EDICINE
2060

The Medical Post

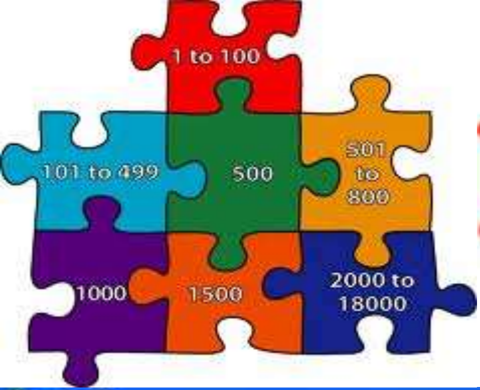
Waiting and watching the future of medicine

EDITORIAL BY BRIAN DAY

“Medicina e Saúde: Perspectivas actuais e futuras”

José M. D. Poças

Médico Internista e Infecciologista


1 to 100
101 to 499
500
501 to 800
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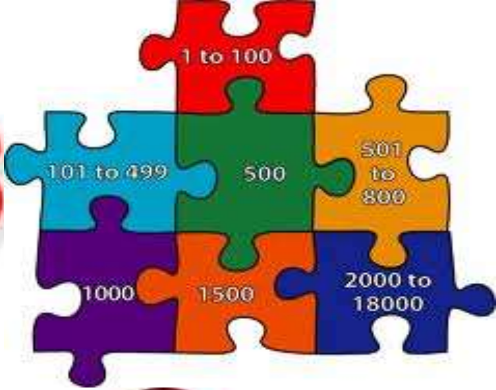
2000 to 18000

PUZZLES


1 to 100
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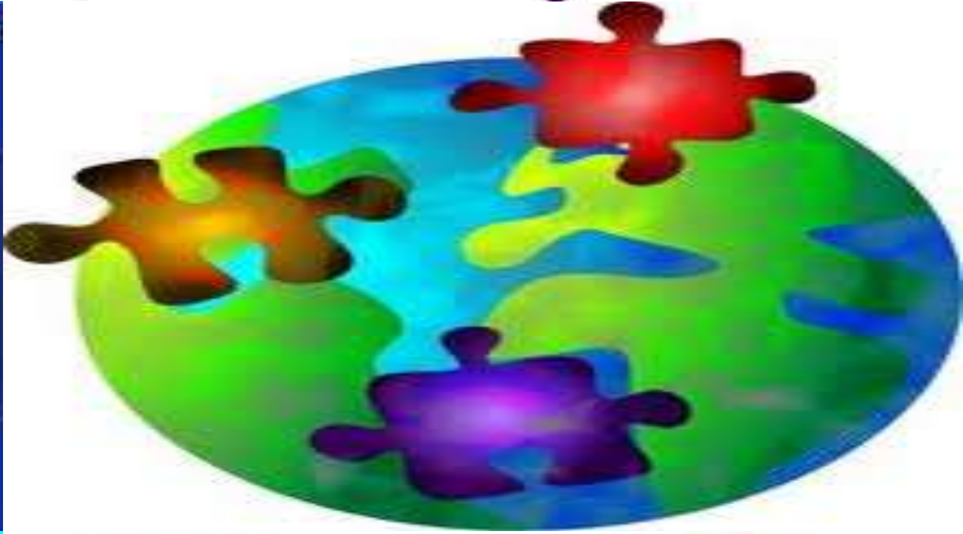
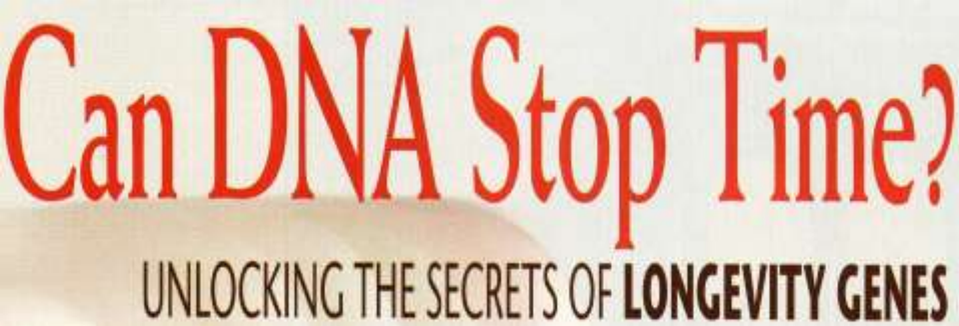
2000 to 18000



PRIMEIROS PENSAMENOS

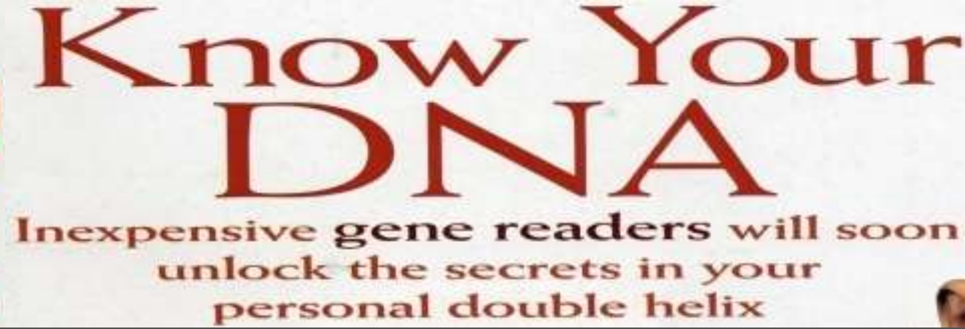
- *“ … Time will say nothing but I told you so,*
  Time only knows the price we have to pay,
  If I could tell you I would let you know … “ (sic.) *(Wystan Auden, Poeta, 1966)*

- *“ … o Homem só vê verdadeiramente aquilo que ele já conhece …*
  saber não é suficiente; devemos aplicar os conhecimentos …
  revelar vontade de fazer não é bastante; o que temos mesmo é de executar … “ (sic.) (Johann W. Goethe)



Can DNA Stop Time?

UNLOCKING THE SECRETS OF **LONGEVITY GENES**

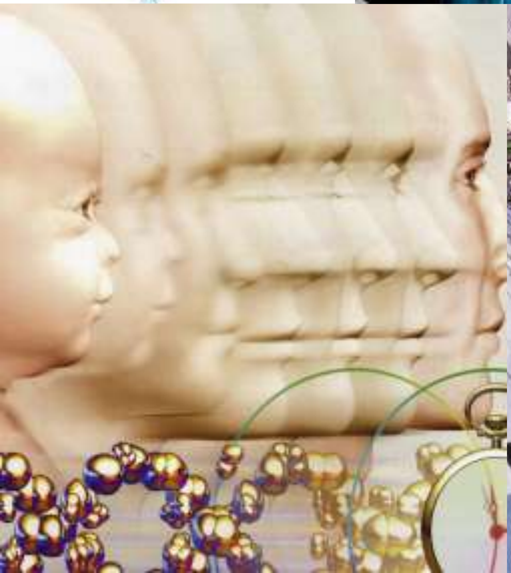


Know Your DNA

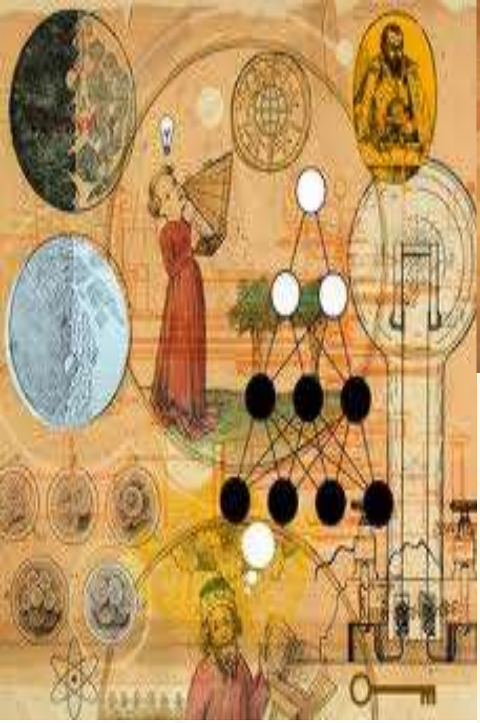
Inexpensive gene readers will soon unlock the secrets in your personal double helix

TÓPICOS da CONFERÊNCIA

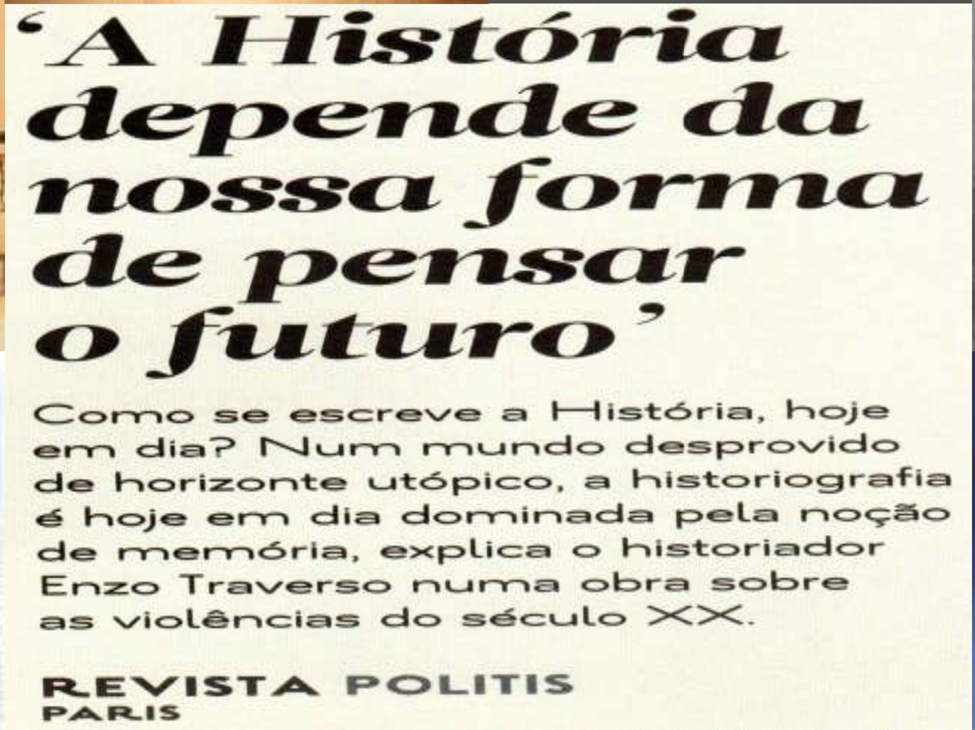
INTRODUÇÃO
PROBLEMAS de ONTEM, de HOJE e de AMANHÃ
Os PRINCIPAIS PROBLEMAS ACTUAIS
Os PRINCIPAIS PROBLEMAS do FUTURO
E ENTÃO em PORTUGAL?
As RESPOSTAS da INOVAÇÃO CIENTÍFICA
PROBLEMAS DECORRENTES da TECNOLOGIA
CONCLUSÕES
MENSAGENS FINAIS



KEEP 'EM MOVING



HISTORY



'A História depende da nossa forma de pensar o futuro'

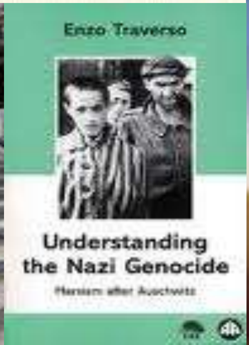
Como se escreve a História, hoje em dia? Num mundo desprovido de horizonte utópico, a historiografia é hoje em dia dominada pela noção de memória, explica o historiador Enzo Traverso numa obra sobre as violências do século XX.

REVISTA POLITIS
PARIS

hachette

Enzo Traverso

1914-1945
La guerre civile européenne



Enzo Traverso

Understanding the Nazi Genocide

Marxism after Auschwitz

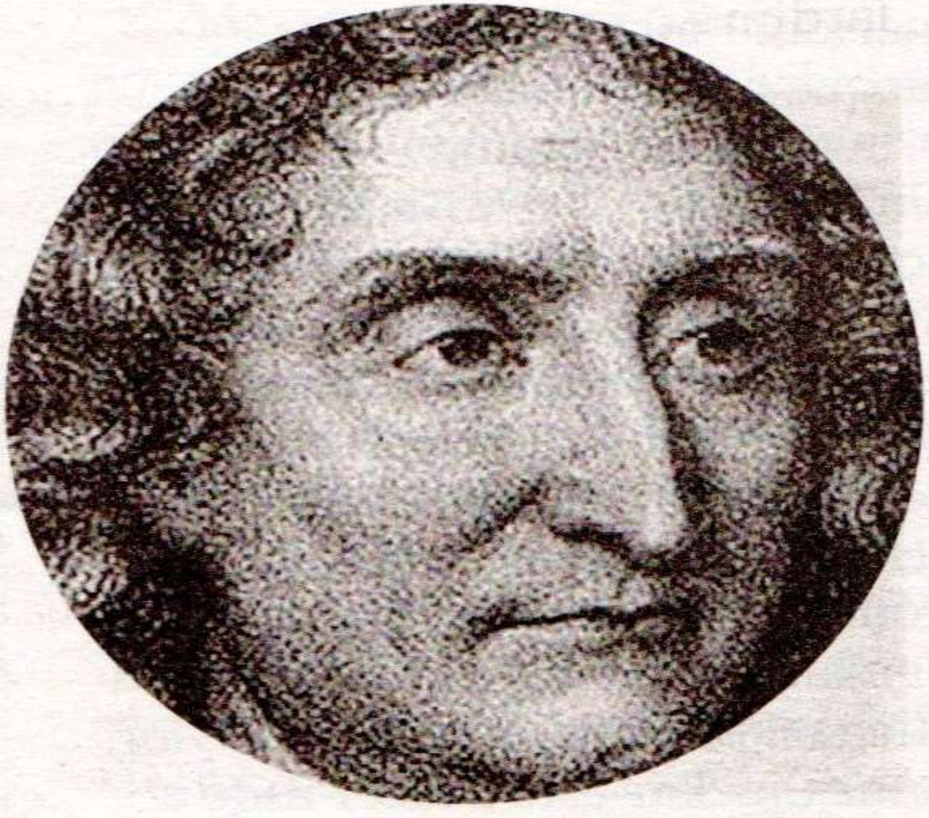
FUTURE
PRESENT
PAST

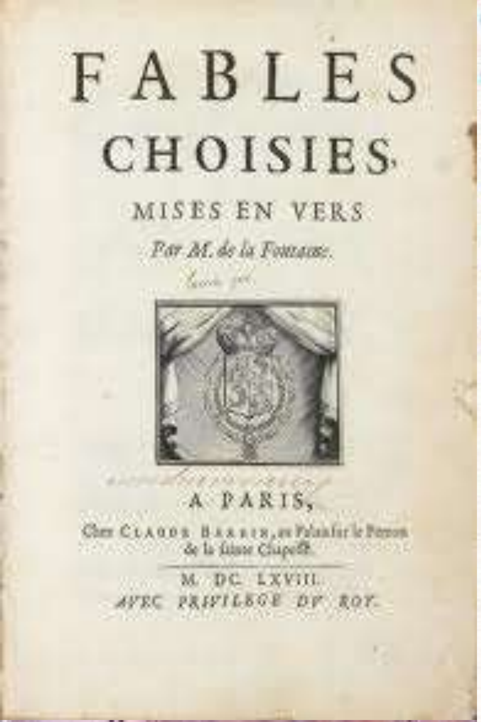
INTRODUÇÃO

Escrito na pedra

E cada um acredita, facilmente, no que teme e no que deseja.

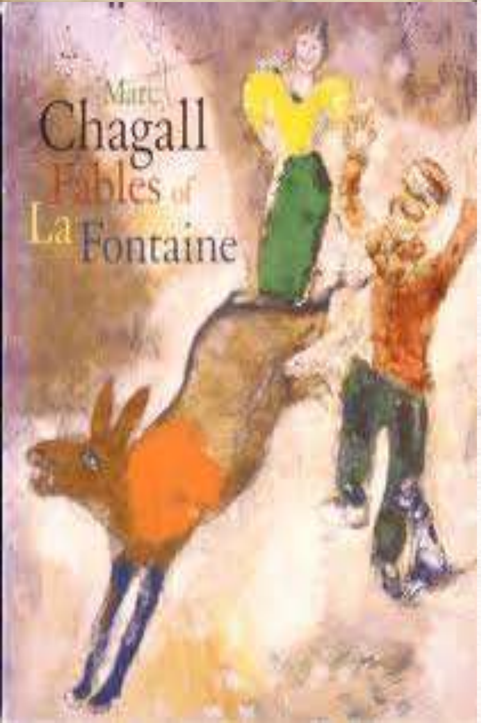
Jean de La Fontaine, escritor francês (1621-1695)

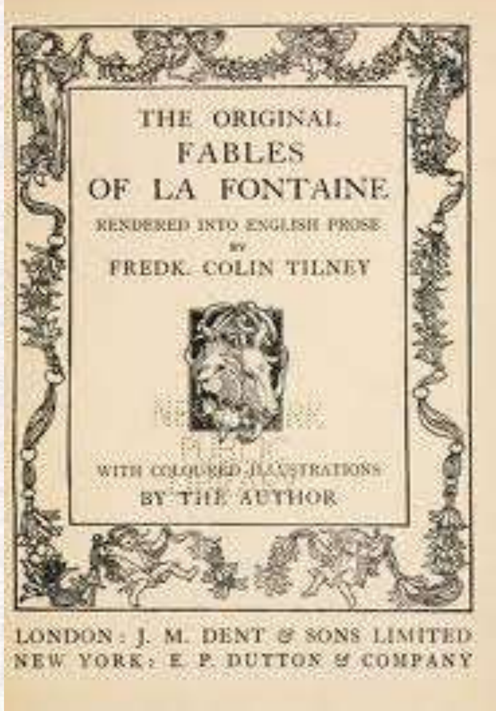




FABLES
CHOISIES
MISES EN VERS
Par M. de la Fontaine.

A PARIS,
Chez CLAUDE BARBIN, au Palais sur le Perron de la sainte Chapelle.
M. DC. LXVIII.
AVEC PRIVILEGE DU ROY.





THE ORIGINAL
FABLES
OF LA FONTAINE
RENDERED INTO ENGLISH PROSE
BY
FREDK. COLIN TILNEY

WITH COLOURED ILLUSTRATIONS
BY THE AUTHOR

LONDON: J. M. DENT & SONS LIMITED
NEW YORK: E. P. DUTTON & COMPANY

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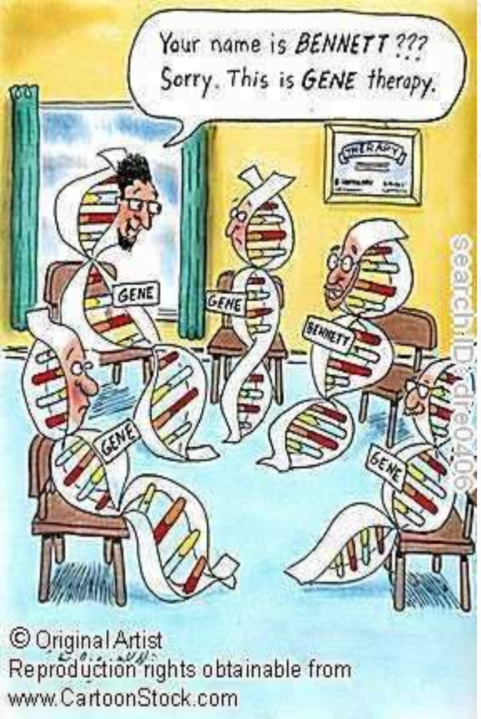
Your name is BENNETT ??? Sorry. This is GENE therapy.
THERAPY
GENE
GENE
BENNETT
GENE
GENE
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DON'T BE ALARMED. IT'S ONLY RALPH... MY ANCIENT MEDICINE MAN GUIDE.
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XES

Seances of the future.

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Well, here's your problem.
search ID: bstn183
Streeter

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LET'S SEE WHAT THE LAWYER ORACLE WILL TELL US...

MODERN MEDICINE MAN

PROGRESS IS PROGRESS, BUT I MISS the CAMP-FIRES...
SCARY STORIES

MEDICINE
OF THE
FUTURE
HERE
TODAY

New hope for cancer, diabetes, dementia and more

SIGHT SAVERS

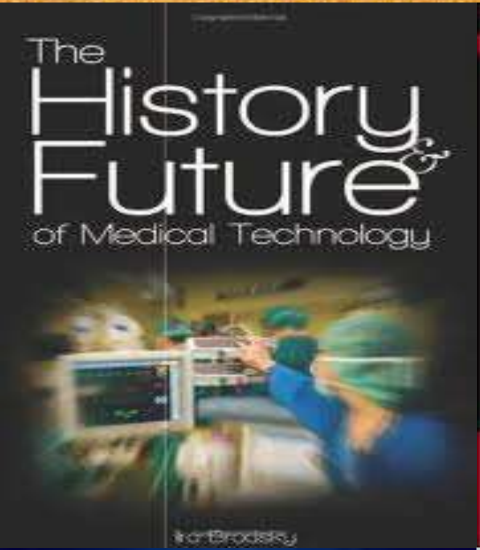
COUNTERTHINK
YES, I CAN TESTIFY THAT OUR ANTI-AGING PILLS DO WORK~ A LITTLE TOO WELL, ACTUALLY.
DR. GRAY
DR. KATZ
DR. YOAN
DR. SAI
CONCEPT-MIKE ADAMS ART-DAN BERGER WWW.NEWSTARGET.COM

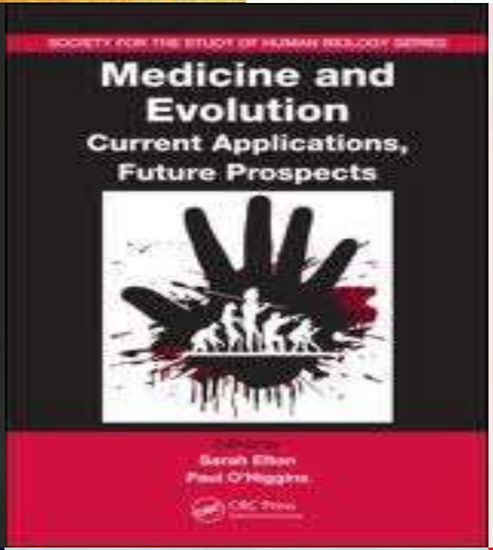
The FUTURE of MEDICINE
Leading The Way To A Better Health Care System
MICHIGAN STATE MEDICAL SOCIETY

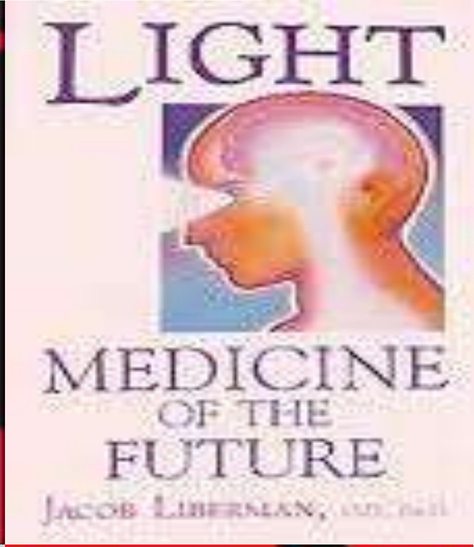
The FUTURE
The road to better
OF MEDICINE

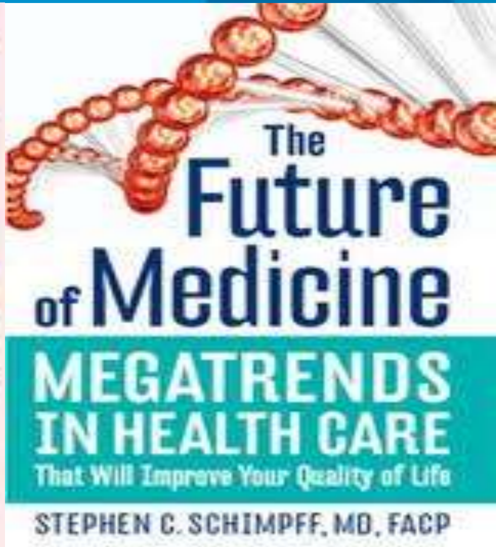
INNOVATION

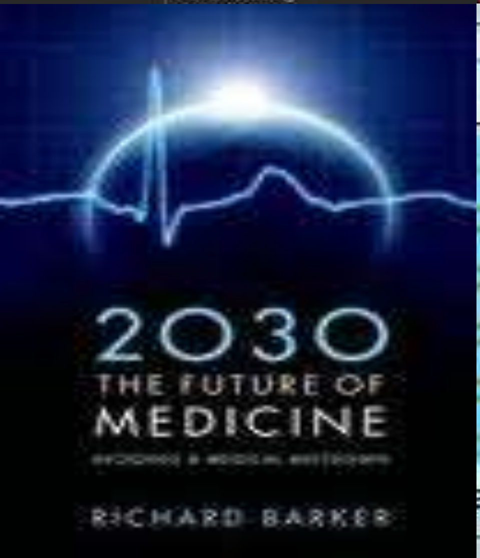
MaRS
Future of Medicine™

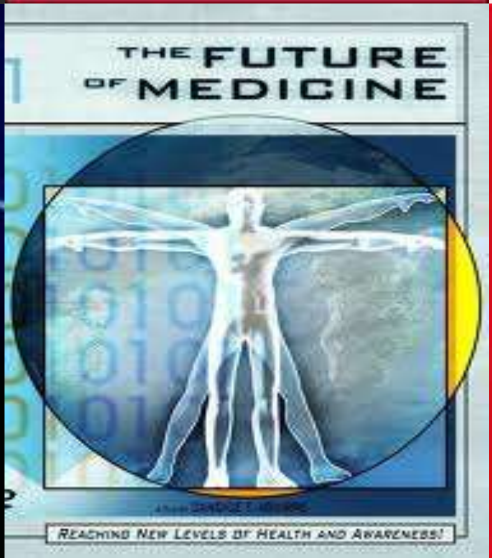

The History & Future of Medical Technology


SOCIETY FOR THE STUDY OF HUMAN BIOLOGY SERIES
Medicine and Evolution
Current Applications, Future Prospects
Sarah Elton
Paul O'Higgins
CRC Press


LIGHT
MEDICINE OF THE FUTURE
JACOB LIBERMAN

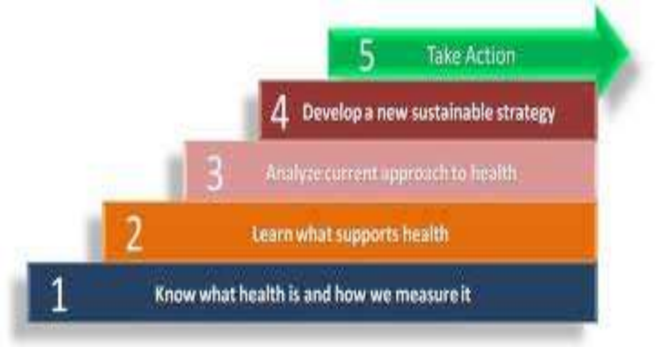

The Future of Medicine
MEGATRENDS IN HEALTH CARE
That Will Improve Your Quality of Life
STEPHEN C. SCHIMPFF, MD, FACP

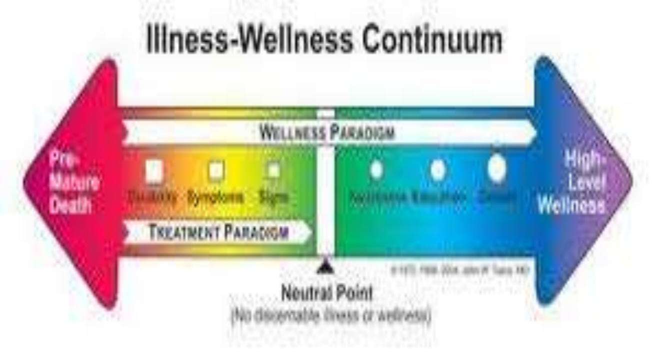

2030
THE FUTURE OF MEDICINE
RICHARD BARKER

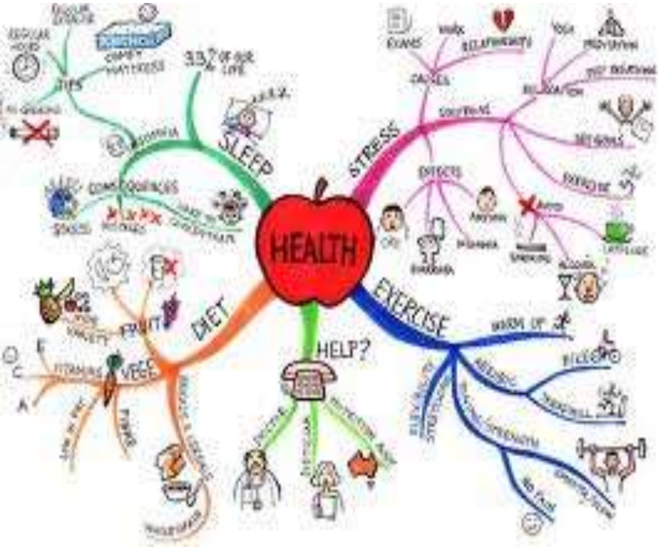

THE FUTURE OF MEDICINE
REACHING NEW LEVELS OF HEALTH AND AWARENESS!

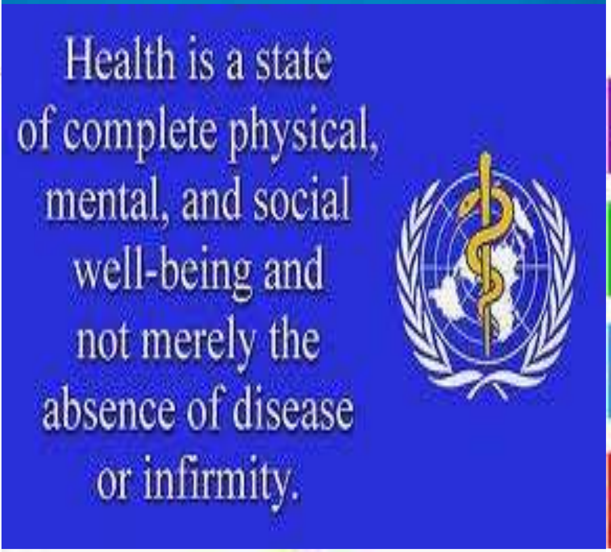
TIME
LOTT'S IMPEACHMENT PLAN
SPECIAL ISSUE
THE FUTURE OF MEDICINE
How genetic engineering will change us in the next century

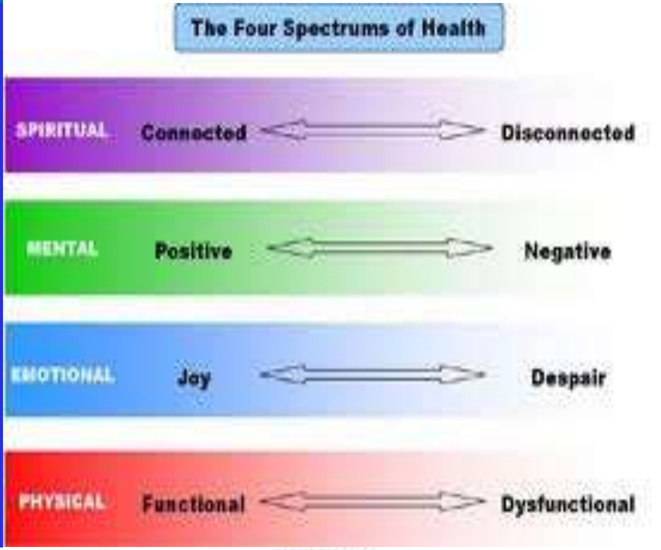
FutureMed
SINGULARITY UNIVERSITY

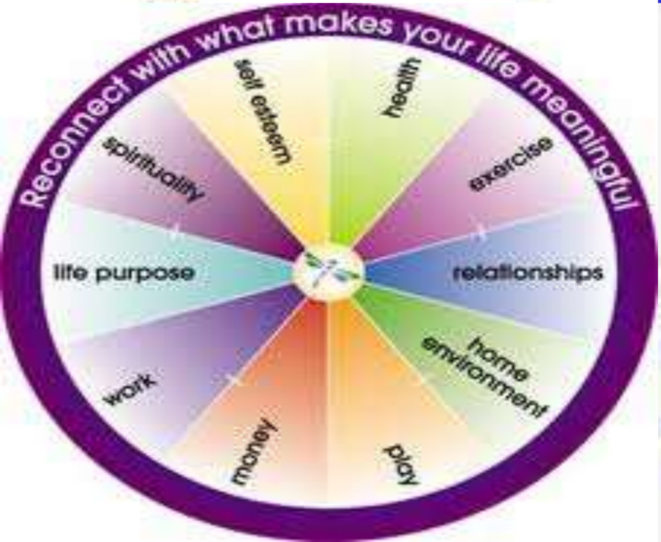

5 Take Action
4 Develop a new sustainable strategy
3 Analyze current approach to health
2 Learn what supports health
1 Know what health is and how we measure it

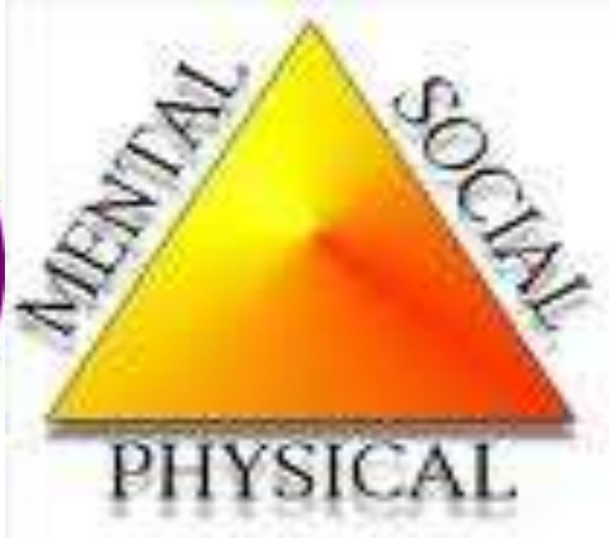

Illness-Wellness Continuum
Pre-Mature Death
Wellness Paradigm
Disability
Symptoms
Signs
Awareness
Education
Growth
Treatment Paradigm
High-Level Wellness
Neutral Point
(No discernable illness or wellness)

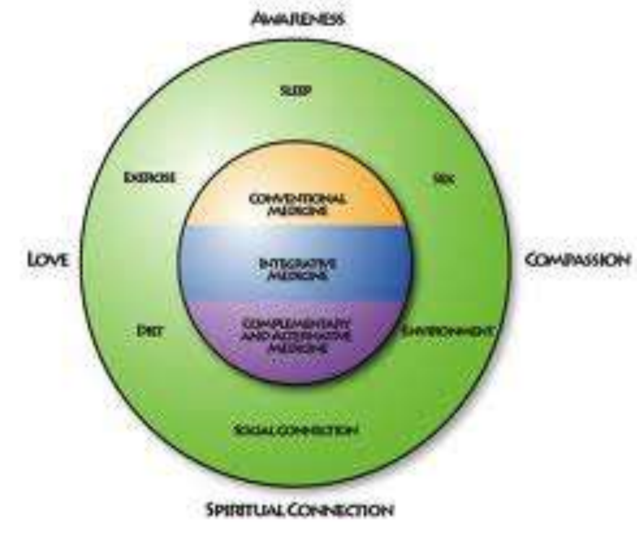

HEALTH
SLEEP
STRESS
EXERCISE
HELP?
DIET
FRUIT
VEGE

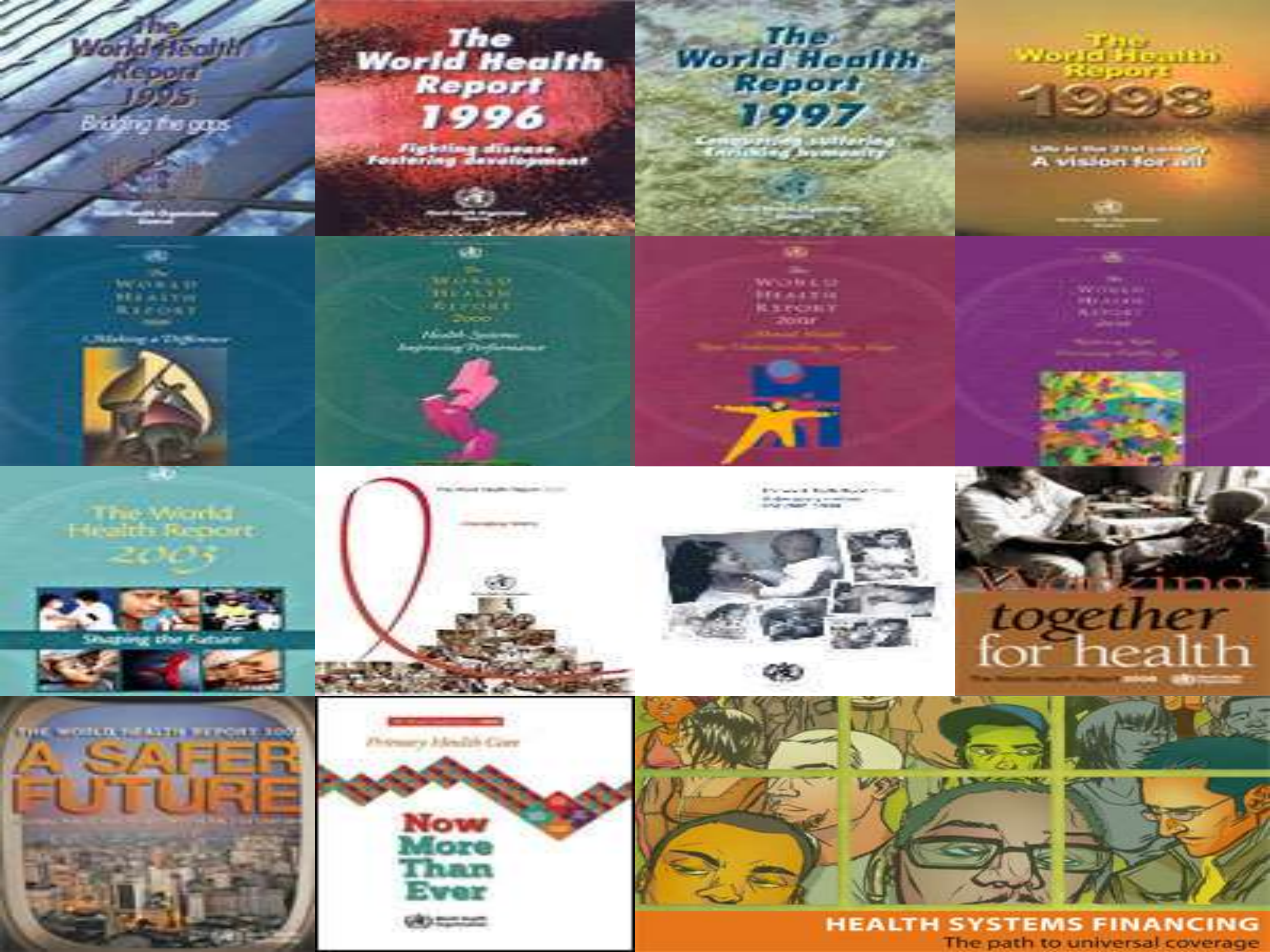

Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.


The Four Spectrums of Health
SPIRITUAL
Connected
Disconnected
MENTAL
Positive
Negative
EMOTIONAL
Joy
Despair
PHYSICAL
Functional
Dysfunctional


Reconnect with what makes your life meaningful
self esteem
health
spirituality
exercise
life purpose
relationships
work
home environment
money
play


MENTAL
SOCIAL
PHYSICAL

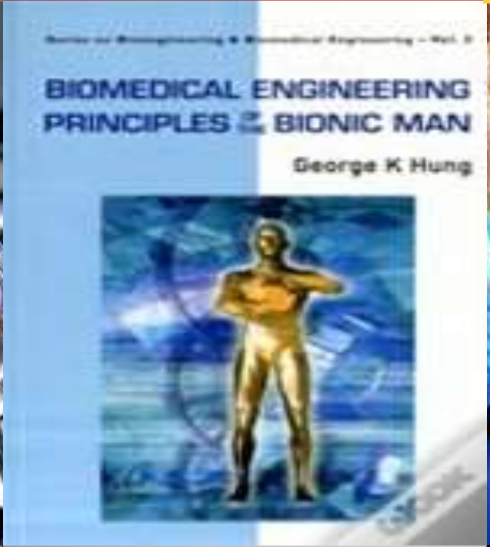

Awareness
Sleep
Exercise
Sex
Love
Conventional Medicine
Integrative Medicine
Compassion
Diet
Complementary and Alternative Medicine
Environment
Social Connection
Spiritual Connection

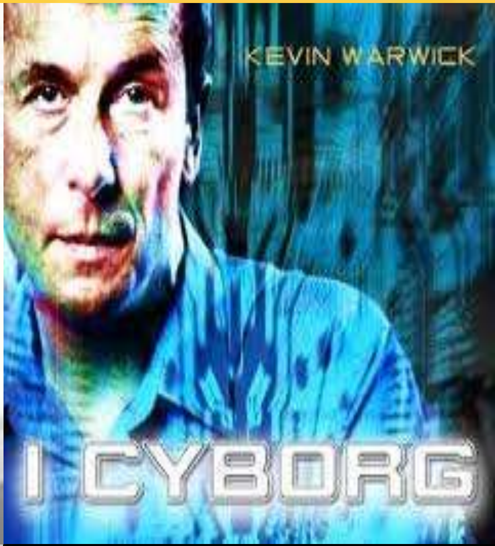

The World Health Report 1995
Bridging the gaps
The World Health Report 1996
Fighting disease
Fostering development
The World Health Report 1997
Conquering suffering
Enriching humanity
The World Health Report 1998
A vision for all
The World Health Report
Making a Difference
The World Health Report 2000
Health Systems: Improving Performance
The World Health Report 2001
The World Health Report
The World Health Report 2003
Shaping the Future
together for health
THE WORLD HEALTH REPORT 2007
A SAFER FUTURE
Primary Health Care
Now More Than Ever
HEALTH SYSTEMS FINANCING
The path to universal coverage

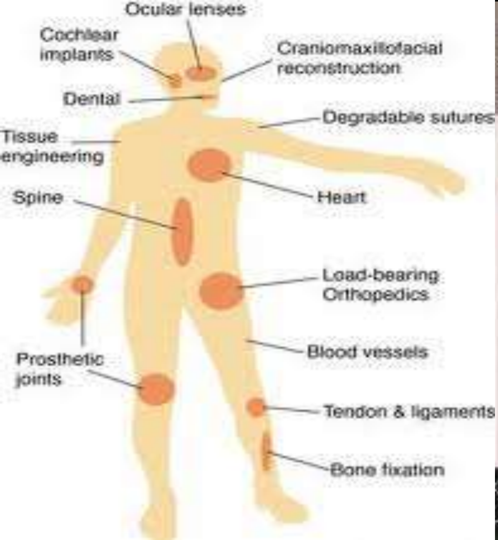
THE BIONIC MAN

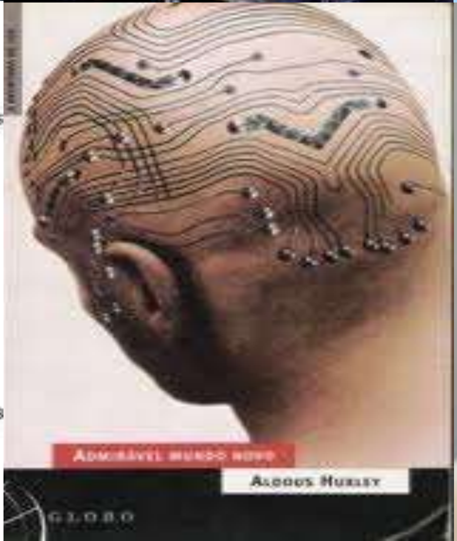
Artificial Organs

PART MAN.
PART MACHINE.
ALL COP.
ROBOCOP
THE FUTURE OF LAW ENFORCEMENT


BIOMEDICAL ENGINEERING PRINCIPLES of the BIONIC MAN
George K Hung


KEVIN WARWICK
I CYBORG

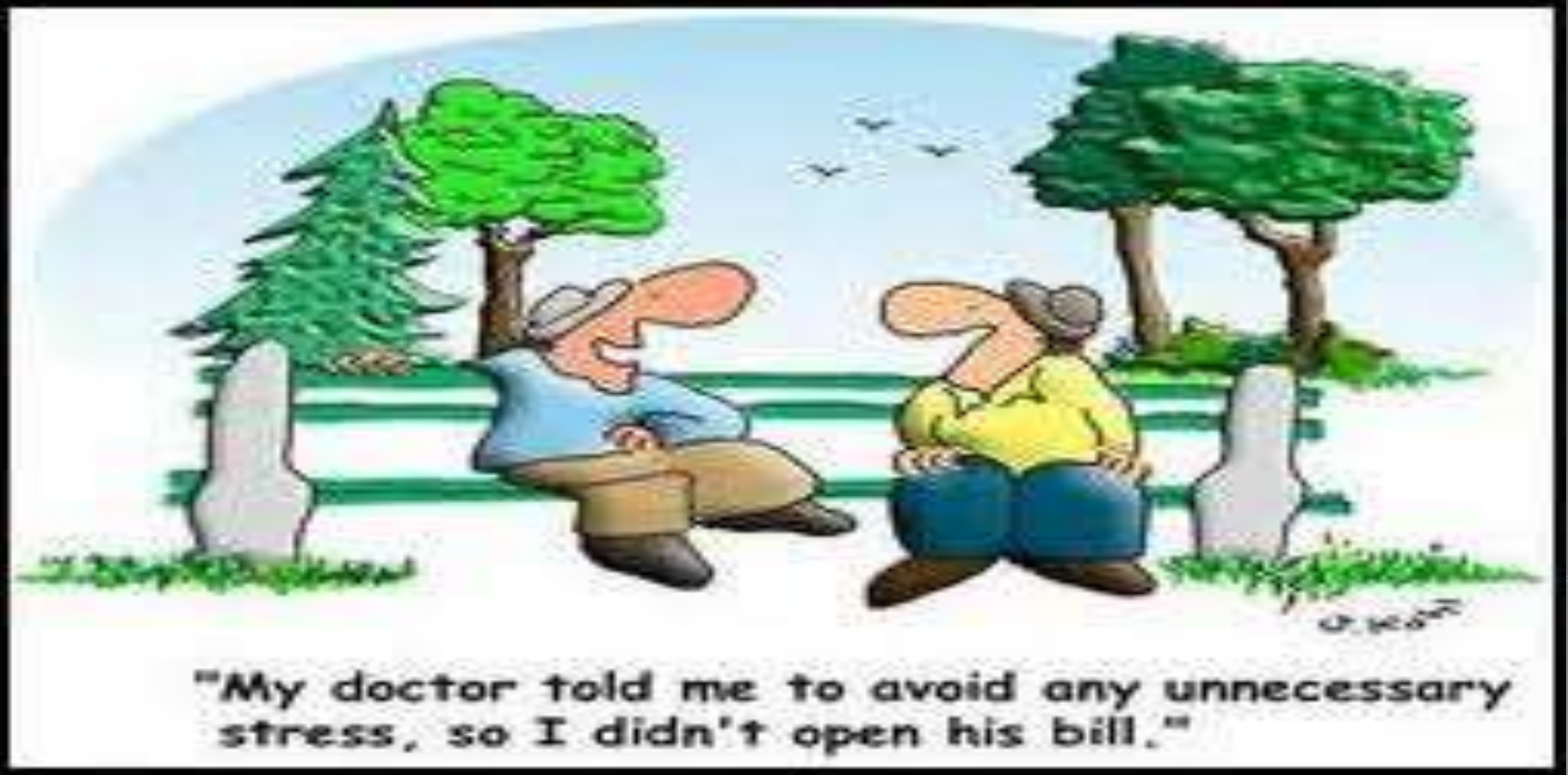

Ocular lenses
Cochlear implants
Craniomaxillofacial reconstruction
Dental
Degradable sutures
Tissue engineering
Heart
Spine
Load-bearing Orthopedics
Blood vessels
Prosthetic joints
Tendon & ligaments
Bone fixation


ADMIRÁVEL MUNDO NOVO
ALDOUS HUXLEY
GLOBO

Bad Science

PROBLEMAS ...

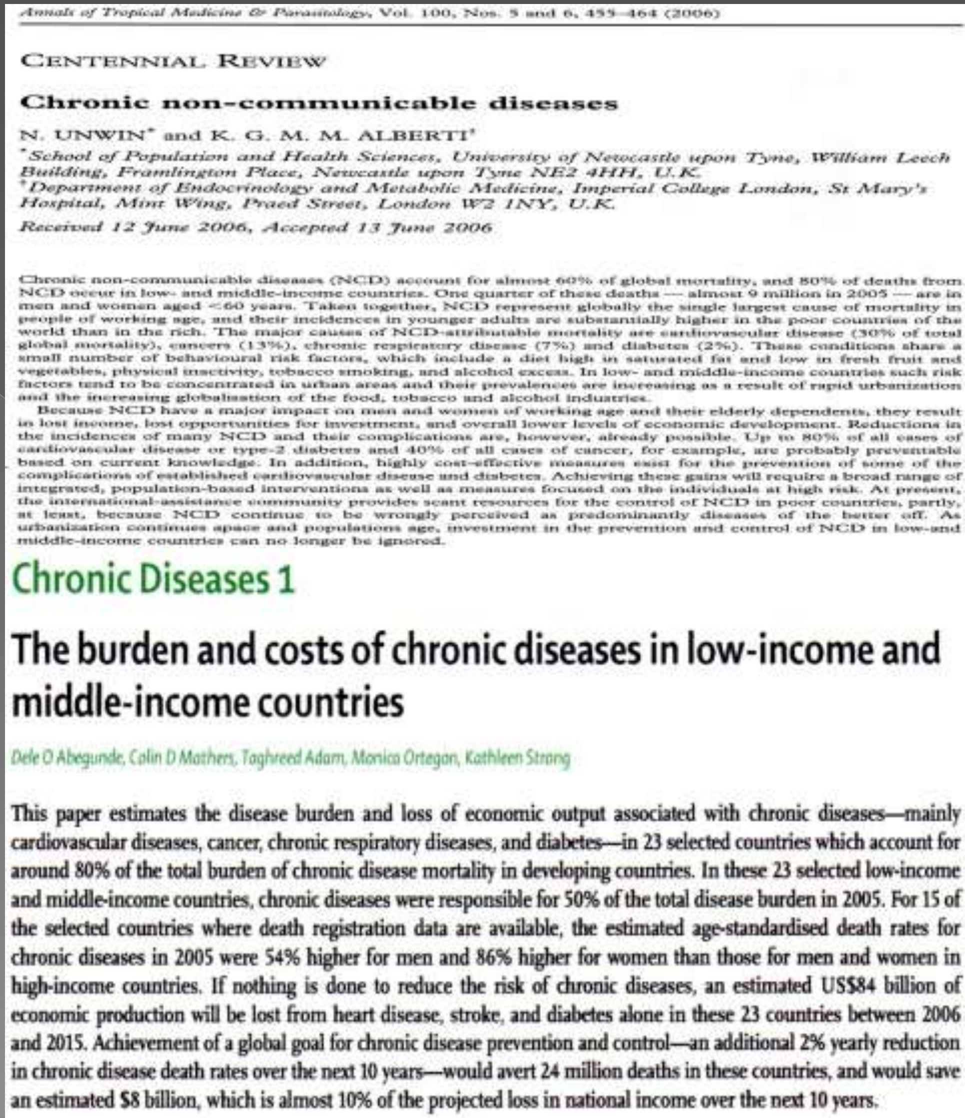
de ONTEM... de HOJE ... e de AMANHÃ !?



"My doctor told me to avoid any unnecessary stress, so I didn't open his bill."

MAIS DOIS PENSAMENTOS

- *" … o custo da inacção é evidente e inaceitável. Através de um investimento sério e determinado numa política sectorial adequadamente direccionada às principais causas de morbi-mortalidade preveníveis, poder-se-á registar um significativo impacto positivo na vida das diversas populações à escala planetária … " (SIC.)* *(Lee Jong-Wook, Secretário Geral da OMS, 2005)*
- *" … calcula-se que cerca de 70 a 80 % das causas Cardio/Cerebro-Vasculares ou Diabetes, bem como 30 a 40 % das causas de Cancro , 40 % das Doenças Crónicas Respiratórias, e cerca de 50 % das restantes causas de morte por causas secundárias a outras Doenças Crónicas, sejam preveníveis com a adopção de hábitos de vida mais saudáveis e vigilância periódica da saúde … " (sic.)* *(N. Unwin, and G. Alberti, 2006, Dele O. Abegunde, et al, 2007)*



Annals of Tropical Medicine & Parasitology, Vol. 100, Nos. 5 and 6, 455–464 (2006)

CENTENNIAL REVIEW

Chronic non-communicable diseases

N. UNWIN* and K. G. M. M. ALBERTI†

*School of Population and Health Sciences, University of Newcastle upon Tyne, William Leech Building, Framlington Place, Newcastle upon Tyne NE2 4HH, U.K.
†Department of Endocrinology and Metabolic Medicine, Imperial College London, St Mary's Hospital, Mint Wing, Praed Street, London W2 1NY, U.K.

Received 12 June 2006, Accepted 13 June 2006

Chronic non-communicable diseases (NCD) account for almost 60% of global mortality, and 80% of deaths from NCD occur in low- and middle-income countries. One quarter of these deaths — almost 9 million in 2005 — are in men and women aged <60 years. Taken together, NCD represent globally the single largest cause of mortality in people of working age, and their incidences in younger adults are substantially higher in the poor countries of the world than in the rich. The major causes of NCD-attributable mortality are cardiovascular disease (30% of total global mortality), cancers (13%), chronic respiratory disease (7%) and diabetes (2%). These conditions share a small number of behavioural risk factors, which include a diet high in saturated fat and low in fresh fruit and vegetables, physical inactivity, tobacco smoking, and alcohol excess. In low- and middle-income countries such risk factors tend to be concentrated in urban areas and their prevalences are increasing as a result of rapid urbanization and the increasing globalisation of the food, tobacco and alcohol industries.

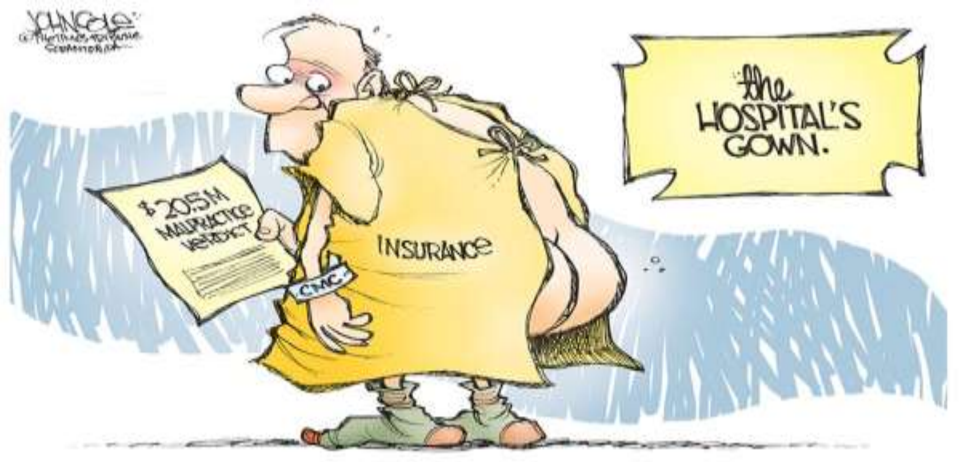
Because NCD have a major impact on men and women of working age and their elderly dependents, they result in lost income, lost opportunities for investment, and overall lower levels of economic development. Reductions in the incidences of many NCD and their complications are, however, already possible. Up to 80% of all cases of cardiovascular disease or type-2 diabetes and 40% of all cases of cancer, for example, are probably preventable based on current knowledge. In addition, highly cost-effective measures exist for the prevention of some of the complications of established cardiovascular disease and diabetes. Achieving these gains will require a broad range of integrated, population-based interventions as well as measures focused on the individuals at high risk. At present, the international-assistance community provides scant resources for the control of NCD in poor countries, partly, at least, because NCD continue to be wrongly perceived as predominantly diseases of the better off. As urbanization continues apace and populations age, investment in the prevention and control of NCD in low-and middle-income countries can no longer be ignored.

Chronic Diseases 1

The burden and costs of chronic diseases in low-income and middle-income countries

Dele O Abegunde, Colin D Mathers, Taghreed Adam, Monica Ortegon, Kathleen Strong

This paper estimates the disease burden and loss of economic output associated with chronic diseases—mainly cardiovascular diseases, cancer, chronic respiratory diseases, and diabetes—in 23 selected countries which account for around 80% of the total burden of chronic disease mortality in developing countries. In these 23 selected low-income and middle-income countries, chronic diseases were responsible for 50% of the total disease burden in 2005. For 15 of the selected countries where death registration data are available, the estimated age-standardised death rates for chronic diseases in 2005 were 54% higher for men and 86% higher for women than those for men and women in high-income countries. If nothing is done to reduce the risk of chronic diseases, an estimated US$84 billion of economic production will be lost from heart disease, stroke, and diabetes alone in these 23 countries between 2006 and 2015. Achievement of a global goal for chronic disease prevention and control—an additional 2% yearly reduction in chronic disease death rates over the next 10 years—would avert 24 million deaths in these countries, and would save an estimated $8 billion, which is almost 10% of the projected loss in national income over the next 10 years.


the HOSPITAL'S GOWN.
$20.5M MALPRACTICE VERDICT
INSURANCE
CMC

O PLANETA e a SOCIEDADE estão DOENTES …

Wild Life
Jayantha Jayawardene

5 JUNE
WORLD ENVIRONMENT DAY
Forests: Nature at Your Service
In support of the UN International Year of Forests

CLIMATE INSTITUTE

70%

of commercial species of fish have already been fished beyond their reproductive capacity.

Almost

20%

of coral reefs in the world have disappeared, and 56% are threatened.

Tropical forests provide a habitat for

50%

of the world's known species. Half the Amazon forest could disappear by **2050**.

13 million

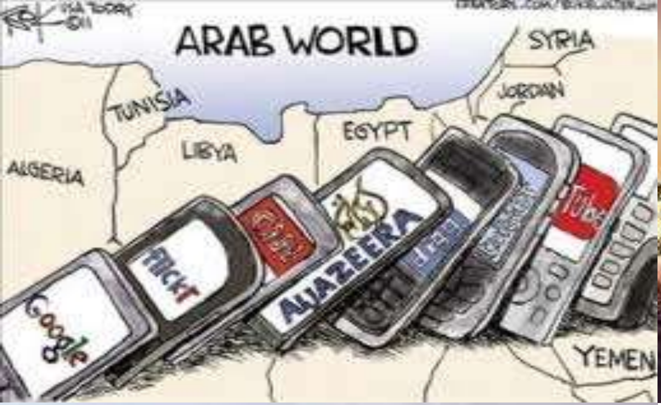
hectares of natural forest disappear in the world every year. That is the equivalent of the surface area of Greece.

PLUS DE

100 MILLIONS

DE PERSONNES VIVENT EN DESSOUS DU **NIVEAU DE LA MER** OU SUR DES TERRES SITUÉES À MOINS D'UN MÈTRE AU-DESSUS.

Courrier internacional
JAPÃO
DEPOIS DO SISMO
O PERIGO ATÓMICO
PRIMAVERA
ÁRABE
POSTA À PROVA
NA LÍBIA


ARAB WORLD
SYRIA
TUNISIA
JORDAN
EGYPT
LIBYA
ALGERIA
YEMEN
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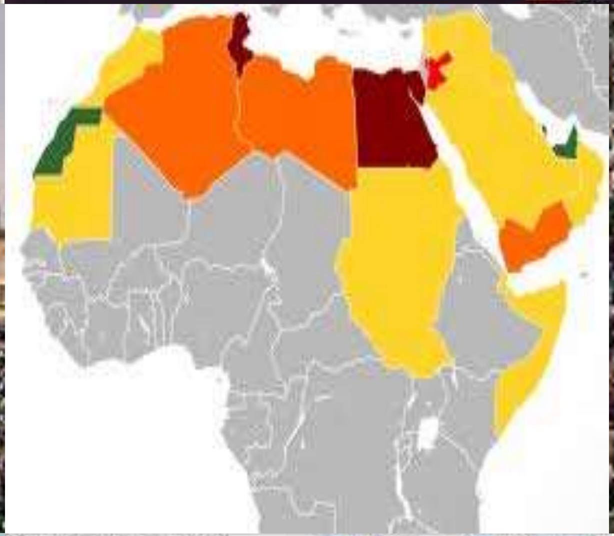
ALJAZEERA

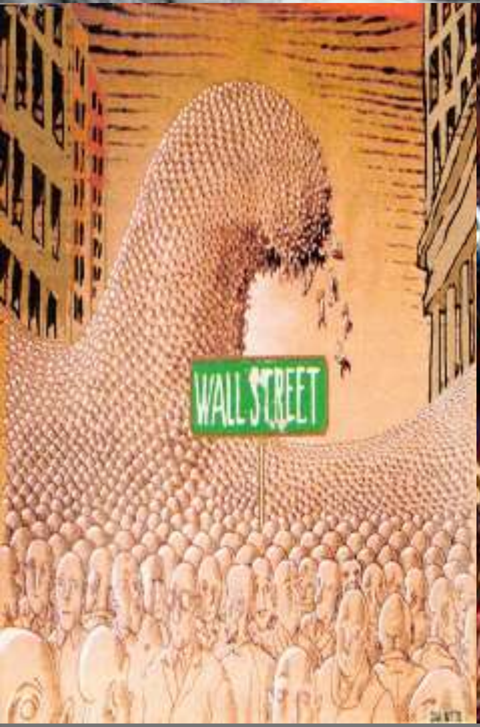
REVOLUTION



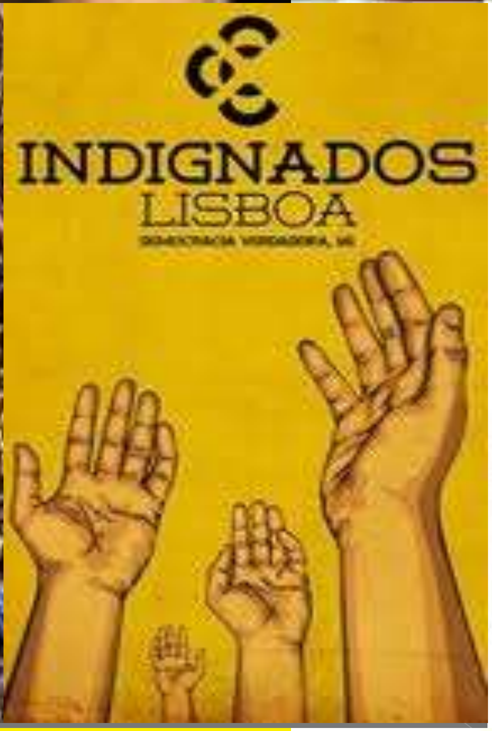
Courier internacional
VENTOS DE MUDANÇA
O CANCRO, CHAVE DA IMORTALIDADE
LÍNGUA INGLESA O FIM DA SUPREMACIA

DESPOTIC
ARAB
REGIMES
TUNISIAN UPRISING

BANQUEROS Y POLÍTICOS:
¡AQUÍ TENÉIS LA PUERTA!
A DONDE HUBIERA QUEDADO EL PARTIDO
DERECHO A VIVIR
POR LA LIBERTAD
NO A LA NEGOCIACIÓN CON ETA
YOU ARE THE SPANISH REVOLUTION
AP


WALL STREET

JVC
REUTERS
NASDAQ


INDIGNADOS
LISBOA
DEMOCRACIA VERDADEIRA, JÁ

Asia
Atlantic Ocean
Africa
Indian Ocean
Australia

DEMO
CRACIA

people
United States
Palestinians
Israel
democratic
must
change
region
rights
security
support
power
Egypt
young
America
Middle
East
reform
Tunisia
North
peace
many
world
democracy
two
leaders
Africa
government

Courrier internacional

PROTESTO GLOBAL

TEMA DE CAPA

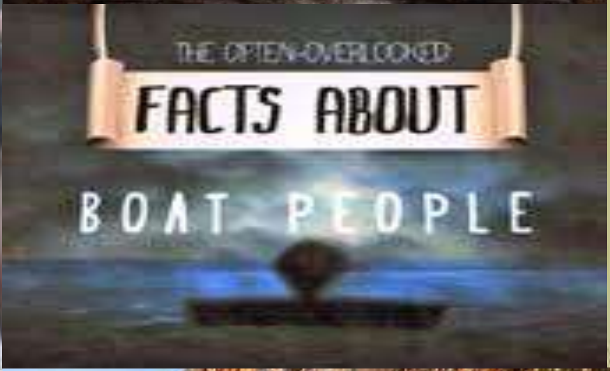
Indignação sem fronteiras

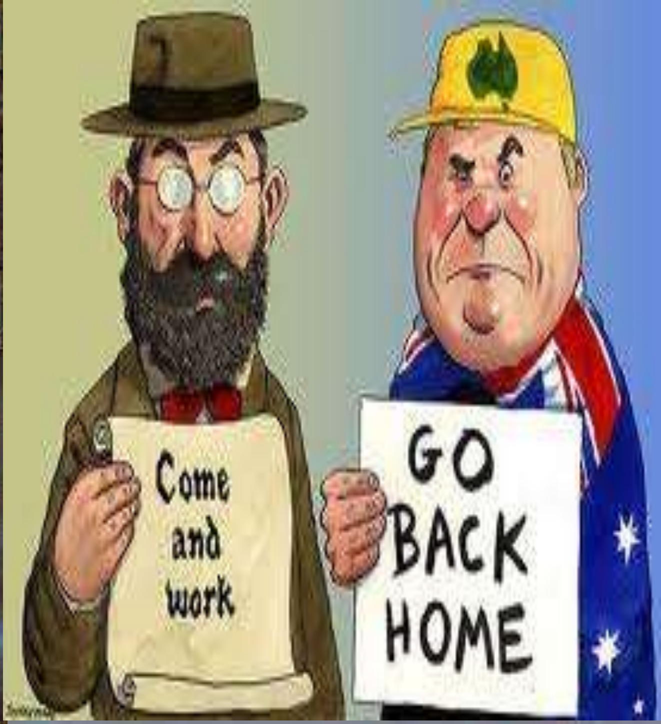
O QUE
SERÁ DO
MEU
FUTURO

Ouvrez
les yeux...
Indignez-vous!

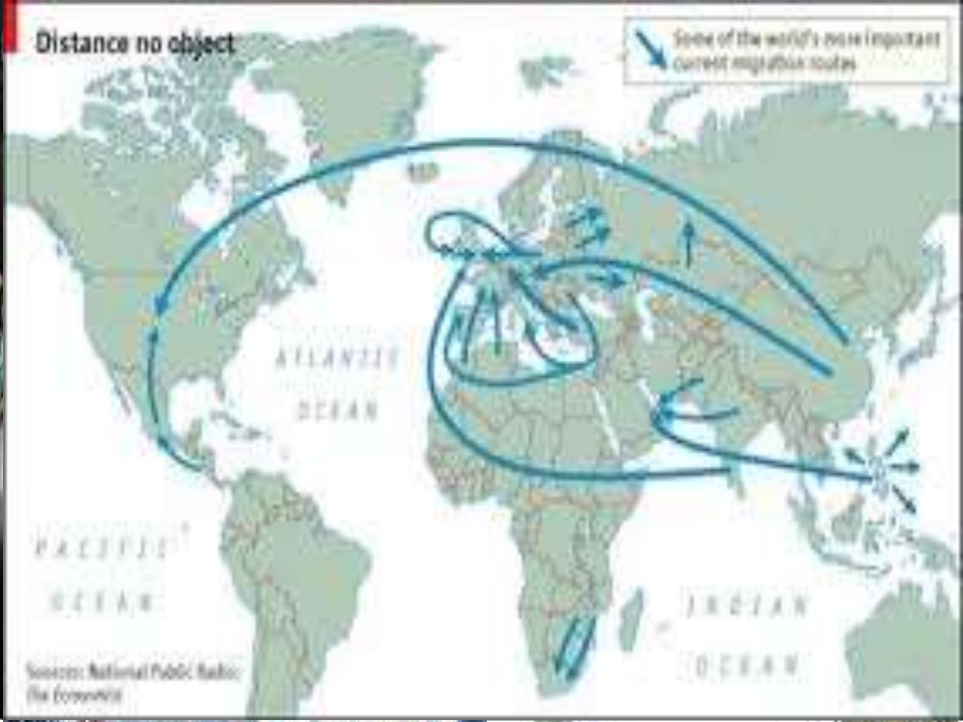
ROYAL THAI NAVY

BOAT PEOPLE


THE OFTEN-OVERLOOKED
FACTS ABOUT
BOAT PEOPLE


Come and work
GO BACK HOME

© AP

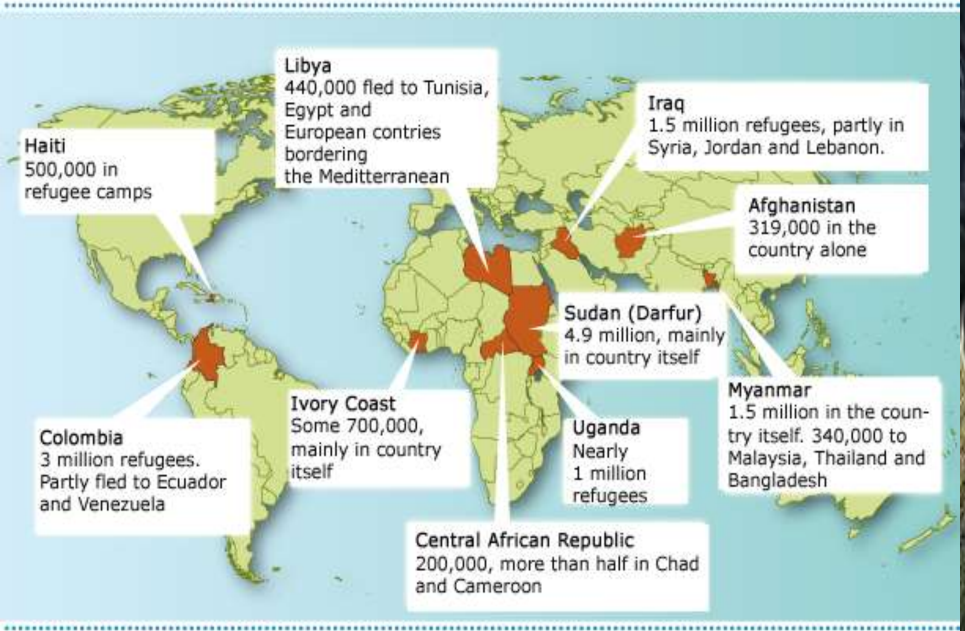


Distance no object

Some of the world's more important current migration routes

Sources: National Public Radio; The Economist

Displaced by violence or disaster



Haiti
500,000 in refugee camps

Libya
440,000 fled to Tunisia, Egypt and European contries bordering the Meditterranean

Iraq
1.5 million refugees, partly in Syria, Jordan and Lebanon.

Afghanistan
319,000 in the country alone

Sudan (Darfur)
4.9 million, mainly in country itself

Myanmar
1.5 million in the country itself. 340,000 to Malaysia, Thailand and Bangladesh

Colombia
3 million refugees. Partly fled to Ecuador and Venezuela

Ivory Coast
Some 700,000, mainly in country itself

Uganda
Nearly 1 million refugees

Central African Republic
200,000, more than half in Chad and Cameroon

© RNW - Tamar Visscher Source: UNHCR

070411

Conflict and Emerging Infectious Diseases

Michelle Gayer,* Dominique Legros,* Pierre Formenty,* and Maire A. Connolly*

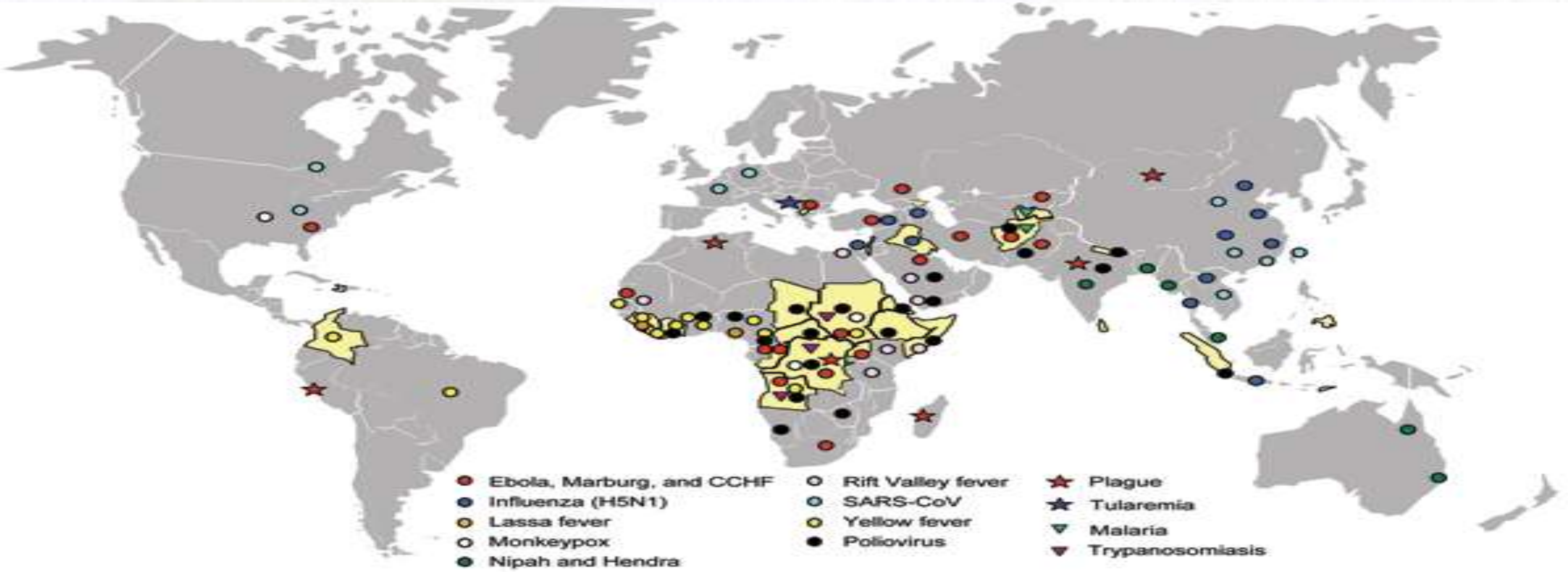
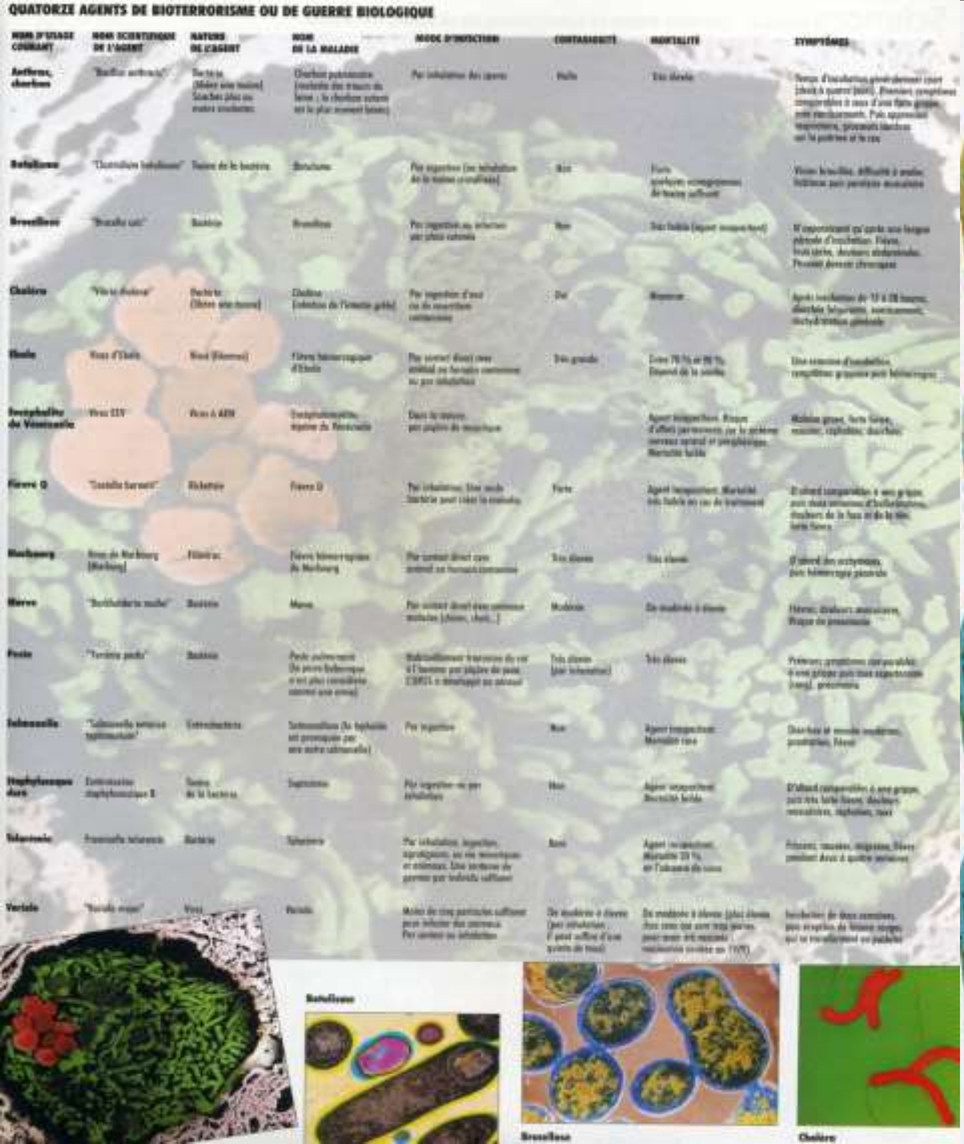

● Ebola, Marburg, and CCHF
● Influenza (H5N1)
● Lassa fever
○ Monkeypox
● Nipah and Hendra
○ Rift Valley fever
○ SARS-CoV
● Yellow fever
● Poliovirus
★ Plague
★ Tularemia
▼ Malaria
▼ Trypanosomiasis

Figure. Geographic distribution of recent emerging or reemerging infectious disease outbreaks and countries affected by conflict, 1990–2006. Countries in yellow were affected by conflict during this period (source: Office for the Coordination of Humanitarian Affairs, World Health Organization, www.reliefweb.int/ocha_ol/onlinehp.html). Symbols indicate outbreaks of emerging or reemerging infectious diseases during this period (source: Epidemic and Pandemic Alert and Response, World Health Organization, www.who.int/csr/en). Circles indicate diseases of viral origin, stars indicate diseases of bacterial origin, and triangles indicate diseases of parasitic origin. CCHF, Crimean-Congo hemorrhagic fever; SARS-CoV, severe acute respiratory syndrome coronavirus.

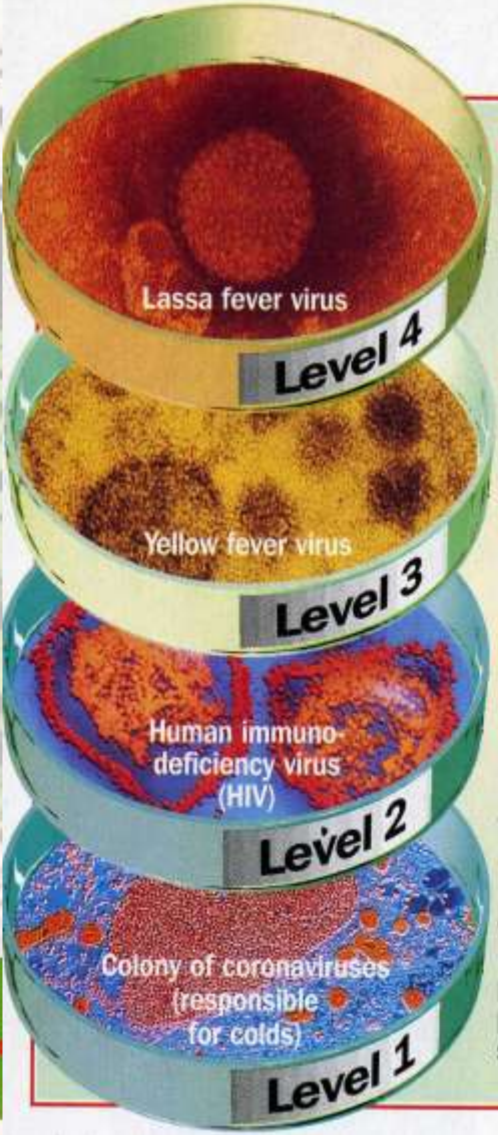
Le dossier du bioterrorisme

BIOTERRORISME



QUATORZE AGENTS DE BIOTERRORISME OU DE GUERRE BIOLOGIQUE

NOM D'USAGE COURANT · NOM SCIENTIFIQUE DE L'AGENT · NATURE DE L'AGENT · NOM DE LA MALADIE · MODE D'INFECTION · CONTAGIOSITÉ · MORTALITÉ · SYMPTÔMES


Lassa fever virus
Level 4
Yellow fever virus
Level 3
Human immuno-deficiency virus (HIV)
Level 2
Colony of coronaviruses (responsible for colds)
Level 1

The virus hierarchy

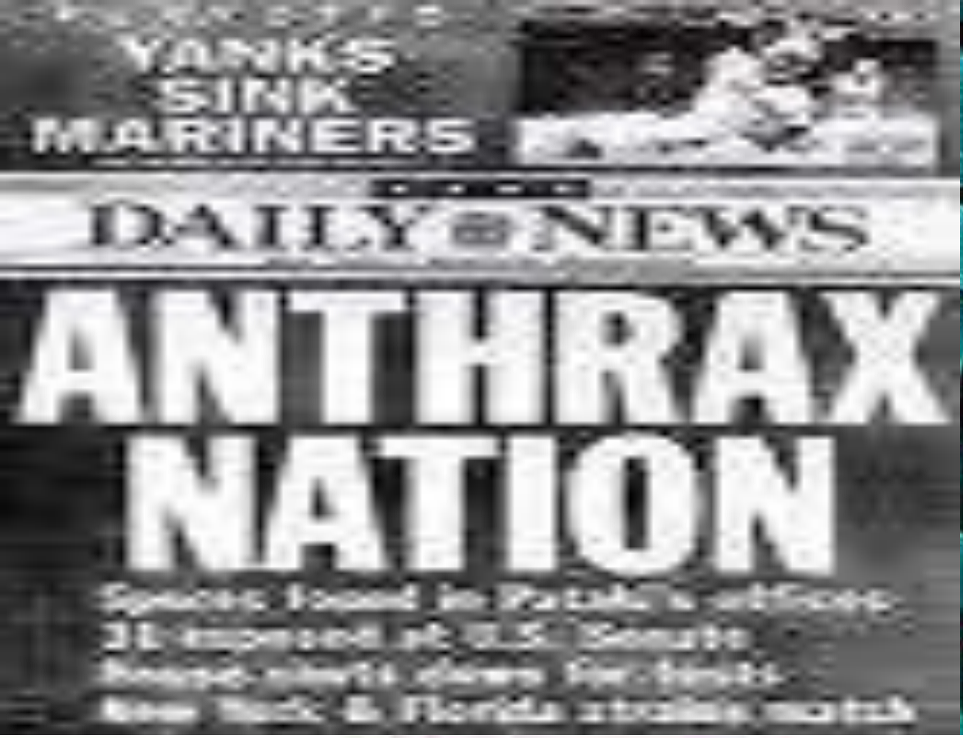
LEVEL 4: eg: **Lassa fever, Marburg, Ebola Zaire viruses**
No known cure. Highly infectious. Fast acting. High mortality rates.

LEVEL 3: eg: **Yellow fever, dengue haemorrhagic fever virus**
Easily contracted. Potentially fatal, and serious when not fatal.

LEVEL 2: eg: **HIV (Aids)**
Difficult to contract. Easily destroyed. Serious, possibly fatal.

LEVEL 1: eg: **cold viruses**
Relatively innocuous – not fatal.

VIRUSES are infectious packages of genetic material (DNA or RNA) in a protein coat. There is debate about whether they should be considered alive: their only activity is to take over living cells of other organisms, without which they cannot survive. Despite these limitations, viruses plague us: flu, colds, glandular fever, polio, some eye infections, possibly some cancers – all are viruses.

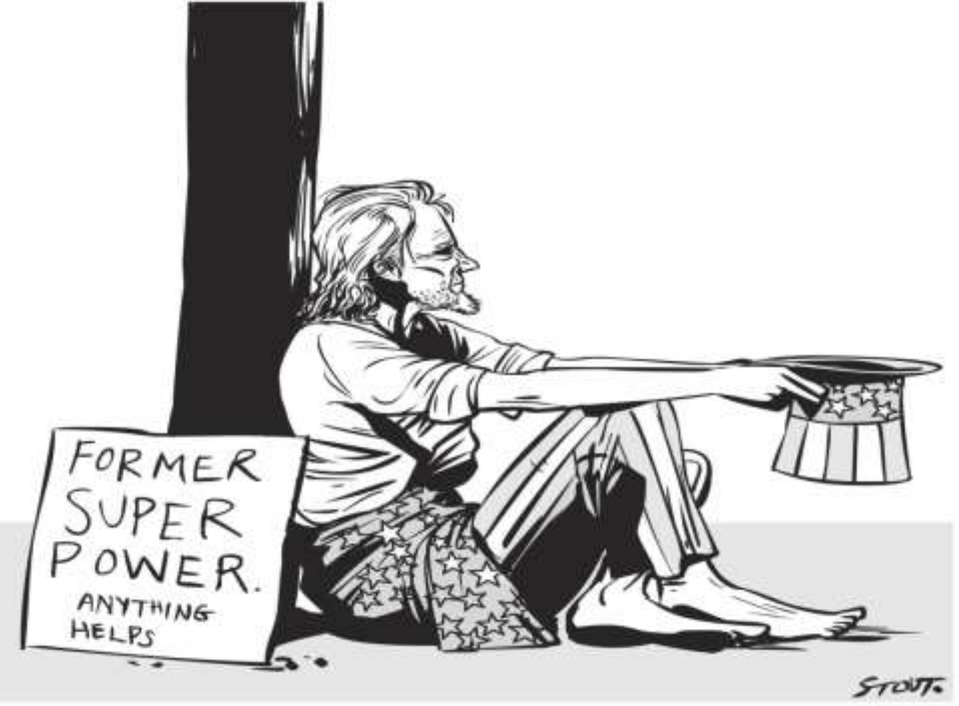


YANKS SINK MARINERS

DAILY NEWS

ANTHRAX NATION

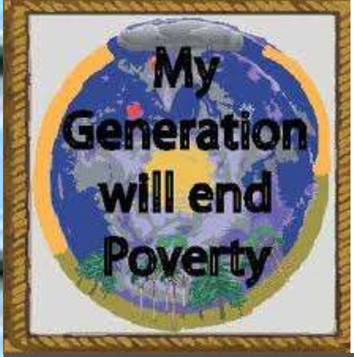
Spores found in Pataki's offices
31 exposed at U.S. Senate
House shuts down for tests
New York & Florida strains match



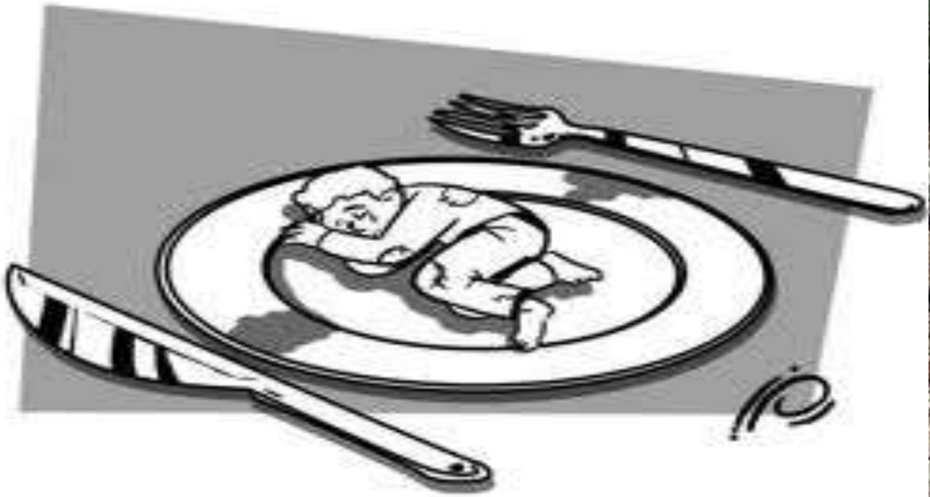
FORMER SUPER POWER.
ANYTHING HELPS
STOUT.

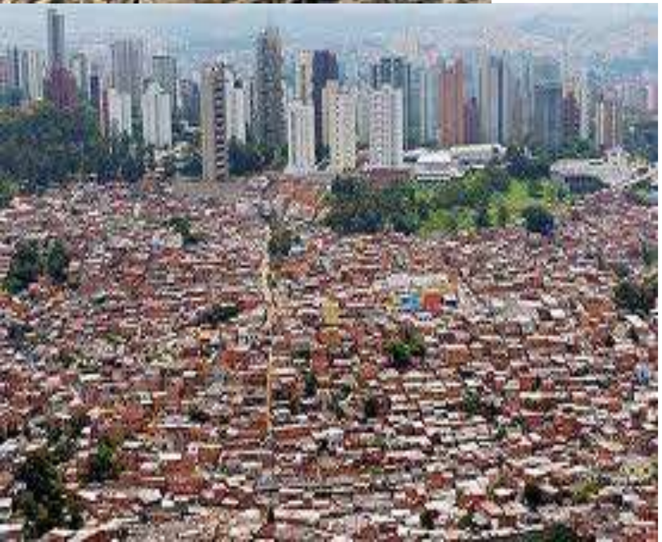
STAND UP
SPEAK OUT
AGAINST POVERTY AND INEQUALITY

GLOBAL CALL TO ACTION
AGAINST POVERTY


My
Generation
will end
Poverty

ONE
JUST
WORLD

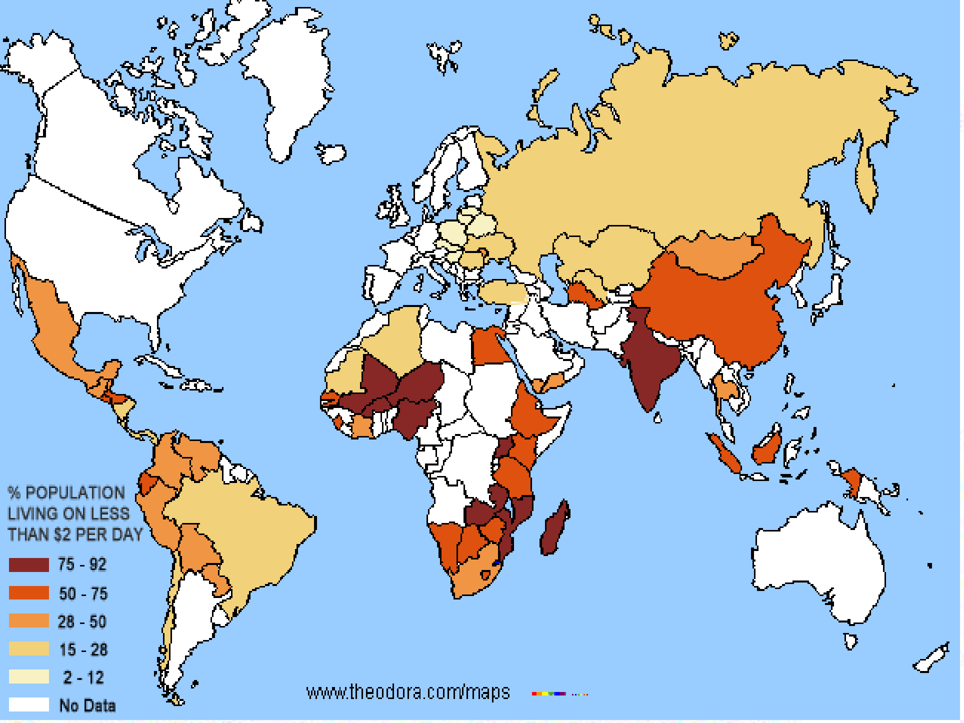


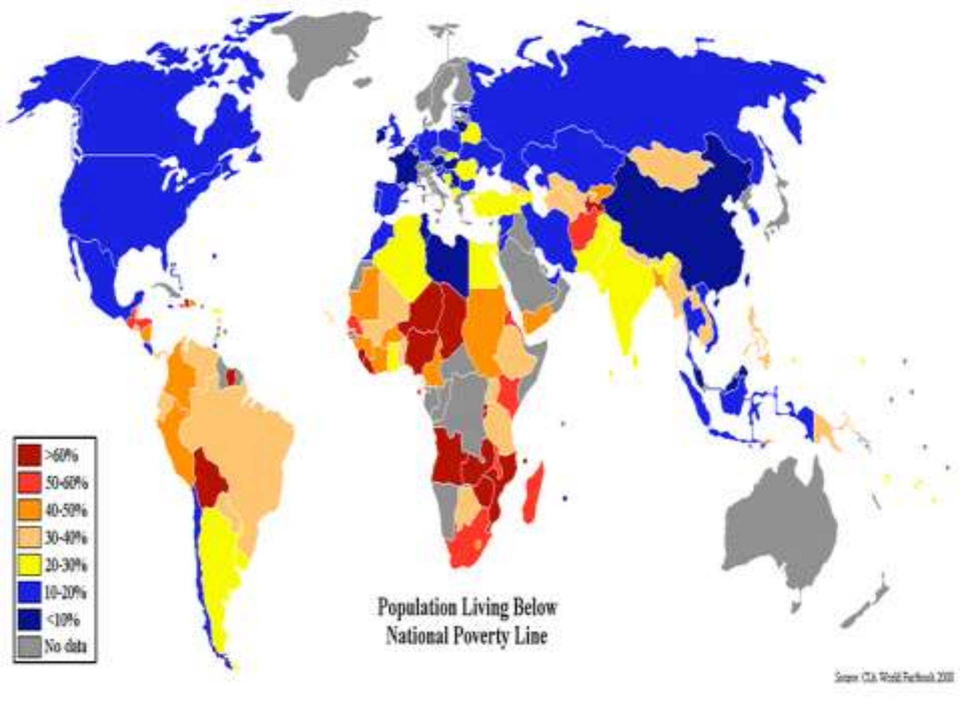


The Sydney Morning Herald

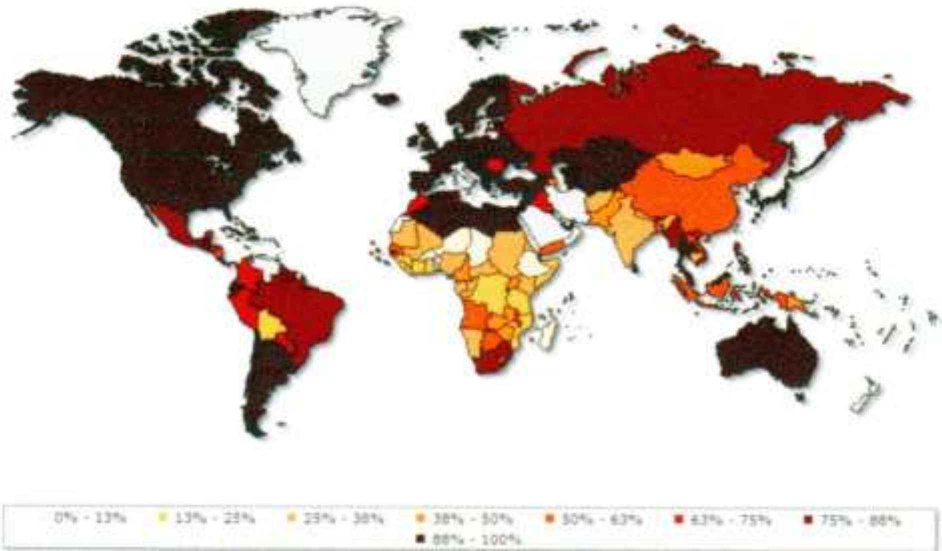
EXTENT OF CRISIS REVEALED

20,000 die each day

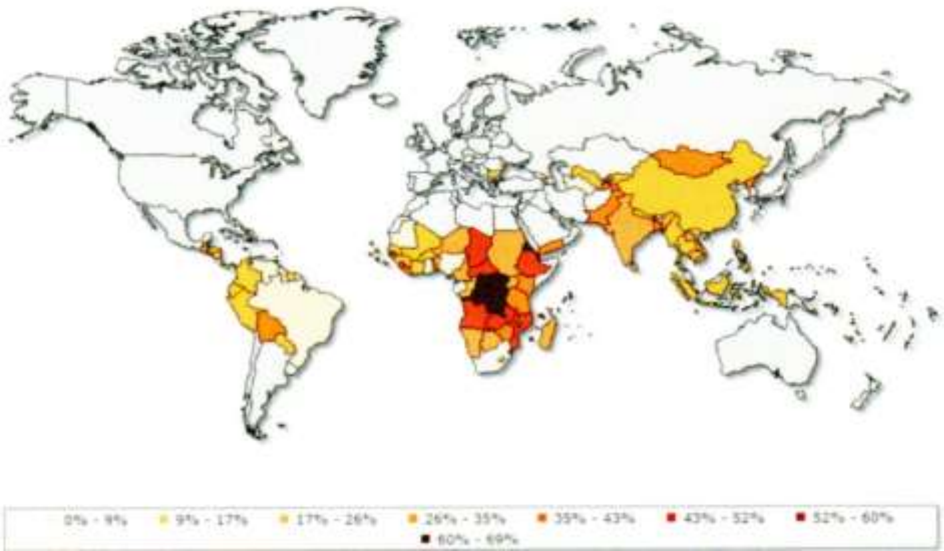

% POPULATION
LIVING ON LESS
THAN $2 PER DAY
75 - 92
50 - 75
28 - 50
15 - 28
2 - 12
No Data
www.theodora.com/maps


>60%
50-60%
40-50%
30-40%
20-30%
10-20%
<10%
No data
Population Living Below
National Poverty Line
Source: CIA World Factbook 2008

Population With Sustainable Access to Improved Sanitation (Percent) 2008
(Go to Table or Notes and Sources below)


0% - 13%
13% - 25%
25% - 38%
38% - 50%
50% - 63%
63% - 75%
75% - 88%
88% - 100%

Population Undernourished (Percent of Total Population) 2005-2007
(Go to Table or Notes and Sources below)


0% - 9%
9% - 17%
17% - 26%
26% - 35%
35% - 43%
43% - 52%
52% - 60%
60% - 69%

PESO
PESADO
www.sic.sapo.pt

TELEVISÃO

Guerra de audiências

PESO
PESADO
www.sic.sapo.pt

OS NOVOS HERÓIS

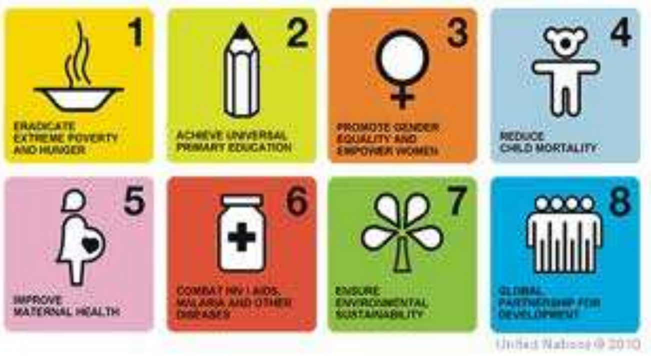
PESO PESADO

REWARD
IF ANYONE CAN FIND A SCIENTIST THAT SAYS SOMETHING POSITIVE
Ireland has 25% of EU waters, only 4% of quota
IRELANDS FISHERMEN Demand a level playing field across the EU

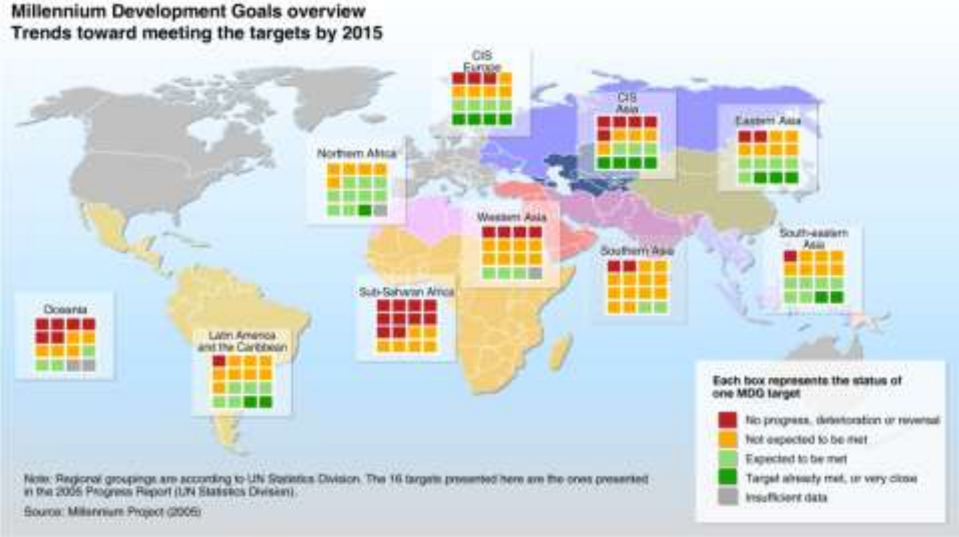
The Irish Farmers Association
Family Farm Survival Campaign

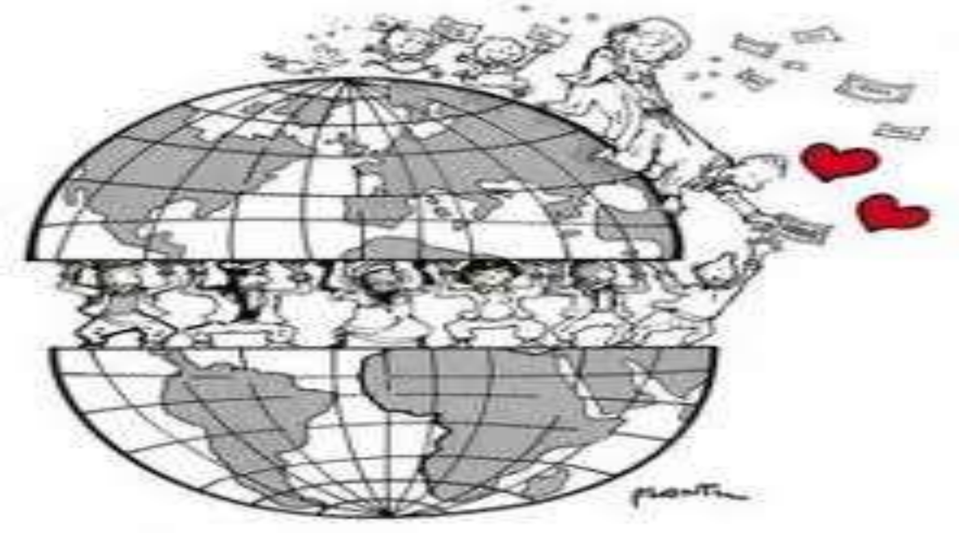
TRIBUTE

WE CAN
END POVERTY
2015
MILLENNIUM
DEVELOPMENT
GOALS


1
ERADICATE EXTREME POVERTY AND HUNGER
2
ACHIEVE UNIVERSAL PRIMARY EDUCATION
3
PROMOTE GENDER EQUALITY AND EMPOWER WOMEN
4
REDUCE CHILD MORTALITY
5
IMPROVE MATERNAL HEALTH
6
COMBAT HIV / AIDS, MALARIA AND OTHER DISEASES
7
ENSURE ENVIRONMENTAL SUSTAINABILITY
8
GLOBAL PARTNERSHIP FOR DEVELOPMENT
United Nations © 2010

Millennium
Development
Goals


Millennium Development Goals overview
Trends toward meeting the targets by 2015
CIS Europe
CIS Asia
Eastern Asia
Northern Africa
Western Asia
Southern Asia
South-eastern Asia
Sub-Saharan Africa
Oceania
Latin America and the Caribbean
Each box represents the status of one MDG target
No progress, deterioration or reversal
Not expected to be met
Expected to be met
Target already met, or very close
Insufficient data
Note: Regional groupings are according to UN Statistics Division. The 16 targets presented here are the ones presented in the 2005 Progress Report (UN Statistics Division).
Source: Millennium Project (2005)



NO EXCUSE
2015
MILLENNIUM CAMPAIGN

ROTARY CLUB DE PIRACICABA-PAULISTA
END POLIO NOW
24/10
Dia Mundial de Combate a Pólio

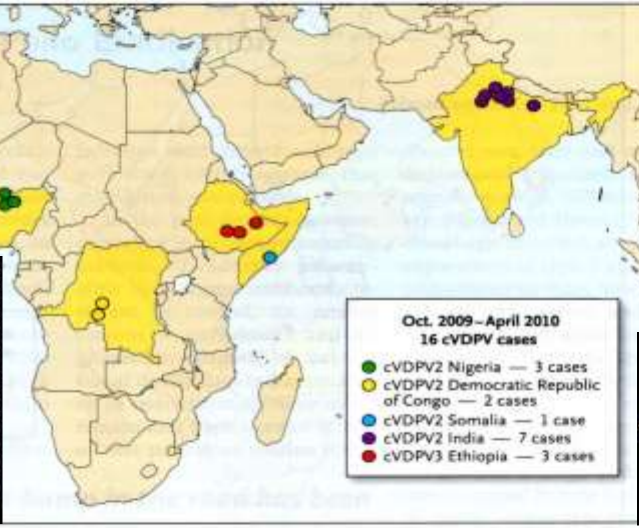
PERSPECTIVE

FOCUS ON RESEARCH

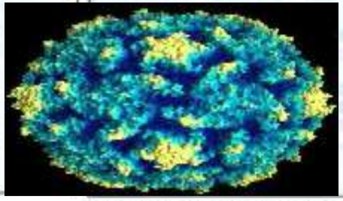
The Bumpy Road to Polio Eradication

John F. Modlin, M.D.

World Polio Day


Oct. 2009 – April 2010
16 cVDPV cases
● cVDPV2 Nigeria — 3 cases
● cVDPV2 Democratic Republic of Congo — 2 cases
● cVDPV2 Somalia — 1 case
● cVDPV2 India — 7 cases
● cVDPV3 Ethiopia — 3 cases

33 USA
Polio Vaccine Developed



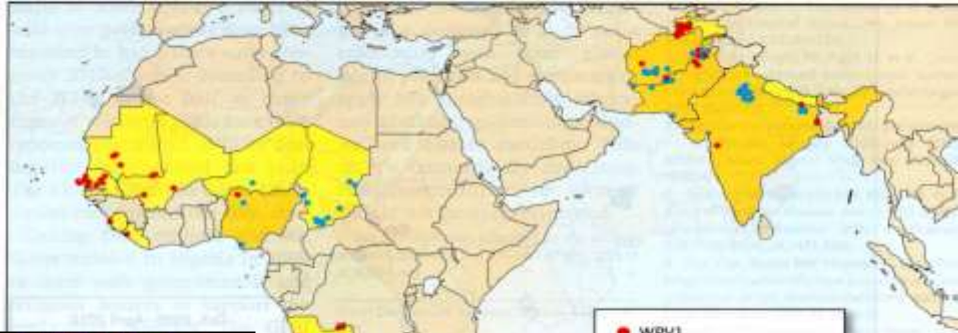
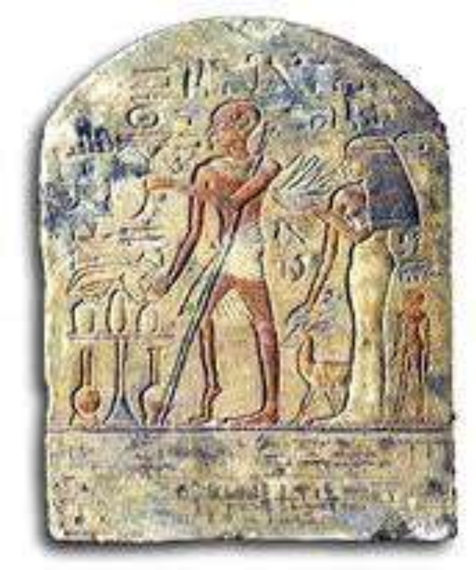
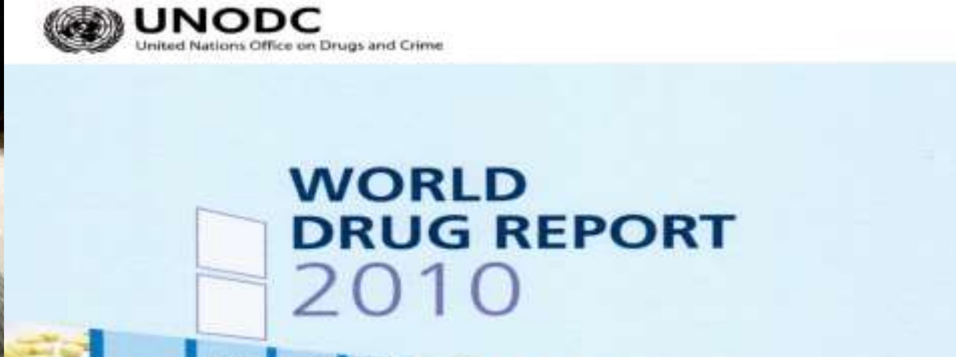

● WPV1
● WPV3
Endemic countries
Case or outbreak after importation (0–6 mo)

Figure 2. Current Outbreaks of Circulating Vaccine-Derived Poliomyelitis. The abbreviation cVDPV denotes circulating vaccine-derived poliovirus, and cVDPV2 and cVDPV3 denote types 1 and 3, respectively. Data are from the WHO Global Poliomyelitis Eradication Initiative.

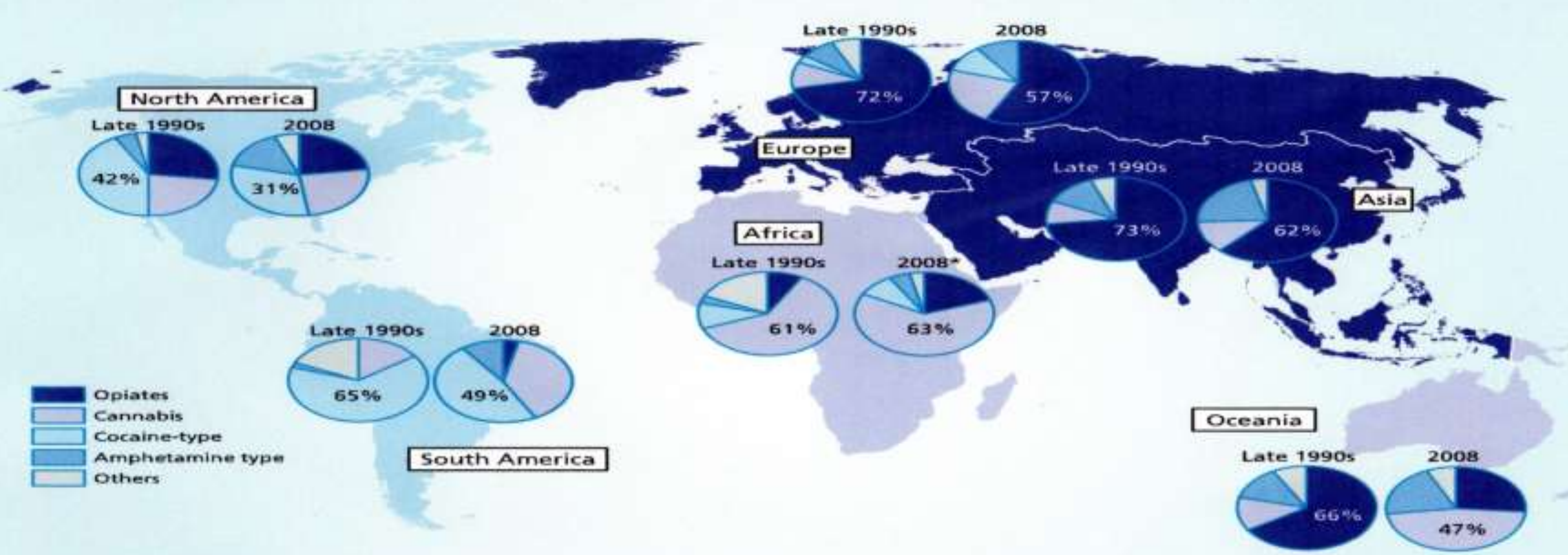
Figure 1. Global Distribution of Wild-Type Poliomyelitis Cases, January 1, 2010–June 1, 2010. WPV1 and WPV3 denote cases of wild-type poliovirus types 1 and 3, respectively. The total number of cases is 254. Data are from the WHO Global Poliomyelitis Eradication Initiative.




UNODC
United Nations Office on Drugs and Crime

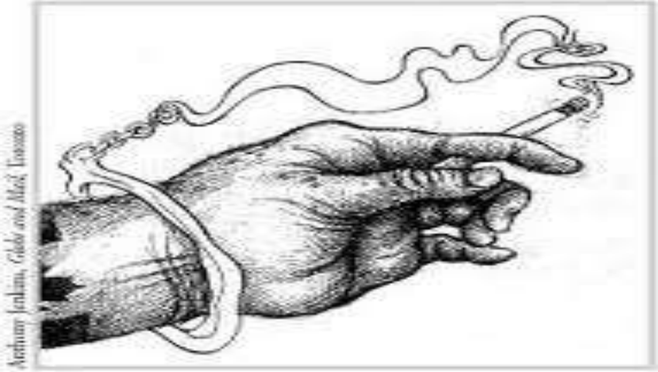
WORLD
DRUG REPORT
2010

Main problem drugs as reflected in treatment demand, by region, from the late 1990s to 2008 (or latest year available)

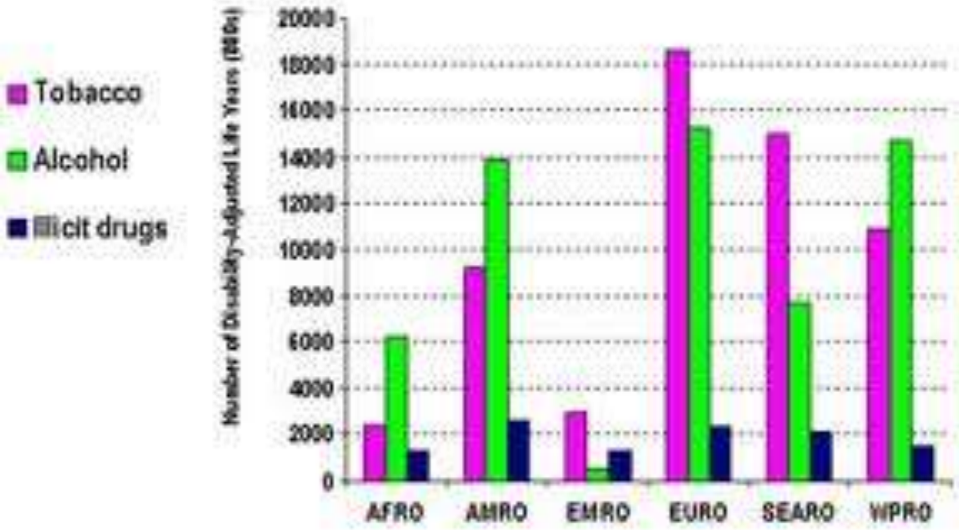

North America
Late 1990s
2008
42%
31%
Europe
Late 1990s
2008
72%
57%
Asia
Late 1990s
2008
73%
62%
Africa
Late 1990s
2008*
61%
63%
South America
Late 1990s
2008
65%
49%
Oceania
Late 1990s
2008
66%
47%
Opiates
Cannabis
Cocaine-type
Amphetamine type
Others

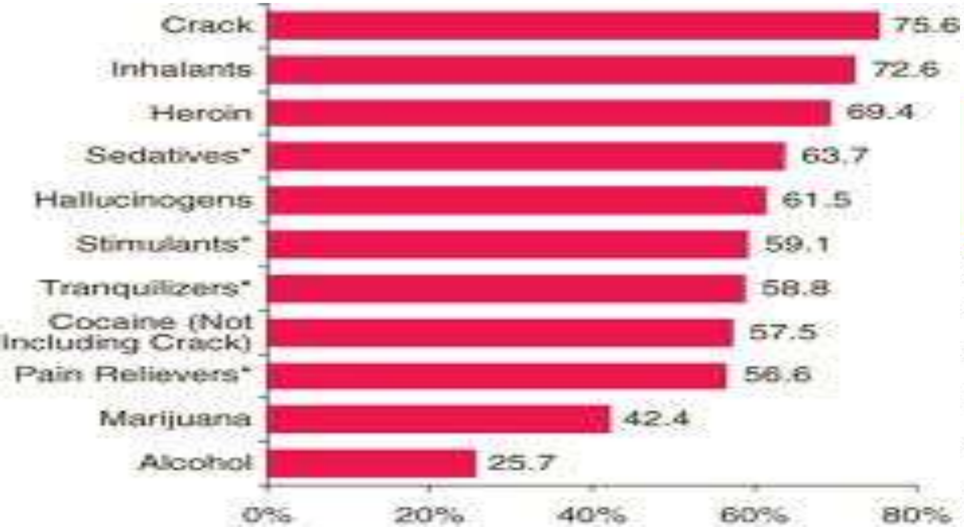
Sources: UNODC, Annual Reports Questionnaire Data/DELTA and National Government Reports

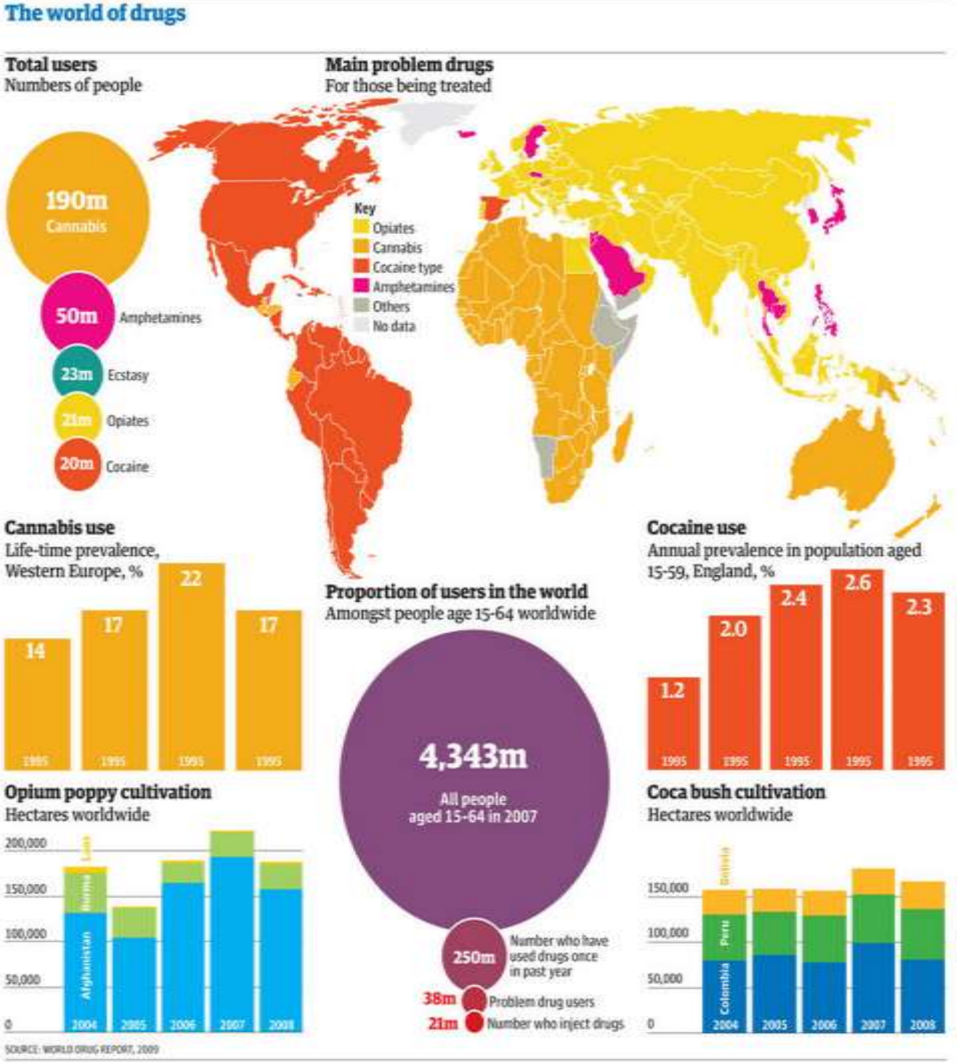
Notes: Percentages are unweighted means of treatment demand from reporting countries. Number of countries reporting data for 2008: Europe (45); Africa (28); North America (3); South America (24); Asia (42); Oceania (2).
Data generally account for primary drug use. Polydrug use may increase totals beyond 100%. * Treatment data dating back more than 10 years were removed from the 2008 estimates and therefore caution should be taken comparing the data from 2008 with previous years.
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.


Arthur Jenkins, Globe and Mail, Toronto

STRESS & DRUG ABUSE


Tobacco
Alcohol
Illicit drugs
Number of Disability-Adjusted Life Years (000s)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
AFRO
AMRO
EMRO
EURO
SEARO
WPRO


Crack 75.6
Inhalants 72.6
Heroin 69.4
Sedatives* 63.7
Hallucinogens 61.5
Stimulants* 59.1
Tranquilizers* 58.8
Cocaine (Not Including Crack) 57.5
Pain Relievers* 56.6
Marijuana 42.4
Alcohol 25.7
0%
20%
40%
60%
80%


The world of drugs
Total users
Numbers of people
190m Cannabis
50m Amphetamines
23m Ecstasy
21m Opiates
20m Cocaine
Main problem drugs
For those being treated
Key
Opiates
Cannabis
Cocaine type
Amphetamines
Others
No data
Cannabis use
Life-time prevalence, Western Europe, %
14
17
22
17
1995
1995
1995
1995
Proportion of users in the world
Amongst people age 15-64 worldwide
4,343m
All people aged 15-64 in 2007
250m Number who have used drugs once in past year
38m Problem drug users
21m Number who inject drugs
Cocaine use
Annual prevalence in population aged 15-59, England, %
1.2
2.0
2.4
2.6
2.3
1995
1995
1995
1995
1995
Opium poppy cultivation
Hectares worldwide
200,000
150,000
100,000
50,000
0
Laos
Burma
Afghanistan
2004
2005
2006
2007
2008
Coca bush cultivation
Hectares worldwide
150,000
100,000
50,000
0
Bolivia
Peru
Colombia
2004
2005
2006
2007
2008
SOURCE: WORLD DRUG REPORT, 2009

Courrier internacional

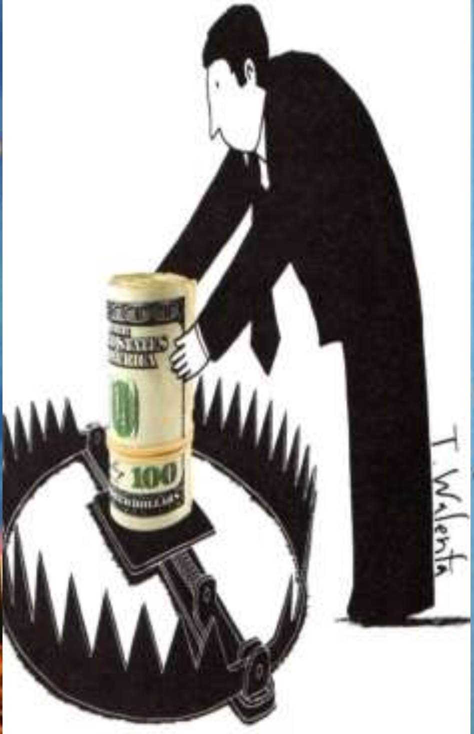
A CRISE DO ESTADO SOCIAL

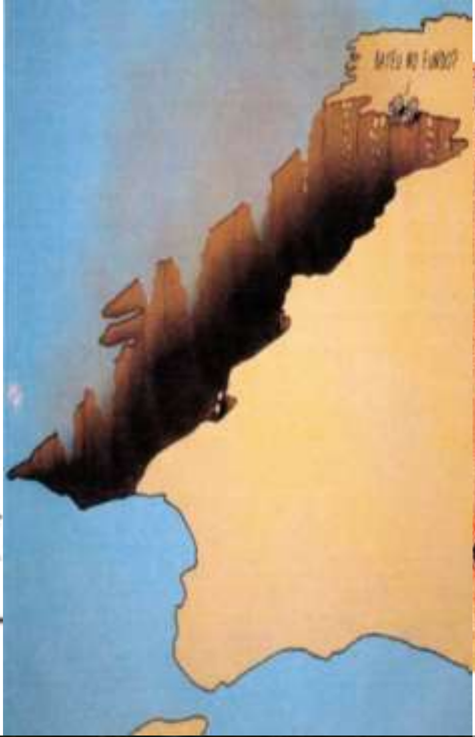
CIÊNCIA & TECNOLOGIA
ACTÉRIAS VIRTUAIS
DESENVOLVEM
MEMÓRIA

UROPA
COMISSÁRIOS
ORNAM-SE
MERCENÁRIOS

CULTURA
QUEM MATOU
A SÉTIMA ARTE?

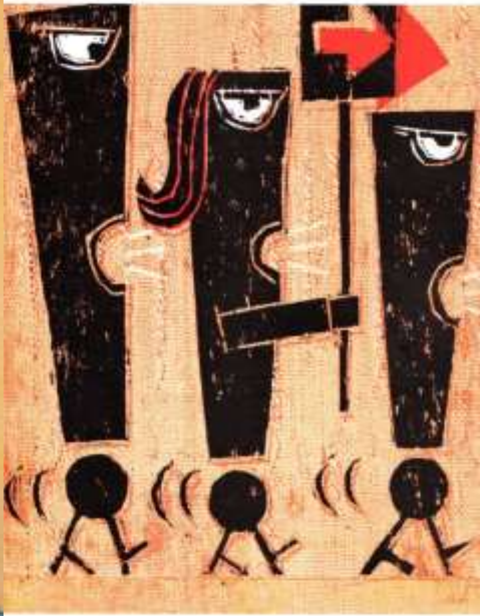
Novembro 2010


THE UNITED STATES OF AMERICA
100
T. Walenta

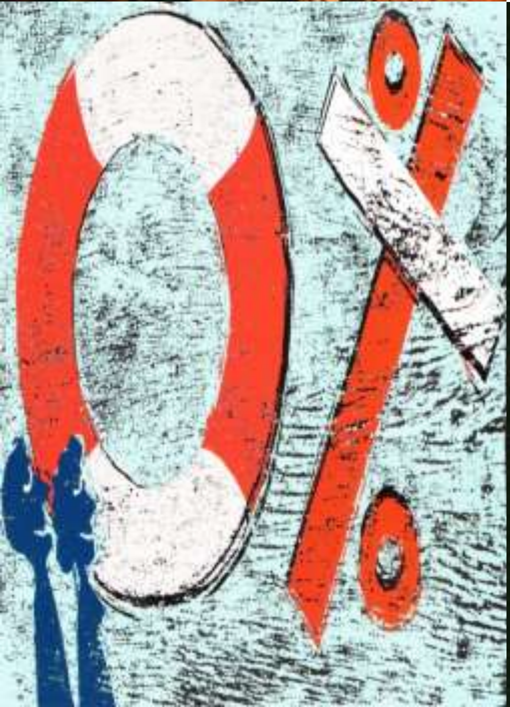

BATEU NO FUNDO?

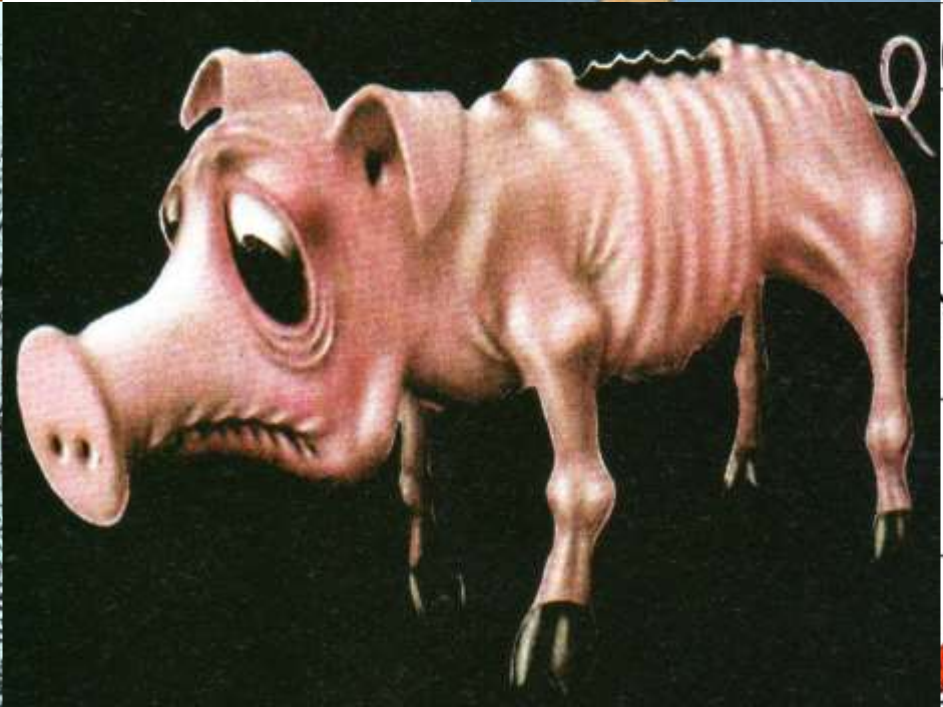
TEMA DE CAPA

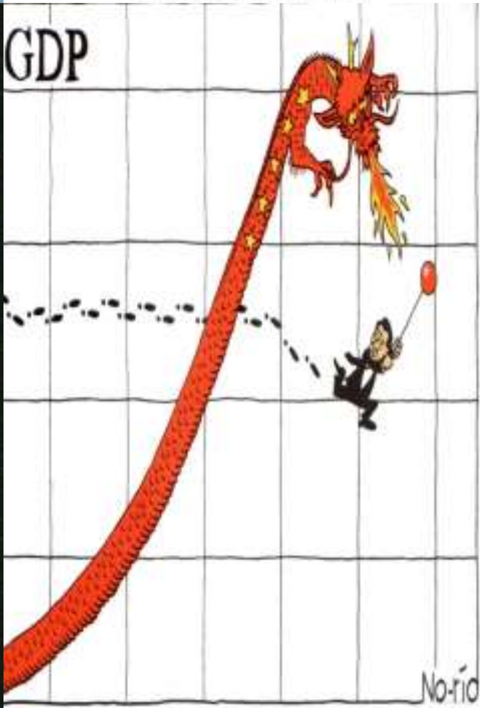
O fim do Estado social



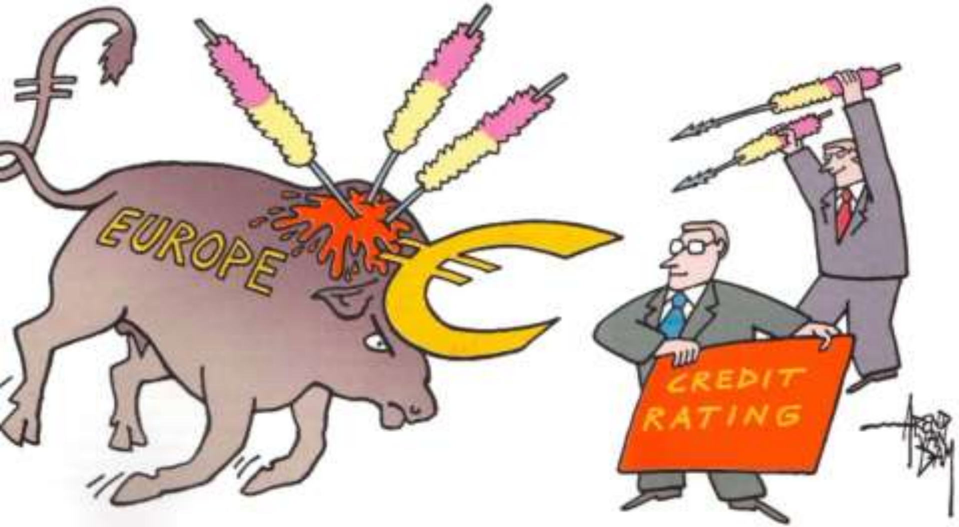
A crise financeira e económica leva a que se coloque em questão o papel do Estado nas sociedades ocidentais. Depois de décadas de "menos Estado", os poderes públicos são obrigados a financiar bancos e empresas privadas.

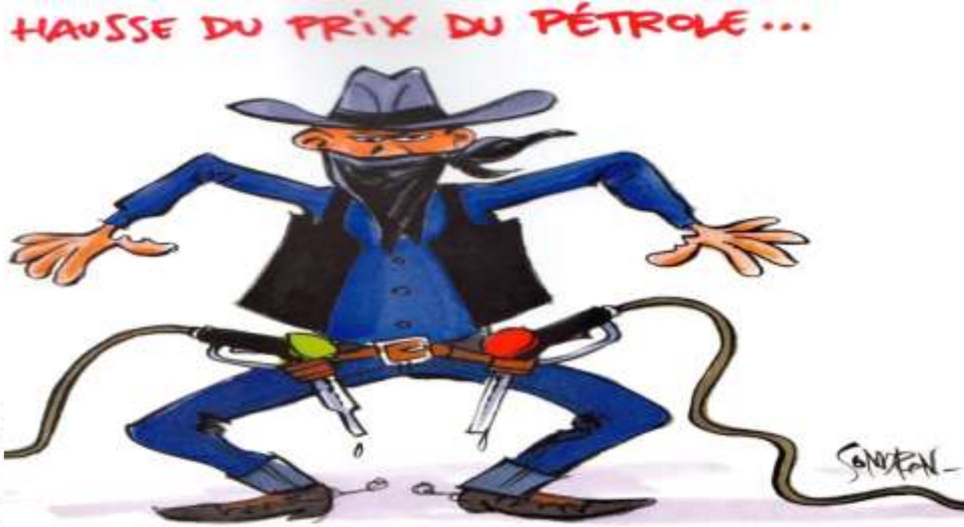


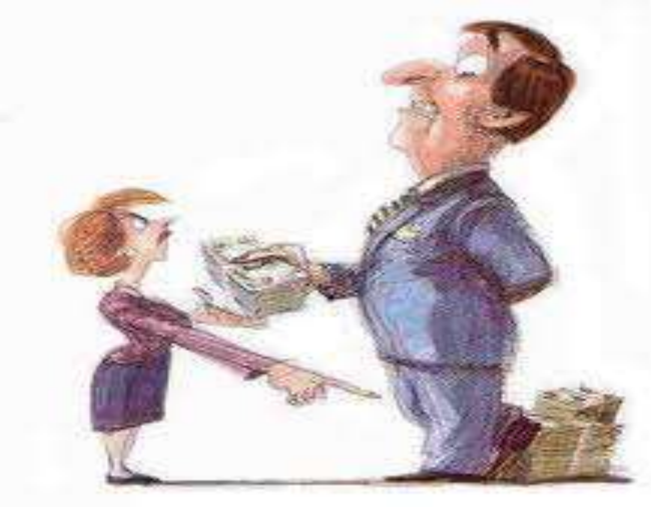


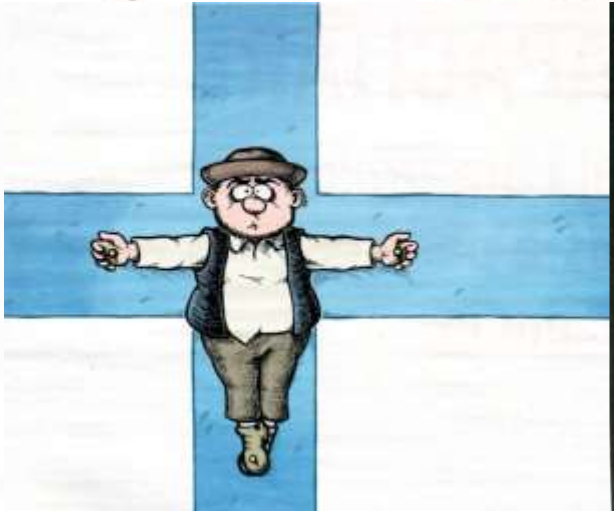


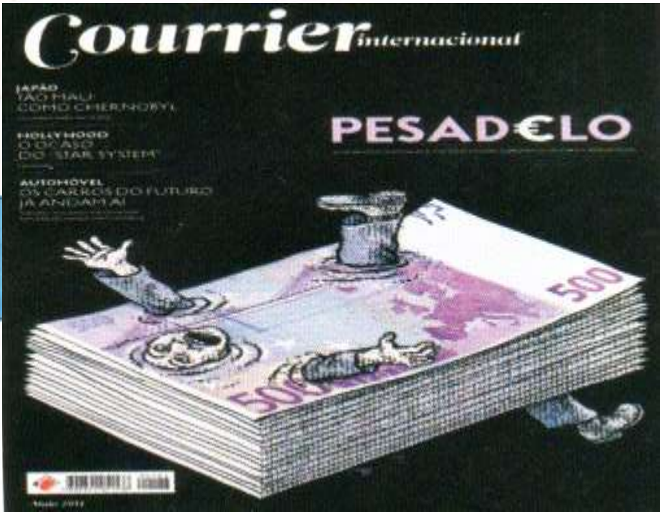
DEPTH GAUGE
50%


EUROPE
CREDIT RATING

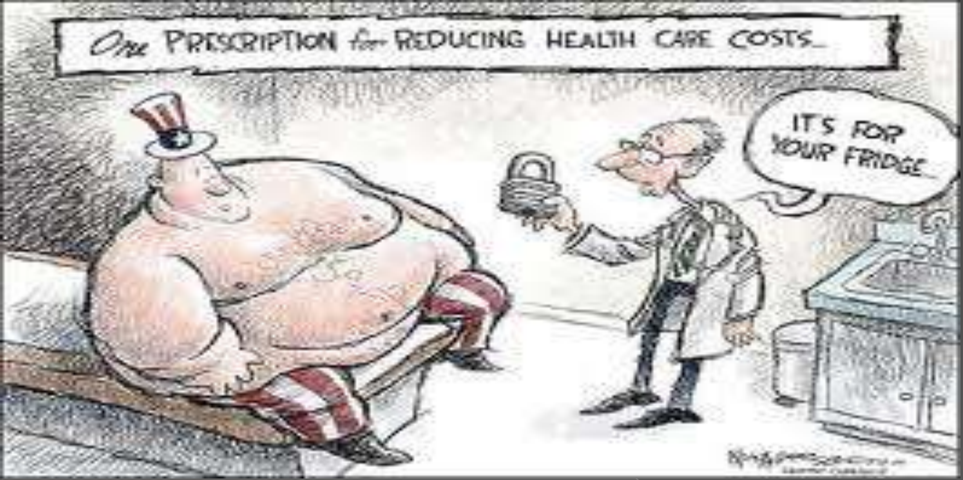

HAUSSE DU PRIX DU PÉTROLE...



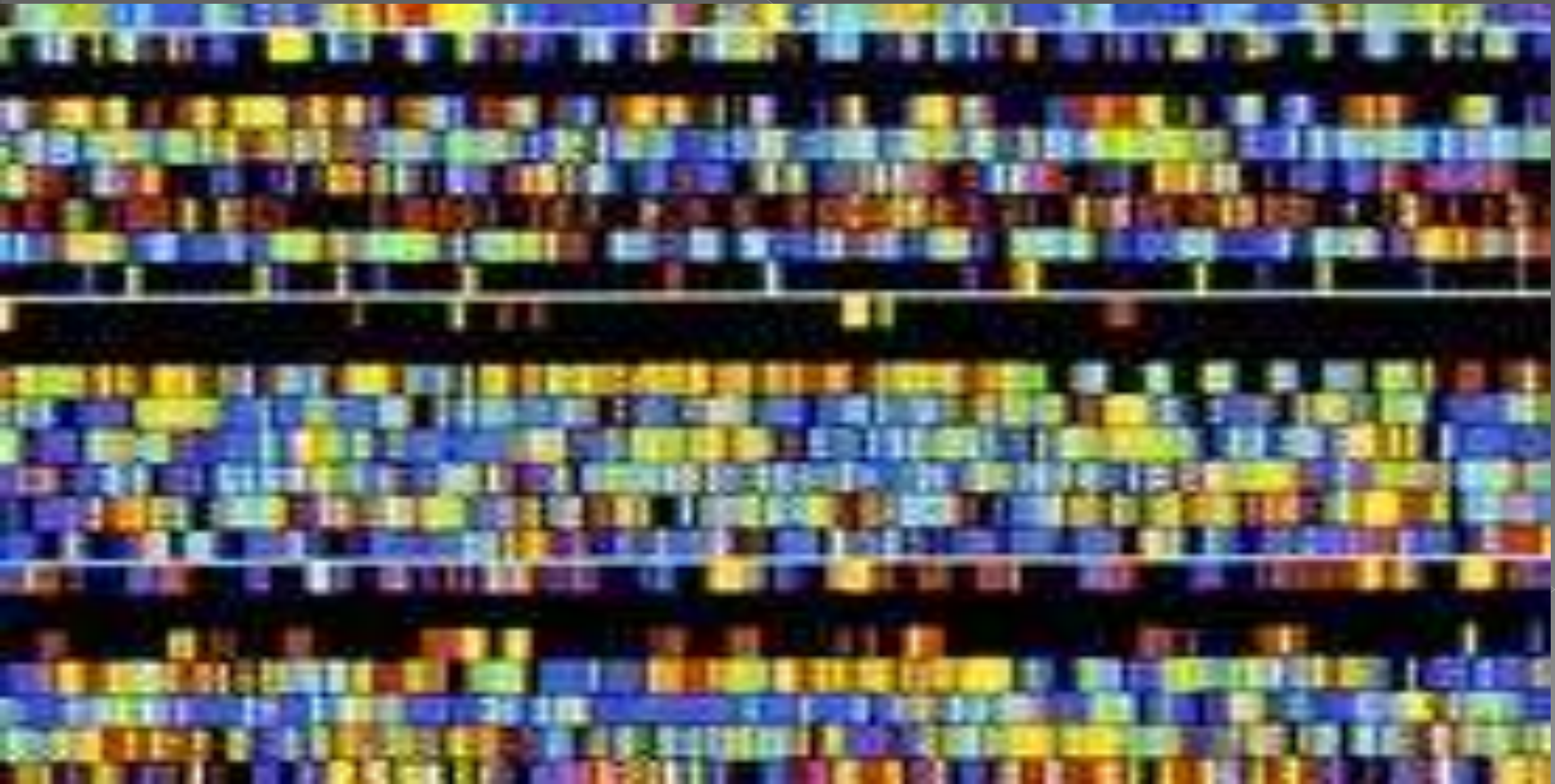


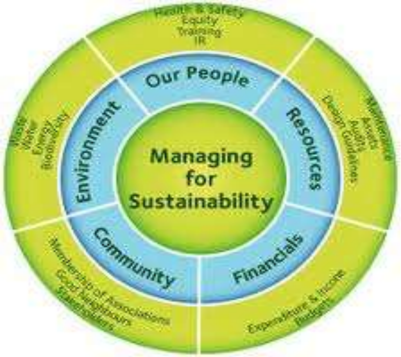

Courrier internacional
JAPÃO
TÃO MAU
COMO CHERNOBYL
HOLLYWOOD
O OCASO
DO 'STAR SYSTEM'
AUTOMÓVEL
OS CARROS DO FUTURO
JÁ ANDAM AÍ
PESAD€LO
500

Real Estate Market

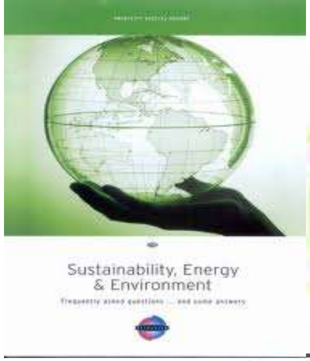

One PRESCRIPTION for REDUCING HEALTH CARE COSTS...
IT'S FOR YOUR FRIDGE

A SUSTENTABILIDADE do SISTEMA

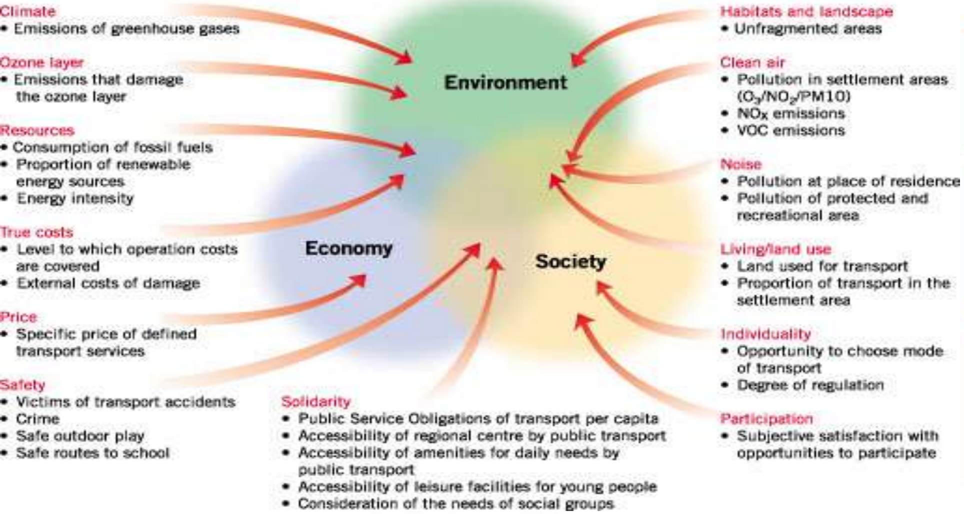



Managing for Sustainability
Our People
Resources
Financials
Community
Environment
Health & Safety
Equity
Training
IR
Maintenance
Assets
Audits
Design Guidelines
Expenditure & Income
Budgets
Membership of Associations
Good Neighbours
Stakeholders
Waste
Water
Energy
Biodiversity

Impacts
by brands / products
Influences
on brands / products
Environmental
Economic
Social
Consumers
Market forces
Key opinion formers


Sustainability, Energy
& Environment
Frequently asked questions ... and some answers

Social
quality of life
Economic
Sustainability
Environmental
natural environment
Infrastructure
Human Habitat
Governance


Environment
Economy
Society

Climate
- Emissions of greenhouse gases

Ozone layer
- Emissions that damage the ozone layer

Resources
- Consumption of fossil fuels
- Proportion of renewable energy sources
- Energy intensity

True costs
- Level to which operation costs are covered
- External costs of damage

Price
- Specific price of defined transport services

Safety
- Victims of transport accidents
- Crime
- Safe outdoor play
- Safe routes to school

Solidarity
- Public Service Obligations of transport per capita
- Accessibility of regional centre by public transport
- Accessibility of amenities for daily needs by public transport
- Accessibility of leisure facilities for young people
- Consideration of the needs of social groups

Habitats and landscape
- Unfragmented areas

Clean air
- Pollution in settlement areas ($O_3/NO_2/PM10$)
- NOx emissions
- VOC emissions

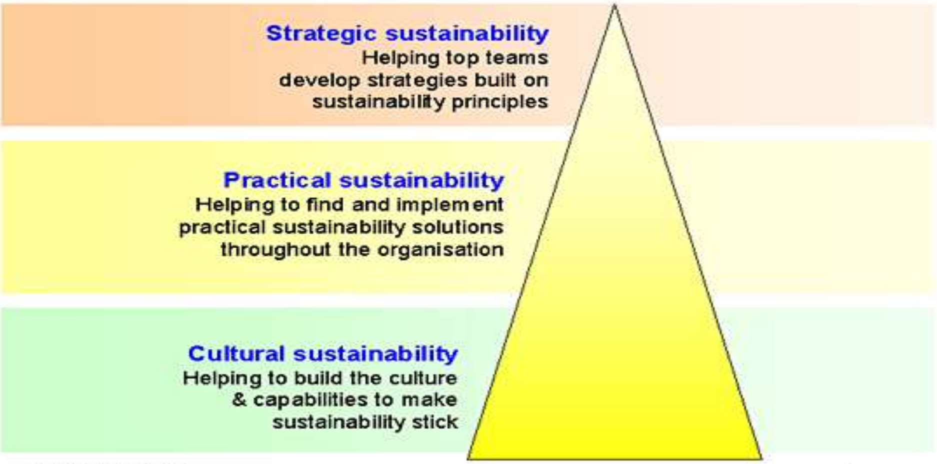
Noise
- Pollution at place of residence
- Pollution of protected and recreational area

Living/land use
- Land used for transport
- Proportion of transport in the settlement area

Individuality
- Opportunity to choose mode of transport
- Degree of regulation

Participation
- Subjective satisfaction with opportunities to participate

Building sustainability

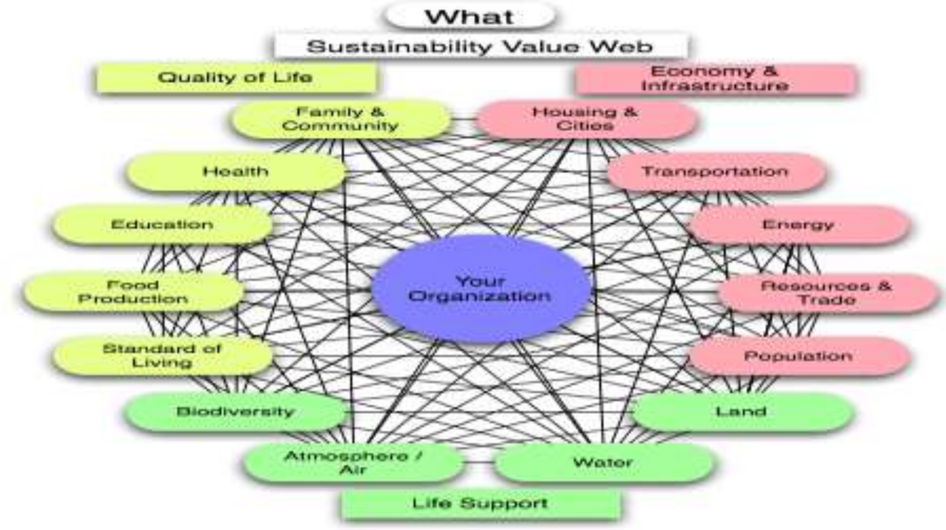


Strategic sustainability
Helping top teams
develop strategies built on
sustainability principles

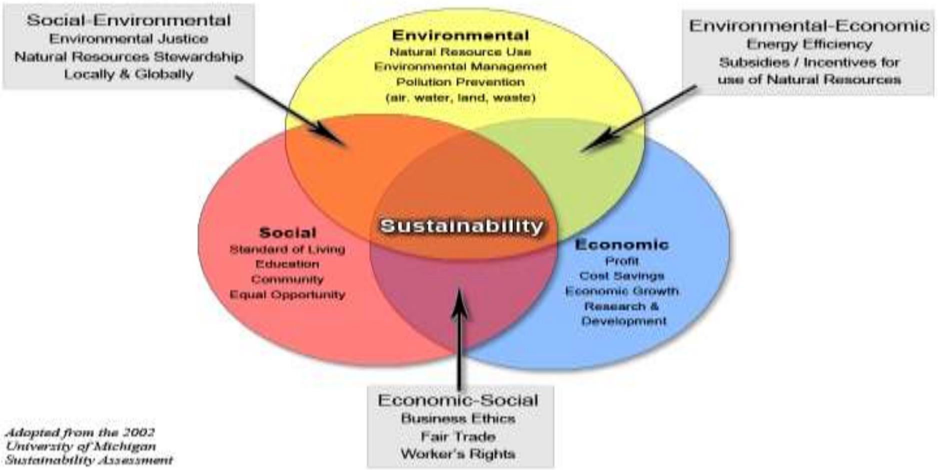
Practical sustainability
Helping to find and implement
practical sustainability solutions
throughout the organisation

Cultural sustainability
Helping to build the culture
& capabilities to make
sustainability stick

CFSP Possible workflow.ppt 3

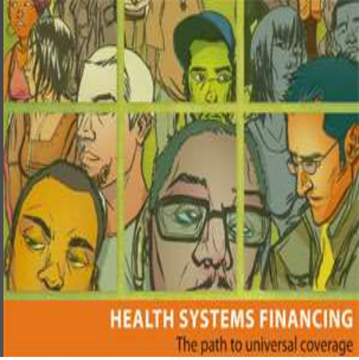

What
Sustainability Value Web
Quality of Life
Economy & Infrastructure
Family & Community
Housing & Cities
Health
Transportation
Education
Energy
Your Organization
Food Production
Resources & Trade
Standard of Living
Population
Biodiversity
Land
Atmosphere / Air
Water
Life Support

The Three Spheres of Sustainability


Social-Environmental
Environmental Justice
Natural Resources Stewardship
Locally & Globally
Environmental
Natural Resource Use
Environmental Managemet
Pollution Prevention
(air, water, land, waste)
Environmental-Economic
Energy Efficiency
Subsidies / Incentives for
use of Natural Resources
Sustainability
Social
Standard of Living
Education
Community
Equal Opportunity
Economic
Profit
Cost Savings
Economic Growth
Research &
Development
Economic-Social
Business Ethics
Fair Trade
Worker's Rights

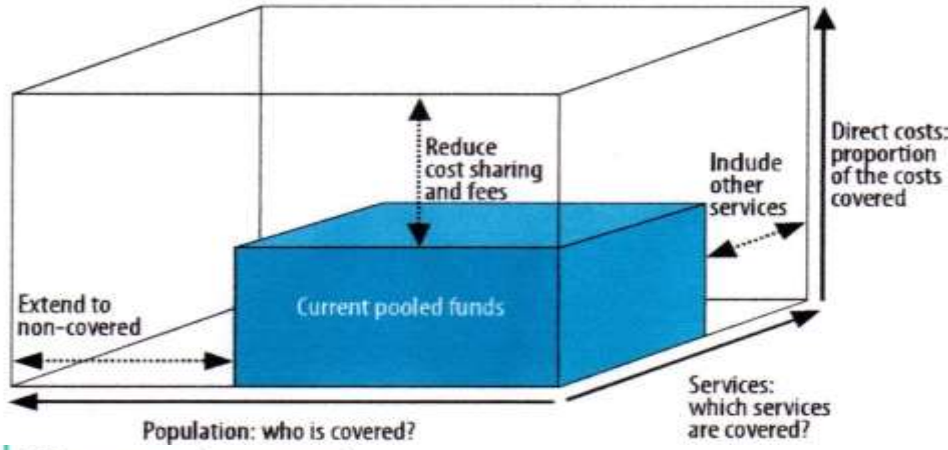
Adopted from the 2002 University of Michigan Sustainability Assessment

CONSTATAÇÕES da REALIDADE

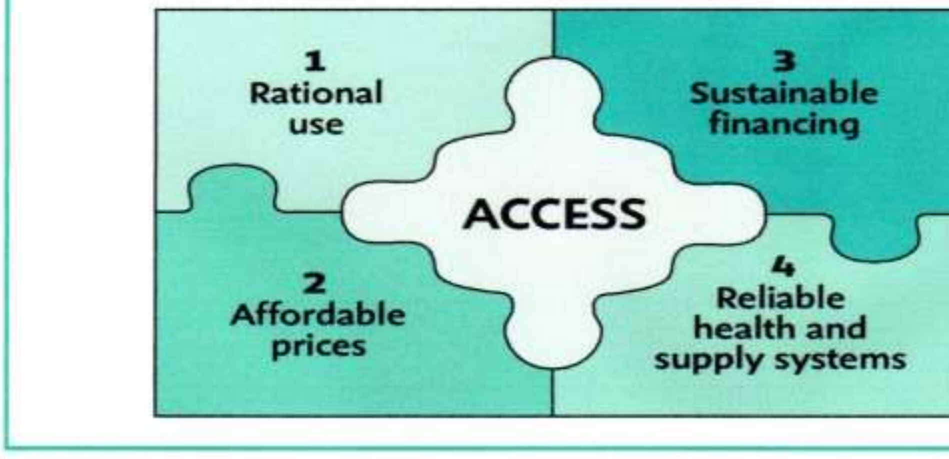

HEALTH SYSTEMS FINANCING
The path to universal coverage

- " … existiu uma previsão supostamente realista segundo a qual no ano 2.000 nenhum país, ou sequer qualquer dos seus cidadãos, viesse a ter um nível de saúde inferior ao aceitável … a Saúde Pública é a arte de saber aplicar a ciência num determinado contexto político para reduzir as desigualdades na prestação dos cuidados de saúde enquanto se assegura simultaneamente a melhor saúde possível a um maior número de pessoas … a proporção do PNB alocado à Saúde deixou de crescer, e tem mesmo vindo a diminuir à escala planetária … constatando-se que do total do dispêndio financeiro em investigação de novos fármacos, somente 10% corresponde às doenças que são responsáveis por 90% da mortalidade em todo o Mundo … existindo cerca de 2 biliões de pessoas sem qualquer acesso aos medicamentos considerados essenciais … calcula-se ainda que o desperdício orce entre 20 a 40 % do total daquilo que se gasta com a Saúde … somente 20 % das pessoas têm uma cobertura social adequada, sendo calculado que para tal seriam apenas necessário cerca de 60 USD / pessoa / ano, em contraste com os actuais 20 USD, sendo certo que cerca de 50 % desta despesa é suportada directamente pelo próprio cidadão … " *(WHO Reports, 1998, 2004 e 2010)*

Fig. 1. **Three dimensions to consider when moving towards universal coverage**


Reduce
cost sharing
and fees
Include
other
services
Direct costs:
proportion
of the costs
covered
Current pooled funds
Extend to
non-covered
Services:
which services
are covered?
Population: who is covered?

The access framework


1
Rational
use
3
Sustainable
financing
ACCESS
2
Affordable
prices
4
Reliable
health and
supply systems

Source: WHO, 2000

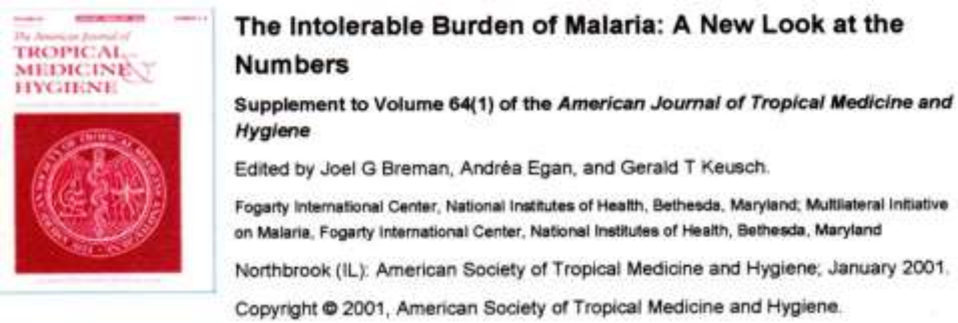
Building of the global movement for health equity: from Santiago to Rio and beyond

Michael Marmot, Jessica Allen, Ruth Bell, Peter Goldblatt

Health inequalities are present throughout the world, both within and between countries. The Commission on Social Determinants of Health drew attention to dramatic social gradients in health within most countries and made proposals for action. These inequalities are not inevitable. The purpose of this article is to report on activity that has taken place worldwide after the report by the Commission on Social Determinants of Health. First, we summarise the global situation. Second, we summarise an interim report of the emerging findings from an independent review of social determinants and the health divide, which was commissioned by the WHO European region. The world conference on social determinants of health will be held in Rio de Janeiro, Brazil, in October, 2011. This summit provides an opportunity to galvanise support, prioritise action, and respond to the call by the Commission on Social Determinants of Health for social justice as a route to a fair distribution of health.

“Social Injustice is killing on a grand scale”

“A toxic combination...of poor social policies and programmes, unfair economic arrangements, and bad politics...is responsible for the fact that a majority of people in the world do not enjoy the good health that is biologically possible.”



The Intolerable Burden of Malaria: A New Look at the Numbers

Supplement to Volume 64(1) of the *American Journal of Tropical Medicine and Hygiene*

Edited by Joel G Breman, Andréa Egan, and Gerald T Keusch.

Fogarty International Center, National Institutes of Health, Bethesda, Maryland; Multilateral Initiative on Malaria, Fogarty International Center, National Institutes of Health, Bethesda, Maryland

Northbrook (IL): American Society of Tropical Medicine and Hygiene; January 2001.

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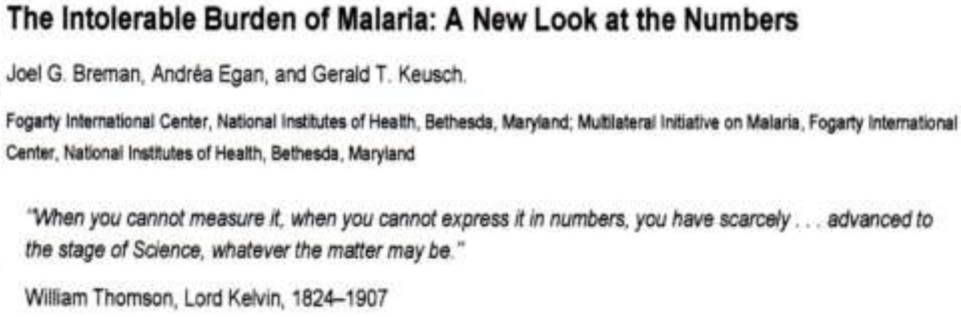


The Intolerable Burden of Malaria: A New Look at the Numbers

Joel G. Breman, Andréa Egan, and Gerald T. Keusch.

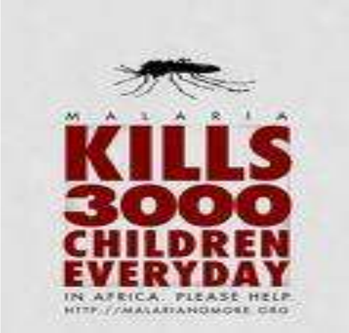
Fogarty International Center, National Institutes of Health, Bethesda, Maryland; Multilateral Initiative on Malaria, Fogarty International Center, National Institutes of Health, Bethesda, Maryland

> *"When you cannot measure it, when you cannot express it in numbers, you have scarcely . . . advanced to the stage of Science, whatever the matter may be."*
>
> William Thomson, Lord Kelvin, 1824–1907

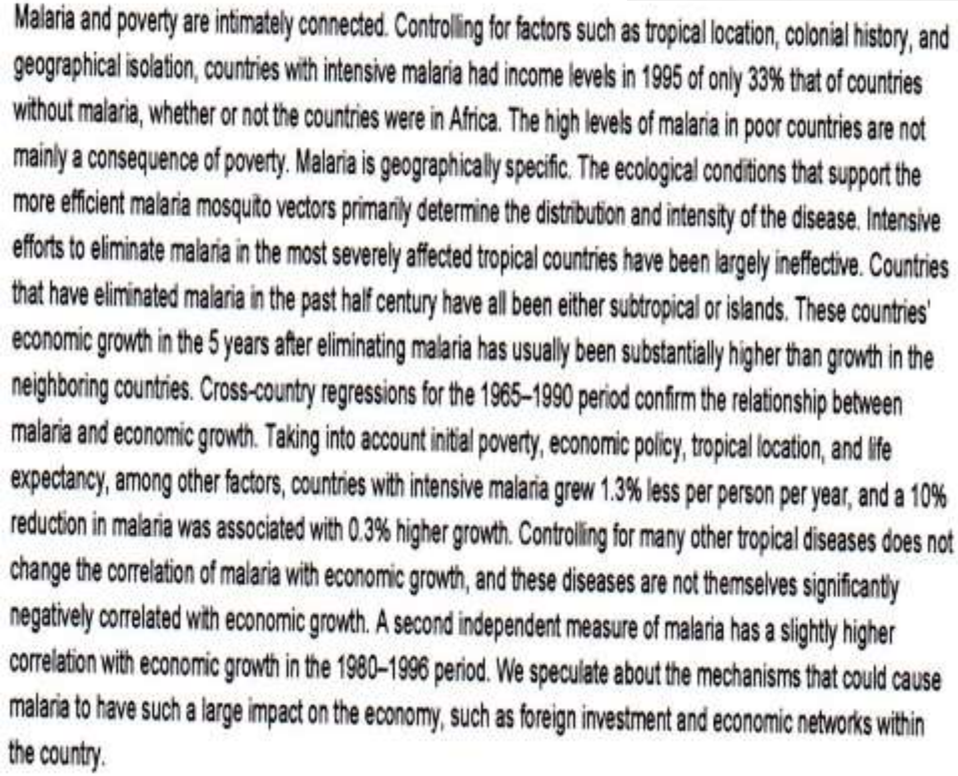
The Economic Burden of Malaria

John Luke Gallup* and Jeffrey D. Sachs.

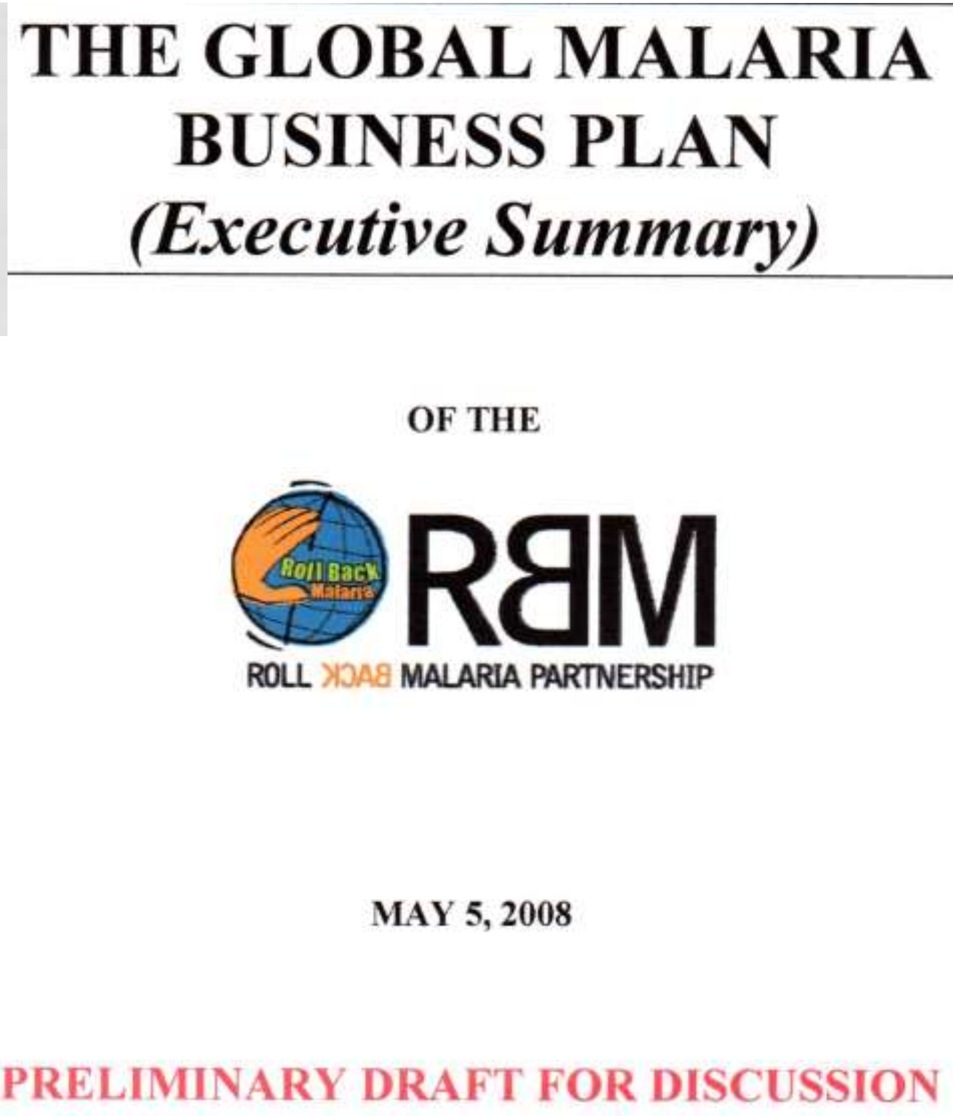
Center for International Development, Harvard University, Cambridge, Massachusetts



Abstract



Malaria and poverty are intimately connected. Controlling for factors such as tropical location, colonial history, and geographical isolation, countries with intensive malaria had income levels in 1995 of only 33% that of countries without malaria, whether or not the countries were in Africa. The high levels of malaria in poor countries are not mainly a consequence of poverty. Malaria is geographically specific. The ecological conditions that support the more efficient malaria mosquito vectors primarily determine the distribution and intensity of the disease. Intensive efforts to eliminate malaria in the most severely affected tropical countries have been largely ineffective. Countries that have eliminated malaria in the past half century have all been either subtropical or islands. These countries' economic growth in the 5 years after eliminating malaria has usually been substantially higher than growth in the neighboring countries. Cross-country regressions for the 1965–1990 period confirm the relationship between malaria and economic growth. Taking into account initial poverty, economic policy, tropical location, and life expectancy, among other factors, countries with intensive malaria grew 1.3% less per person per year, and a 10% reduction in malaria was associated with 0.3% higher growth. Controlling for many other tropical diseases does not change the correlation of malaria with economic growth, and these diseases are not themselves significantly negatively correlated with economic growth. A second independent measure of malaria has a slightly higher correlation with economic growth in the 1980–1996 period. We speculate about the mechanisms that could cause malaria to have such a large impact on the economy, such as foreign investment and economic networks within the country.



THE GLOBAL MALARIA BUSINESS PLAN
(Executive Summary)

OF THE

Roll Back Malaria
RBM
ROLL BACK MALARIA PARTNERSHIP

MAY 5, 2008

PRELIMINARY DRAFT FOR DISCUSSION

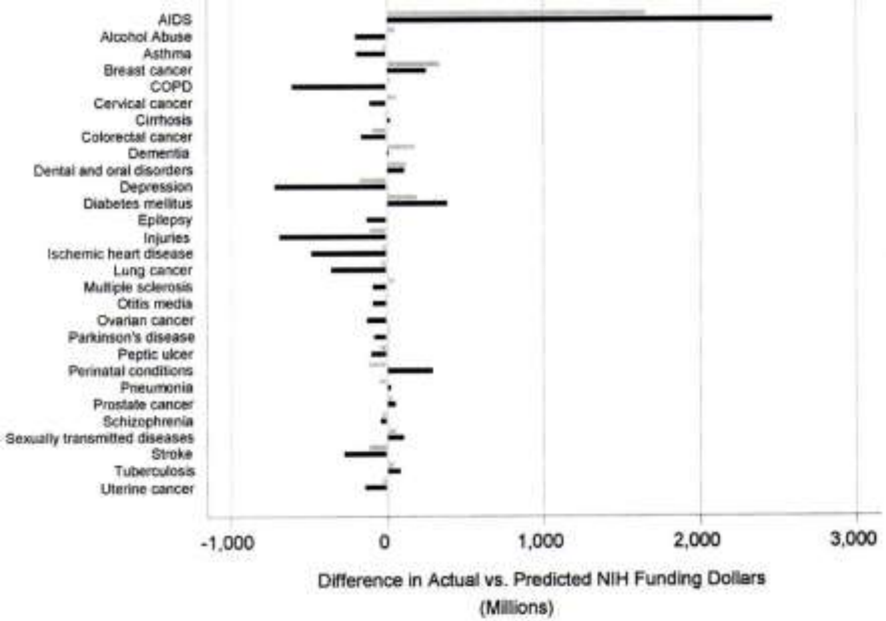


Figure 1. Ten-year Comparison of Differences Between Actual and Expected Disease-Specific NIH Funding Relative to US Burden of Disease in DALYs. A comparison of differences between actual and expected funding values as predicted by **DALYs burden alone in 1996 (light blue)** and **2006 (navy)**. Negative values reflect actual funding dollars less than expected and positive values represent actual funding dollars more than expected.
doi:10.1371/journal.pone.0016837.g001

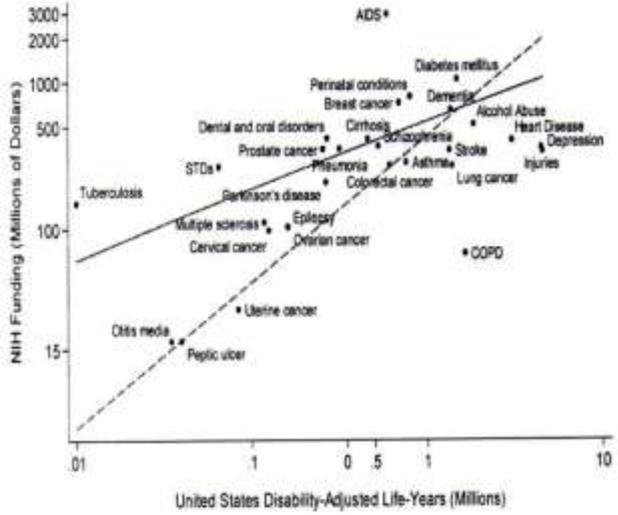
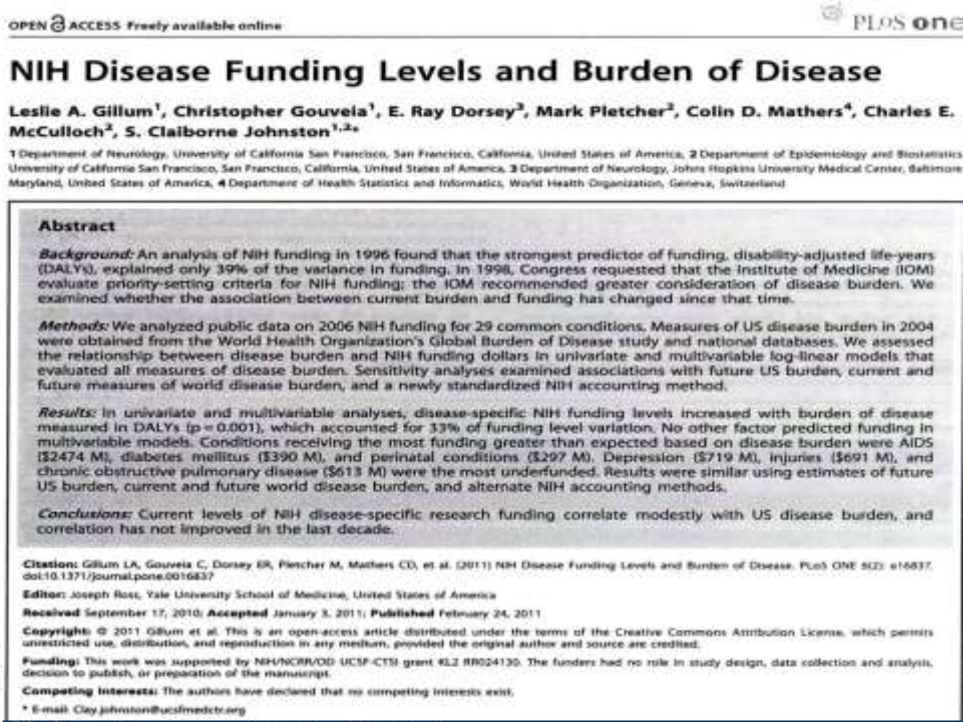


Figure 2. NIH Funding in 2006 and US Disease Burden in DALYs in 2004 for 29 Common Medical Conditions. The **solid line** represents the results of a traditional multivariable analysis, showing the relationship between US disease-specific DALYs burden and actual 2006 NIH funding dollars. The **dashed line** projects NIH funding levels in a similar multivariable model that requires that a disease with no burden receives no funding (constrained model). Though the models produce similar results, several diseases that would be considered overfunded in one model are considered underfunded in the other. For example, cervical cancer appears to be overfunded relative to the dashed line, while it is underfunded relative to the solid one.
doi:10.1371/journal.pone.0016837.g002


OPEN ACCESS Freely available online

PLoS one

NIH Disease Funding Levels and Burden of Disease

Leslie A. Gillum[1], Christopher Gouveia[1], E. Ray Dorsey[3], Mark Pletcher[2], Colin D. Mathers[4], Charles E. McCulloch[2], S. Claiborne Johnston[1,2]*

1 Department of Neurology, University of California San Francisco, San Francisco, California, United States of America, 2 Department of Epidemiology and Biostatistics University of California San Francisco, San Francisco, California, United States of America, 3 Department of Neurology, Johns Hopkins University Medical Center, Baltimore Maryland, United States of America, 4 Department of Health Statistics and Informatics, World Health Organization, Geneva, Switzerland

Abstract

Background: An analysis of NIH funding in 1996 found that the strongest predictor of funding, disability-adjusted life-years (DALYs), explained only 39% of the variance in funding. In 1998, Congress requested that the Institute of Medicine (IOM) evaluate priority-setting criteria for NIH funding; the IOM recommended greater consideration of disease burden. We examined whether the association between current burden and funding has changed since that time.

Methods: We analyzed public data on 2006 NIH funding for 29 common conditions. Measures of US disease burden in 2004 were obtained from the World Health Organization's Global Burden of Disease study and national databases. We assessed the relationship between disease burden and NIH funding dollars in univariate and multivariable log-linear models that evaluated all measures of disease burden. Sensitivity analyses examined associations with future US burden, current and future measures of world disease burden, and a newly standardized NIH accounting method.

Results: In univariate and multivariable analyses, disease-specific NIH funding levels increased with burden of disease measured in DALYs ($p = 0.001$), which accounted for 33% of funding level variation. No other factor predicted funding in multivariable models. Conditions receiving the most funding greater than expected based on disease burden were AIDS ($2474 M), diabetes mellitus ($390 M), and perinatal conditions ($297 M). Depression ($719 M), injuries ($691 M), and chronic obstructive pulmonary disease ($613 M) were the most underfunded. Results were similar using estimates of future US burden, current and future world disease burden, and alternate NIH accounting methods.

Conclusions: Current levels of NIH disease-specific research funding correlate modestly with US disease burden, and correlation has not improved in the last decade.

Citation: Gillum LA, Gouveia C, Dorsey ER, Pletcher M, Mathers CD, et al. (2011) NIH Disease Funding Levels and Burden of Disease. PLoS ONE 6(2): e16837. doi:10.1371/journal.pone.0016837

Editor: Joseph Ross, Yale University School of Medicine, United States of America

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Competing Interests: The authors have declared that no competing interests exist.

* E-mail: Clay.johnston@ucsfmedctr.org

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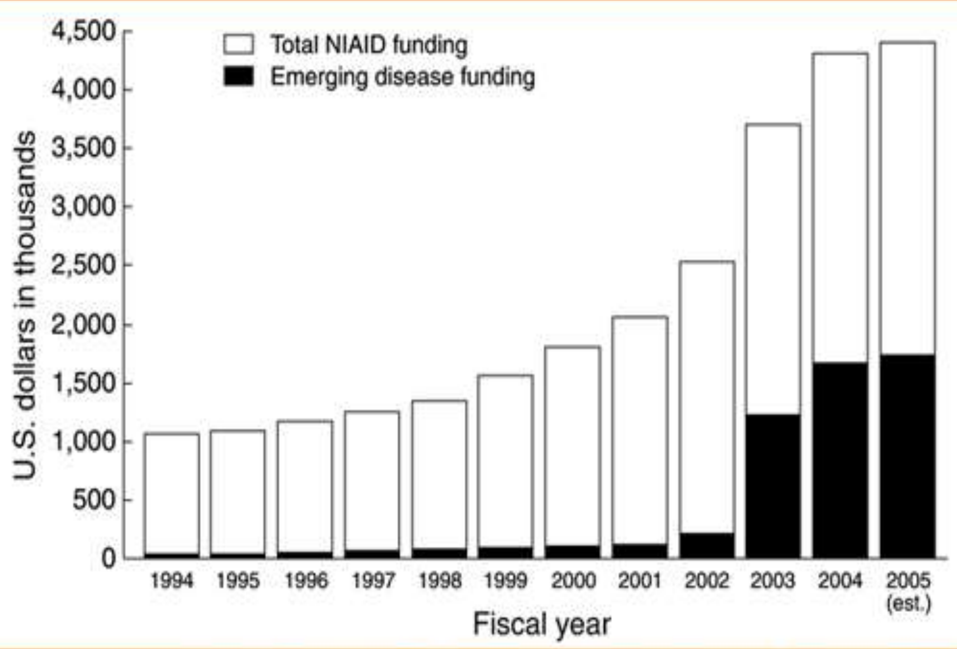


Source: Emerg Infect Dis © 2005 Centers for Disease Control and Prevention (CDC)

Farmacoeconomia e TARV

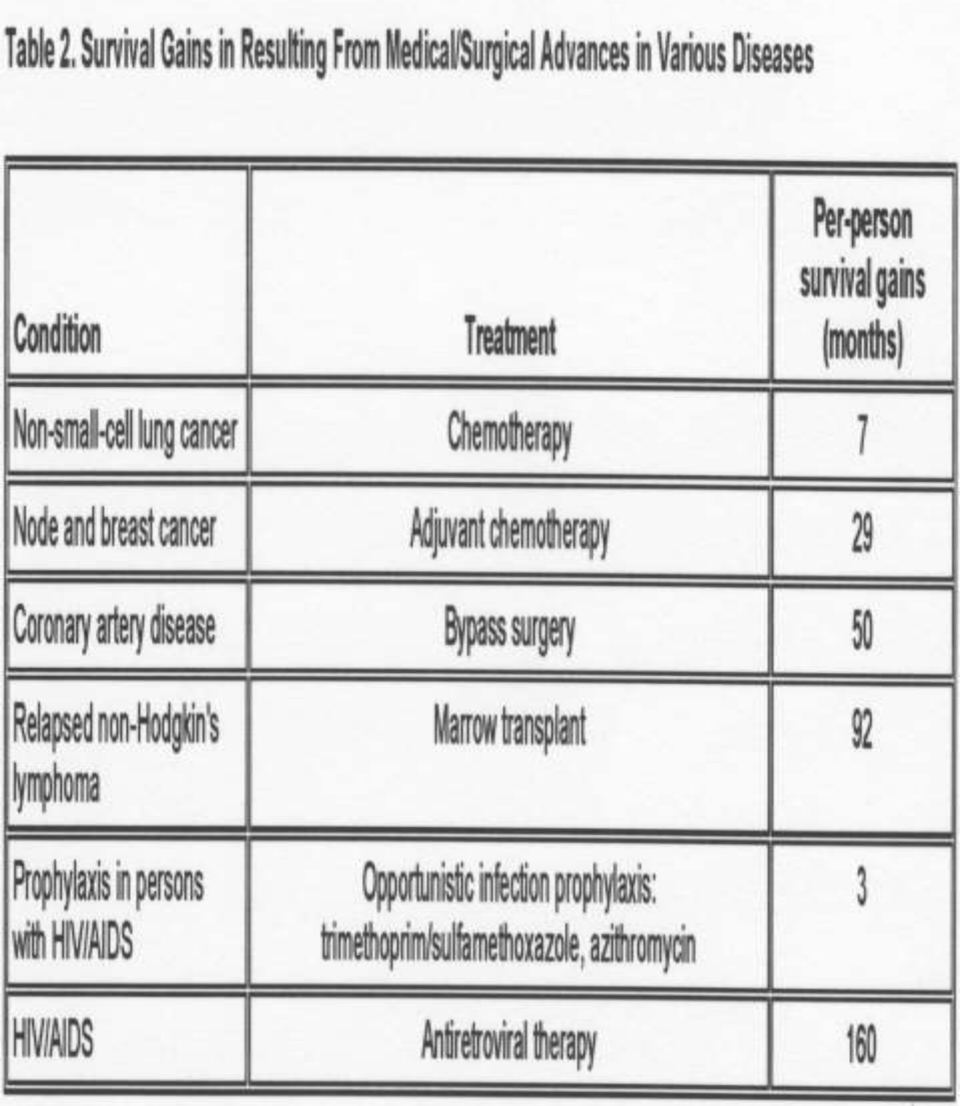
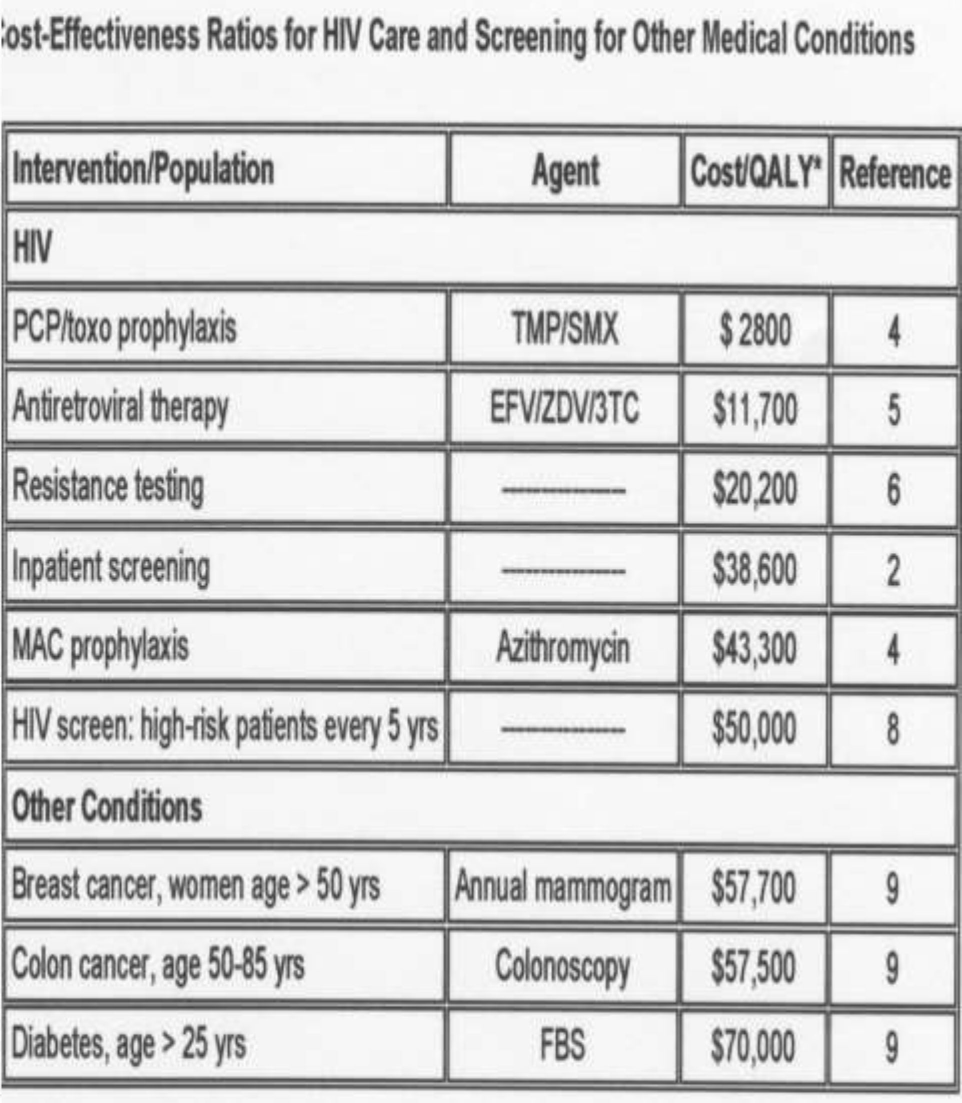


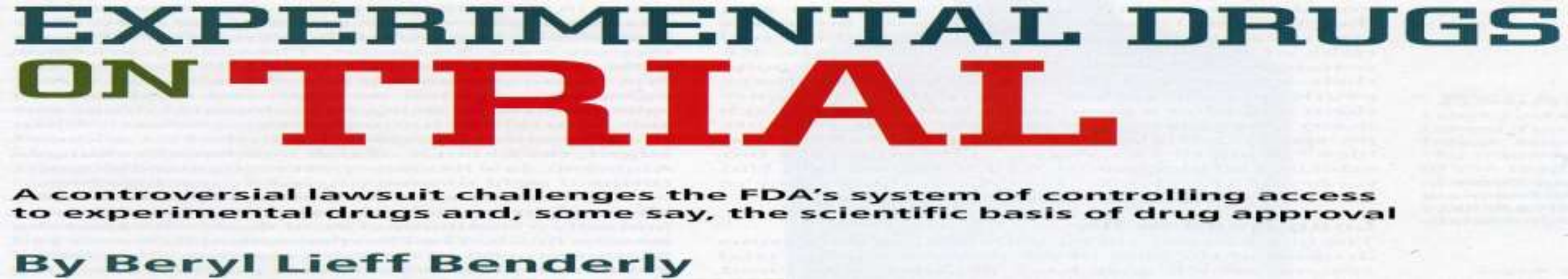
Table 2. Survival Gains in Resulting From Medical/Surgical Advances in Various Diseases

Condition	Treatment	Per-person survival gains (months)
Non-small-cell lung cancer	Chemotherapy	7
Node and breast cancer	Adjuvant chemotherapy	29
Coronary artery disease	Bypass surgery	50
Relapsed non-Hodgkin's lymphoma	Marrow transplant	92
Prophylaxis in persons with HIV/AIDS	Opportunistic infection prophylaxis: trimethoprim/sulfamethoxazole, azithromycin	3
HIV/AIDS	Antiretroviral therapy	160



ost-Effectiveness Ratios for HIV Care and Screening for Other Medical Conditions

Intervention/Population	Agent	Cost/QALY*	Reference
HIV			
PCP/toxo prophylaxis	TMP/SMX	$ 2800	4
Antiretroviral therapy	EFV/ZDV/3TC	$11,700	5
Resistance testing	------------	$20,200	6
Inpatient screening	------------	$38,600	2
MAC prophylaxis	Azithromycin	$43,300	4
HIV screen: high-risk patients every 5 yrs	------------	$50,000	8
Other Conditions			
Breast cancer, women age > 50 yrs	Annual mammogram	$57,700	9
Colon cancer, age 50-85 yrs	Colonoscopy	$57,500	9
Diabetes, age > 25 yrs	FBS	$70,000	9



EXPERIMENTAL DRUGS ON TRIAL

A controversial lawsuit challenges the FDA's system of controlling access to experimental drugs and, some say, the scientific basis of drug approval

By Beryl Lieff Benderly

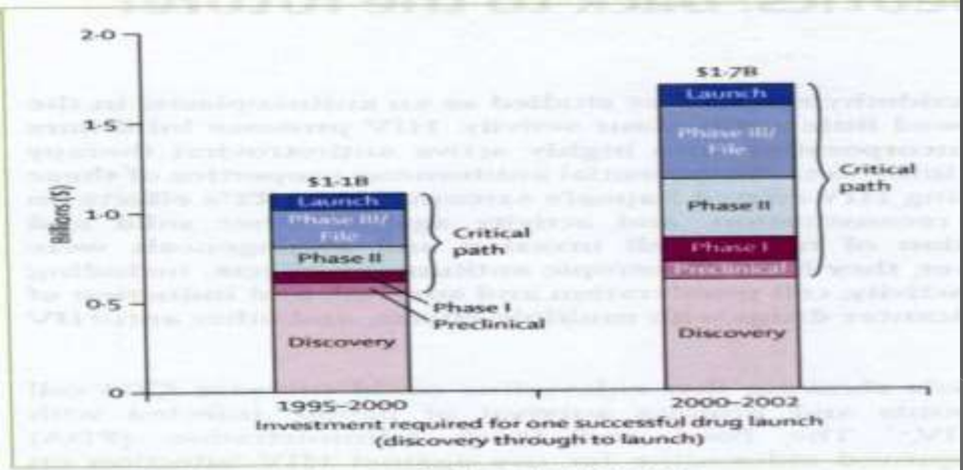
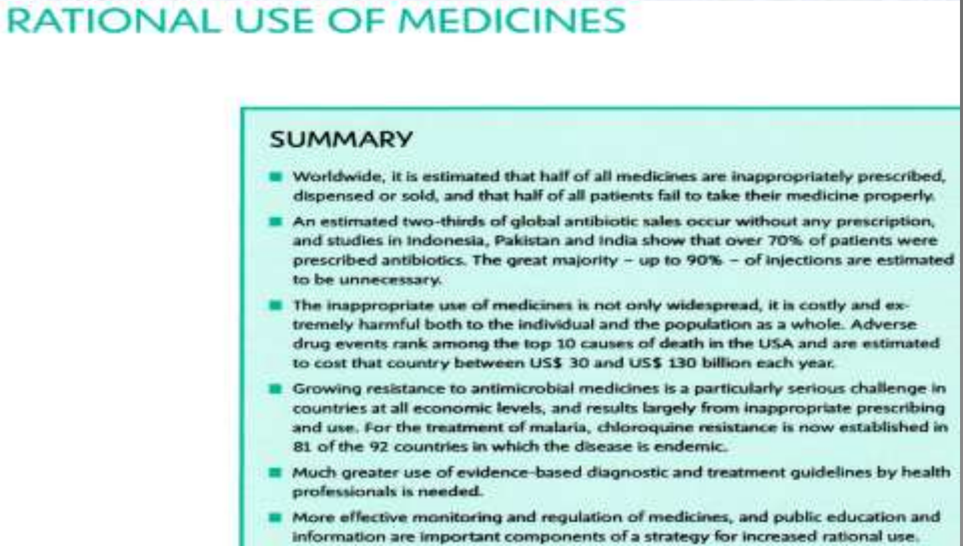


Figure 2: **Growing cost of successful drug development**
The cost of successful drug development increased 55% from 1995–2000 to 2000–02. Most of the rising costs are attributable to clinical trials. Reproduced with permission from reference 2.

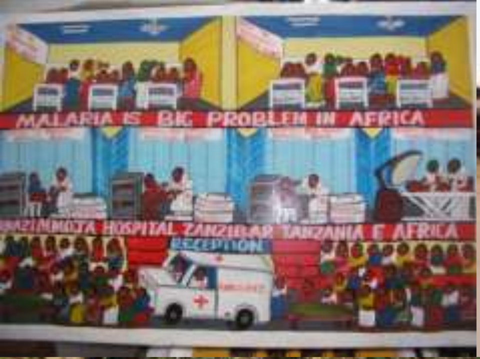


RATIONAL USE OF MEDICINES

SUMMARY

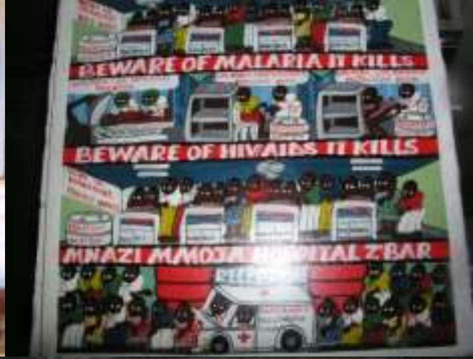
- Worldwide, it is estimated that half of all medicines are inappropriately prescribed, dispensed or sold, and that half of all patients fail to take their medicine properly.
- An estimated two-thirds of global antibiotic sales occur without any prescription, and studies in Indonesia, Pakistan and India show that over 70% of patients were prescribed antibiotics. The great majority – up to 90% – of injections are estimated to be unnecessary.
- The inappropriate use of medicines is not only widespread, it is costly and extremely harmful both to the individual and the population as a whole. Adverse drug events rank among the top 10 causes of death in the USA and are estimated to cost that country between US$ 30 and US$ 130 billion each year.
- Growing resistance to antimicrobial medicines is a particularly serious challenge in countries at all economic levels, and results largely from inappropriate prescribing and use. For the treatment of malaria, chloroquine resistance is now established in 81 of the 92 countries in which the disease is endemic.
- Much greater use of evidence-based diagnostic and treatment guidelines by health professionals is needed.
- More effective monitoring and regulation of medicines, and public education and information are important components of a strategy for increased rational use.

- Por cada molécula aprovada para uso clínico, são investigadas 25 novos compostos, de entre aproximadamente 5.000 possíveis alternativas, durante cerca de 10 a 15 anos
- Somente 21,5 % das moléculas que entram em fase I de desenvolvimento chegam a ser comercializadas
- Custos triplicaram em 4 anos (1998-2001)
- Em 2007: 1,3 biliões de USD / molécula
- Em 2008: Investimento total (USA): 65.2 biliões de USD, contabilizando-se cerca de 2.900 compostos em investigação (300 para Doenças Raras, 750 para Doenças Neoplásicas, 277 para Doenças Cerebro/Cardio-Vasculares, e 109 para a SIDA)
- Em 2008: Existia um repositório de cerca de 100.000 moléculas que poderão ser futuramente investigadas, embora apenas 100 dos cerca de 3.000 alvos proteicos conhecidos a partir do Genoma Humano poderão permitir a síntese de novos medicamentos a curto/médio prazo
- Calcula-se que os medicamentos são responsáveis por cerca de 50 a 60% da redução da mortalidade presentemente verificada em todo o mundo, sendo mais acentuada nas Doenças Neoplásicas, Doenças Cerebro/Cardio-Vasculares e SIDA.


MALARIA IS BIG PROBLEM IN AFRICA
MNAZIMMOJA HOSPITAL ZANZIBAR TANZANIA E AFRICA
RECEPTION

FARMACIA
MARTYFER
FARMACIA DE DESCUENTO

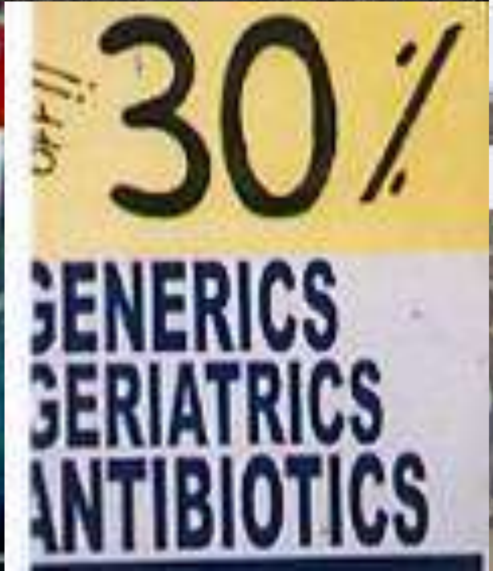
CONSULTORIO MEDICO URGENCIAS
24 HORAS
Dr. José Guirao López


BEWARE OF MALARIA IT KILLS
BEWARE OF HIV AIDS IT KILLS
MNAZI MMOJA HOSPITAL Z'BAR

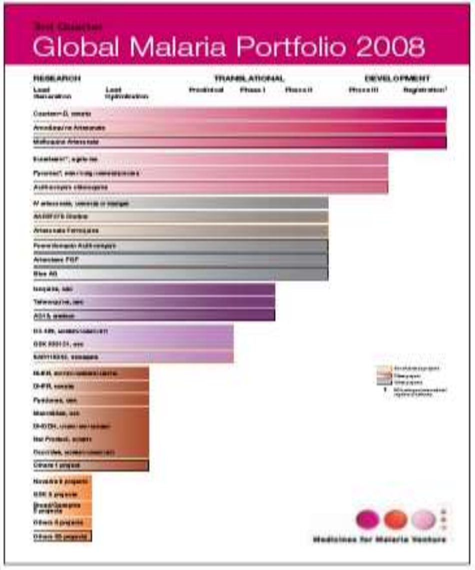
Tooth Brush Tree.
salvadora persica
(swahili-mswaki).
The twigs are used as
a toothbrush. roots
and leaves used for
treatment of malaria.

FEVER TREE
Acacia xanthophlea (olerai-Masai)
The tree grows in groups in a Low Lying
Swampy areas Which is favourable breeding
ground for Malarial Mosquitoes. Early Pioneers
Were convinced that the tree caused Malaria
Which is not true. Roots used for
treatment of Stomach-ache.

DISCOUNT
FARMACY
• GENERICS
• GERIATRICS
• ANTIBIOTICS


OFF!!
30%
GENERICS
GERIATRICS
ANTIBIOTICS

DOCTOR TRADICIONAL
TRATA-SE TRADICIONAL-
MENTE E ESPIRITUALMENTE
FEBRE AMARELA - MALUCU
CHUCHA GRANDE - DOR DE DENTE
MULHER OU HOMME NUNCA FEZ FI
CRIANÇA QUE TEM PEDRA
PALUDISMO - MAKULU
TROMBOSE - ANGINA
PESSOAS QUE DESMAIA
VIA BERTA - PESSOA QUE AJUSTA TODA
HORA - DOR DE BARRIGA
DOR DE BEXIGA - INFAMAÇÃO NA BE
XIGA - TUBERCULOSE - LUKINA
IMORROIDE - APENDECITE
ASMA - DIABETA - ESCANDAMEN
TO - MICROBIO - FORÇA SEXUAL
MESTRUAÇÃO NÃO APARECE
QUE TEM QUALQUE PROBLEMA -
RESOLVE-SE - LAVAGEM DE BARRIGA
HERNIA INTERNA EXTERNA - GOTA
DOR DE COSTELA - GRAMATISMO


Global Malaria Portfolio 2008
RESEARCH
TRANSLATIONAL
DEVELOPMENT
Lead Generation
Lead Optimization
Preclinical
Phase I
Phase II
Phase III
Registration
Medicines for Malaria Venture

Emerging Safety Science: Workshop Summary
http://www.nap.edu/catalog/11975.html

INTEGRATION 101

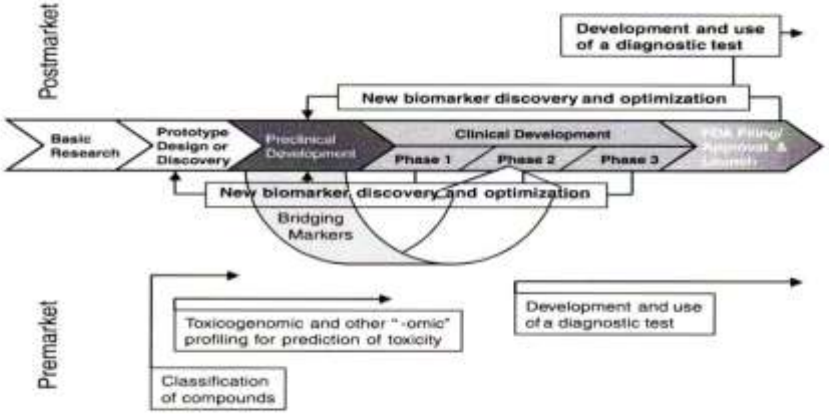

Postmarket
Development and use of a diagnostic test
New biomarker discovery and optimization
Basic Research
Prototype Design or Discovery
Preclinical Development
Clinical Development
Phase 1
Phase 2
Phase 3
FDA Filing/ Approval & Launch
New biomarker discovery and optimization
Bridging Markers
Premarket
Toxicogenomic and other "-omic" profiling for prediction of toxicity
Development and use of a diagnostic test
Classification of compounds

FIGURE 9-2 Drug development as an iterative process. The figure illustrates how biomarkers may be used to bridge, or translate, early preclinical findings to clinical findings, and how clinical findings may be used to inform and corroborate the basic science. Many of the workshop participants emphasized that the ultimate goal of applying these new technologies in safety science is to create a continual iterative process in which the basic scientific data can help to inform and predict clinical outcomes.
SOURCE: Frueh, 2007.

FIGURE 11: **The R&D Process: Long, Complex, and Costly**

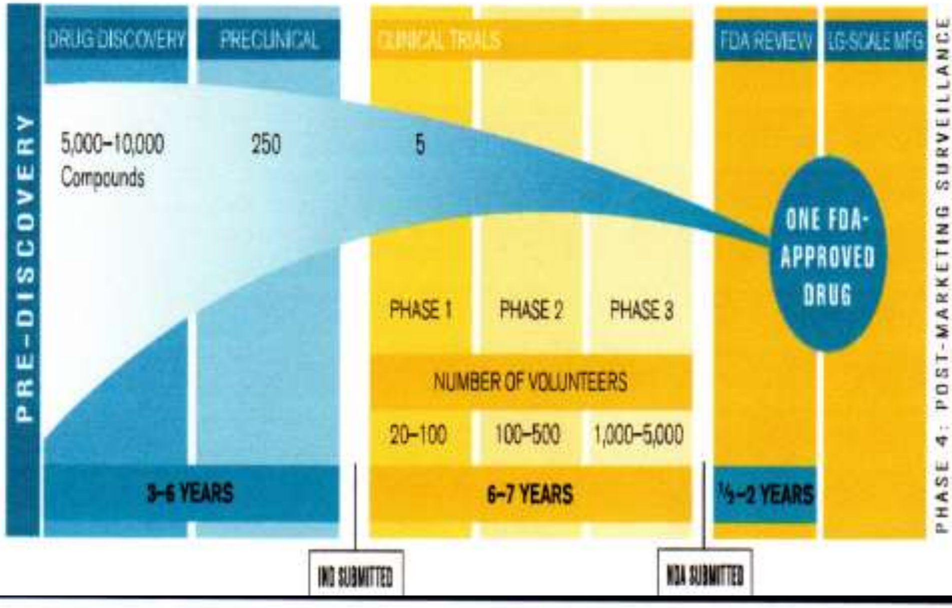
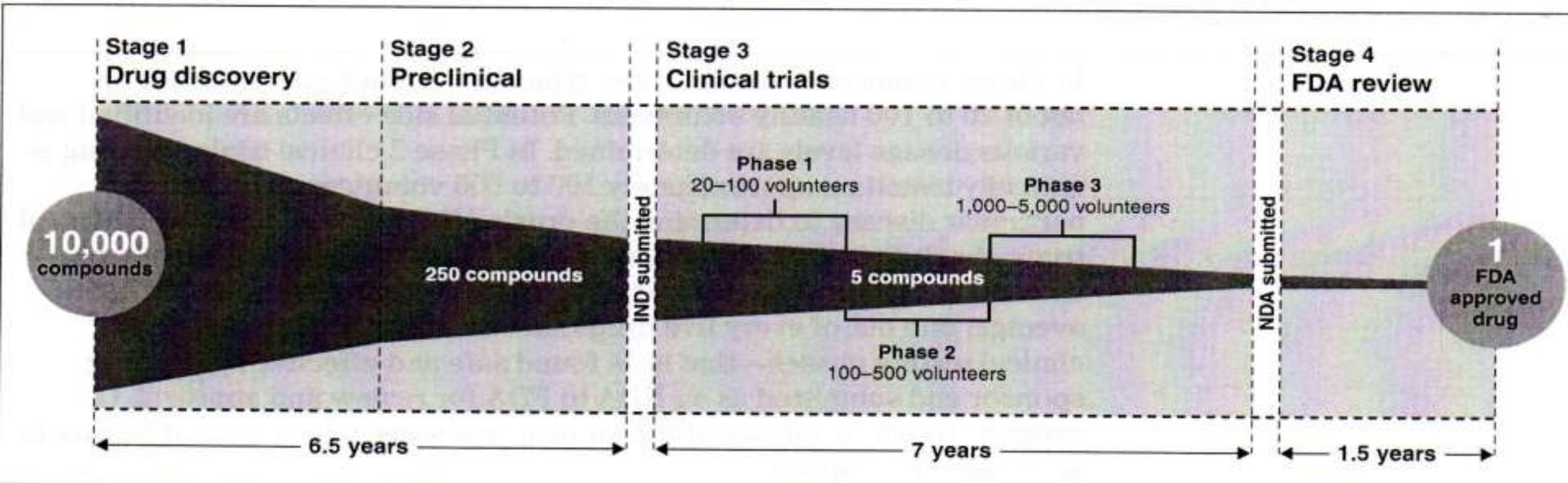
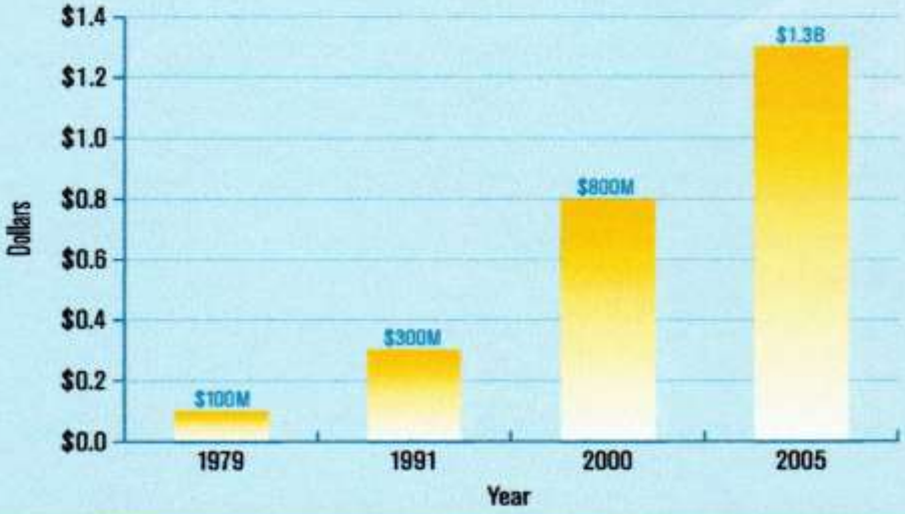

PRE-DISCOVERY
DRUG DISCOVERY
PRECLINICAL
CLINICAL TRIALS
FDA REVIEW
LG-SCALE MFG
5,000–10,000 Compounds
250
5
ONE FDA-APPROVED DRUG
PHASE 1
PHASE 2
PHASE 3
NUMBER OF VOLUNTEERS
20–100
100–500
1,000–5,000
3–6 YEARS
6–7 YEARS
½–2 YEARS
IND SUBMITTED
NDA SUBMITTED
PHASE 4: POST-MARKETING SURVEILLANCE

Figure 1: The Drug Discovery, Development, and Review Process


Stage 1
Drug discovery
Stage 2
Preclinical
Stage 3
Clinical trials
Stage 4
FDA review
10,000 compounds
250 compounds
IND submitted
Phase 1
20–100 volunteers
5 compounds
Phase 3
1,000–5,000 volunteers
Phase 2
100–500 volunteers
NDA submitted
1 FDA approved drug
6.5 years
7 years
1.5 years

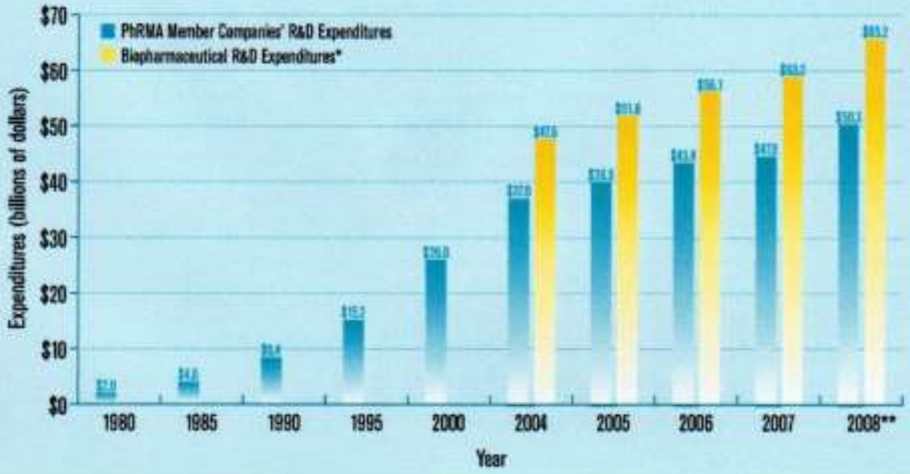
Source: Pharmaceutical Research and Manufacturers of America.

FIGURE 13: **Cost to Develop One New Drug**



SOURCES: J. A. DiMasi and H. G. Grabowski, "The Cost of Biopharmaceutical R&D: Is Biotech Different?" *Managerial and Decision Economics* 28, no. 4–5 (2007): 469–479; J. A. DiMasi, *et al.*, "The Price of Innovation: New Estimates of Drug Development Costs," *Journal of Health Economics* 22 (2003): 151–185.

FIGURE 9: **Biopharmaceutical Companies' Investment in R&D Remains Strong**

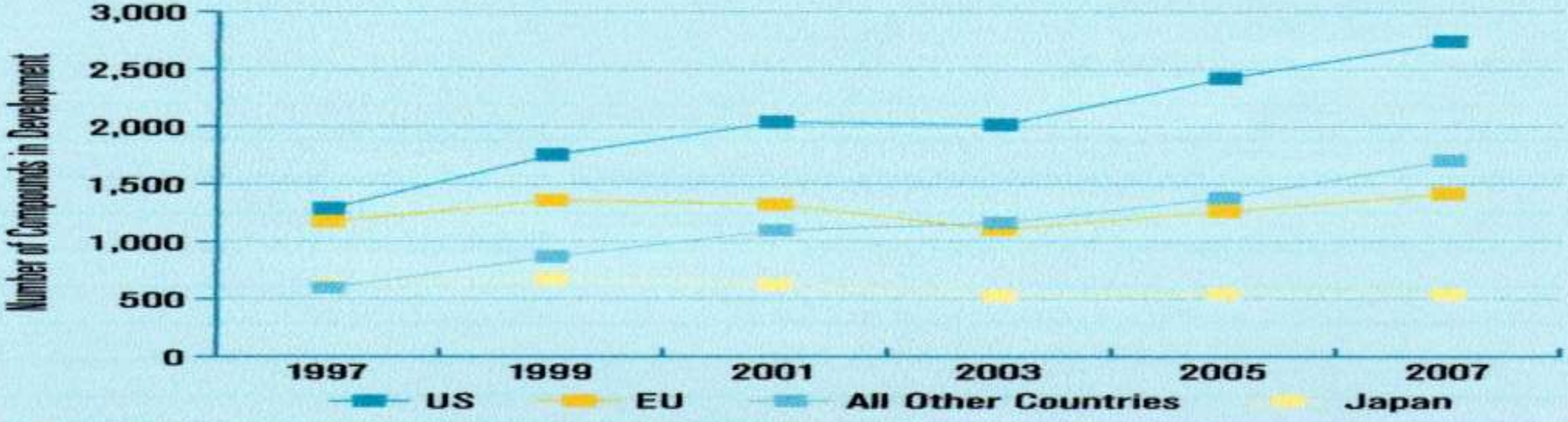


*The "Biopharmaceutical R&D Expenditures" figures include PhRMA research associates and nonmembers; these are not included in "PhRMA Member Companies' R&D Expenditures." PhRMA first reported this data in 2004.

**Estimated.

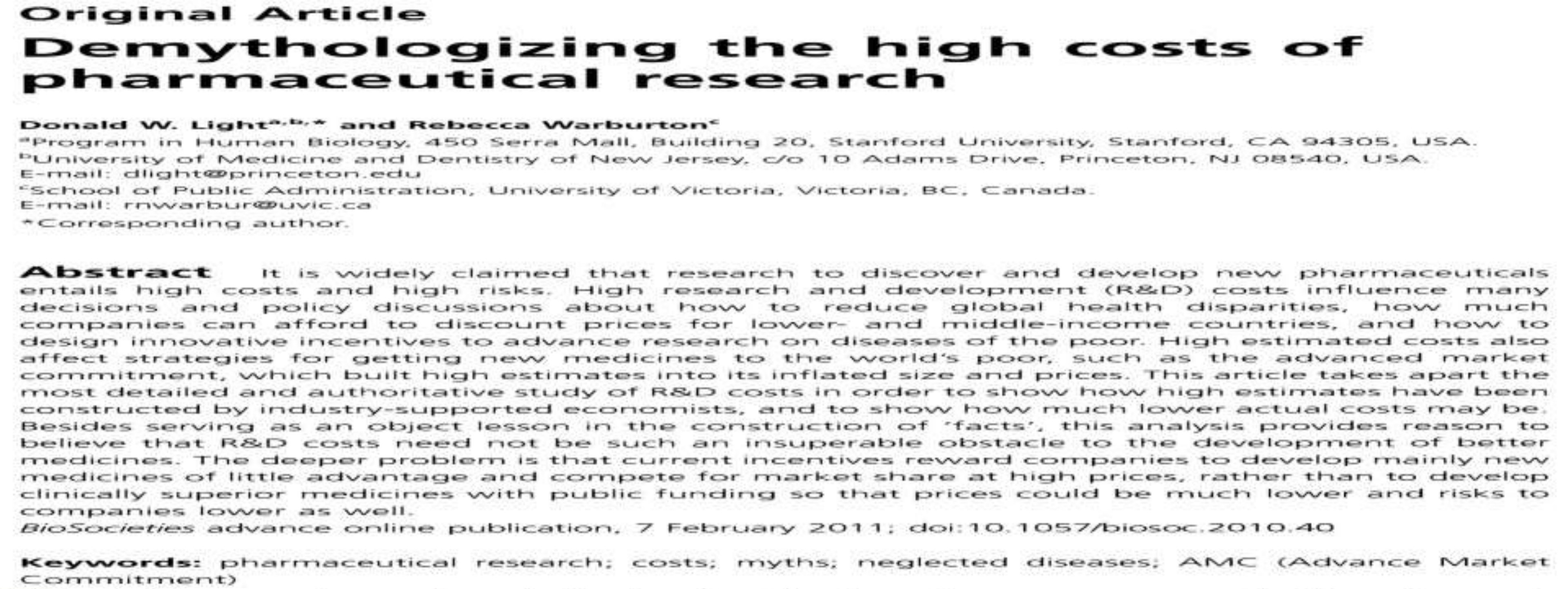
SOURCES: Burrill & Company, analysis for Pharmaceutical Research and Manufacturers of America, 2005–2009; Pharmaceutical Research and Manufacturers of America, *PhRMA Annual Member Survey* (Washington, DC: PhRMA, 1981–2009).

FIGURE 10: **Number of Compounds in Development, by Region***



*Note: Reflects the number of compounds in clinical trials or awaiting approval as of June of each year. Compounds in development for multiple regions are counted in each region for which regulatory approval is sought, and multiple indications are counted only once.

SOURCE: Adis R&D Insight Database, Wolters Kluwer Health, Customized Run, December 2007.



Original Article

Demythologizing the high costs of pharmaceutical research

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E-mail: rnwarbur@uvic.ca
*Corresponding author.

Abstract It is widely claimed that research to discover and develop new pharmaceuticals entails high costs and high risks. High research and development (R&D) costs influence many decisions and policy discussions about how to reduce global health disparities, how much companies can afford to discount prices for lower- and middle-income countries, and how to design innovative incentives to advance research on diseases of the poor. High estimated costs also affect strategies for getting new medicines to the world's poor, such as the advanced market commitment, which built high estimates into its inflated size and prices. This article takes apart the most detailed and authoritative study of R&D costs in order to show how high estimates have been constructed by industry-supported economists, and to show how much lower actual costs may be. Besides serving as an object lesson in the construction of 'facts', this analysis provides reason to believe that R&D costs need not be such an insuperable obstacle to the development of better medicines. The deeper problem is that current incentives reward companies to develop mainly new medicines of little advantage and compete for market share at high prices, rather than to develop clinically superior medicines with public funding so that prices could be much lower and risks to companies lower as well.

BioSocieties advance online publication, 7 February 2011; doi:10.1057/biosoc.2010.40

Keywords: pharmaceutical research; costs; myths; neglected diseases; AMC (Advance Market Commitment)

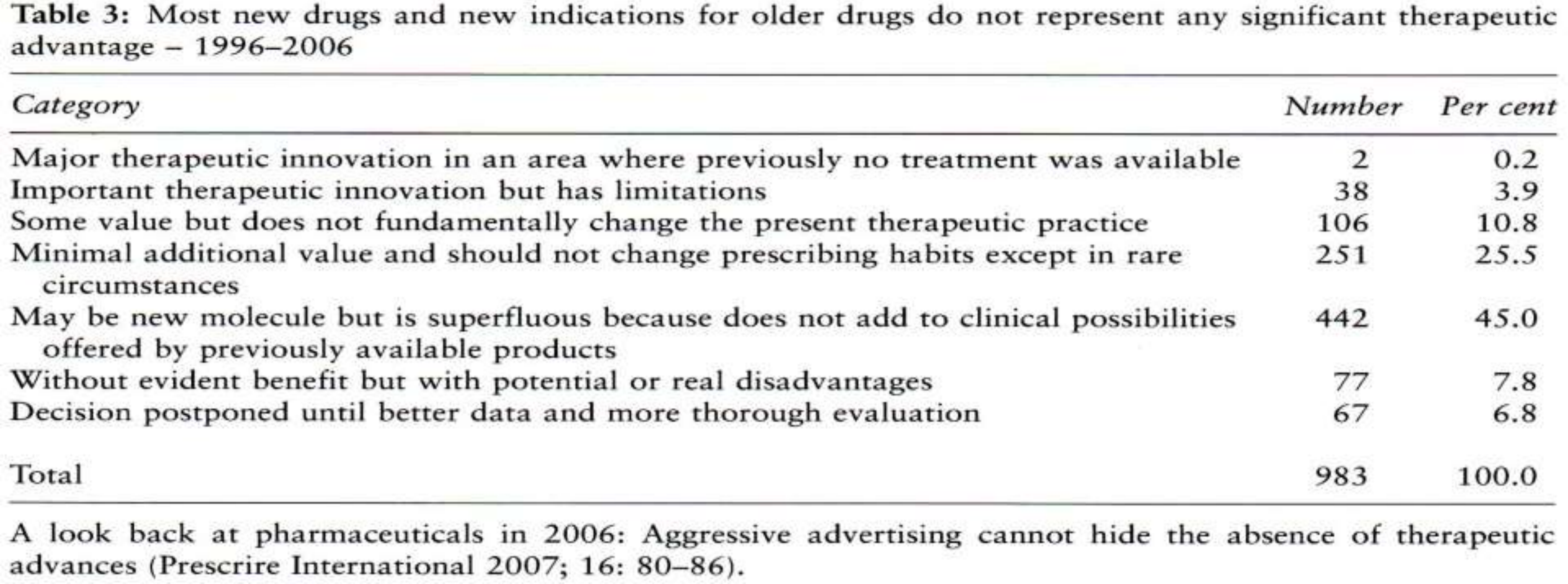
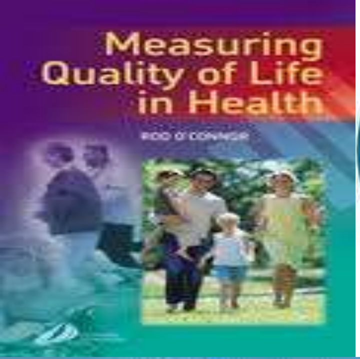


Table 3: Most new drugs and new indications for older drugs do not represent any significant therapeutic advantage – 1996–2006

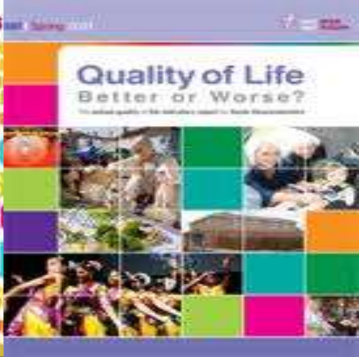
Category	*Number*	*Per cent*
Major therapeutic innovation in an area where previously no treatment was available	2	0.2
Important therapeutic innovation but has limitations	38	3.9
Some value but does not fundamentally change the present therapeutic practice	106	10.8
Minimal additional value and should not change prescribing habits except in rare circumstances	251	25.5
May be new molecule but is superfluous because does not add to clinical possibilities offered by previously available products	442	45.0
Without evident benefit but with potential or real disadvantages	77	7.8
Decision postponed until better data and more thorough evaluation	67	6.8
Total	983	100.0

A look back at pharmaceuticals in 2006: Aggressive advertising cannot hide the absence of therapeutic advances (Prescrire International 2007; 16: 80–86).


Measuring Quality of Life in Health
ROD O'CONNOR

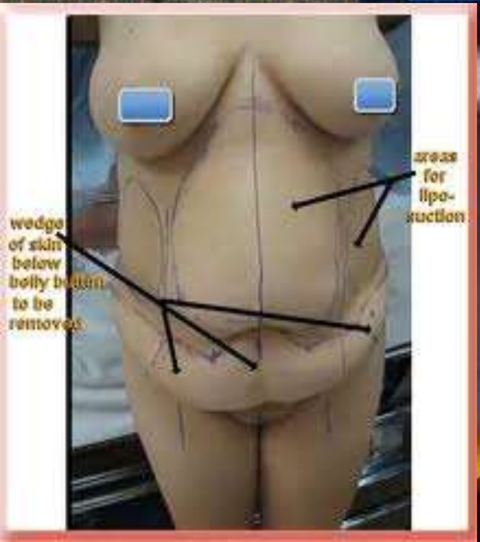
Quality of Life

Liposuction
Medical
Suction-Assisted
Sterilized
Anesthetic
General
Different
Devices
Many
Doctor
Make
Thighs
Fat
Claimed
Provided
Factors
Saline
Intended
Injection
Performed
Loss
Abdomen
Minimize
Lidocaine
Bleeding
Volume
Aspects
Simply
Often
Arms
Cleaned
Modeling
Lumpiness
Over-Suctioned
Contouring
Skin
Hundreds
Works
Backs
Less
Ultimately
Disposable

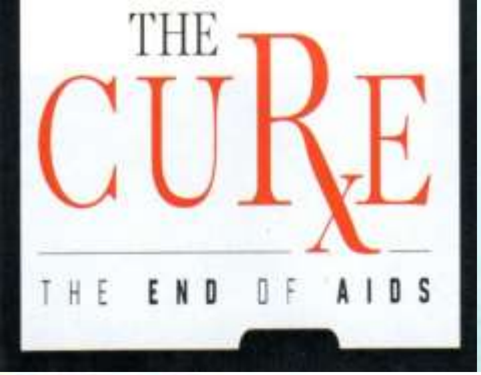

Quality of Life
Better or Worse?

BEFORE
AFTER

Michael Jackson
1958-2009


areas for lipo-suction
wedge of skin below belly button to be removed

before
after


THE
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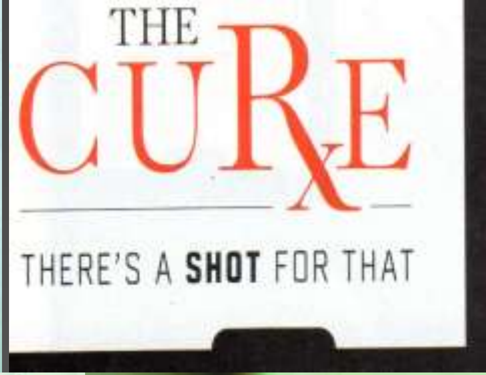
THE END OF AIDS


THE
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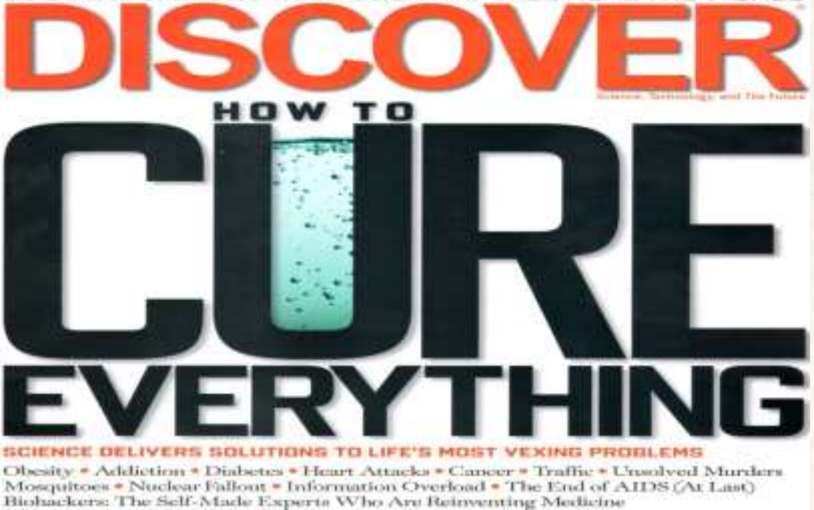
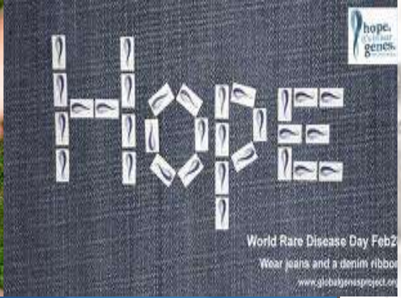
THERE'S A **SHOT** FOR THAT

THERE'S
A SHOT
FOR THAT


SPECIAL REPORT 35 PAGES THAT WILL HEAL THE WORLD
DISCOVER
HOW TO
CURE
EVERYTHING
SCIENCE DELIVERS SOLUTIONS TO LIFE'S MOST VEXING PROBLEMS
Obesity • Addiction • Diabetes • Heart Attacks • Cancer • Traffic • Unsolved Murders
Mosquitoes • Nuclear Fallout • Information Overload • The End of AIDS (At Last)
Biohackers: The Self-Made Experts Who Are Reinventing Medicine

RareArtist.org invites artists to participate in the second annual EveryLife Art Contest.

7000
bracelets for hope.


Hope
hope. it's in our genes.
World Rare Disease Day Feb2
Wear jeans and a denim ribbon
www.globalgenesproject.org

Rare Disease
#1

RARE DISEASE DAY
28 February 2009
Patient Care: A Public Affair!

Rare Disease Day
28 February 2011
Patients and Researchers, Partners for Life!

orphanet

EURORDIS
Rare Diseases Europe

hope. it's in our genes.
A RARE DISEASE INITIATIVE

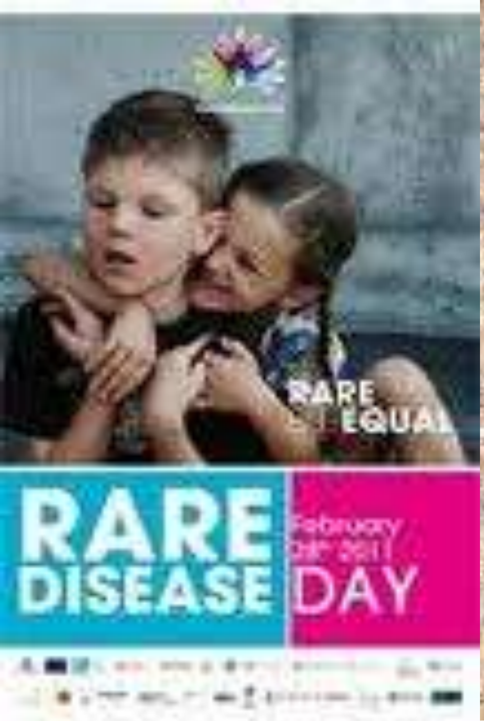
Rare
Disease
Foundation

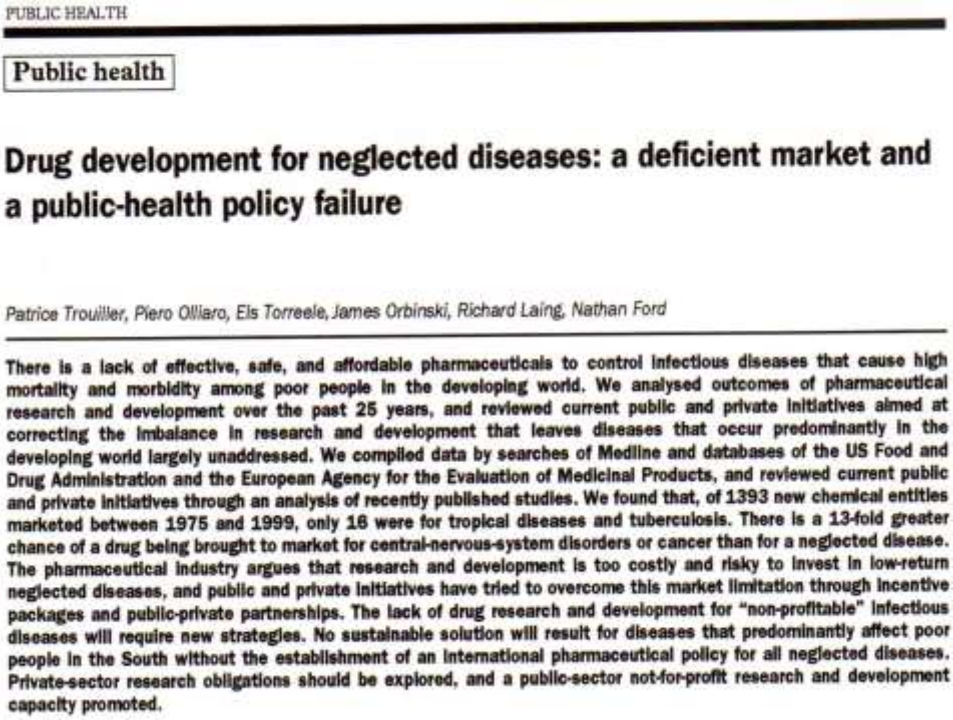
Office of
Rare Diseases
Research
National Institutes of Health

WEAR THAT YOU CARE.
RARE DISEASE DAY FEB. 28, 2011
global genes

RARE CLINICAL DISEASES RESEARCH NETWORK
Funded by the National Institutes of Health

the global genes project





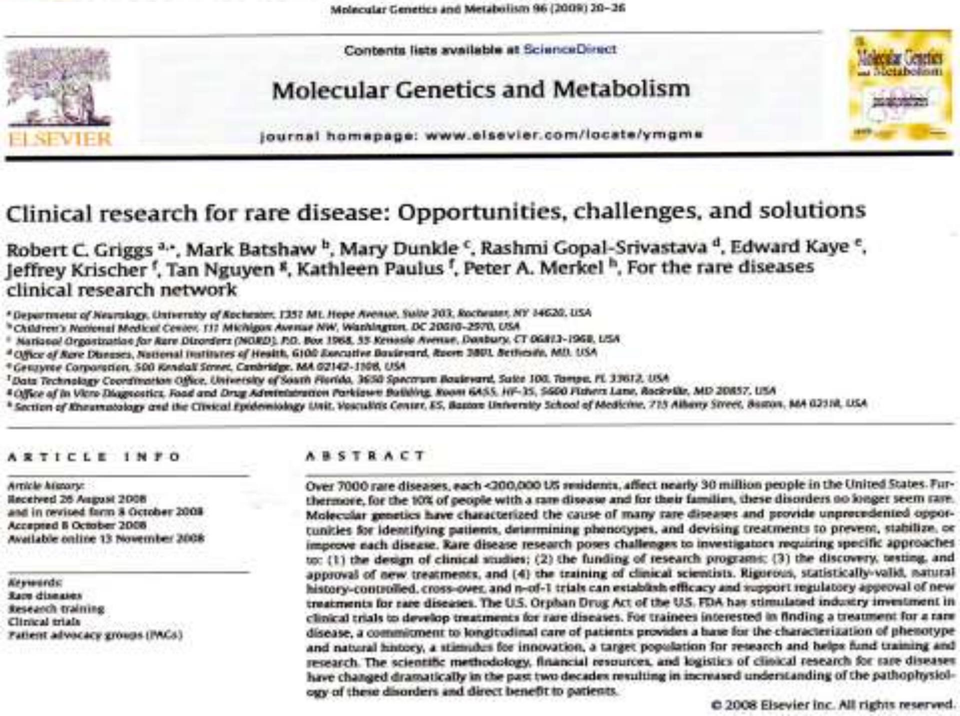
PUBLIC HEALTH

Public health

Drug development for neglected diseases: a deficient market and a public-health policy failure

Patrice Trouiller, Piero Olliaro, Els Torreele, James Orbinski, Richard Laing, Nathan Ford

There is a lack of effective, safe, and affordable pharmaceuticals to control infectious diseases that cause high mortality and morbidity among poor people in the developing world. We analysed outcomes of pharmaceutical research and development over the past 25 years, and reviewed current public and private initiatives aimed at correcting the imbalance in research and development that leaves diseases that occur predominantly in the developing world largely unaddressed. We compiled data by searches of Medline and databases of the US Food and Drug Administration and the European Agency for the Evaluation of Medicinal Products, and reviewed current public and private initiatives through an analysis of recently published studies. We found that, of 1393 new chemical entities marketed between 1975 and 1999, only 16 were for tropical diseases and tuberculosis. There is a 13-fold greater chance of a drug being brought to market for central-nervous-system disorders or cancer than for a neglected disease. The pharmaceutical industry argues that research and development is too costly and risky to invest in low-return neglected diseases, and public and private initiatives have tried to overcome this market limitation through incentive packages and public-private partnerships. The lack of drug research and development for "non-profitable" infectious diseases will require new strategies. No sustainable solution will result for diseases that predominantly affect poor people in the South without the establishment of an international pharmaceutical policy for all neglected diseases. Private-sector research obligations should be explored, and a public-sector not-for-profit research and development capacity promoted.



Molecular Genetics and Metabolism 96 (2009) 20–26

Contents lists available at ScienceDirect

Molecular Genetics and Metabolism

journal homepage: www.elsevier.com/locate/ymgme

Clinical research for rare disease: Opportunities, challenges, and solutions

Robert C. Griggs [a,*], Mark Batshaw [b], Mary Dunkle [c], Rashmi Gopal-Srivastava [d], Edward Kaye [e], Jeffrey Krischer [f], Tan Nguyen [g], Kathleen Paulus [f], Peter A. Merkel [h], For the rare diseases clinical research network

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ABSTRACT

Over 7000 rare diseases, each <200,000 US residents, affect nearly 30 million people in the United States. Furthermore, for the 10% of people with a rare disease and for their families, these disorders no longer seem rare. Molecular genetics have characterized the cause of many rare diseases and provide unprecedented opportunities for identifying patients, determining phenotypes, and devising treatments to prevent, stabilize, or improve each disease. Rare disease research poses challenges to investigators requiring specific approaches to: (1) the design of clinical studies; (2) the funding of research programs; (3) the discovery, testing, and approval of new treatments, and (4) the training of clinical scientists. Rigorous, statistically-valid, natural history-controlled, cross-over, and n-of-1 trials can establish efficacy and support regulatory approval of new treatments for rare diseases. The U.S. Orphan Drug Act of the U.S. FDA has stimulated industry investment in clinical trials to develop treatments for rare diseases. For trainees interested in finding a treatment for a rare disease, a commitment to longitudinal care of patients provides a base for the characterization of phenotype and natural history, a stimulus for innovation, a target population for research and helps fund training and research. The scientific methodology, financial resources, and logistics of clinical research for rare diseases have changed dramatically in the past two decades resulting in increased understanding of the pathophysiology of these disorders and direct benefit to patients.

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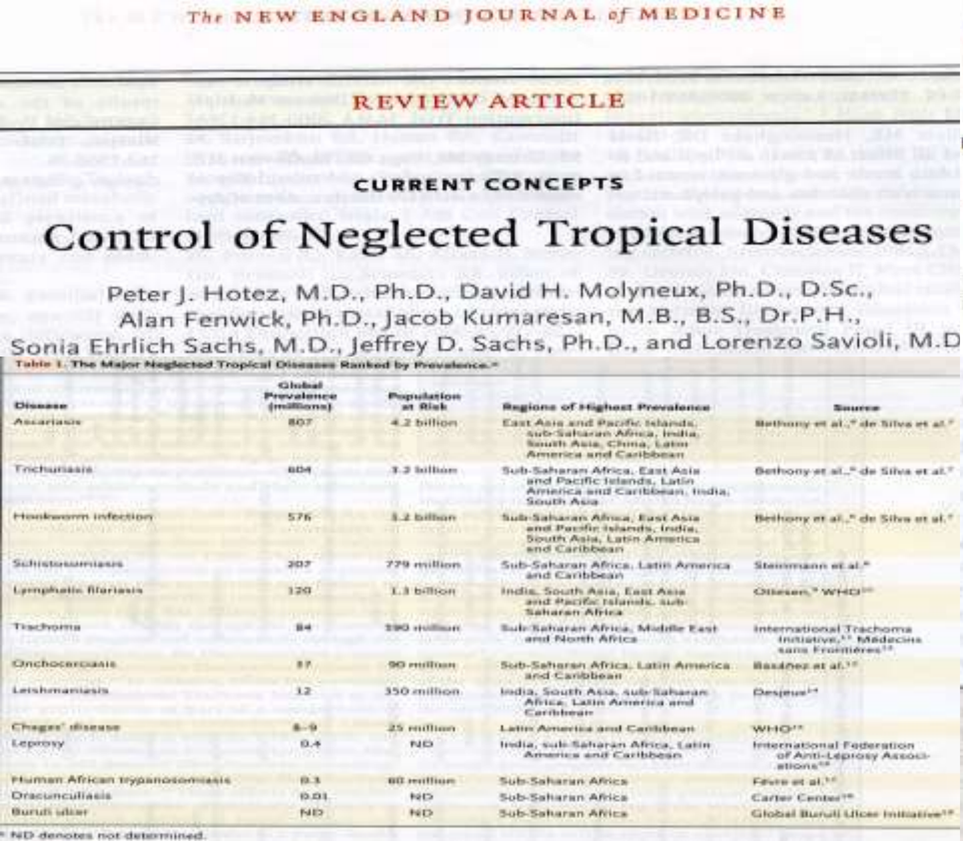
HAVE
NO
FEAR



The NEW ENGLAND JOURNAL of MEDICINE

REVIEW ARTICLE

CURRENT CONCEPTS

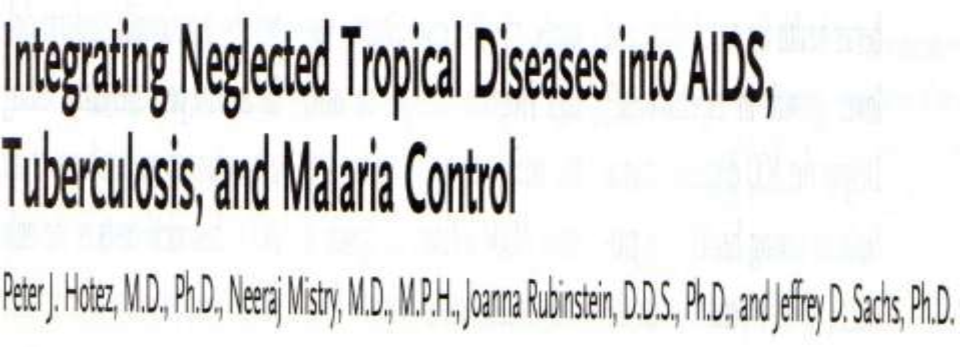
Control of Neglected Tropical Diseases

Peter J. Hotez, M.D., Ph.D., David H. Molyneux, Ph.D., D.Sc.,
Alan Fenwick, Ph.D., Jacob Kumaresan, M.B., B.S., Dr.P.H.,
Sonia Ehrlich Sachs, M.D., Jeffrey D. Sachs, Ph.D., and Lorenzo Savioli, M.D

Table 1. The Major Neglected Tropical Diseases Ranked by Prevalence.*

Disease	Global Prevalence (millions)	Population at Risk	Regions of Highest Prevalence	Source
Ascariasis	807	4.2 billion	East Asia and Pacific Islands, sub-Saharan Africa, India, South Asia, China, Latin America and Caribbean	Bethony et al.,[6] de Silva et al.[7]
Trichuriasis	604	3.2 billion	Sub-Saharan Africa, East Asia and Pacific Islands, Latin America and Caribbean, India, South Asia	Bethony et al.,[6] de Silva et al.[7]
Hookworm infection	576	3.2 billion	Sub-Saharan Africa, East Asia and Pacific Islands, India, South Asia, Latin America and Caribbean	Bethony et al.,[6] de Silva et al.[7]
Schistosomiasis	207	779 million	Sub-Saharan Africa, Latin America and Caribbean	Steinmann et al.[8]
Lymphatic filariasis	120	1.3 billion	India, South Asia, East Asia and Pacific Islands, sub-Saharan Africa	Ottesen,[9] WHO[10]
Trachoma	84	590 million	Sub-Saharan Africa, Middle East and North Africa	International Trachoma Initiative,[11] Médecins sans Frontières[12]
Onchocerciasis	37	90 million	Sub-Saharan Africa, Latin America and Caribbean	Basáñez et al.[13]
Leishmaniasis	12	350 million	India, South Asia, sub-Saharan Africa, Latin America and Caribbean	Desjeux[14]
Chagas' disease	8–9	25 million	Latin America and Caribbean	WHO[15]
Leprosy	0.4	ND	India, sub-Saharan Africa, Latin America and Caribbean	International Federation of Anti-Leprosy Associations[16]
Human African trypanosomiasis	0.3	60 million	Sub-Saharan Africa	Fèvre et al.[17]
Dracunculiasis	0.01	ND	Sub-Saharan Africa	Carter Center[18]
Buruli ulcer	ND	ND	Sub-Saharan Africa	Global Buruli Ulcer Initiative[19]

* ND denotes not determined.



Integrating Neglected Tropical Diseases into AIDS, Tuberculosis, and Malaria Control

Peter J. Hotez, M.D., Ph.D., Neeraj Mistry, M.D., M.P.H., Joanna Rubinstein, D.D.S., Ph.D., and Jeffrey D. Sachs, Ph.D.

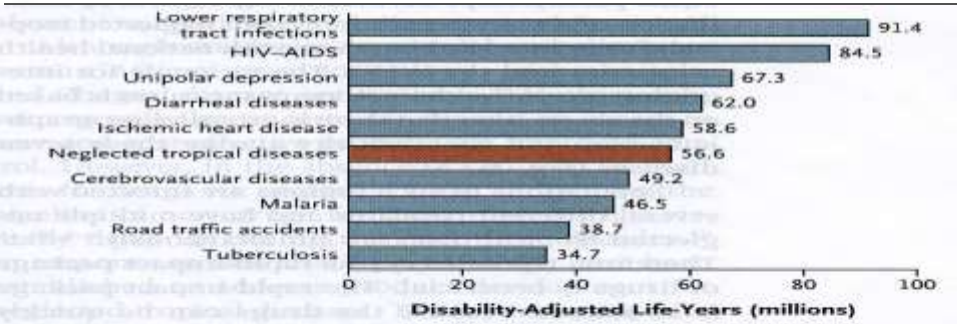


Figure 1. The 10 Leading Causes of Life-Years Lost to Disability and Premature Death.
The number of years lost to disability and premature death (disability-adjusted life-years) for the 13 major neglected tropical diseases were calculated according to a method we described previously.[4] The disability-adjusted life-years for the other conditions are based on data from the World Health Organization.[23] The ranking of disease burdens is based on data in Hotez.[5]

NEGLECTED DISEASES:
HAVE OUR GOVERNMENTS GOT SLEEPING SICKNESS?
DNDi

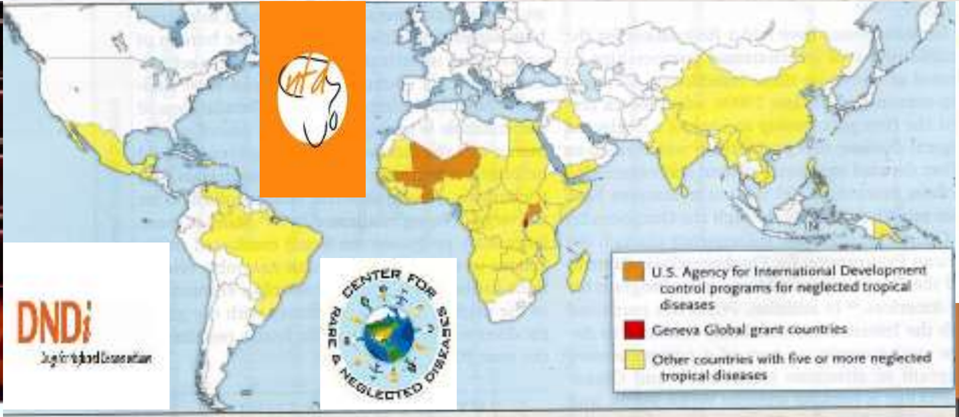

U.S. Agency for International Development control programs for neglected tropical diseases
🟥 Geneva Global grant countries
🟨 Other countries with five or more neglected tropical diseases
DNDi
CENTER FOR RARE & NEGLECTED DISEASES

Figure 2. **Nations with Five, Six, or Seven Neglected Tropical Diseases to Be Targeted for Integrated Preventive Chemotherapy.**
Of the 56 nations to be targeted with a rapid-impact package, shown in yellow, 37 are located in the World Health Organization (WHO) African region, 5 in the WHO Region of the Americas, 5 in the WHO Eastern Mediterranean region, 3 in the WHO South-East Asia region, and 6 in the WHO Western Pacific region. Data regarding the occurrence of lymphatic filariasis, onchocerciasis, schistosomiasis, and the three soil-transmitted helminth infections are derived from the WHO.[44] Data regarding the occurrence of trachoma are derived from the WHO.[45] The five nations shown in orange — Burkina Faso, Ghana, Mali, Niger, and Uganda — will be targeted for integrated control in national programs through the support of the U.S. Agency for International Development Neglected Tropical Disease Control Program beginning this year. The two nations shown in red — Rwanda and Burundi — will be targeted for integrated control in national programs through the support of Geneva Global beginning this year.

Neglected Tropical Diseases

Neglected Diseases in the Developing World
PROGRESS, CURRENT CHALLENGES, AND PROMISING APPROACHES
Learn More

EU2009.CZ

POLICY SUMMARY 1

Addressing financial sustainability in health systems

Sarah Thomson, Tom Foubister, Josep Figueras, Joseph Kutzin, Govin Permanand, Lucie Bryndová

Observatory

HEN

CALEDON INSTITUTE OF SOCIAL POLICY

Population Aging, Health Care Spending and Sustainability: Do we really have a crisis?

by

Joe Ruggeri

September 2002

- **" … a inovação tecnológica é o factor mais importante de incremento dos custos em saúde …o envelhecimento "apenas" contribui com cerca de 10% …"**
  (EU Report, 2009)

- **" … no debate acerca da sustentabilidade financeira relativa à prestação dos cuidados de saúde, talvez seja importante levantar a seguinte questão: Como é que ninguém questiona o facto de se gastar praticamente 12 % do PIB em actividades recreativas, mas simultaneamente toda a gente reclamar que se torna incomportável despender cerca de 10 % em saúde? … "**
  (Canada Report, 2002)

The Road to Sustainability

Integrating Sustainability

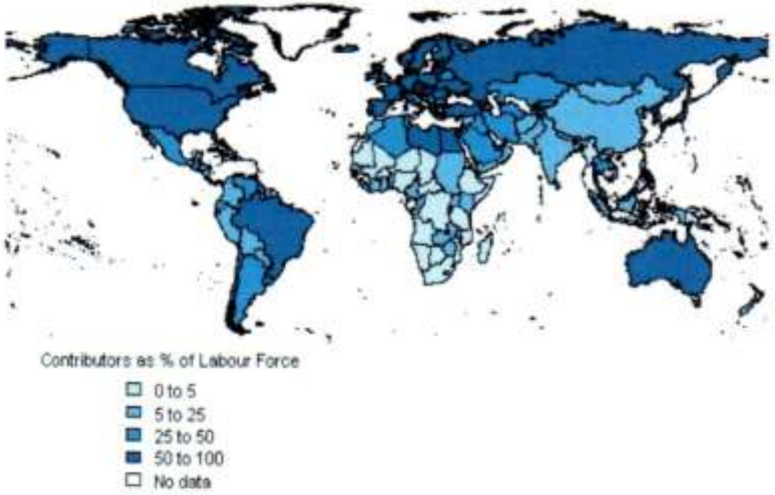
think sustainability!

Economic & Social Affairs

World Population Ageing 2009

United Nations

Figure 44. Coverage as measured by active members of mandatory pension systems as a share of labour force: world 2000-2008


Contributors as % of Labour Force
0 to 5
5 to 25
25 to 50
50 to 100
No data

Source: Hinz, Pallares-Miralles and Romero (forthcoming, 2010).

Figure old38. Distribution of economically active population aged 65 or over by sex: world, 1980-2020

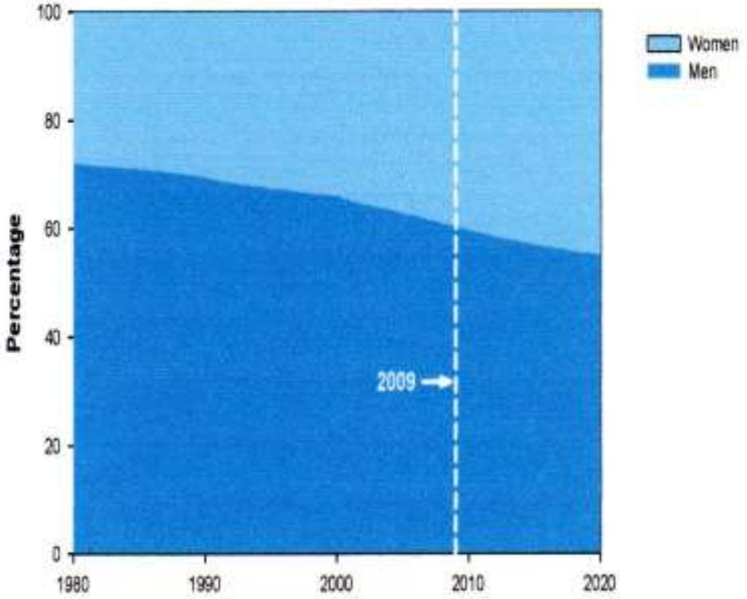
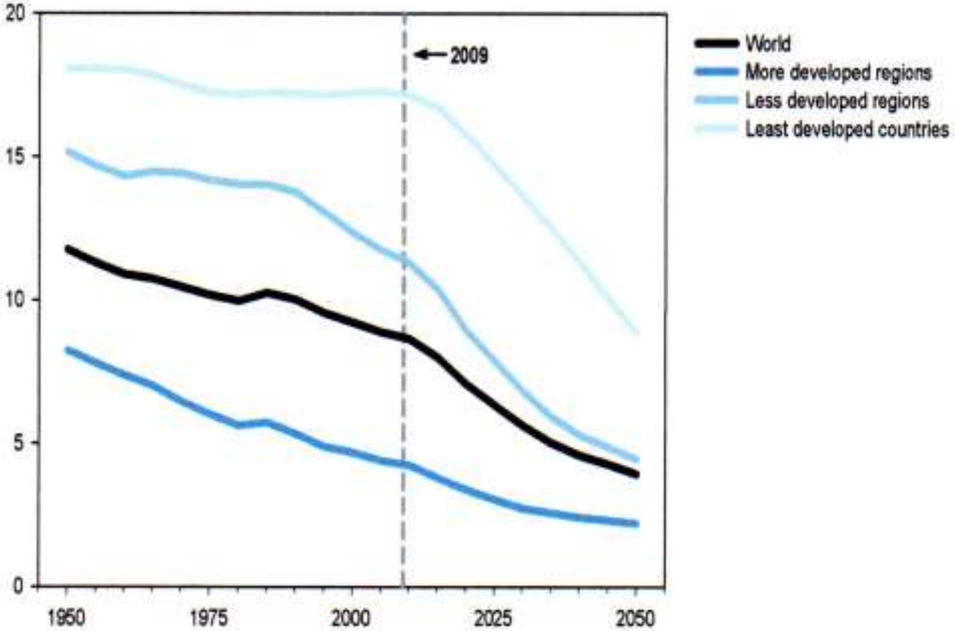
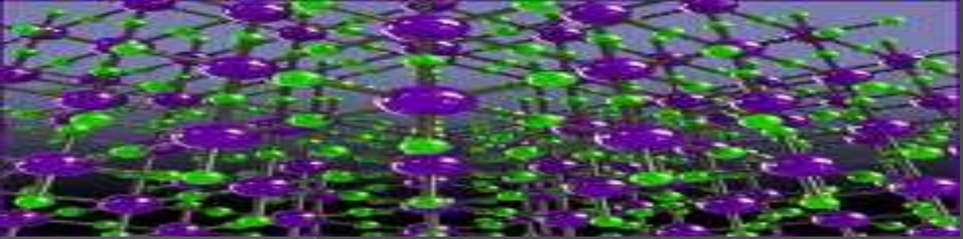


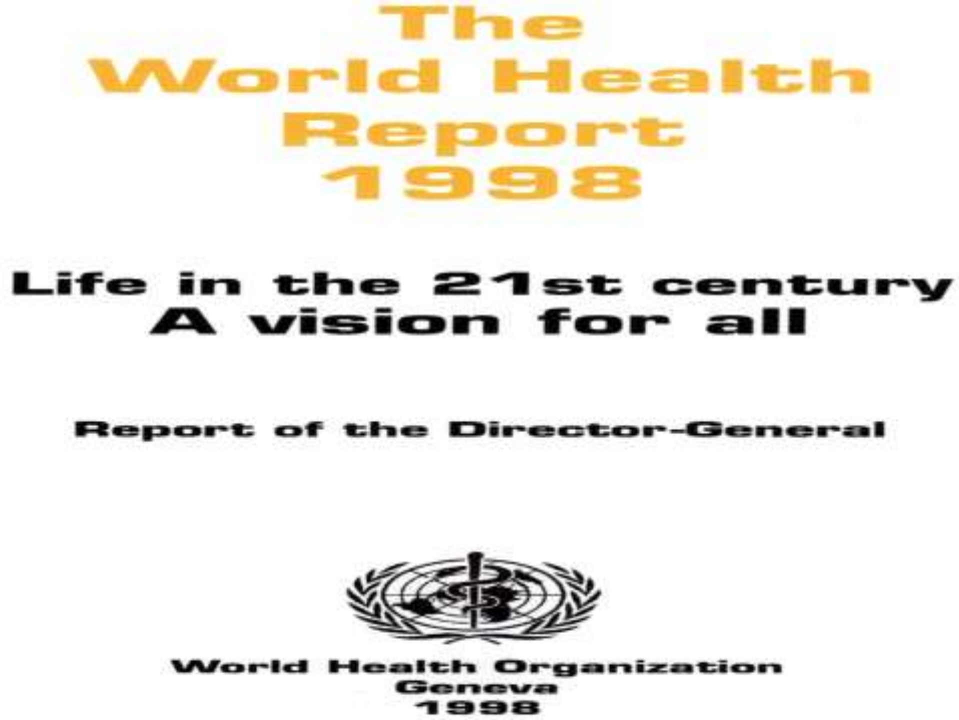
Figure 17. Potential support ratio: world and development regions, 1950-2050





Os PRINCIPAIS PROBLEMAS ACTUAIS

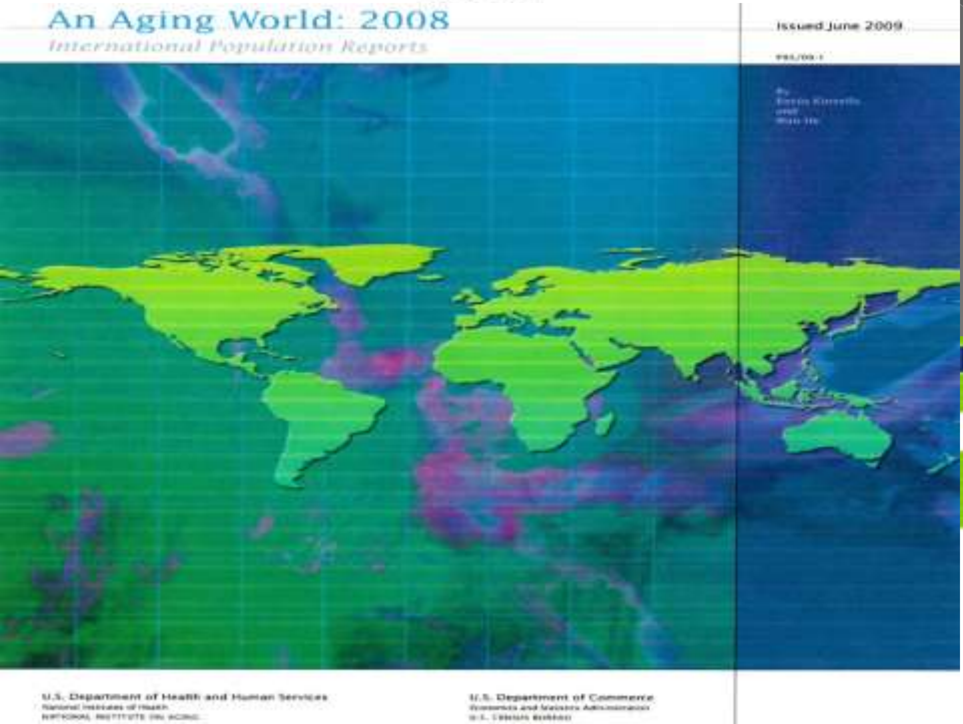
Envelhecimento
Doenças Crónicas
Deficiências
Dependências
As Falsas Profecias


The World Health Report 1998

Life in the 21st century
A vision for all

Report of the Director-General

World Health Organization
Geneva
1998


An Aging World: 2008
International Population Reports

Issued June 2009

U.S. Department of Health and Human Services

U.S. Department of Commerce

World Health Organization

.eu

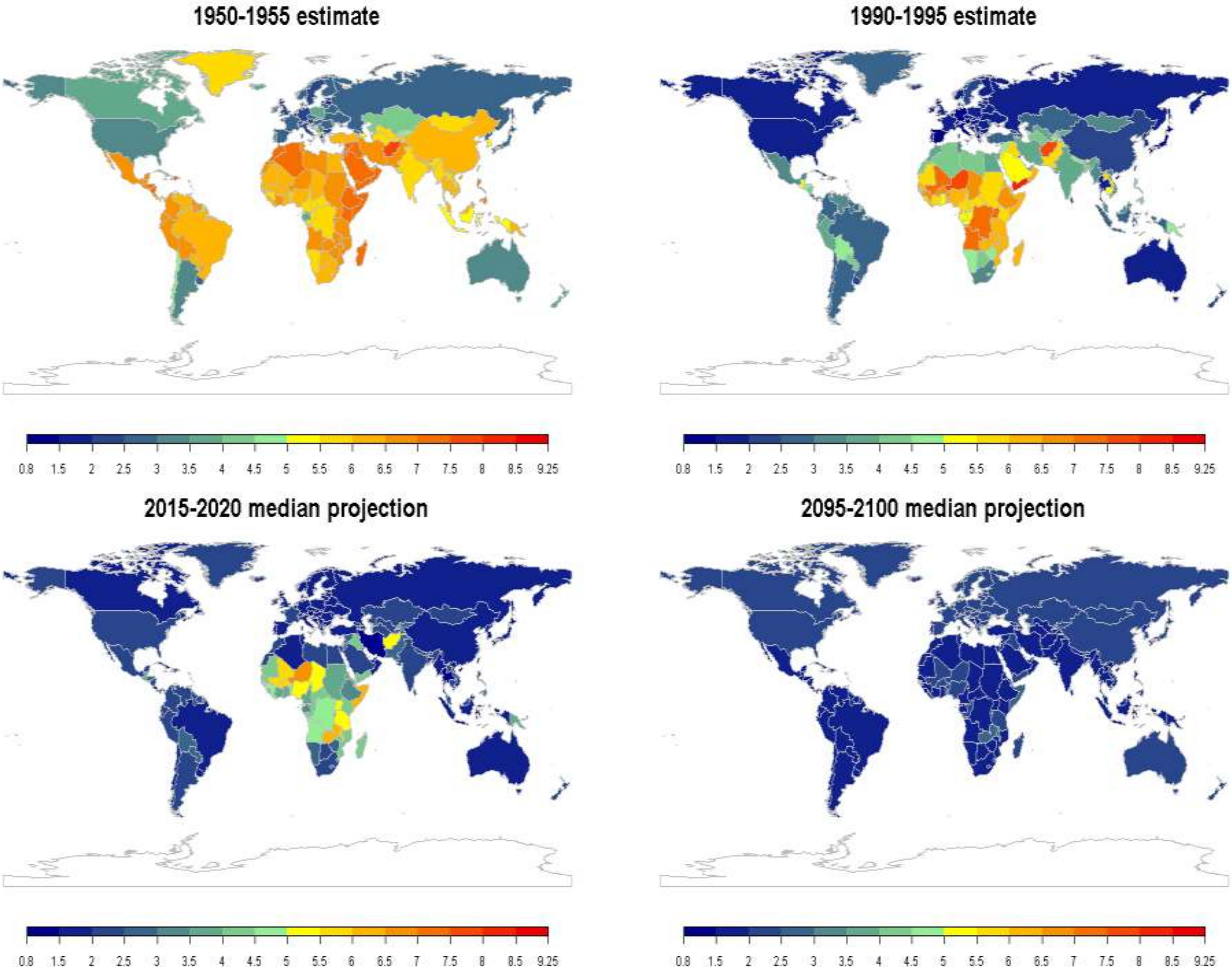
U.S. Department of Health & Human Services

- “ … nós estamos presentemente a aprender lentamente uma das lições mais importantes: não só como viver mais anos, mas também como ficar mais tempo com um bom estado de saúde e com menor dependência dos outros … o padrão de progresso mais importante que emerge na actualidade, é o da maior sobrevivência com qualidade de vida … “ *(sic.)* *(Hiroshi Nakajima, Secretário Geral da OMS, 2008)*

Directorate-General for Health & Consumers

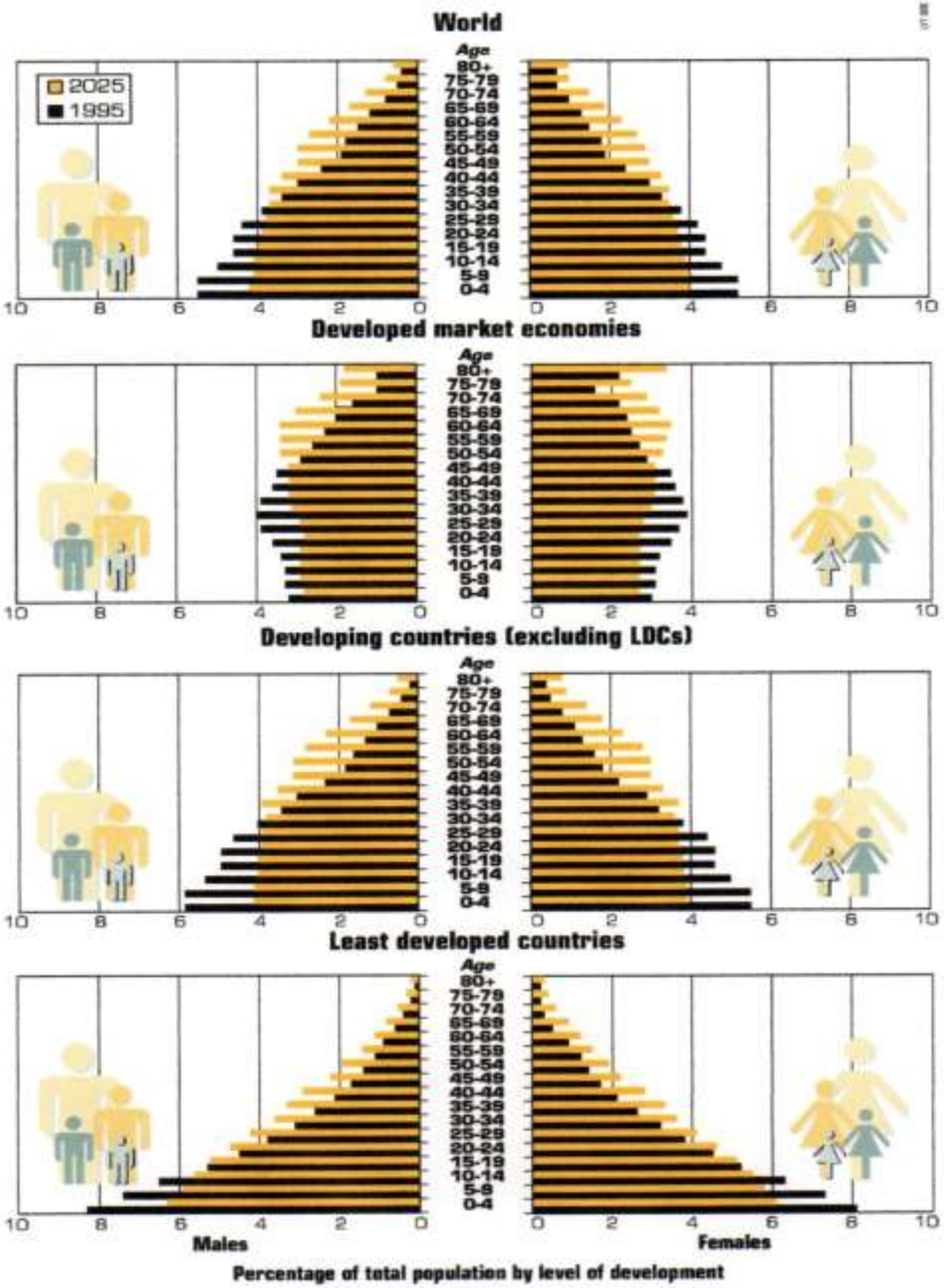
Major and Chronic Diseases

REPORT 2007

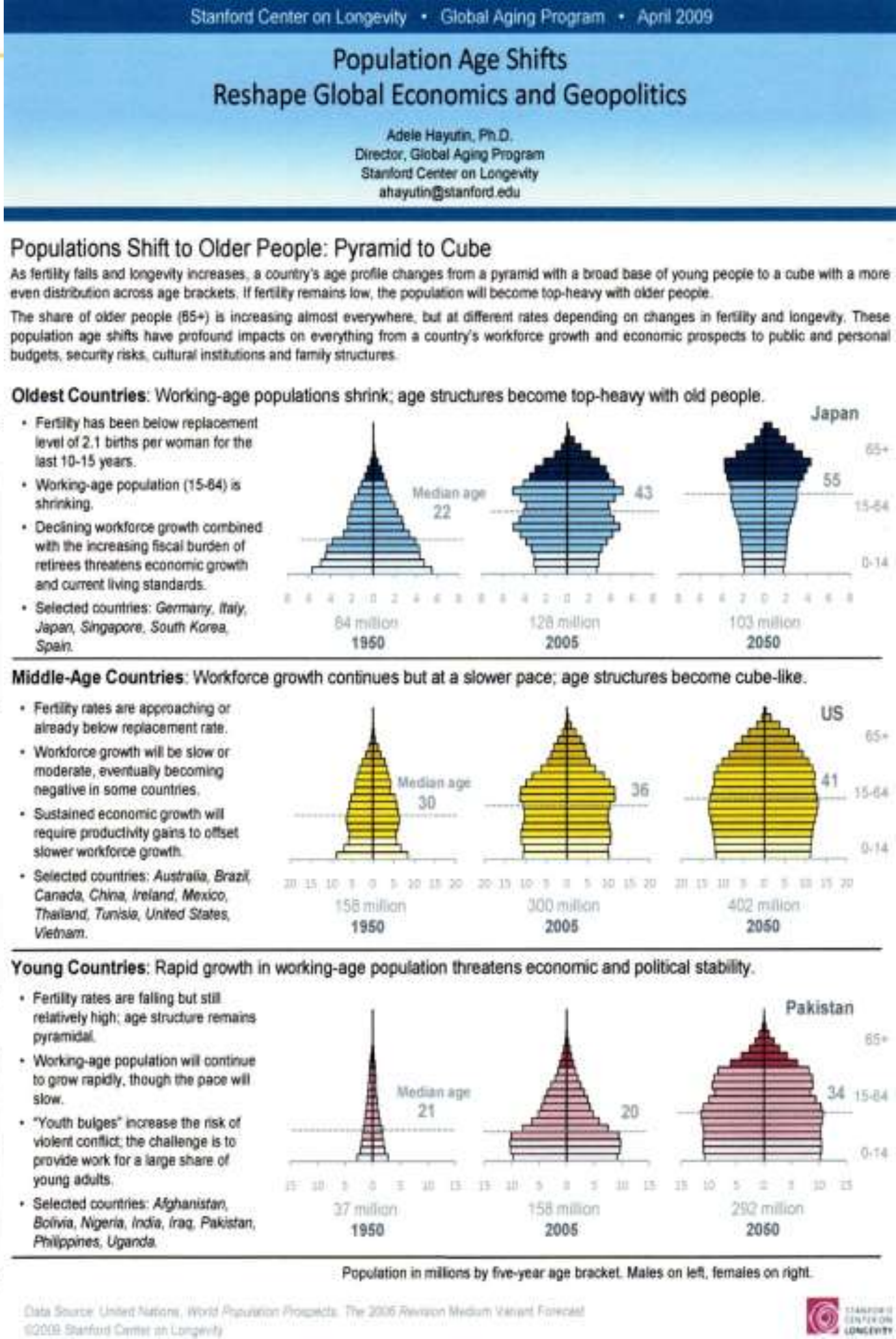

1950-1955 estimate
1990-1995 estimate
2015-2020 median projection
2095-2100 median projection
0.8 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6 6.5 7 7.5 8 8.5 9.25

The World Health Report 1998

Fig. 13. Population by age and sex, 1995 and 2025



Percentage of total population by level of development



Stanford Center on Longevity • Global Aging Program • April 2009

Population Age Shifts
Reshape Global Economics and Geopolitics

Adele Hayutin, Ph.D.
Director, Global Aging Program
Stanford Center on Longevity
ahayutin@stanford.edu

Populations Shift to Older People: Pyramid to Cube

As fertility falls and longevity increases, a country's age profile changes from a pyramid with a broad base of young people to a cube with a more even distribution across age brackets. If fertility remains low, the population will become top-heavy with older people.

The share of older people (65+) is increasing almost everywhere, but at different rates depending on changes in fertility and longevity. These population age shifts have profound impacts on everything from a country's workforce growth and economic prospects to public and personal budgets, security risks, cultural institutions and family structures.

Oldest Countries: Working-age populations shrink; age structures become top-heavy with old people.

- Fertility has been below replacement level of 2.1 births per woman for the last 10-15 years.
- Working-age population (15-64) is shrinking.
- Declining workforce growth combined with the increasing fiscal burden of retirees threatens economic growth and current living standards.
- Selected countries: *Germany, Italy, Japan, Singapore, South Korea, Spain.*

Middle-Age Countries: Workforce growth continues but at a slower pace; age structures become cube-like.

- Fertility rates are approaching or already below replacement rate.
- Workforce growth will be slow or moderate, eventually becoming negative in some countries.
- Sustained economic growth will require productivity gains to offset slower workforce growth.
- Selected countries: *Australia, Brazil, Canada, China, Ireland, Mexico, Thailand, Tunisia, United States, Vietnam.*

Young Countries: Rapid growth in working-age population threatens economic and political stability.

- Fertility rates are falling but still relatively high; age structure remains pyramidal.
- Working-age population will continue to grow rapidly, though the pace will slow.
- "Youth bulges" increase the risk of violent conflict; the challenge is to provide work for a large share of young adults.
- Selected countries: *Afghanistan, Bolivia, Nigeria, India, Iraq, Pakistan, Philippines, Uganda.*

Population in millions by five-year age bracket. Males on left, females on right.

Data Source: United Nations, *World Population Prospects: The 2006 Revision* Medium Variant Forecast

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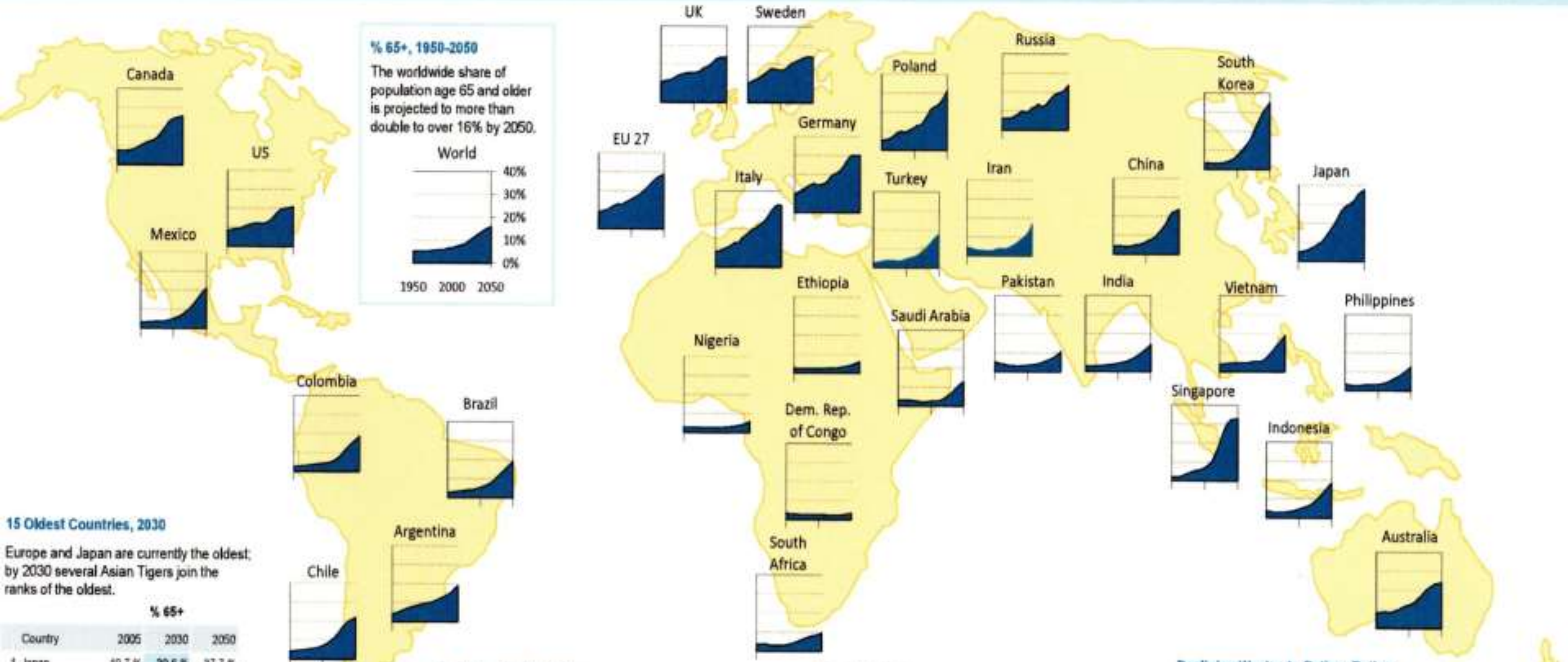
Global Aging

Share of Population Age 65 and Older

Dramatic and unprecedented population age shifts are occurring at vastly different rates around the world.


Canada
US
Mexico
Colombia
Brazil
Chile
Argentina
UK
Sweden
EU 27
Germany
Italy
Poland
Russia
Turkey
Iran
China
South Korea
Japan
Nigeria
Ethiopia
Saudi Arabia
Pakistan
India
Vietnam
Philippines
Singapore
Indonesia
Dem. Rep. of Congo
South Africa
Australia
World
40%
30%
20%
10%
0%
1950
2000
2050

% 65+, 1950-2050

The worldwide share of population age 65 and older is projected to more than double to over 16% by 2050.

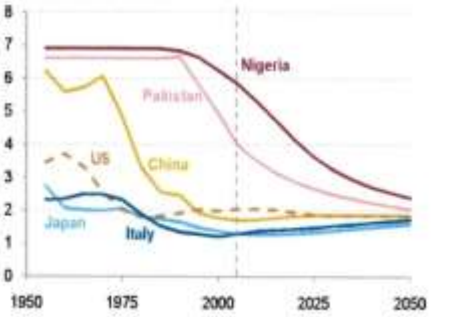
15 Oldest Countries, 2030

Europe and Japan are currently the oldest; by 2030 several Asian Tigers join the ranks of the oldest.

	% 65+		
Country	2005	2030	2050
1. Japan	19.7 %	30.6 %	37.7 %
2. Singapore	8.5 %	27.4 %	32.8 %
3. Germany	18.8 %	27.3 %	30.2 %
4. Italy	19.7 %	27.0 %	32.6 %
5. Hong Kong	12.0 %	25.8 %	32.6 %
6. Slovenia	15.6 %	25.7 %	33.1 %
7. Finland	15.9 %	25.0 %	25.6 %
8. Austria	16.2 %	24.6 %	29.0 %
9. Belgium	17.3 %	24.4 %	27.1 %
10. Greece	18.3 %	24.2 %	31.7 %
11. Netherlands	14.2 %	24.1 %	25.2 %
12. Croatia	17.2 %	24.1 %	28.5 %
13. Spain	16.8 %	23.9 %	33.2 %
14. Switzerland	15.4 %	23.9 %	25.0 %
15. South Korea	9.4 %	23.4 %	35.1 %
US	12.3 %	19.4 %	21.0 %
EU 27	16.7 %	23.9 %	28.7 %
World	7.3 %	11.7 %	16.2 %

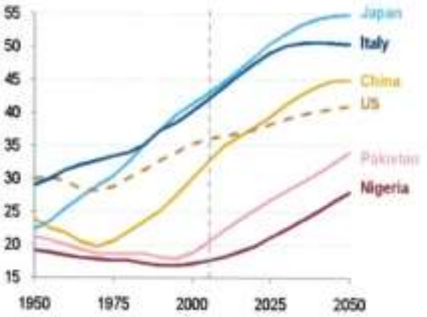
Declining Fertility Rates

Fertility has decreased worldwide, but at different rates.



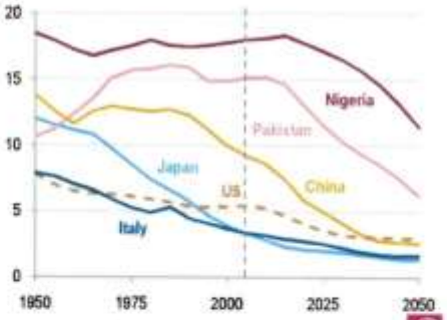
Rising Median Age

The pace of aging varies dramatically; many countries face steep gains in median age.



Declining Worker to Retiree Ratios

As countries age, the ratio of potential workers (15-64) to retirees (65+) declines, increasing the fiscal burden on workers.



Data Source: United Nations, World Population Prospects: The 2006 Revision Medium Variant Forecast

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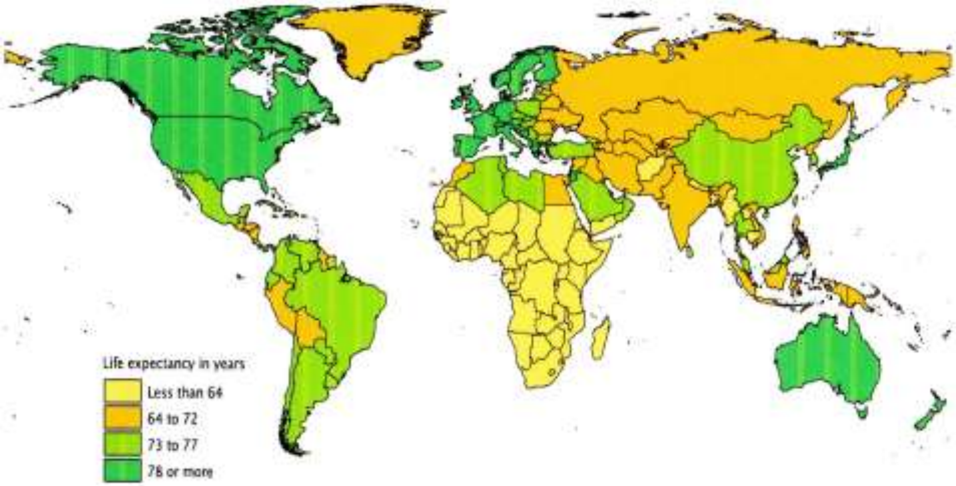
Figure 4-2.

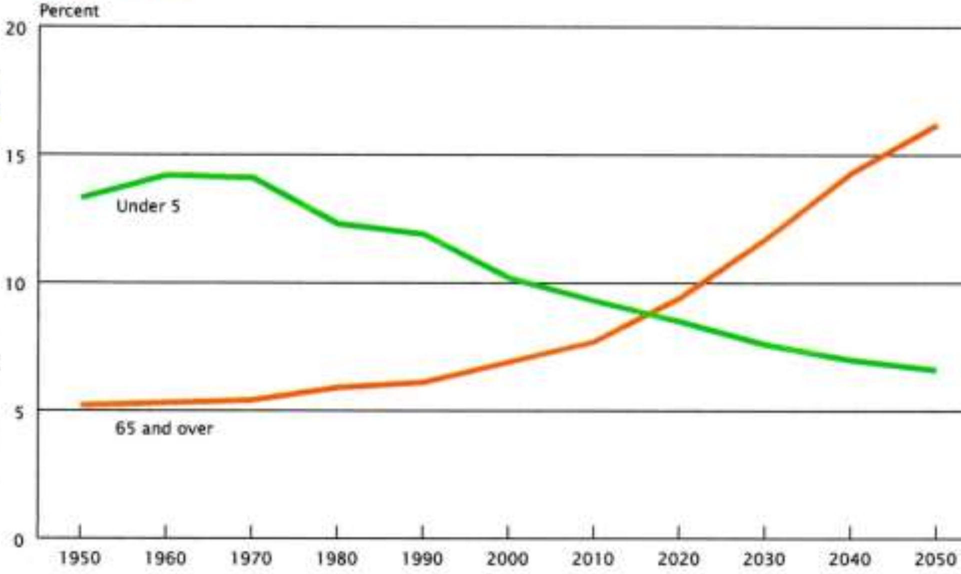
Life Expectancy at Birth: 2008


Life expectancy in years
Less than 64
64 to 72
73 to 77
78 or more

Source: U.S. Census Bureau, International Data Base, accessed on May 27, 2008.

Figure 2-1.

Young Children and Older People as a Percentage of Global Population: 1950 to 2050



Source: United Nations Department of Economic and Social Affairs, 2007b.

Figure 1. Total fertility rate and life expectancy at birth: world, 1950-2050

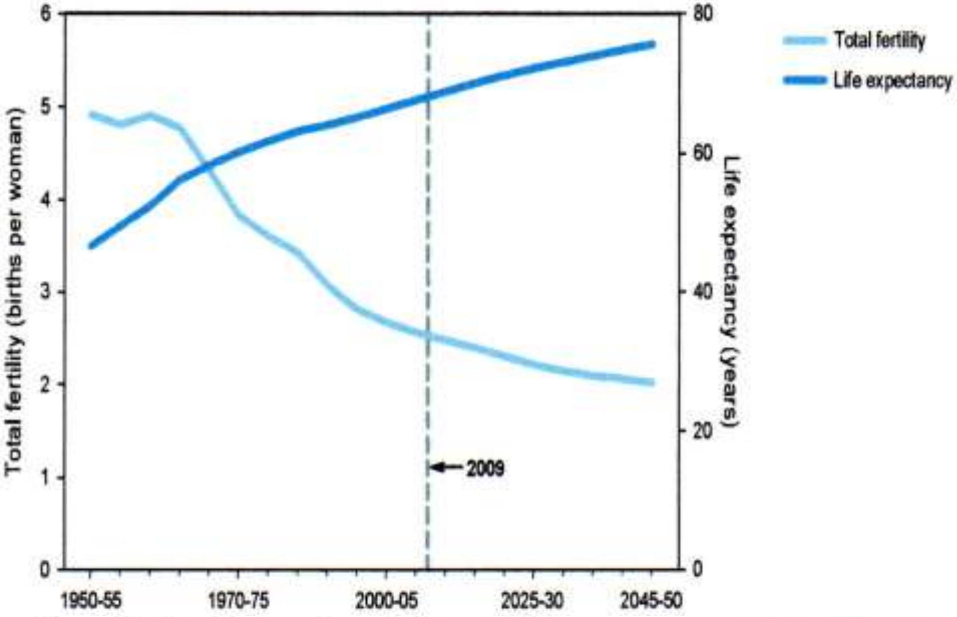


Figure 13. Median age of the population: world and development regions, 1950-2050
(years)

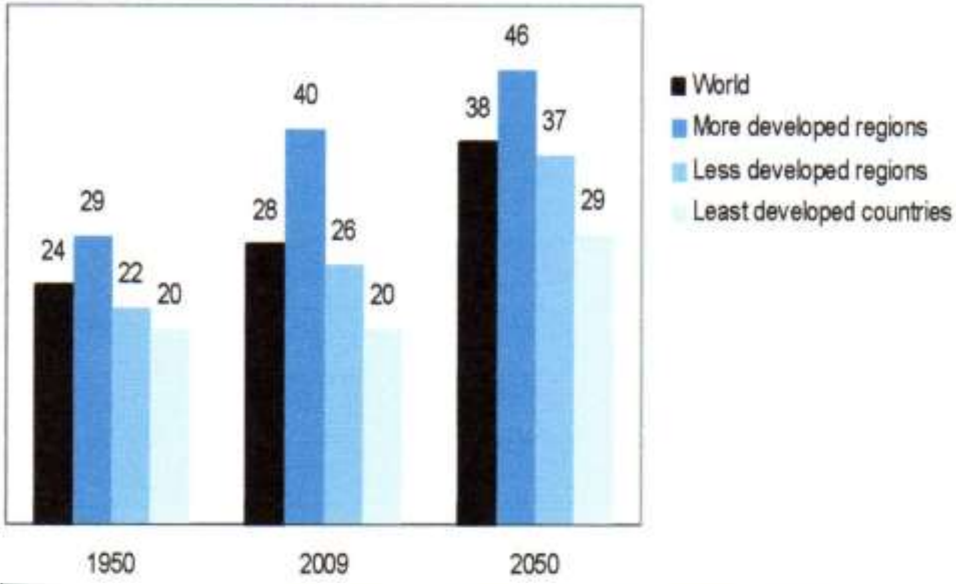


Figure 20. Distribution of population aged 60 or over by age: world, 1950-2050

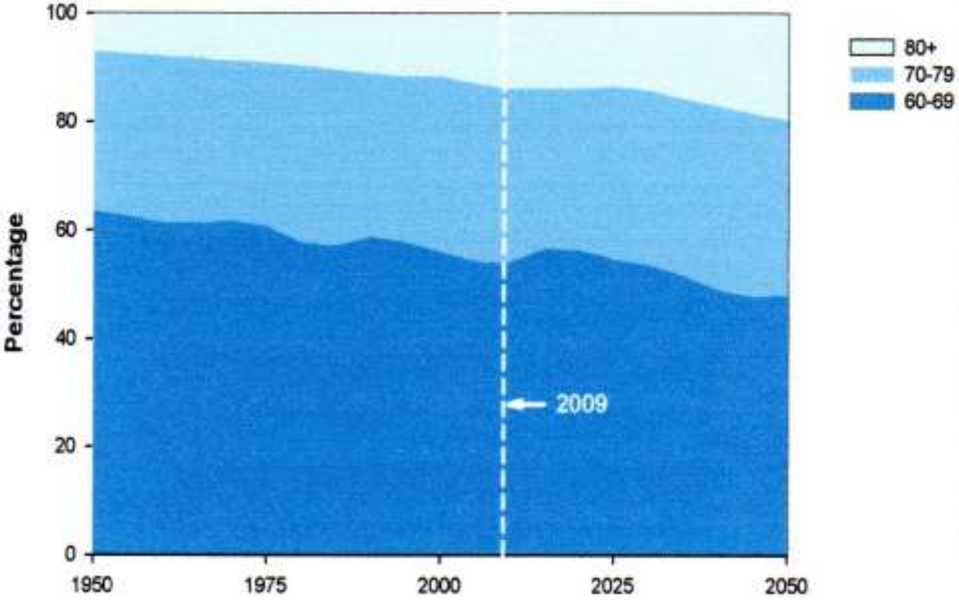
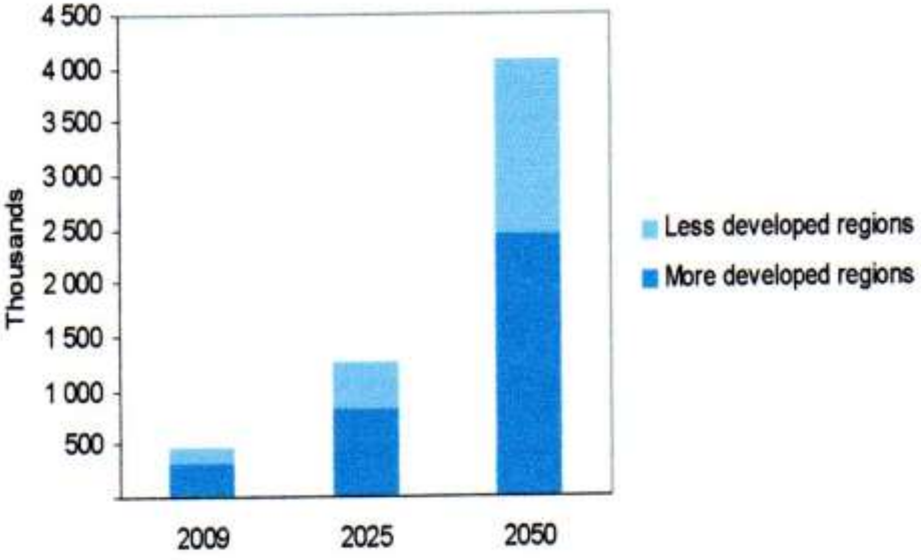


Figure 23. Distribution of world centenarians by development regions, 2009-2050



Preventing CHRONIC DISEASES a vital investment

World Health Organization

CHRONIC DISEASES ARE THE MAJOR CAUSE OF DEATH IN ALMOST ALL COUNTRIES

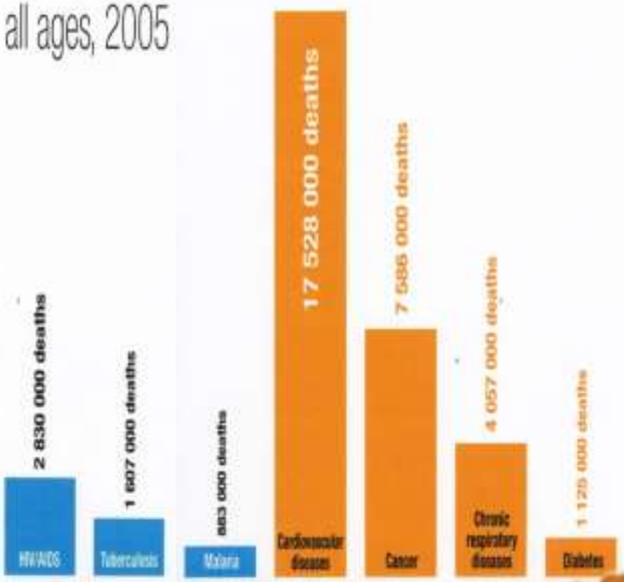
Chronic diseases include heart disease, stroke, cancer, chronic respiratory diseases and diabetes. Visual impairment and blindness, hearing impairment and deafness, oral diseases and genetic disorders are other chronic conditions that account for a substantial portion of the global burden of disease.

From a projected total of 58 million deaths from all causes in 2005,[1] it is estimated that chronic diseases will account for 35 million, which is double the number of deaths from all infectious diseases (including HIV/AIDS, tuberculosis and malaria), maternal and perinatal conditions, and nutritional deficiencies combined.

[1] The data presented in this overview were estimated by WHO using standard methods to maximize cross-country comparability. They are not necessarily the official statistics of Member States.

35 000 000 people will die from chronic diseases in 2005

Projected global deaths by cause, all ages, 2005

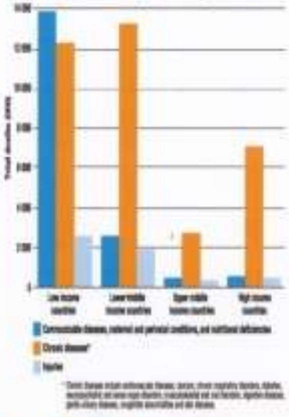


60% of all deaths are due to chronic diseases

THE POOREST COUNTRIES ARE THE WORST AFFECTED

Only 20% of chronic disease deaths occur in high income countries – while 80% occur in low and middle income countries, where most of the world's population lives. As this report will show, even least developed countries such as the United Republic of Tanzania are not immune to the growing problem.

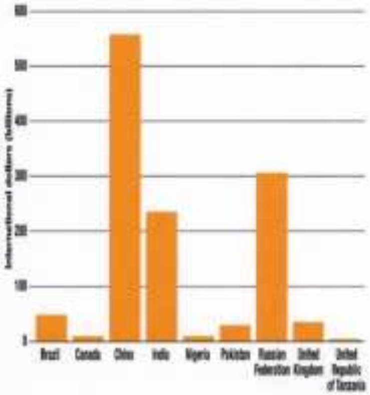
Projected deaths by major cause and World Bank income group, all ages, 2005



*Chronic diseases include cardiovascular diseases, cancer, chronic respiratory disorders, diabetes, neuropsychiatric and sense organ disorders, musculoskeletal and oral disorders, digestive diseases, genito-urinary diseases, congenital abnormalities and skin diseases.

80% of chronic disease deaths occur in low and middle income countries

Projected foregone national income due to heart disease, stroke and diabetes in selected countries, 2005–2015



THE PROBLEM HAS SERIOUS IMPACT

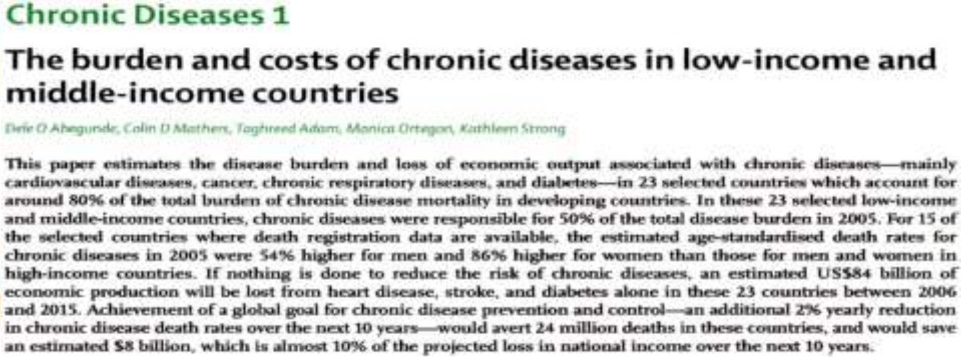
The burden of chronic disease:

- has major adverse effects on the quality of life of affected individuals;
- causes premature death;
- creates large adverse – and underappreciated – economic effects on families, communities and societies in general.

$558 billion

The estimated amount China will forego in national income over the next 10 years as a result of premature deaths caused by heart disease, stroke and diabetes

CHRONIC DISEASE



Chronic Diseases 1

The burden and costs of chronic diseases in low-income and middle-income countries

Dele O Abegunde, Colin D Mathers, Taghreed Adam, Monica Ortegon, Kathleen Strong

This paper estimates the disease burden and loss of economic output associated with chronic diseases—mainly cardiovascular diseases, cancer, chronic respiratory diseases, and diabetes—in 23 selected countries which account for around 80% of the total burden of chronic disease mortality in developing countries. In these 23 selected low-income and middle-income countries, chronic diseases were responsible for 50% of the total disease burden in 2005. For 15 of the selected countries where death registration data are available, the estimated age-standardised death rates for chronic diseases in 2005 were 54% higher for men and 86% higher for women than those for men and women in high-income countries. If nothing is done to reduce the risk of chronic diseases, an estimated US$84 billion of economic production will be lost from heart disease, stroke, and diabetes alone in these 23 countries between 2006 and 2015. Achievement of a global goal for chronic disease prevention and control—an additional 2% yearly reduction in chronic disease death rates over the next 10 years—would avert 24 million deaths in these countries, and would save an estimated $8 billion, which is almost 10% of the projected loss in national income over the next 10 years.

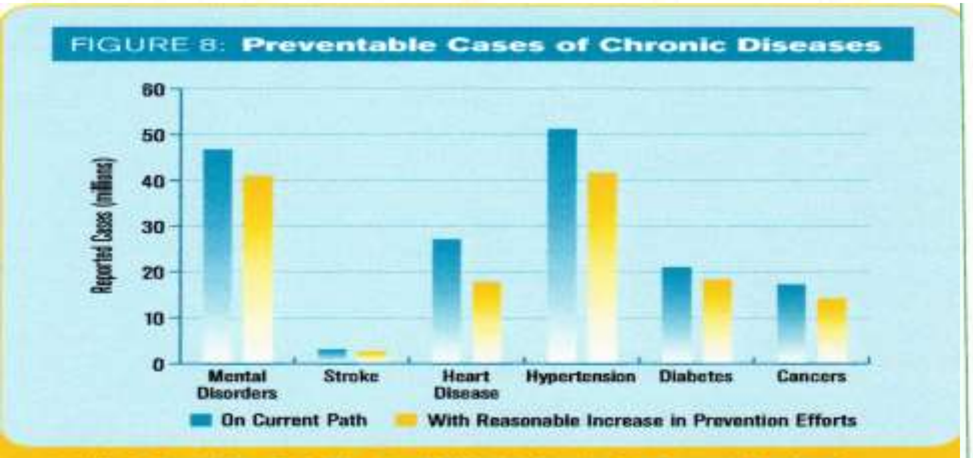


FIGURE 8: **Preventable Cases of Chronic Diseases**

SOURCE: Adapted from R. DeVol, *et al.*, An Unhealthy America: The Economic Burden of Chronic Disease, (Santa Monica, CA: Milken Institute, October 2007), www.milkeninstitute.org/publications/publications.taf?function=detail&ID=38801018&cat=ResRep (accessed 6 February 2009).

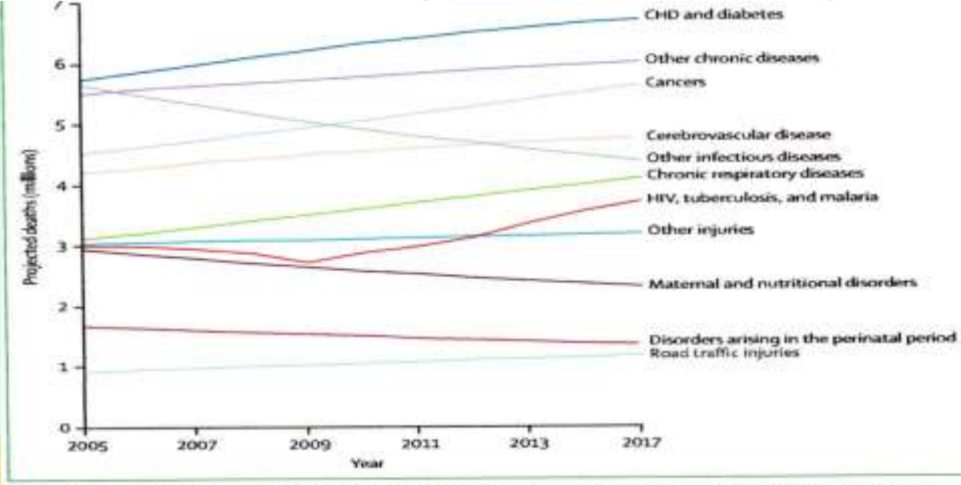
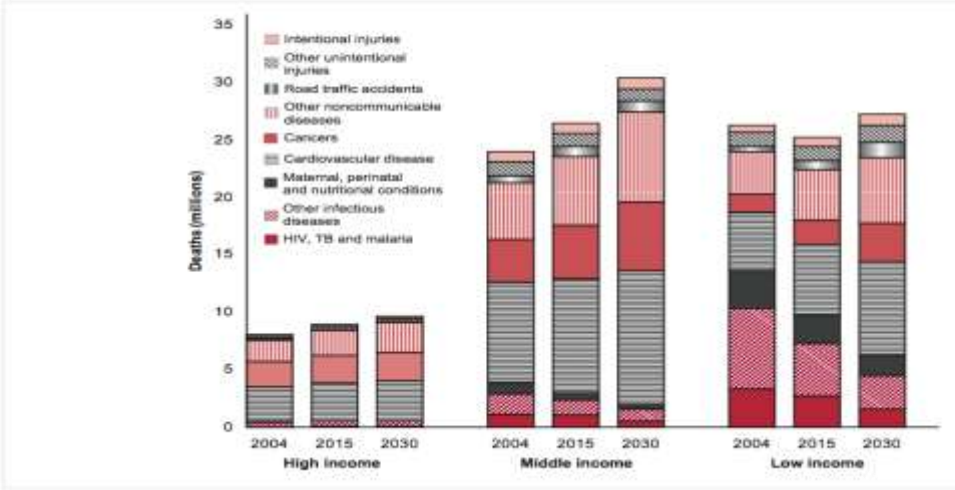
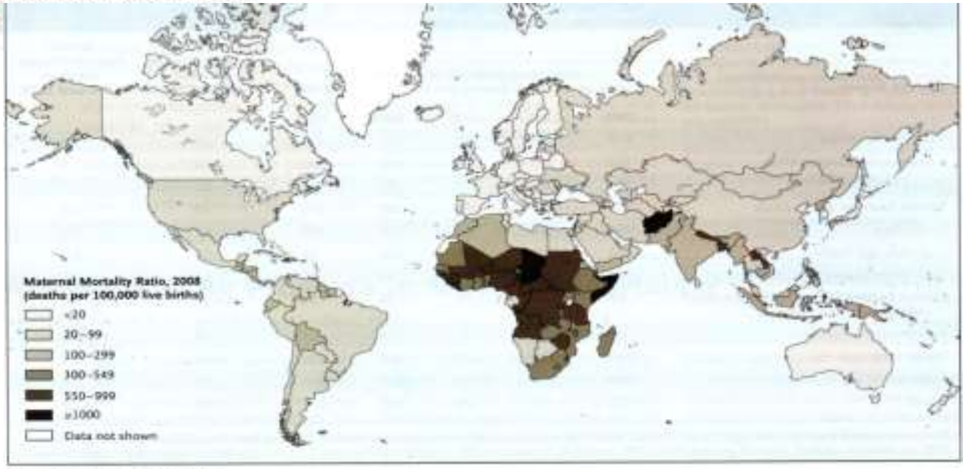


Figure 3: Projected global deaths (millions) for major chronic disease groups and other causes of death in 23 selected countries, 2005–15

CHD=coronary heart disease.

PROJECTED DEATHS BY CAUSE FOR HIGH-, MIDDLE- AND LOW-INCOME COUNTRIES





Maternal Mortality Ratio, 2008
(deaths per 100,000 live births)
<20
20–99
100–299
300–549
550–999
≥1000
Data not shown

Maternal Mortality Ratios, 2008.

Data are the numbers of maternal deaths per 100,000 live births. Data are from the WHO, UNICEF, the United Nations Population Fund, and the World Bank. The boundaries used do not imply official endorsement or acceptance by the United Nations. An interactive map showing changes in maternal mortality ratios over time is available with the full text of this article at NEJM.org.

European
Observatory
on Health Systems and Policies

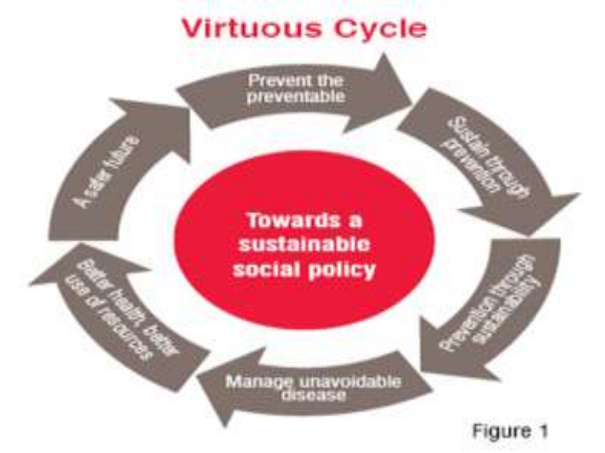

Virtuous Cycle
Prevent the preventable
Sustain through prevention
Prevention through sustainability
Manage unavoidable disease
Better health, better use of resources
A safer future
Towards a sustainable social policy

Figure 1

TACKLING CHRONIC DISEASE IN EUROPE

Strategies, interventions and challenges

Reinhard Busse, Miriam Blümel,
David Scheller-Kreinsen,
Annette Zentner

Observatory Studies Series Nº 20

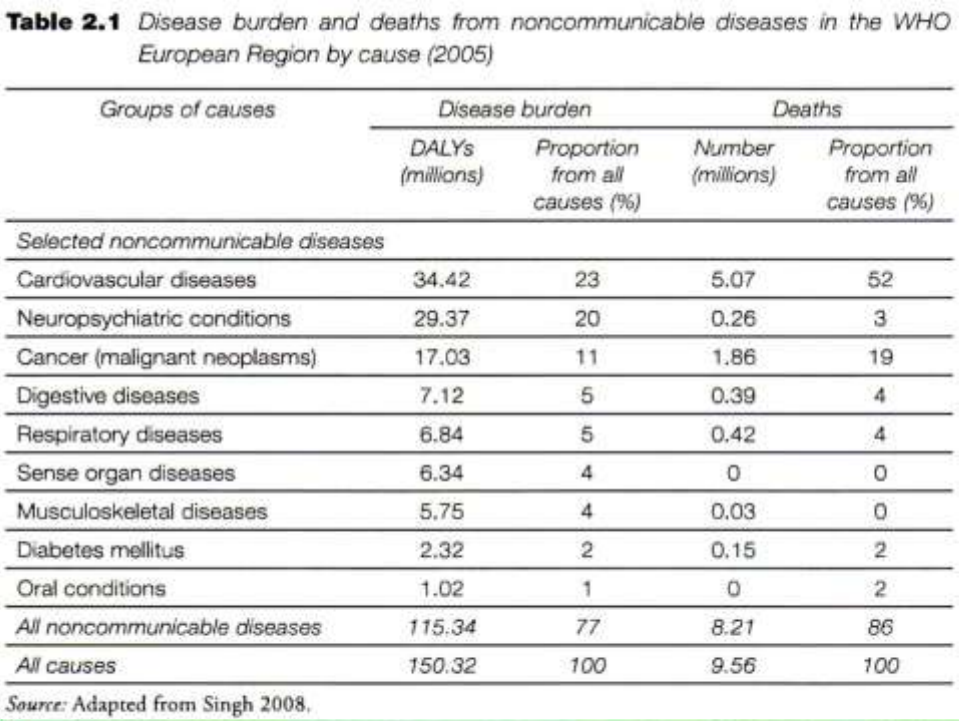
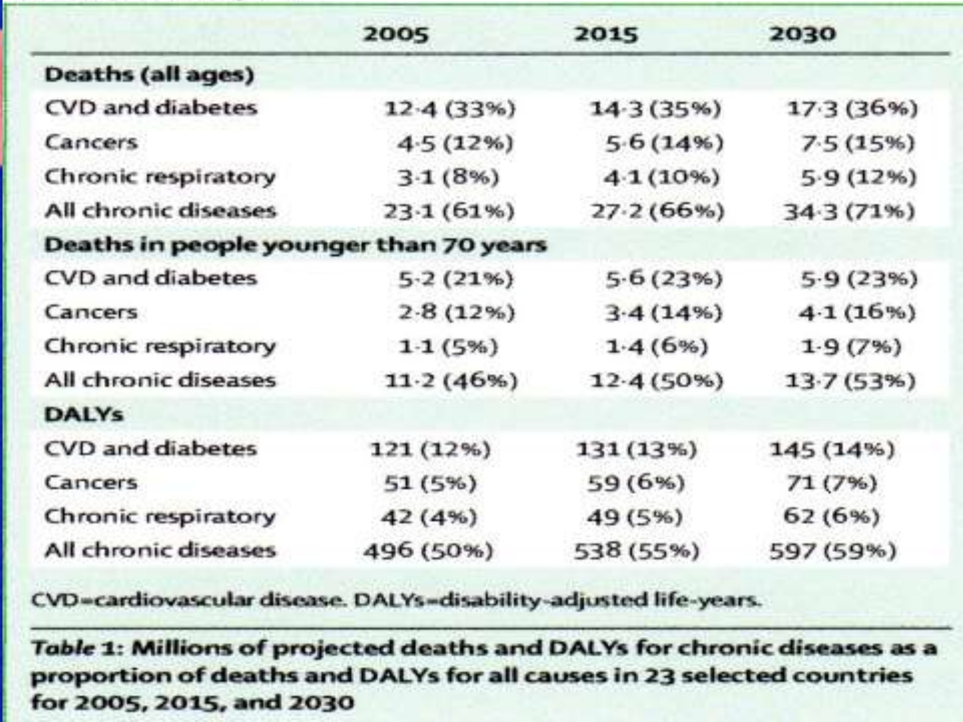


Table 2.1 *Disease burden and deaths from noncommunicable diseases in the WHO European Region by cause (2005)*

Groups of causes	*Disease burden*		*Deaths*	
	DALYs (millions)	*Proportion from all causes (%)*	*Number (millions)*	*Proportion from all causes (%)*
Selected noncommunicable diseases				
Cardiovascular diseases	34.42	23	5.07	52
Neuropsychiatric conditions	29.37	20	0.26	3
Cancer (malignant neoplasms)	17.03	11	1.86	19
Digestive diseases	7.12	5	0.39	4
Respiratory diseases	6.84	5	0.42	4
Sense organ diseases	6.34	4	0	0
Musculoskeletal diseases	5.75	4	0.03	0
Diabetes mellitus	2.32	2	0.15	2
Oral conditions	1.02	1	0	2
All noncommunicable diseases	*115.34*	*77*	*8.21*	*86*
All causes	*150.32*	*100*	*9.56*	*100*

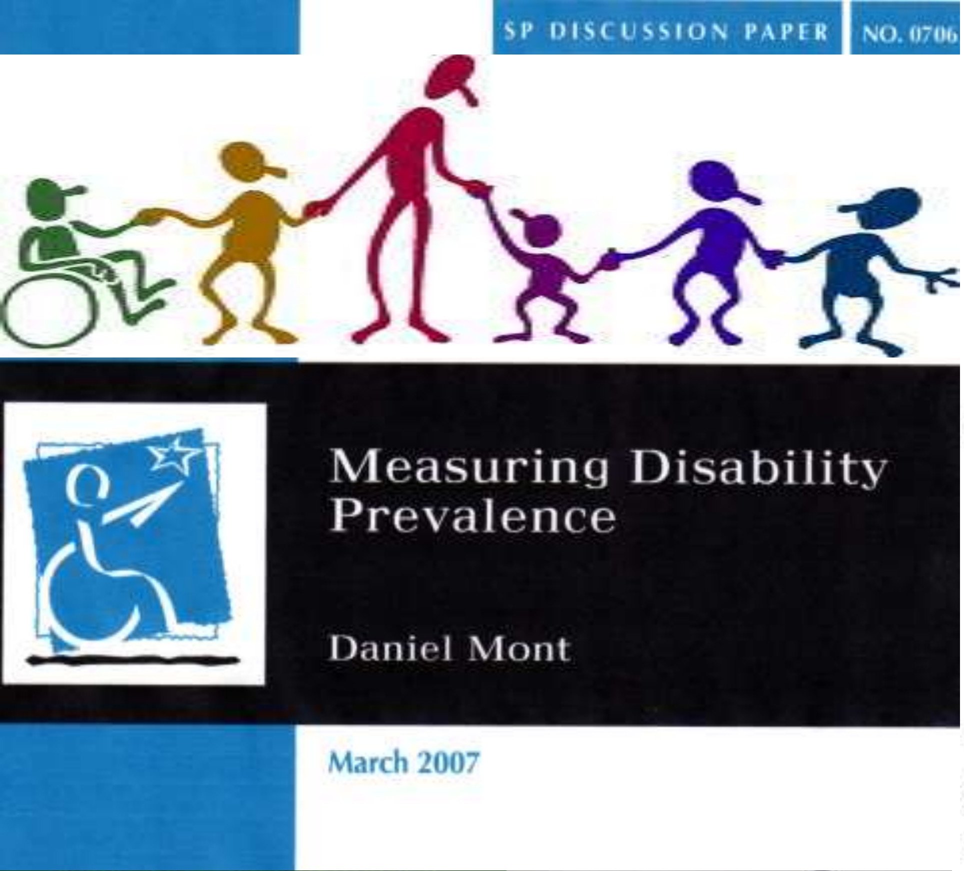
Source: Adapted from Singh 2008.



	2005	2015	2030
Deaths (all ages)			
CVD and diabetes	12·4 (33%)	14·3 (35%)	17·3 (36%)
Cancers	4·5 (12%)	5·6 (14%)	7·5 (15%)
Chronic respiratory	3·1 (8%)	4·1 (10%)	5·9 (12%)
All chronic diseases	23·1 (61%)	27·2 (66%)	34·3 (71%)
Deaths in people younger than 70 years			
CVD and diabetes	5·2 (21%)	5·6 (23%)	5·9 (23%)
Cancers	2·8 (12%)	3·4 (14%)	4·1 (16%)
Chronic respiratory	1·1 (5%)	1·4 (6%)	1·9 (7%)
All chronic diseases	11·2 (46%)	12·4 (50%)	13·7 (53%)
DALYs			
CVD and diabetes	121 (12%)	131 (13%)	145 (14%)
Cancers	51 (5%)	59 (6%)	71 (7%)
Chronic respiratory	42 (4%)	49 (5%)	62 (6%)
All chronic diseases	496 (50%)	538 (55%)	597 (59%)

CVD=cardiovascular disease. DALYs=disability-adjusted life-years.

***Table* 1: Millions of projected deaths and DALYs for chronic diseases as a proportion of deaths and DALYs for all causes in 23 selected countries for 2005, 2015, and 2030**



SP DISCUSSION PAPER NO. 0706

Measuring Disability Prevalence

Daniel Mont

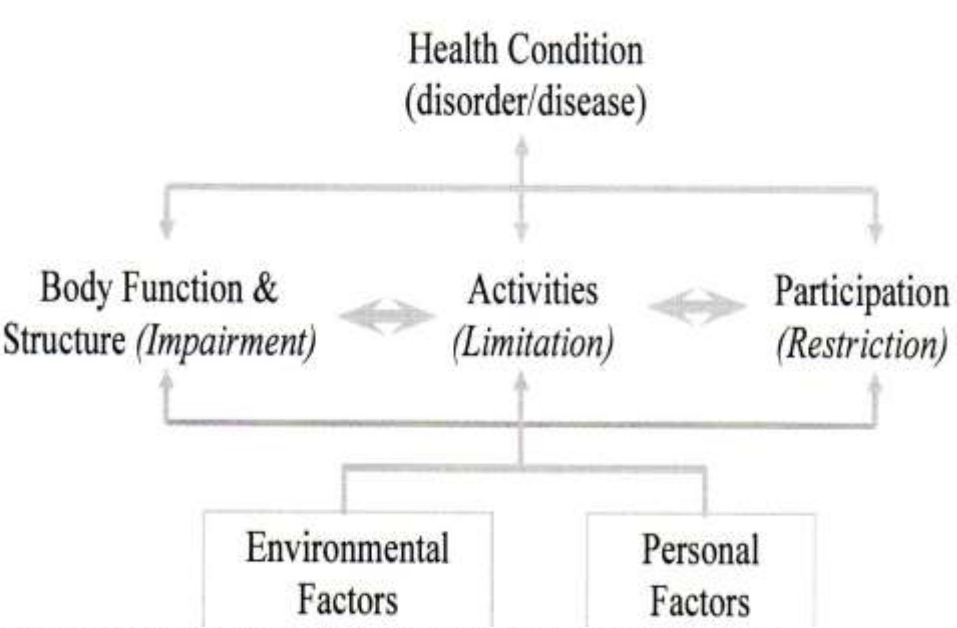
March 2007

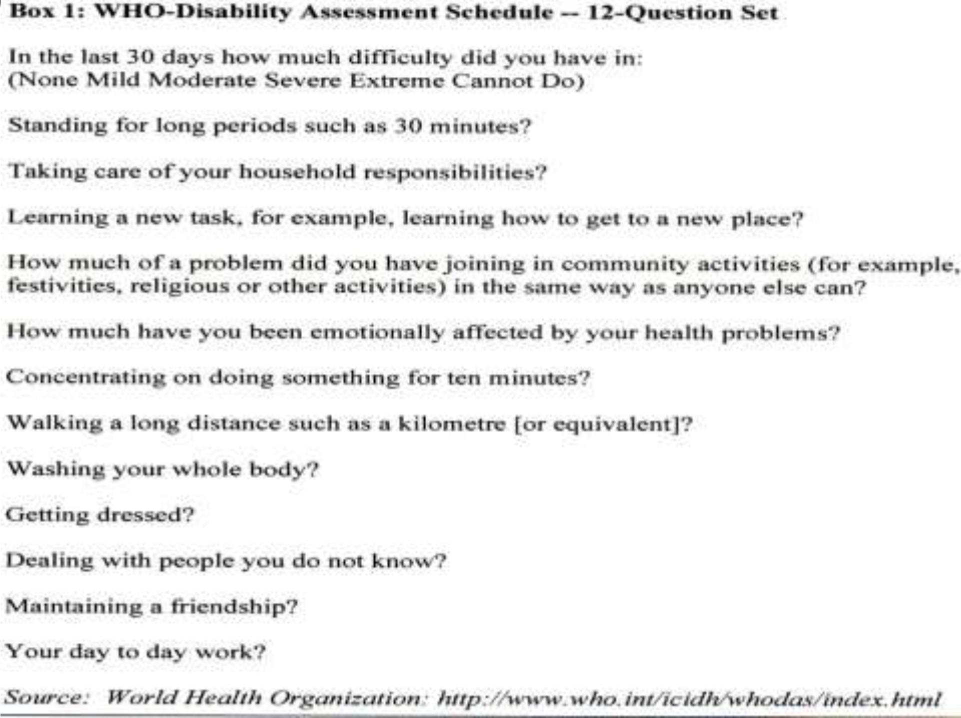
Blogging Against Disablism

TOGETHER WE CAN
TOGETHER WE WILL

Social Protection
THE WORLD BANK

Figure 1: The ICF Model


Health Condition (disorder/disease)
Body Function & Structure (Impairment)
Activities (Limitation)
Participation (Restriction)
Environmental Factors
Personal Factors



Box 1: WHO-Disability Assessment Schedule -- 12-Question Set

In the last 30 days how much difficulty did you have in:
(None Mild Moderate Severe Extreme Cannot Do)

Standing for long periods such as 30 minutes?

Taking care of your household responsibilities?

Learning a new task, for example, learning how to get to a new place?

How much of a problem did you have joining in community activities (for example, festivities, religious or other activities) in the same way as anyone else can?

How much have you been emotionally affected by your health problems?

Concentrating on doing something for ten minutes?

Walking a long distance such as a kilometre [or equivalent]?

Washing your whole body?

Getting dressed?

Dealing with people you do not know?

Maintaining a friendship?

Your day to day work?

Source: World Health Organization: http://www.who.int/icidh/whodas/index.html

Current and future worldwide prevalence of dependency, its relationship to total population, and dependency ratios

Rowan H. Harwood,[1] Avan Aihie Sayer,[2] & Miriam Hirschfeld[3]

Objective To estimate the number of people worldwide requiring daily assistance from another person in carrying out health, domestic or personal tasks.

Methods Data from the Global Burden of Disease Study were used to calculate the prevalence of severe levels of disability, and consequently, to estimate dependency. Population projections were used to forecast changes over the next 50 years.

Findings The greatest burden of dependency currently falls in sub-Saharan Africa, where the "dependency ratio" (ratio of dependent people to the population of working age) is about 10%, compared with 7–8% elsewhere. Large increases in prevalence are predicted in sub-Saharan Africa, the Middle East, Asia and Latin America of up to 5-fold or 6-fold in some cases. These increases will occur in the context of generally increasing populations, and dependency ratios will increase modestly to about 10%. The dependency ratio will increase more in China (14%) and India (12%) than in other areas with large prevalence increases. Established market economies, especially Europe and Japan, will experience modest increases in the prevalence of dependency (30%), and in the dependency ratio (up to 10%). Former Socialist economies of Europe will have static or declining numbers of dependent people, but will have large increases in the dependency ratio (up to 13%).

Conclusion Many countries will be greatly affected by the increasing number of dependent people and will need to identify the human and financial resources to support them. Much improved collection of data on disability and on the needs of caregivers is required. The prevention of disability and provision of support for caregivers needs greater priority.

Keywords Dependency (Psychology); Population dynamics; Aging; Chronic disease; Disabled persons; Health services needs and demand; Activities of daily living; Cost of illness; Forecasting (*source: MeSH, NLM*).

Mots clés Dépendance (Psychologie); Dynamique population; Vieillissement; Maladie chronique; Handicapé; Besoins et demande services santé; Activité quotidienne; Coût maladie; Prévision (*source: MeSH, INSERM*).

Palabras clave Dependencia (Psicología); Dinámica de población; Envejecimiento; Enfermedad crónica; Evaluación de la incapacidad; Necesidades y demanda de servicios de salud; Actividades cotidianas; Costo de la enfermedad; Predicción (*fuente: DeCS, BIREME*).

الكلمات المفتاحية: نوعية الحياة؛ الحالة الصحية؛ مؤشرات الحالة الصحية؛ قياس الألم؛ الإفصاح الذاتي عن المعلومات؛ العوامل الاجتماعية الاقتصادية؛
الخصائص الثقافية؛ تحليل التحوُّف؛ جنوب أفريقيا. (المصدر: رؤوس الموضوعات الطبية- المكتب الإقليمي لشرق المتوسط)

Bulletin of the World Health Organization 2004;82:251-258.

Voir page 256 le résumé en français. En la página 257 figura un resumen en español.

يمكن الاطلاع على الملخص بالعربية في صفحة 257.

Table 1. **Twenty-two indicator conditions used to determine disability severity scores, with their disability classes, and the frequency of care needs as rated by health professionals**

Short description of condition	Disability class	Median dependency rating[a]
Active psychosis	7	1
Dementia	7	1
Quadriplegia	7	1
Severe continuous migraine	7	1
Blind	6	1
Paraplegic	6	1
Severe depression	6	1
Down syndrome	5	1
Mild mental retardation	5	1
Recto-vaginal fistula	5	2
Below-knee amputation	4	2
Deafness	4	2
Infertility	3	3
Fracture radius	3	2
Rheumatoid arthritis	3	2
Impotence	3	3
Angina after walking 50 m	3	2
Severe continuous sore throat	2	2.5
Anaemia	2	2
Diarrhoea	2	2
Severe thinness	1	2.5
Vitiligo	1	3

[a] 1, daily help; 2, weekly help; 3, less than weekly help.

JOEM • Volume 47, Number 6, June 2005

FAST TRACK ARTICLE

The Assessment of Chronic Health Conditions on Work Performance, Absence, and Total Economic Impact for Employers

James J. Collins, PhD
Catherine M. Baase, MD
Claire E. Sharda, RN, MBA
Ronald J. Ozminkowski, PhD
Sean Nicholson, PhD
Gary M. Billotti, MS
Robin S. Turpin, PhD
Michael Olson, PhD
Marc L. Berger, MD

C

Objective: *The objective of this study was to determine the prevalence and estimate total costs for chronic health conditions in the U.S. workforce for the Dow Chemical Company (Dow).* ***Methods:*** *Using the Stanford Presenteeism Scale, information was collected from workers at five locations on work impairment and absenteeism based on self-reported "primary" chronic health conditions. Survey data were merged with employee demographics, medical and pharmaceutical claims, smoking status, biometric health risk factors, payroll records, and job type.* ***Results:*** *Almost 65% of respondents reported having one or more of the surveyed chronic conditions. The most common were allergies, arthritis/joint pain or stiffness, and back or neck disorders. The associated absenteeism by chronic condition ranged from 0.9 to 5.9 hours in a 4-week period, and on-the-job work impairment ranged from a 17.8% to 36.4% decrement in ability to function at work. The presence of a chronic condition was the most important determinant of the reported levels of work impairment and absence after adjusting for other factors (P < 0.000). The total cost of chronic conditions was estimated to be 10.7% of the total labor costs for Dow in the United States; 6.8% was attributable to work impairment alone.* ***Conclusion:*** *For all chronic conditions studied, the cost associated with performance based work loss or "presenteeism" greatly exceeded the combined costs of absenteeism and medical treatment combined.* (J Occup Environ Med. *2005;47:547–557*)

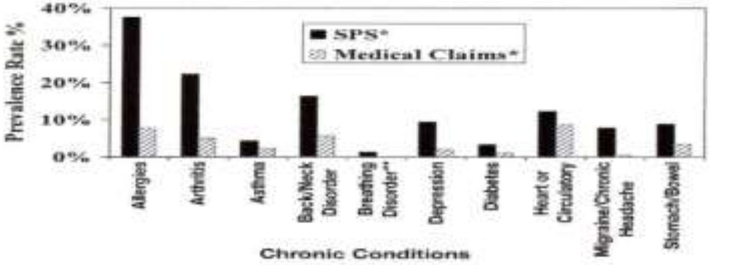


Fig. 2. *Prevalence rates from the SPS of any chronic conditions in the last 4 weeks and chronic conditions reported from medical and pharmacy claims in the last year. **Breathing disorders (bronchitis and emphysema).

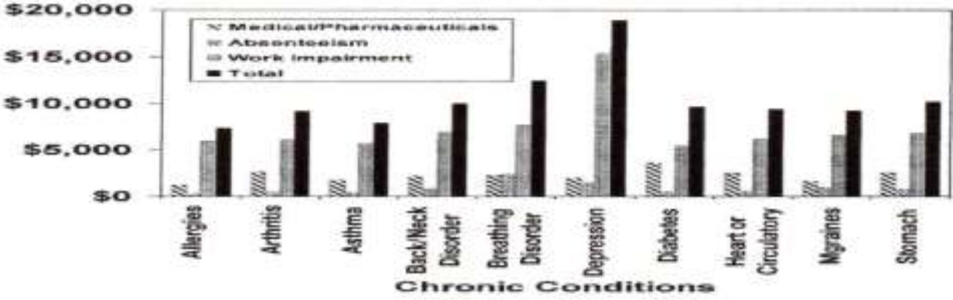
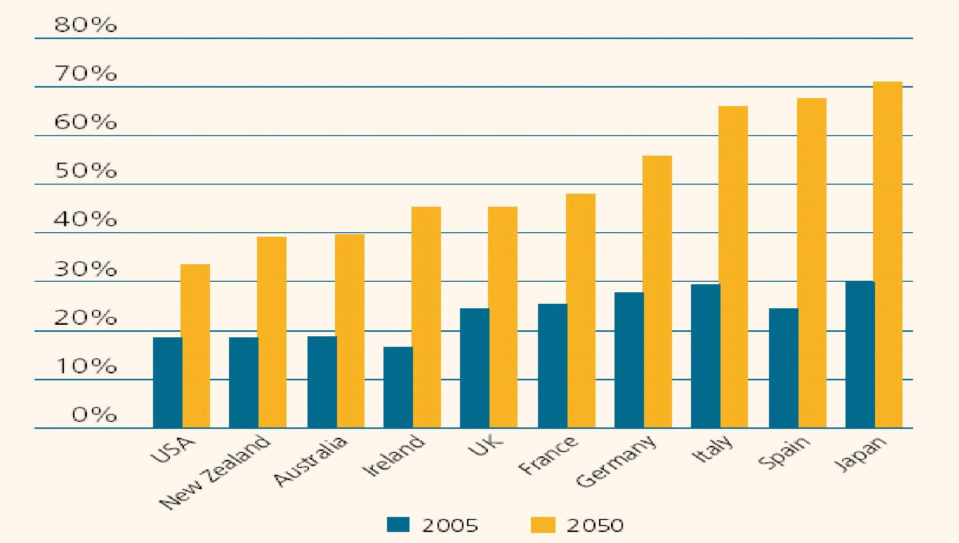


Fig. 3. Chronic Conditions.



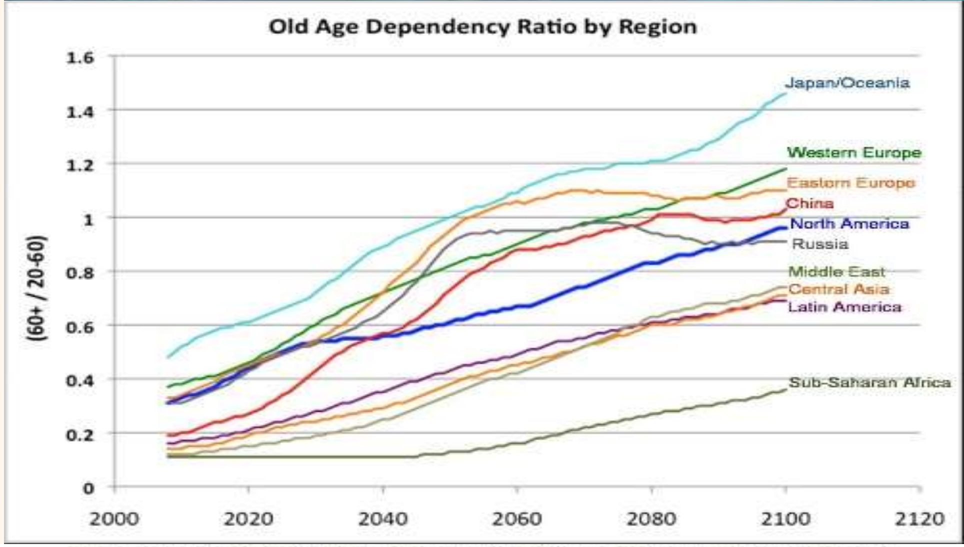

Old Age Dependency Ratio by Region

Figure 16. Old-age dependency ratio: major areas, 2009 and 2050

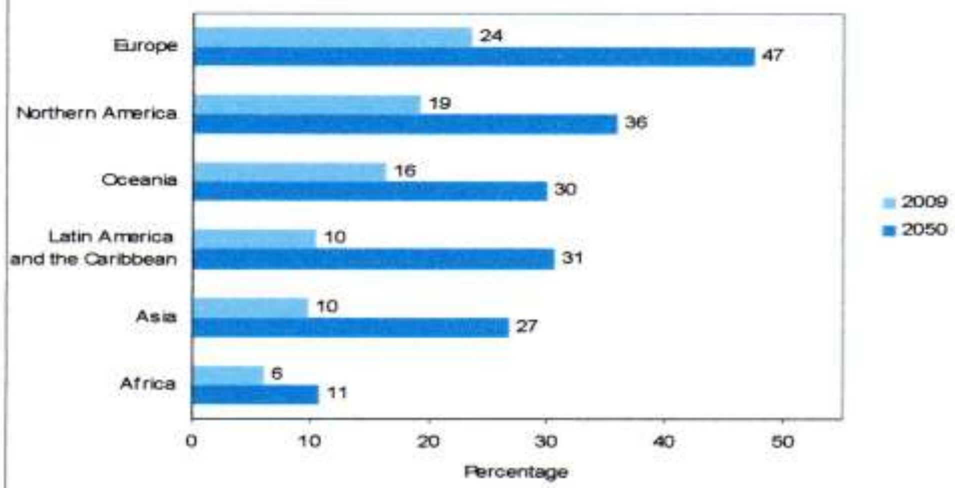


Figure 14. Total dependency ratio: world and development regions, 1950-2050

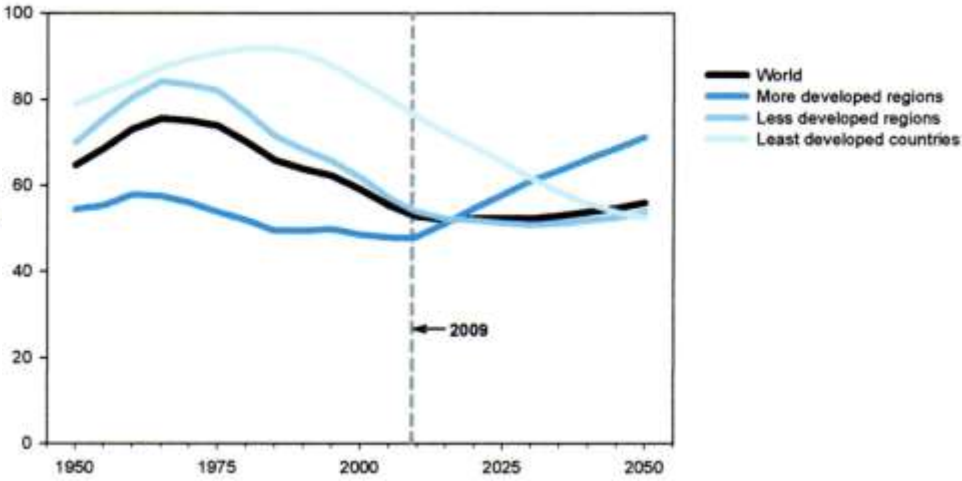
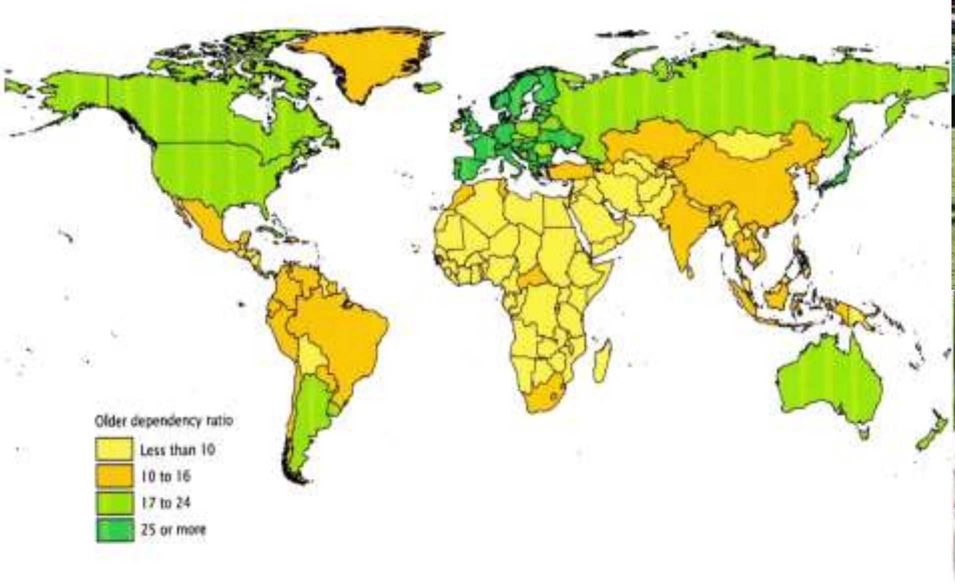


Figure 7-2.

Older Dependency Ratio: 2008

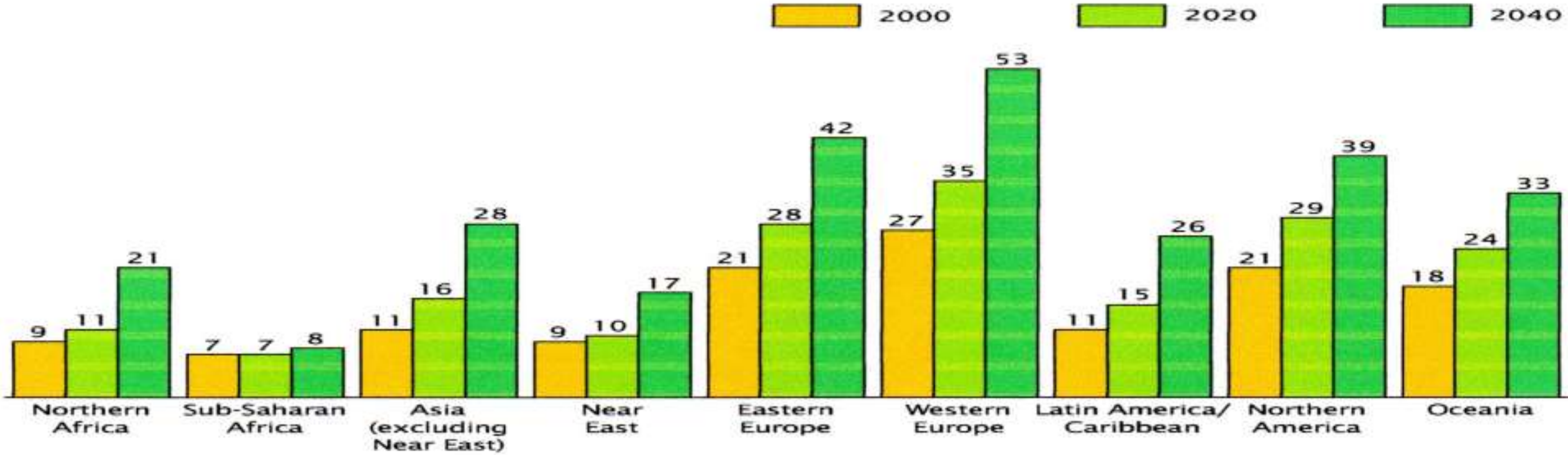


Older dependency ratio
Less than 10
10 to 16
17 to 24
25 or more

Note: Older dependency ratio is the number of people aged 65 and over per 100 people aged 20 to 64.
Source: U.S. Census Bureau, International Data Base, accessed on May 27, 2008.

Figure 7-3.

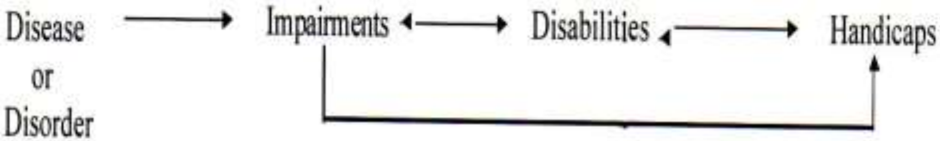
Older Dependency Ratio for World Regions: 2000, 2020, and 2040



Note: Older dependency ratio is the number of people aged 65 and over per 100 people aged 20 to 64.
Source: U.S. Census Bureau, International Data Base, accessed on January 10, 2008.

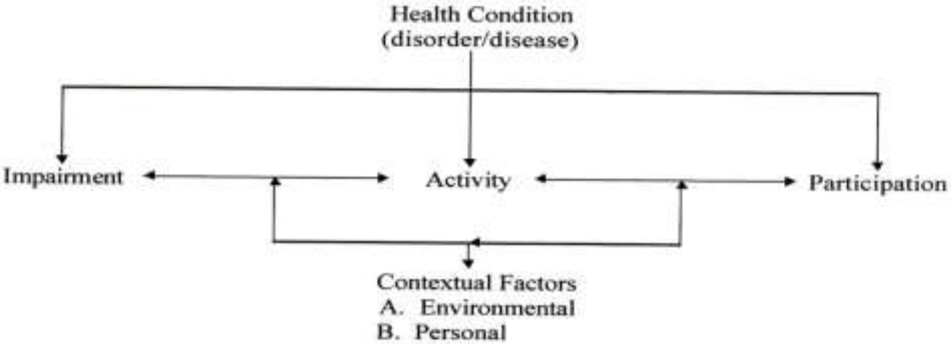
DISABILITY ISSUES, TRENDS AND RECOMMENDATIONS FOR THE WORLD BANK (FULL TEXT AND ANNEXES)

Figure 1.1: The Disablement Phenomena as Conceptualized in the Original ICIDH


Disease
or
Disorder
Impairments
Disabilities
Handicaps

Source: World Health Organization, *ICIDH-2*. 11.

Figure 1.2: Current Understanding of Interactions within ICIDH-2 Dimensions

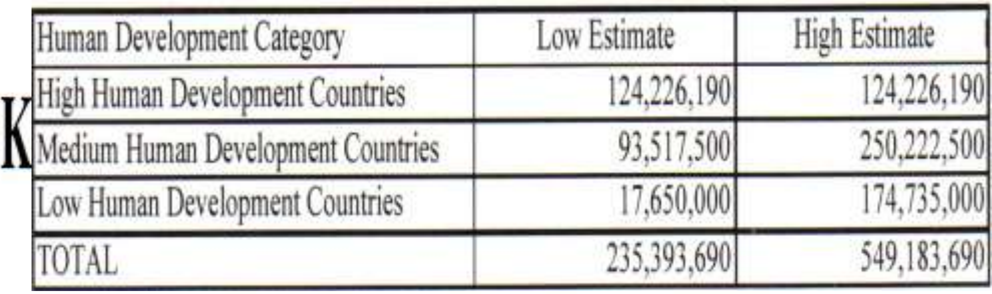

Health Condition
(disorder/disease)
Impairment
Activity
Participation
Contextual Factors
A. Environmental
B. Personal

Source: World Health Organization, *ICIDH-2*. 12.

ROBERT L. METTS, PH.D.

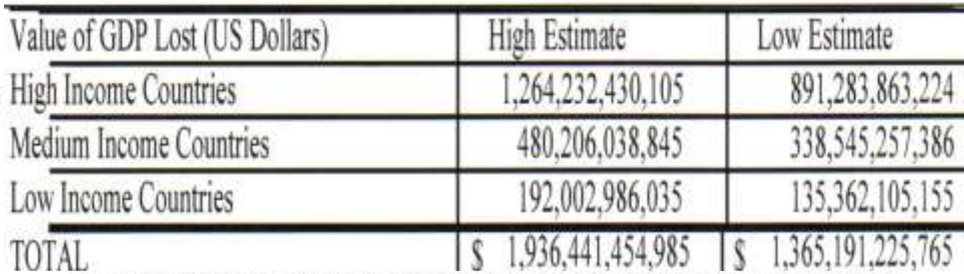
FEBRUARY, 2000

Table 1.1: Estimated Ranges of Populations of People with Disabilities



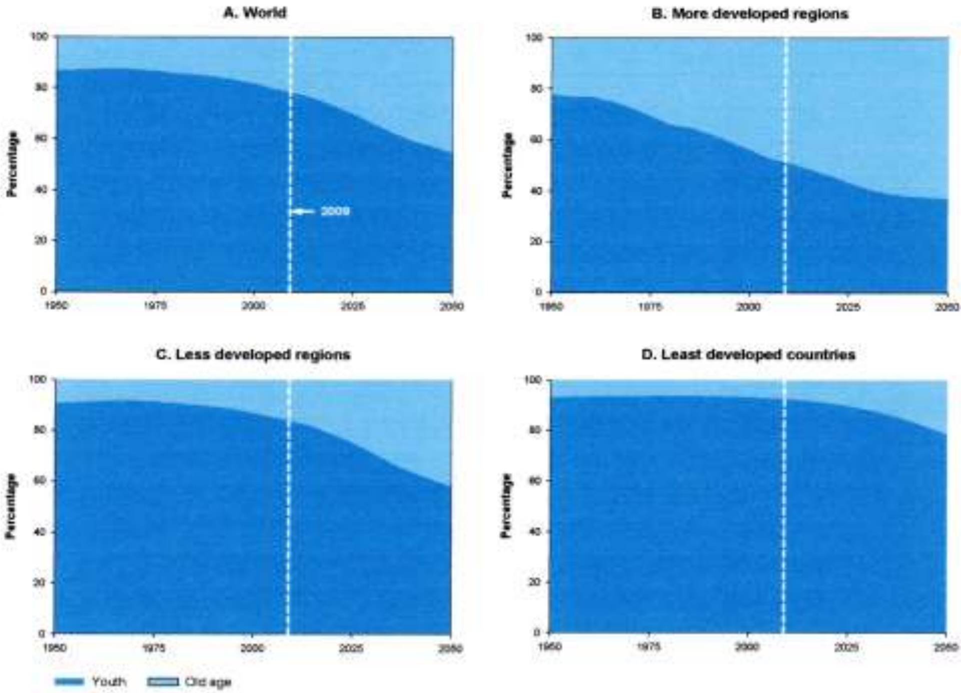
Human Development Category	Low Estimate	High Estimate
High Human Development Countries	124,226,190	124,226,190
Medium Human Development Countries	93,517,500	250,222,500
Low Human Development Countries	17,650,000	174,735,000
TOTAL	235,393,690	549,183,690

Table 1.2: Total Annual Value of GDP Lost Due to Disability



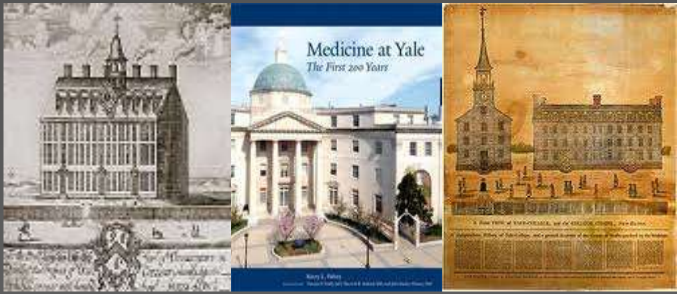
Value of GDP Lost (US Dollars)	High Estimate	Low Estimate
High Income Countries	1,264,232,430,105	891,283,863,224
Medium Income Countries	480,206,038,845	338,545,257,386
Low Income Countries	192,002,986,035	135,362,105,155
TOTAL	$ 1,936,441,454,985	$ 1,365,191,225,765

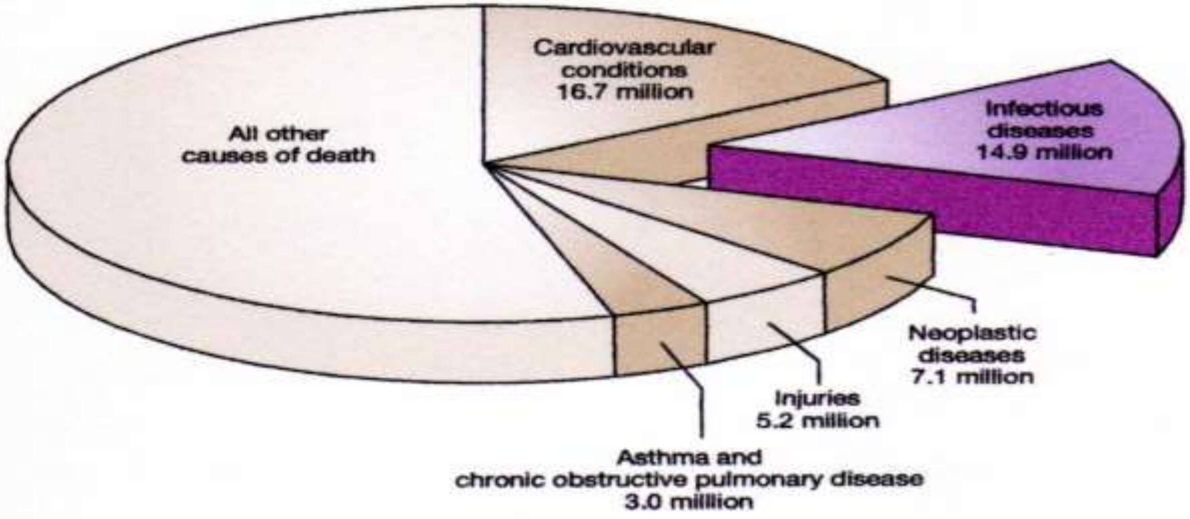
Figure 15. Composition of the total dependency ratio: world and development regions, 1950-2050

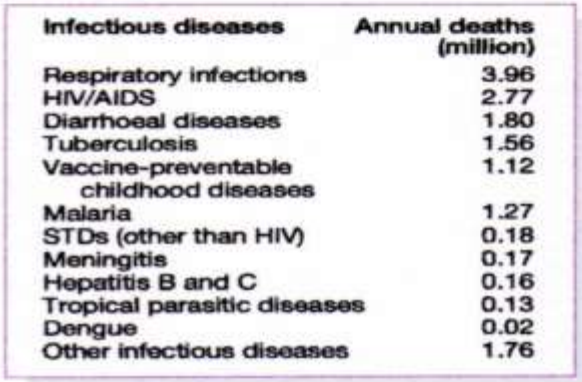


Futurologia Falaciosa

- "… the war against infectious diseases is over, because we have won…" (sic.)(US Surgeon General, 1967)
- "… no new diseases are going to be discovered …" (sic.) (L. Thomas Dean of Yale Medical School, 1976)
- WHO (2008)
  - D. Infecciosas 15.000.000 mortes / ano
    - 2ª causa de Mortalidade Mundial
      - 1ª Causa nos Países em Desenvolvimento
  - Novos Agentes Patogénicos para a Espécie Humanas descritos nos últimos 40 anos: 50







Infectious diseases	Annual deaths (million)
Respiratory infections	3.96
HIV/AIDS	2.77
Diarrhoeal diseases	1.80
Tuberculosis	1.56
Vaccine-preventable childhood diseases	1.12
Malaria	1.27
STDs (other than HIV)	0.18
Meningitis	0.17
Hepatitis B and C	0.16
Tropical parasitic diseases	0.13
Dengue	0.02
Other infectious diseases	1.76

Figure 2 Leading causes of death worldwide. About 15 million (>25%) of 57 million annual deaths worldwide are the direct result of infectious disease. Figures published by the World Health Organization (see http://www.who.int/whr/en and ref. 7).

"...nowadays we see maladies unknown to our forefathers springing up around us".

Ullrich von Hutten, 1519[36]

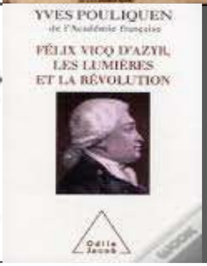
"After our fathers and grandfathers succumbed... dogs and vultures devoured the bodies. So it was that we became orphans, oh, my sons! So we became when we were young. All of us were thus. We were born to die!"

Cakchiquel Mayan on the hueyzahuatl epidemic of 1520–21[44]

VOCABVLARIO

"If there is, within medicine, any subject worthy of... investigation...it is, without doubt, epidemic pestilential diseases, obscure and hidden in their causes, rapid in their progression, frightening in their symptoms, and deadly in their consequences."

Félix Vicq-d'Azyr, 1776[51]


YVES POULIQUEN
de l'Académie française
FÉLIX VICQ D'AZYR,
LES LUMIÈRES
ET LA RÉVOLUTION
Odile Jacob

"France and its capital have been visited by a fearful pestilence...It comes without any known cause; it disappears without any revealed reason. The bodies of its victims are in vain examined; death is interrogated: death betrays nothing."

Louis-François Benoiston de Châteauneuf, 1834[69]

15
DEUTSCHE POST
BERLIN

"Not a single year passes without [which]...we can tell the world: here is a new disease!"

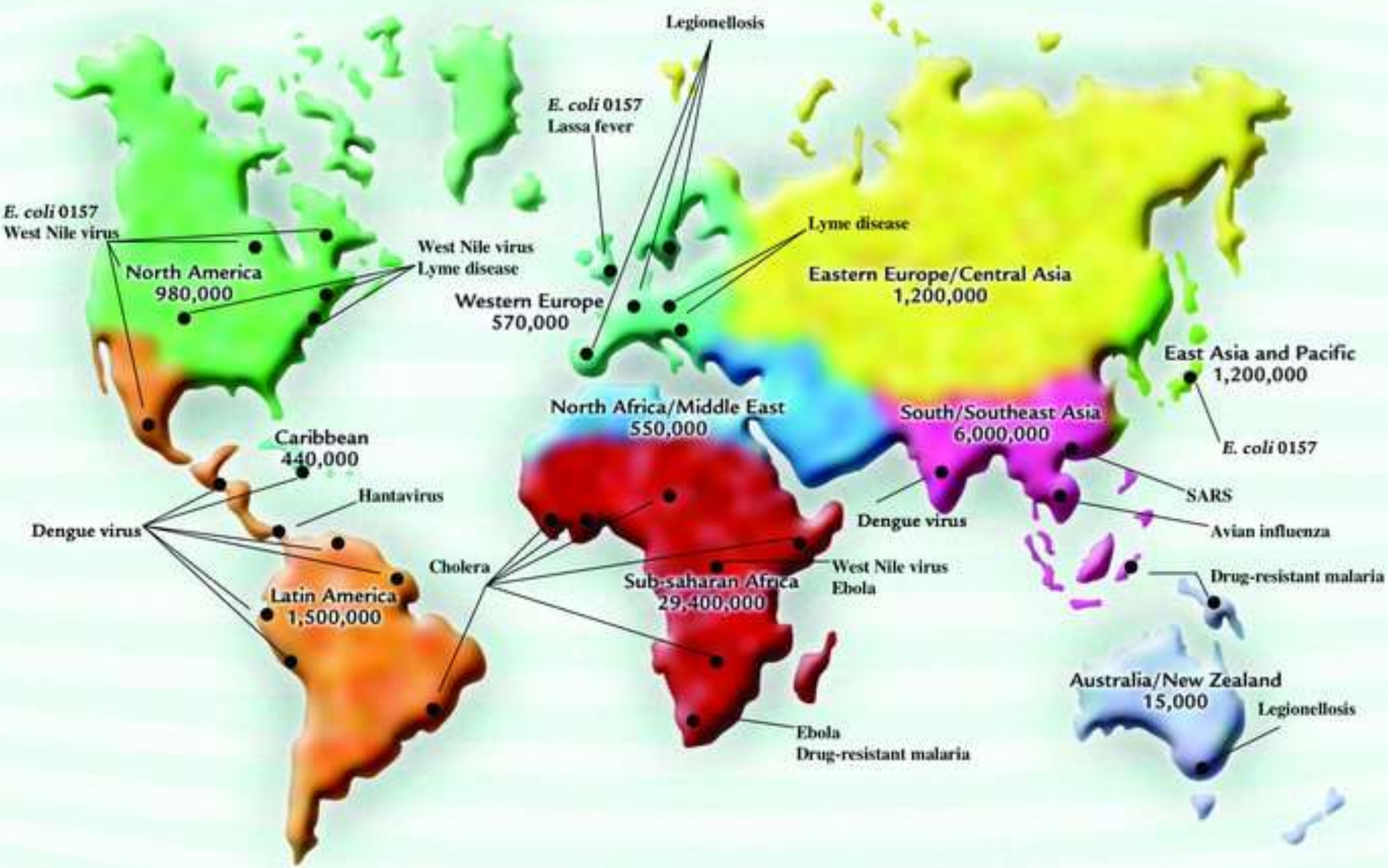
Rudolf Virchow, 1867[1]

Joshua Lederberg
(1925 - 2008)

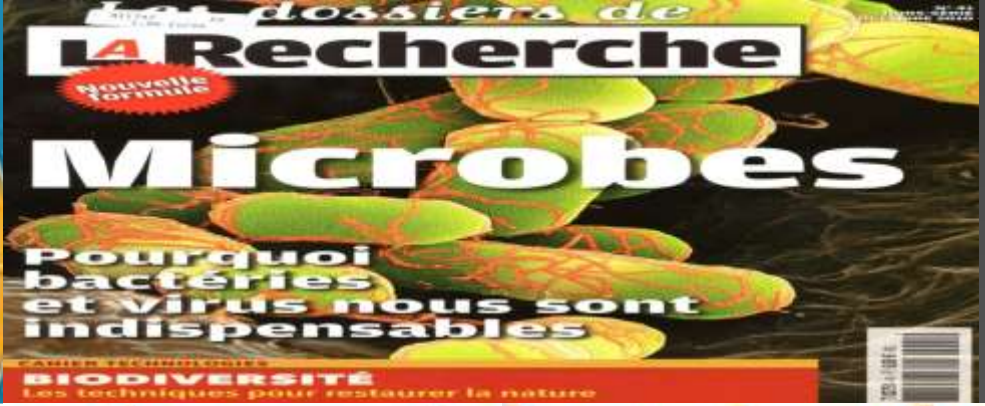
"The future of microbes and mankind will probably unfold as episodes of a suspense thriller that could be entitled Our wits versus their genes".

J. Lederberg, Science 2000[33]

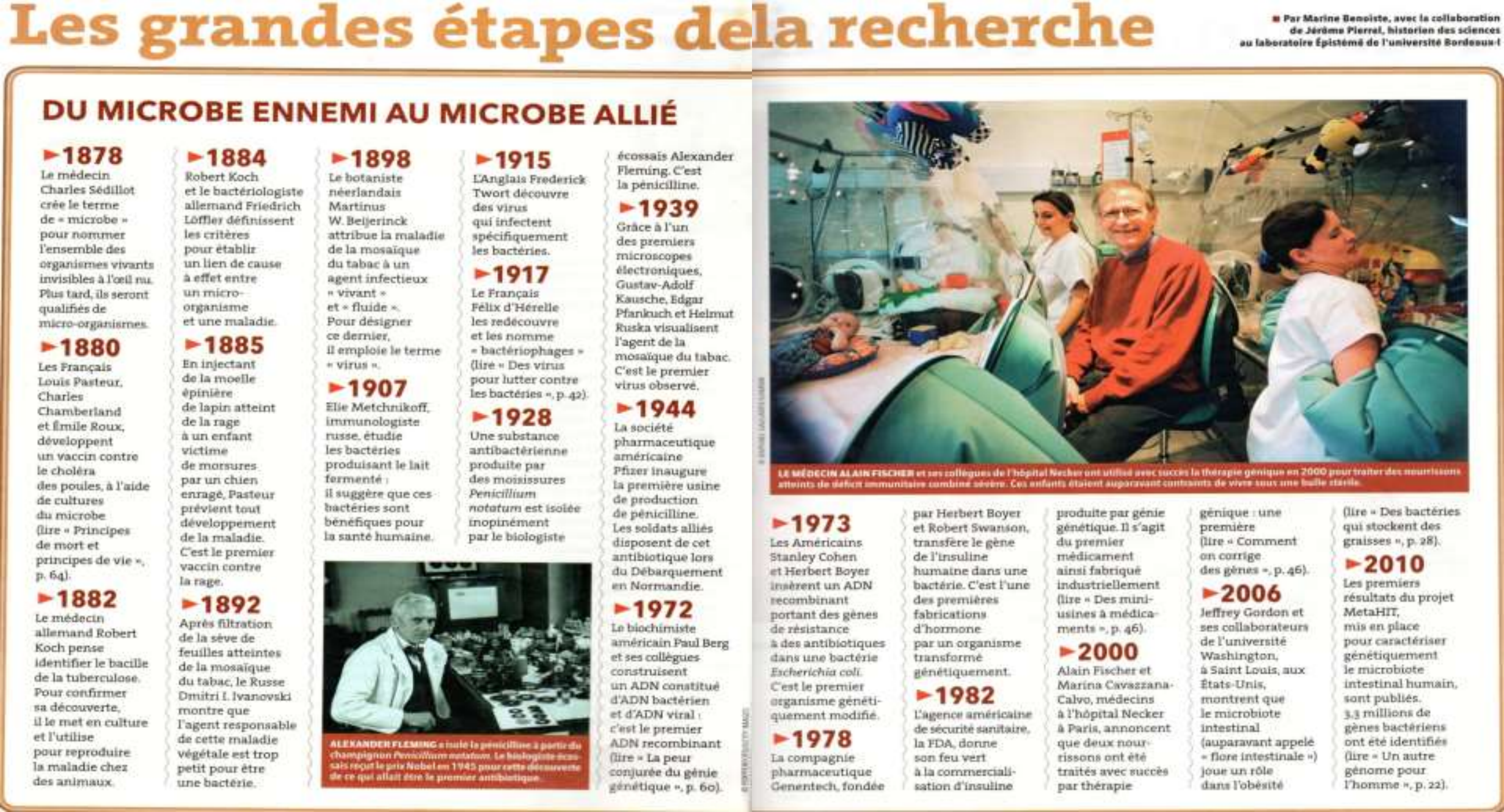
EMERGING INFECTIONS
Microbial Threats to Health in the United States


Legionellosis
E. coli 0157
Lassa fever
E. coli 0157
West Nile virus
North America
980,000
West Nile virus
Lyme disease
Western Europe
570,000
Lyme disease
Eastern Europe/Central Asia
1,200,000
East Asia and Pacific
1,200,000
North Africa/Middle East
550,000
South/Southeast Asia
6,000,000
E. coli 0157
Caribbean
440,000
Hantavirus
Dengue virus
SARS
Dengue virus
Avian influenza
Cholera
West Nile virus
Ebola
Drug-resistant malaria
Latin America
1,500,000
Sub-saharan Africa
29,400,000
Australia/New Zealand
15,000
Legionellosis
Ebola
Drug-resistant malaria

COMBAT
DRUG
RESISTANCE
DRUG
RESISTANCE


Les dossiers de
La Recherche
Nouvelle formule
Microbes
Pourquoi bactéries et virus nous sont indispensables
BIODIVERSITÉ
Les techniques pour restaurer la nature

ANTIBIOTIC
RESISTANCE



Les grandes étapes de la recherche

Par Marine Benoiste, avec la collaboration de Jérôme Pierrel, historien des sciences au laboratoire Épistémé de l'université Bordeaux-I

DU MICROBE ENNEMI AU MICROBE ALLIÉ

►1878
Le médecin Charles Sédillot crée le terme de « microbe » pour nommer l'ensemble des organismes vivants invisibles à l'œil nu. Plus tard, ils seront qualifiés de micro-organismes.

►1880
Les Français Louis Pasteur, Charles Chamberland et Émile Roux, développent un vaccin contre le choléra des poules, à l'aide de cultures du microbe (lire « Principes de mort et principes de vie », p. 64).

►1882
Le médecin allemand Robert Koch pense identifier le bacille de la tuberculose. Pour confirmer sa découverte, il le met en culture et l'utilise pour reproduire la maladie chez des animaux.

►1884
Robert Koch et le bactériologiste allemand Friedrich Löffler définissent les critères pour établir un lien de cause à effet entre un micro-organisme et une maladie.

►1885
En injectant de la moelle épinière de lapin atteint de la rage à un enfant victime de morsures par un chien enragé, Pasteur prévient tout développement de la maladie. C'est le premier vaccin contre la rage.

►1892
Après filtration de la sève de feuilles atteintes de la mosaïque du tabac, le Russe Dmitri I. Ivanovski montre que l'agent responsable de cette maladie végétale est trop petit pour être une bactérie.

►1898
Le botaniste néerlandais Martinus W. Beijerinck attribue la maladie de la mosaïque du tabac à un agent infectieux « vivant » et « fluide ». Pour désigner ce dernier, il emploie le terme « virus ».

►1907
Elie Metchnikoff, immunologiste russe, étudie les bactéries produisant le lait fermenté : il suggère que ces bactéries sont bénéfiques pour la santé humaine.

►1915
L'Anglais Frederick Twort découvre des virus qui infectent spécifiquement les bactéries.

►1917
Le Français Félix d'Hérelle les redécouvre et les nomme « bactériophages » (lire « Des virus pour lutter contre les bactéries », p. 42).

►1928
Une substance antibactérienne produite par des moisissures *Penicillium notatum* est isolée inopinément par le biologiste écossais Alexander Fleming. C'est la pénicilline.

►1939
Grâce à l'un des premiers microscopes électroniques, Gustav-Adolf Kausche, Edgar Pfankuch et Helmut Ruska visualisent l'agent de la mosaïque du tabac. C'est le premier virus observé.

►1944
La société pharmaceutique américaine Pfizer inaugure la première usine de production de pénicilline. Les soldats alliés disposent de cet antibiotique lors du Débarquement en Normandie.

►1972
Le biochimiste américain Paul Berg et ses collègues construisent un ADN constitué d'ADN bactérien et d'ADN viral : c'est le premier ADN recombinant (lire « La peur conjurée du génie génétique », p. 60).

ALEXANDER FLEMING a isolé la pénicilline à partir du champignon *Penicillium notatum*. Le biologiste écossais reçoit le prix Nobel en 1945 pour cette découverte de ce qui allait être le premier antibiotique.

LE MÉDECIN ALAIN FISCHER et ses collègues de l'hôpital Necker ont utilisé avec succès la thérapie génique en 2000 pour traiter des nourrissons atteints de déficit immunitaire combiné sévère. Ces enfants étaient auparavant contraints de vivre sous une bulle stérile.

►1973
Les Américains Stanley Cohen et Herbert Boyer insèrent un ADN recombinant portant des gènes de résistance à des antibiotiques dans une bactérie *Escherichia coli*. C'est le premier organisme génétiquement modifié.

►1978
La compagnie pharmaceutique Genentech, fondée par Herbert Boyer et Robert Swanson, transfère le gène de l'insuline humaine dans une bactérie. C'est l'une des premières fabrications d'hormone par un organisme transformé génétiquement.

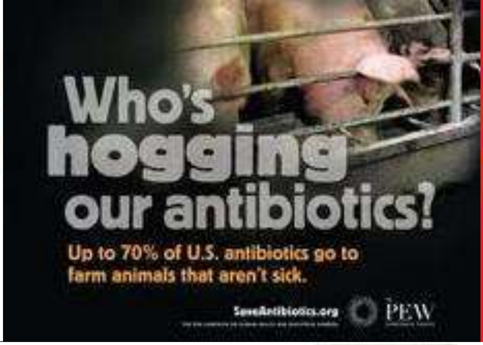
►1982
L'agence américaine de sécurité sanitaire, la FDA, donne son feu vert à la commercialisation d'insuline produite par génie génétique. Il s'agit du premier médicament ainsi fabriqué industriellement (lire « Des mini-usines à médicaments », p. 46).

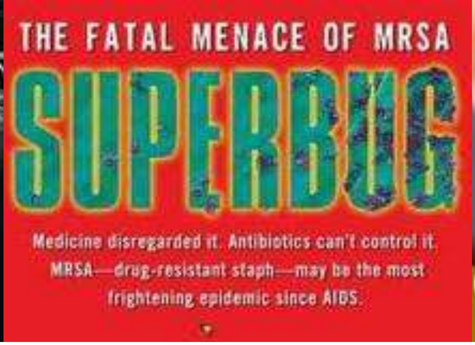
►2000
Alain Fischer et Marina Cavazzana-Calvo, médecins à l'hôpital Necker à Paris, annoncent que deux nourrissons ont été traités avec succès par thérapie génique : une première (lire « Comment on corrige des gènes », p. 46).

►2006
Jeffrey Gordon et ses collaborateurs de l'université Washington, à Saint Louis, aux États-Unis, montrent que le microbiote intestinal (auparavant appelé « flore intestinale ») joue un rôle dans l'obésité (lire « Des bactéries qui stockent des graisses », p. 28).

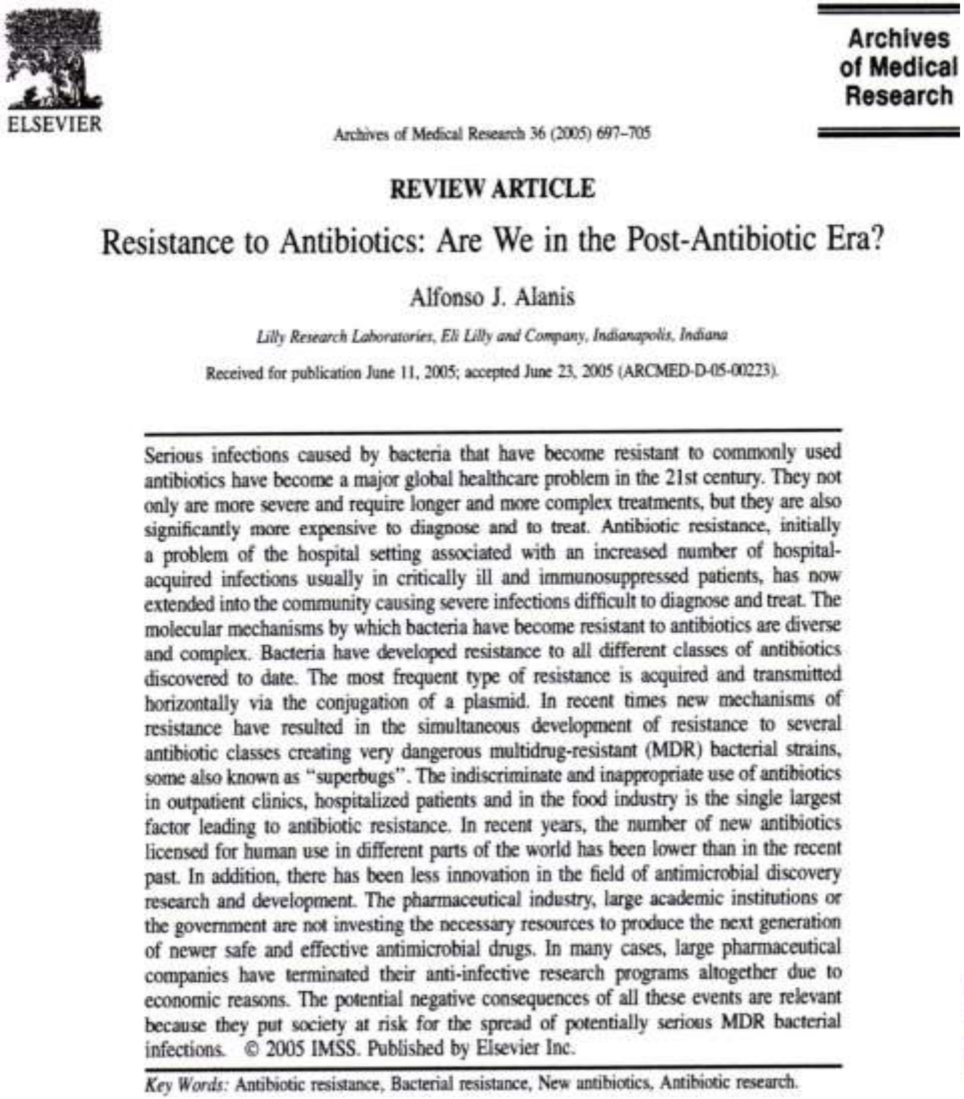
►2010
Les premiers résultats du projet MetaHIT, mis en place pour caractériser génétiquement le microbiote intestinal humain, sont publiés. 3,3 millions de gènes bactériens ont été identifiés (lire « Un autre génome pour l'homme », p. 22).

GET
SMART
Know When Antibiotics Work


Who's hogging our antibiotics?
Up to 70% of U.S. antibiotics go to farm animals that aren't sick.
SaveAntibiotics.org
PEW


THE FATAL MENACE OF MRSA
SUPERBUG
Medicine disregarded it. Antibiotics can't control it. MRSA—drug-resistant staph—may be the most frightening epidemic since AIDS.

The Danger of Antibiotic Overuse


ELSEVIER

Archives of Medical Research

Archives of Medical Research 36 (2005) 697–705

REVIEW ARTICLE

Resistance to Antibiotics: Are We in the Post-Antibiotic Era?

Alfonso J. Alanis

Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, Indiana

Received for publication June 11, 2005; accepted June 23, 2005 (ARCMED-D-05-00223).

Serious infections caused by bacteria that have become resistant to commonly used antibiotics have become a major global healthcare problem in the 21st century. They not only are more severe and require longer and more complex treatments, but they are also significantly more expensive to diagnose and to treat. Antibiotic resistance, initially a problem of the hospital setting associated with an increased number of hospital-acquired infections usually in critically ill and immunosuppressed patients, has now extended into the community causing severe infections difficult to diagnose and treat. The molecular mechanisms by which bacteria have become resistant to antibiotics are diverse and complex. Bacteria have developed resistance to all different classes of antibiotics discovered to date. The most frequent type of resistance is acquired and transmitted horizontally via the conjugation of a plasmid. In recent times new mechanisms of resistance have resulted in the simultaneous development of resistance to several antibiotic classes creating very dangerous multidrug-resistant (MDR) bacterial strains, some also known as "superbugs". The indiscriminate and inappropriate use of antibiotics in outpatient clinics, hospitalized patients and in the food industry is the single largest factor leading to antibiotic resistance. In recent years, the number of new antibiotics licensed for human use in different parts of the world has been lower than in the recent past. In addition, there has been less innovation in the field of antimicrobial discovery research and development. The pharmaceutical industry, large academic institutions or the government are not investing the necessary resources to produce the next generation of newer safe and effective antimicrobial drugs. In many cases, large pharmaceutical companies have terminated their anti-infective research programs altogether due to economic reasons. The potential negative consequences of all these events are relevant because they put society at risk for the spread of potentially serious MDR bacterial infections. © 2005 IMSS. Published by Elsevier Inc.

Key Words: Antibiotic resistance, Bacterial resistance, New antibiotics, Antibiotic research.

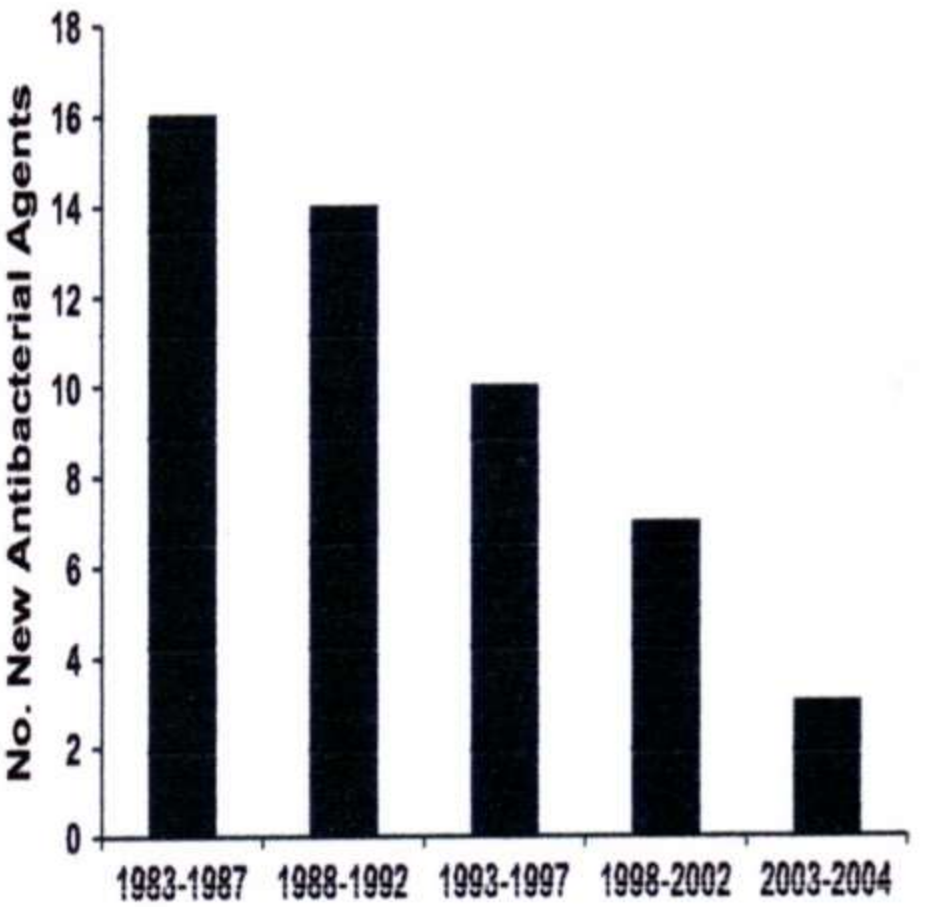
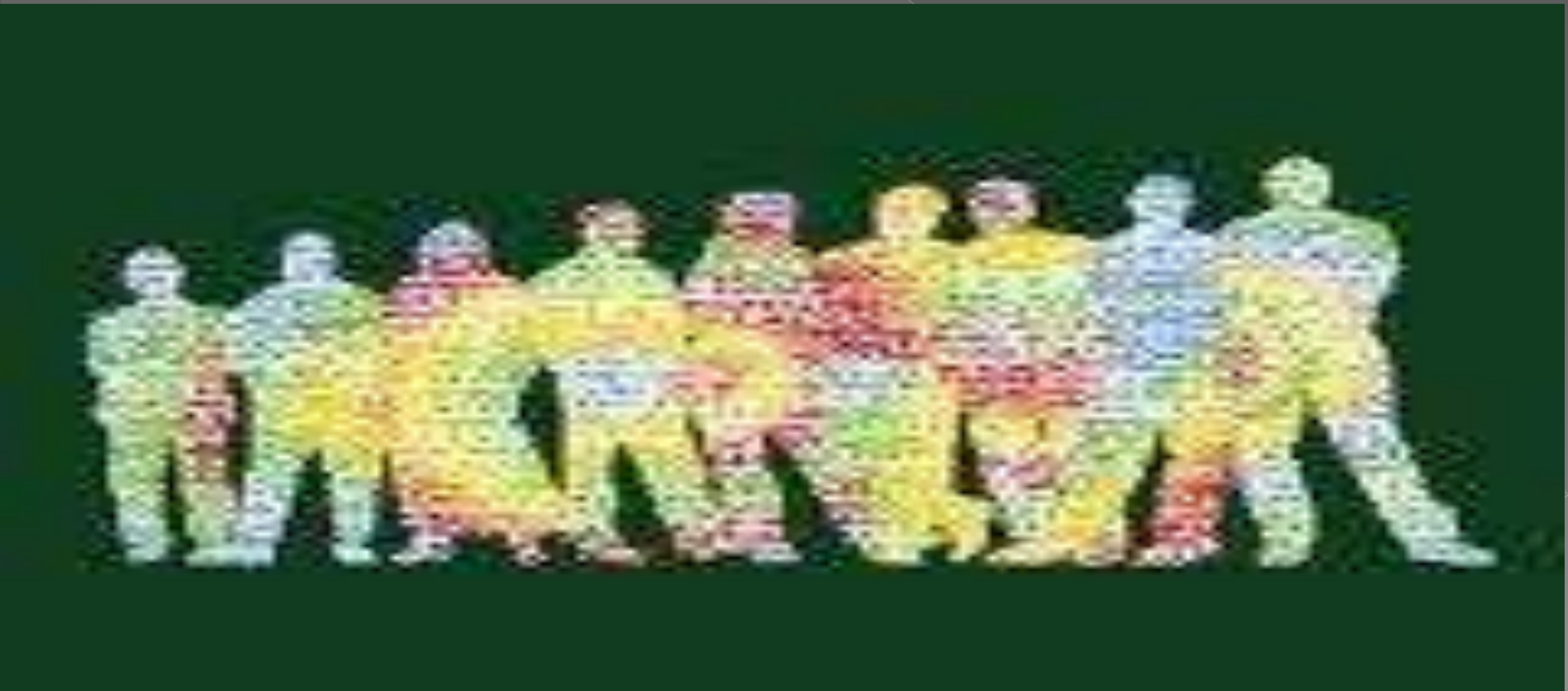


Figure 1. New antibacterial agents approved by the FDA in the U.S from 1983 to 2003. Data from Reference 70.

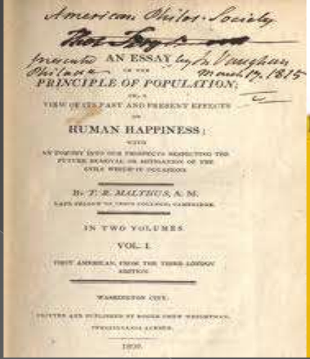
WHY YOU'VE NEVER HEARD THE WHOLE TRUTH ABOUT VITAMIN D
BIG PHARMA
FTC
VITAMIN D
KOMEN FOR THE CURE
FDA
NCI
ONCOLOGY

Os PRINICIPAIS PROBLEMAS no FUTURO

A Explosão Demográfica
A Limitação dos Recursos Naturais



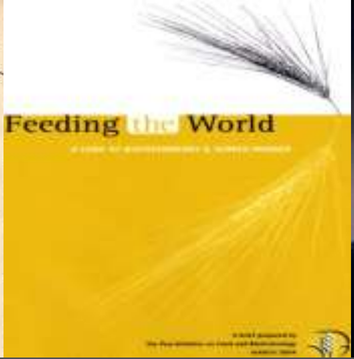
Thomas R. Malthus
1766–1834

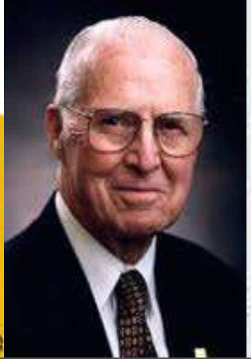

AN ESSAY
ON THE
PRINCIPLE OF POPULATION;
OR, A
VIEW OF ITS PAST AND PRESENT EFFECTS
ON
HUMAN HAPPINESS;

By T. R. MALTHUS, A. M.

IN TWO VOLUMES.
VOL. I.

WASHINGTON CITY:





NORMAN BORLAUG

- " … o crescimento populacional vai inevitavelmente tornar insuficiente a capacidade mundial de produção alimentar, razão pela qual irá imperar futuramente a fome e a miséria … " (sic.) (Thomas Malthus, 1803)
- " … calcula-se que entre 30 a 40 % do total de alimentos sejam desperdiçados … " (FAO Report, 2004)
- " … calcula-se que cerca de 20 % das emissões de gases nocivos para a atmosfera (designadamente metano e oxido nítrico), resultam das actividades relacionadas directa ou indirectamente com a agricultura … " (sic.) (H. Charles J. Godfrey, et al, 2010)

PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B

Phil. Trans. R. Soc. B (2010) 365, 2769–2777

Introduction

The future of the global food system

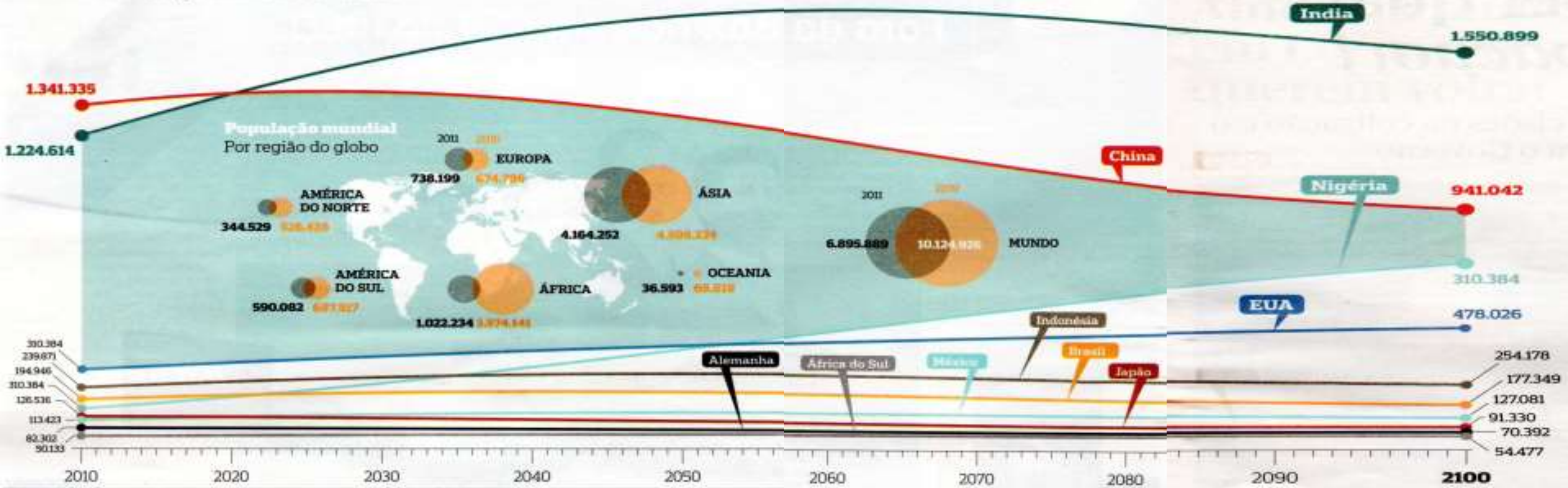
H. Charles J. Godfray, Ian R. Crute, Lawrence Haddad, David Lawrence, James F. Muir, Nicholas Nisbett, Jules Pretty, Sherman Robinson, Camilla Toulmin and Rosalind Whiteley

Keywords: food security; food system; population growth; consumption growth; agriculture; climate change

- *" … nós não seremos capazes de alimentar todos os habitantes do mundo até ao final do presente milénio utilizando apenas os actuais meios tecnológicos e práticas. Insistir nessa falsa ideia de que isso será possível, só condenará milhões de pessoas à condição de famintos, bem como produzirá o caos social, económico e político … " (sic.)* (Norman Borlaug)
- *" … a prática actual da agricultura tem sido dominada por um discurso centrado nas questões tecnológicas, ignorando aspectos muito mais importantes de natureza económica e social, e negligenciado outros domínios do conhecimento, designadamente o saber tradicional e a experiência acumulada das populações. O resultado desta postura materializou-se na imposição inadequada de modelos de desenvolvimento menos consentâneos, de que a biotecnologia é uma das suas últimas variantes … " (sic.)* (Miguel Altieri e Peter Rosset)

Em 2100, seremos um planeta de dez mil milhões de pessoas

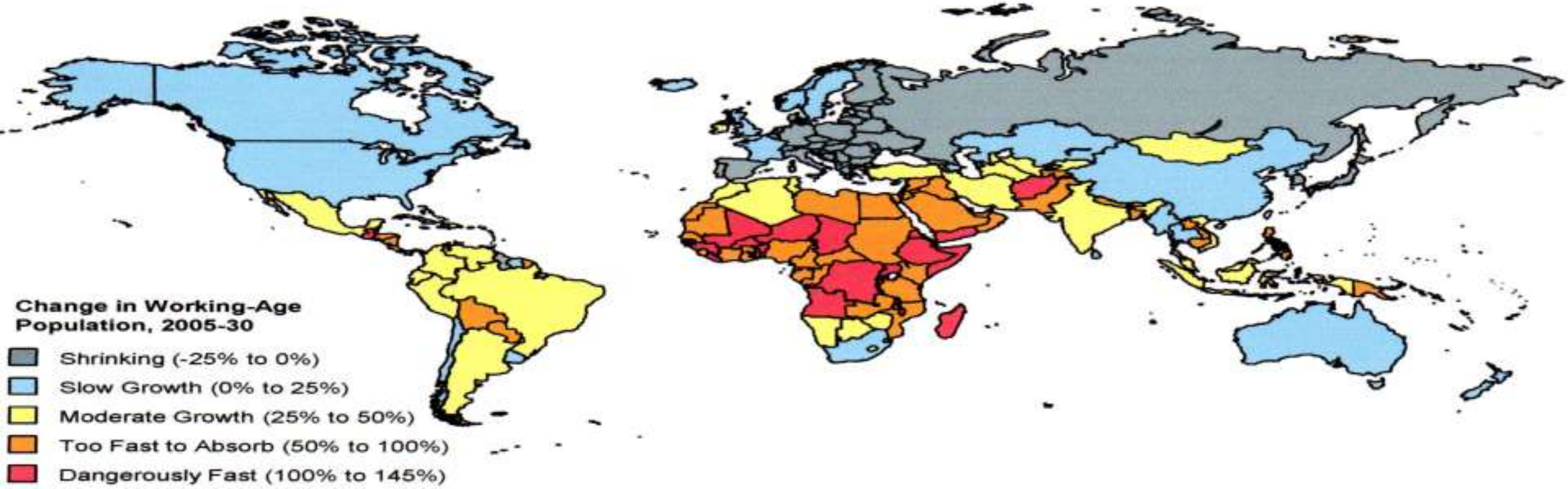
Europa será o único continente a ver a sua população decrescer nos próximos 90 anos

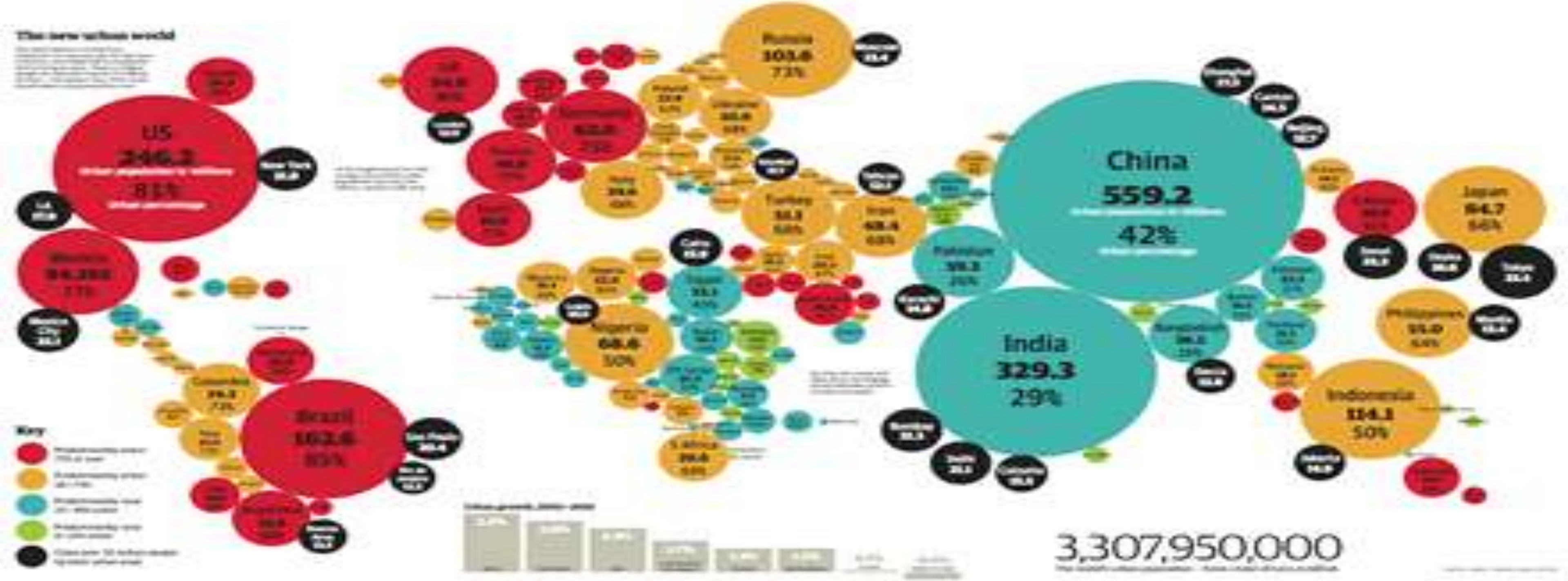


Fonte: World Population Prospects. 2010 Revision. Organização das Nações Unidas

Change in Working-Age Population, 2005-30

Most advanced economies face shrinking workforces, while many young countries face explosive growth.


Change in Working-Age Population, 2005-30
Shrinking (-25% to 0%)
Slow Growth (0% to 25%)
Moderate Growth (25% to 50%)
Too Fast to Absorb (50% to 100%)
Dangerously Fast (100% to 145%)


The new urban world
US
246.2
Urban population in millions
81%
Urban percentage
New York
LA
Mexico
Mexico City
Brazil
162.6
85%
Sao Paulo
Colombia
UK
Germany
Russia
103.6
73%
Turkey
Iran
Nigeria
68.6
50%
Pakistan
59.3
China
559.2
Urban population in millions
42%
Urban percentage
India
329.3
29%
Japan
84.7
66%
Philippines
Indonesia
114.1
50%
Bangladesh
Key
Urban growth, 2000-2030
3,307,950,000

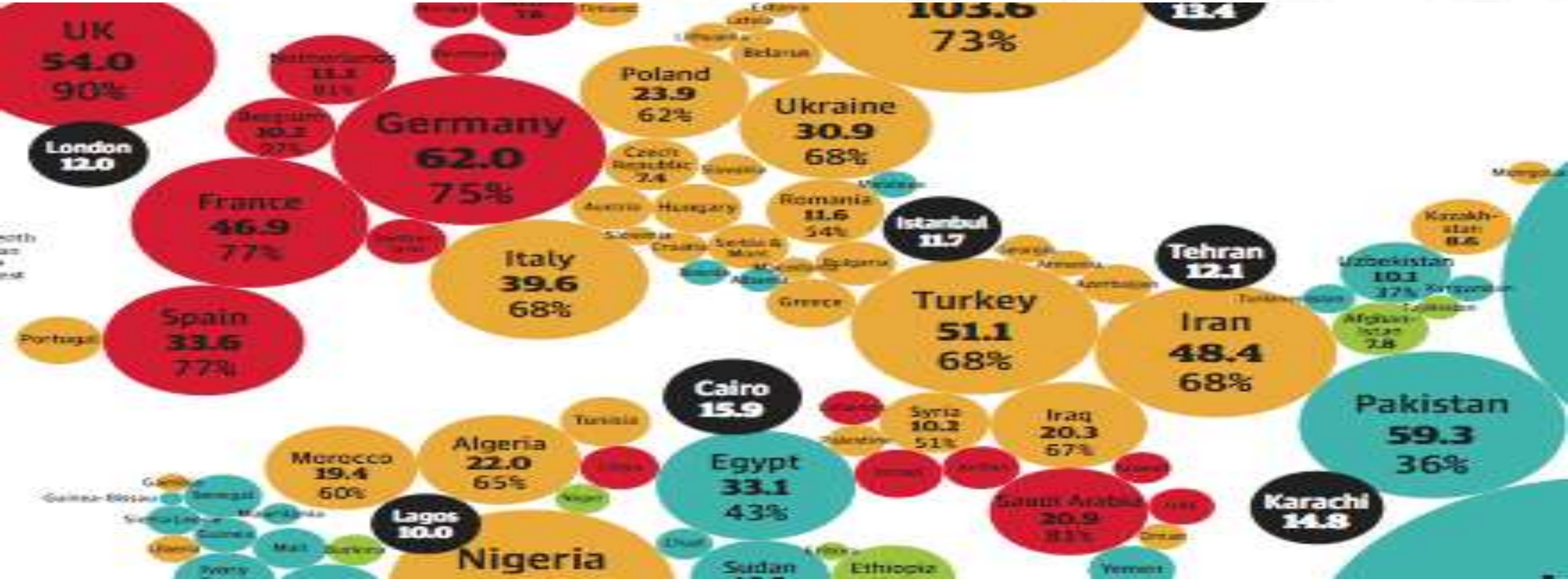
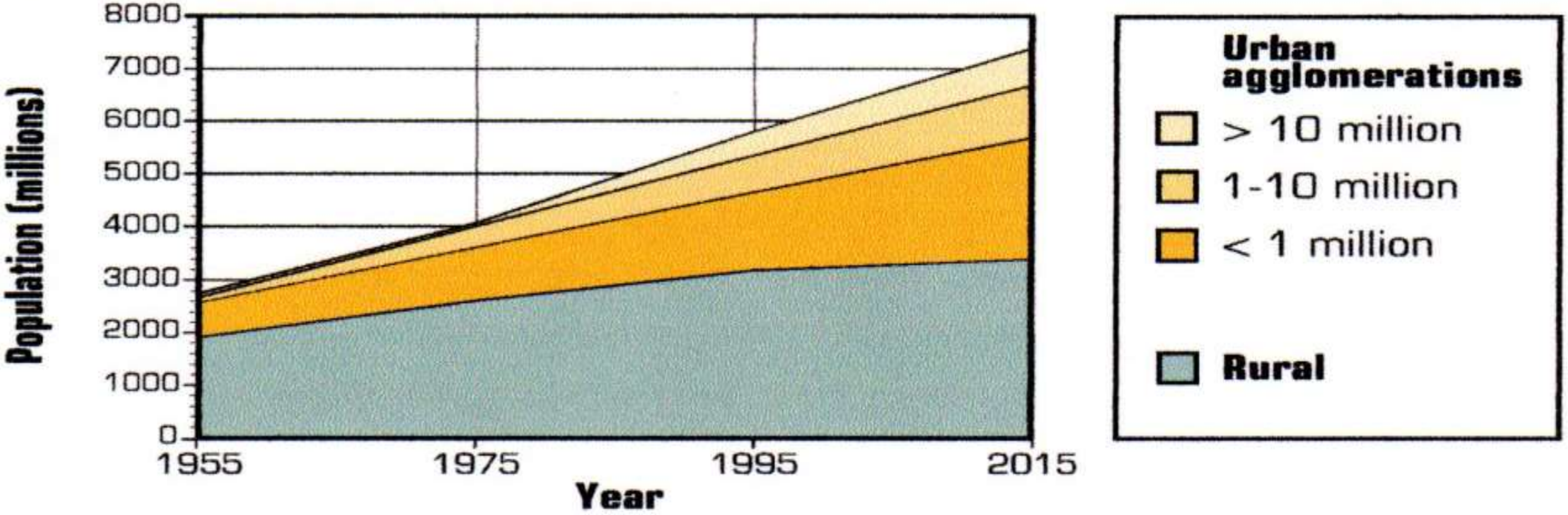

UK
54.0
90%
Netherlands
13.3
81%
Belgium
10.2
97%
London
12.0
Germany
62.0
75%
France
46.9
77%
Spain
33.6
77%
Portugal
Italy
39.6
68%
103.6
73%
13.4
Estonia
Latvia
Lithuania
Belarus
Poland
23.9
62%
Ukraine
30.9
68%
Czech Republic
7.4
Slovakia
Austria
Hungary
Romania
11.6
54%
Moldova
Slovenia
Croatia
Serbia & Mont.
Bosnia
Albania
Macedonia
Bulgaria
Greece
Istanbul
11.7
Georgia
Armenia
Azerbaijan
Turkey
51.1
68%
Tehran
12.1
Iran
48.4
68%
Turkmenistan
Uzbekistan
10.1
37%
Kyrgyzstan
Tajikistan
Kazakhstan
8.6
Mongolia
Afghanistan
7.8
Pakistan
59.3
36%
Karachi
14.8
Cairo
15.9
Syria
10.2
51%
Lebanon
Palestine
Iraq
20.3
67%
Israel
Jordan
Kuwait
Tunisia
Libya
Morocco
19.4
60%
Algeria
22.0
65%
Egypt
33.1
43%
Saudi Arabia
20.9
81%
UAE
Oman
Yemen
Niger
Mauritania
Gambia
Senegal
Guinea-Bissau
Sierra Leone
Guinea
Liberia
Mali
Burkina
Ivory
Lagos
10.0
Nigeria
Chad
Sudan
Eritrea
Ethiopia

Fig. 16. Urban and rural population, world, 1955-2015



De 2004 para cá, o índice dos preços da comida da FAO mais do que duplicou, enquanto os preços do petróleo foram de uns modestos 40 dólares o barril em 2000 para um pico de quase 140 em 2008. Os biocombustíveis estão a desviar comida da boca das pessoas para os depósitos automóveis. A água escasseia. O planeta está a consumir por ano, segundo a ONG World Wide Fund, 50% mais do que a terra consegue suportar. **É neste cenário que vamos bater mais um recorde de crescimento populacional**

Han, o bebé sete mil milhões...

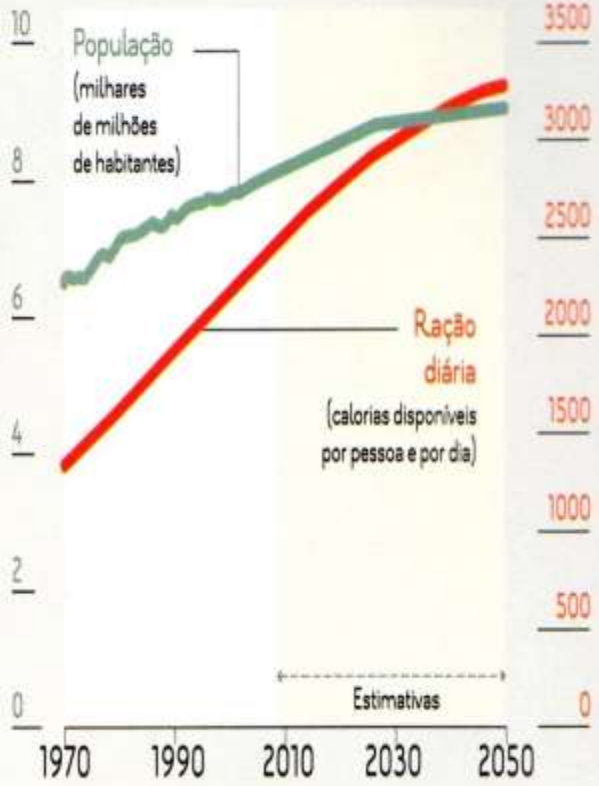
... Haverá lugar para ele?

FEEDING
THE FUTURE

Science
Foresight
The Future of Food and Farming:
Challenges and choices for global sustainability

Every 3.6 seconds a person
dies of hunger
75%
of them are children

UM FUTURO SEM 'SOL VERDE'

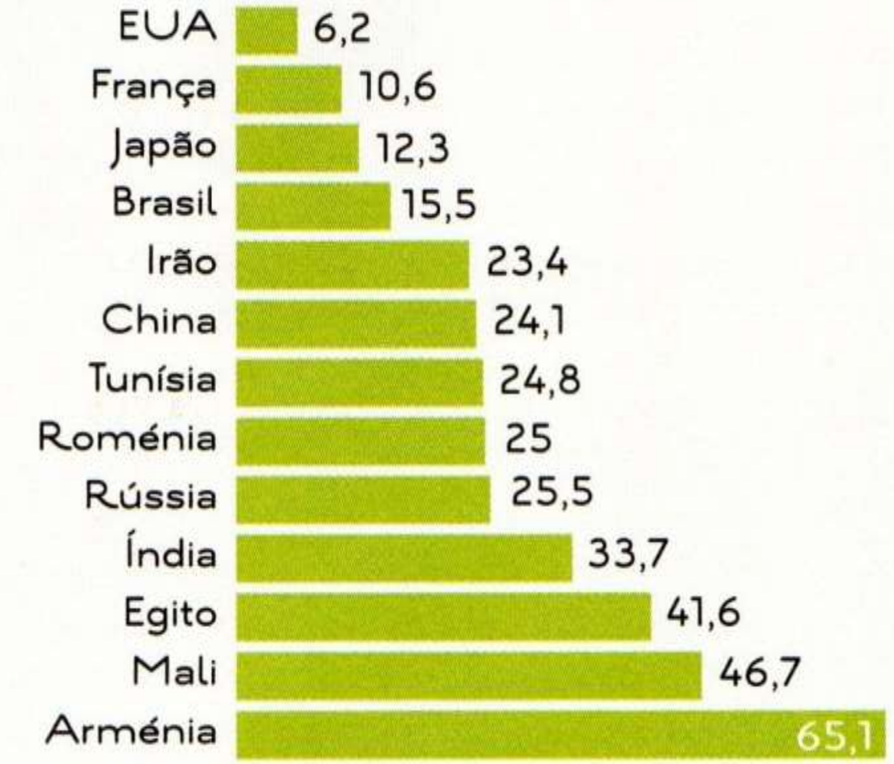


A bomba demográfica há muito tempo temida não chegará a explodir. Segundo as mais recentes projeções da ONU, a população mundial deverá estabilizar em redor dos nove mil milhões de habitantes, no ano 2050. Ao mesmo tempo, a produção agrícola e, logo, a ração diária disponível, deverá aumentar. Produzir comida suficiente para satisfazer as necessidades da população tornar-se-á possível, mas não sem ameaçar gravemente outros recursos, nomeadamente a água.

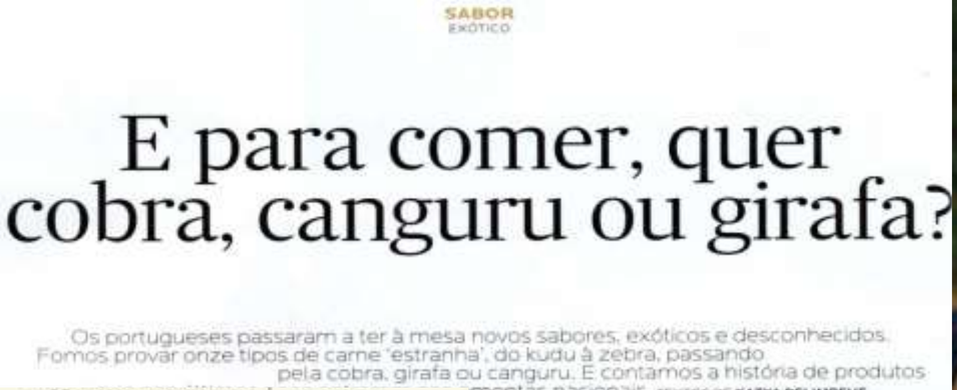
Fontes: Nature, Divisão de população da ONU, FAC

ORÇAMENTO FAMILIAR

Peso da alimentação nas despesas das famílias (percentagem, 2005)



onte: World Food Demand, Grace Gao, Universidade da Austrália Ocidental, 2010

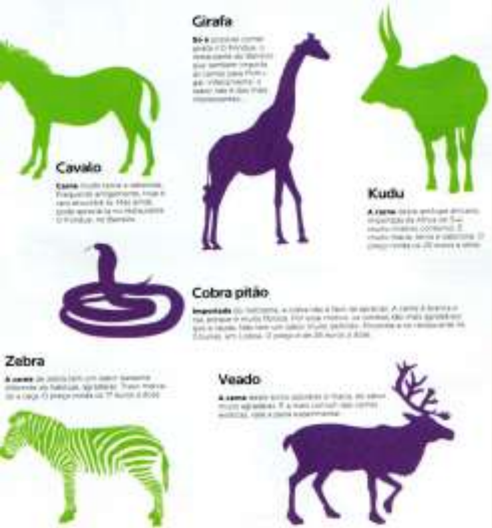


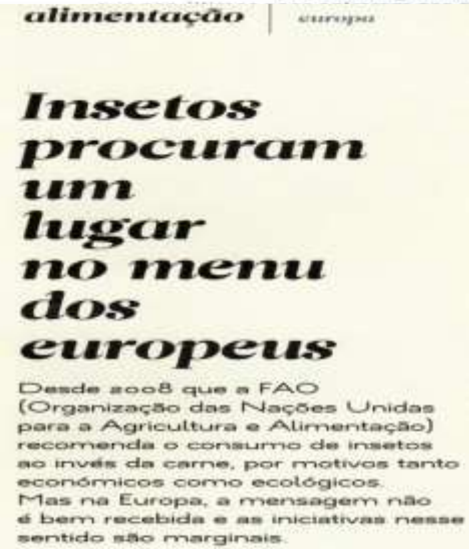
SABOR
EXÓTICO

E para comer, quer cobra, canguru ou girafa?

Os portugueses passaram a ter à mesa novos sabores, exóticos e desconhecidos. Fomos provar onze tipos de carne 'estranha', do kudu à zebra, passando pela cobra, girafa ou canguru. E contamos a história de produtos

mentas nacionais. TEXTOS DE **KATYA DELIMBEUF**

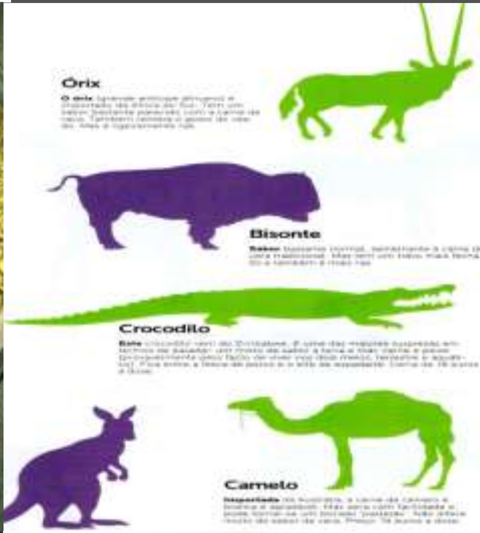

Girafa
Cavalo
Kudu
Cobra pitão
Zebra
Veado

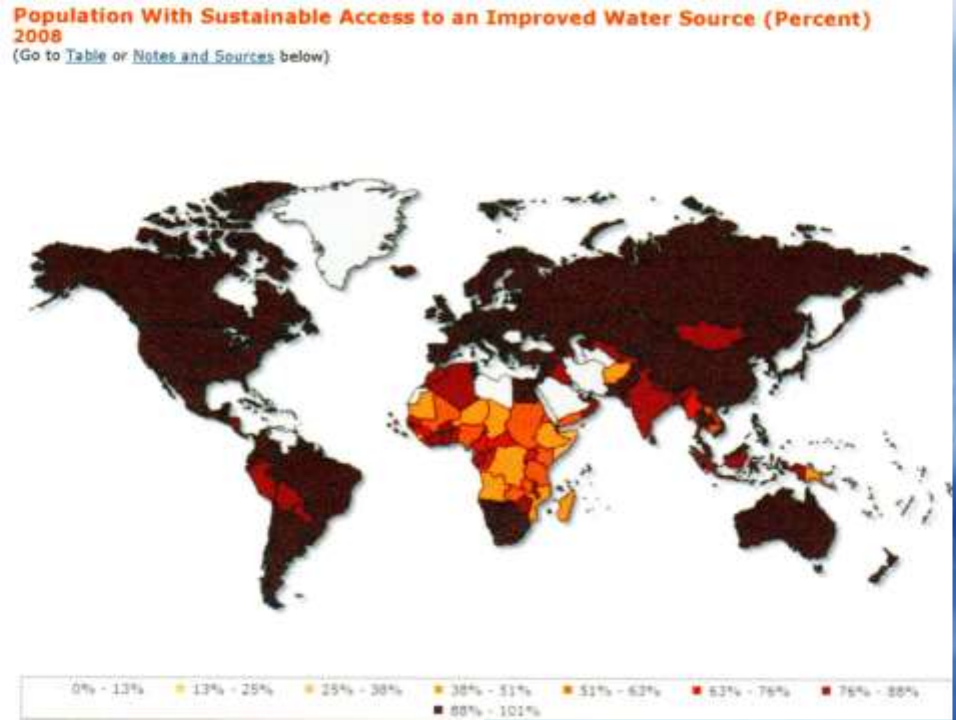


alimentação | *europa*

Insetos procuram um lugar no menu dos europeus

Desde 2008 que a FAO (Organização das Nações Unidas para a Agricultura e Alimentação) recomenda o consumo de insetos ao invés da carne, por motivos tanto económicos como ecológicos. Mas na Europa, a mensagem não é bem recebida e as iniciativas nesse sentido são marginais.

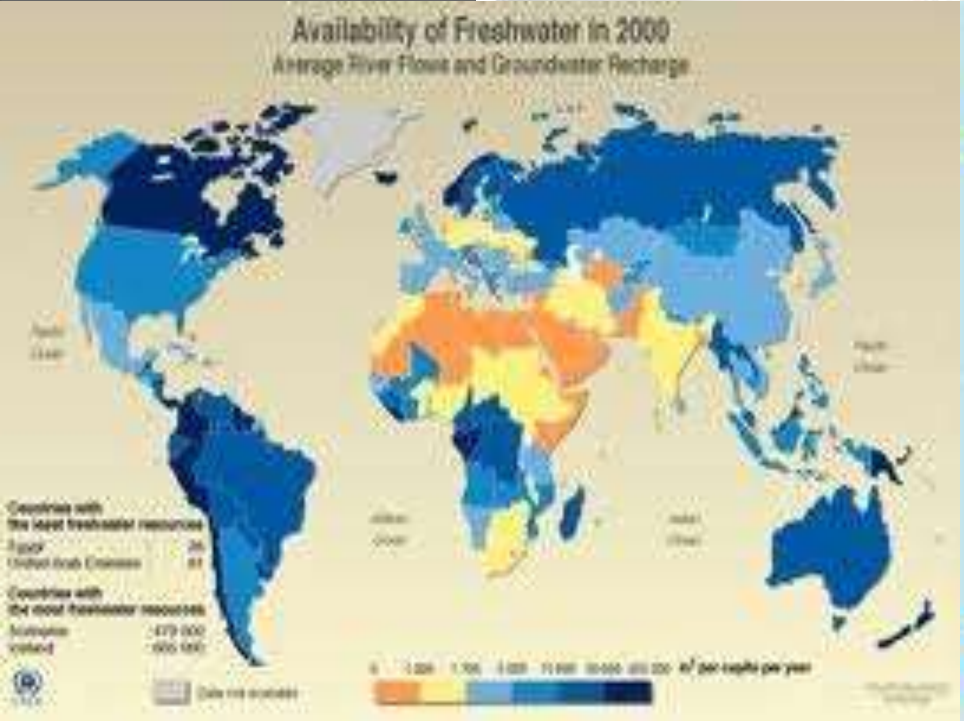

Órix
Bisonte
Crocodilo
Camelo



Population With Sustainable Access to an Improved Water Source (Percent) 2008

(Go to Table or Notes and Sources below)

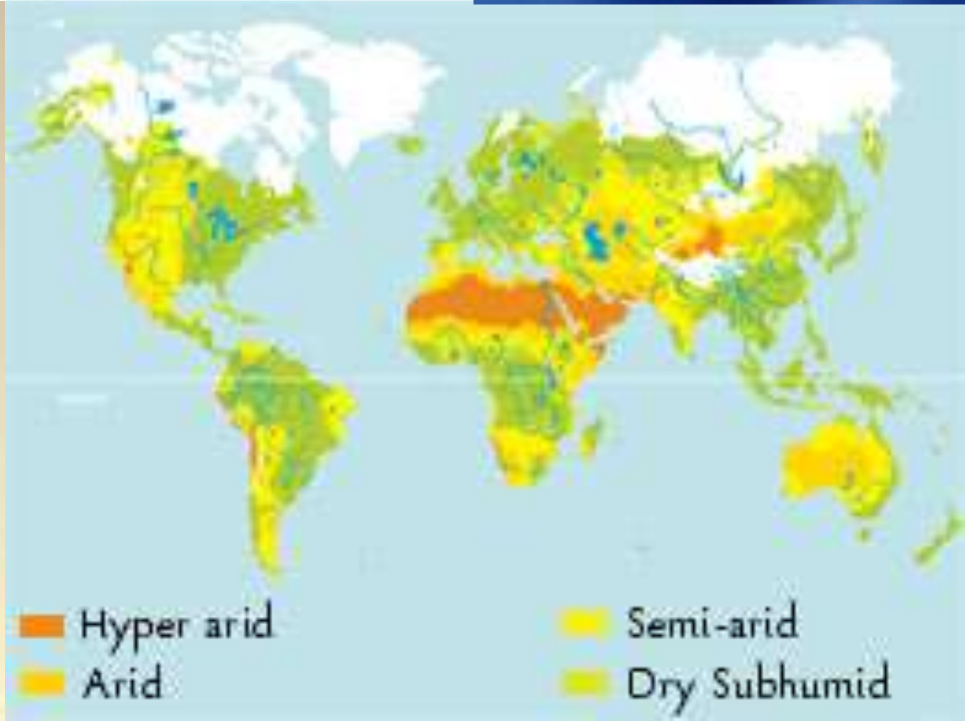
0% - 13%
13% - 25%
25% - 38%
38% - 51%
51% - 63%
63% - 76%
76% - 88%
88% - 101%



Availability of Freshwater in 2000

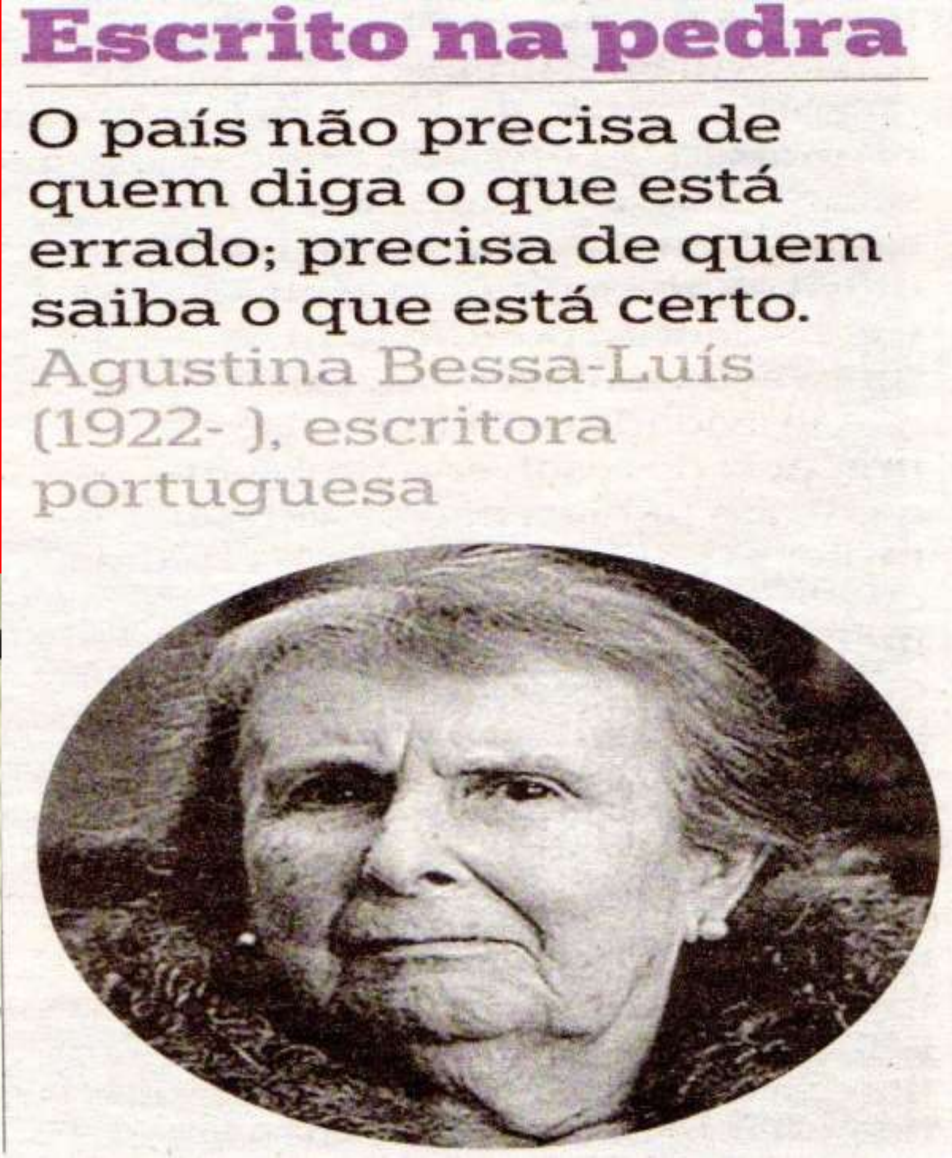
Average River Flows and Groundwater Recharge

Countries with the least freshwater resources
Countries with the most freshwater resources
Data not available
m³ per capita per year



Hyper arid
Arid
Semi-arid
Dry Subhumid

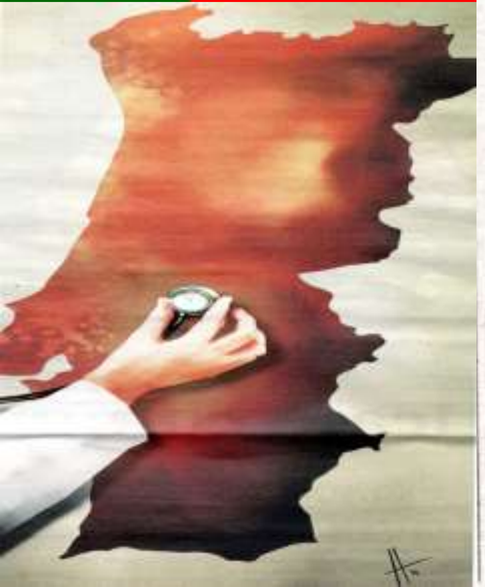
ENTÃO, E EM PORTUGAL?

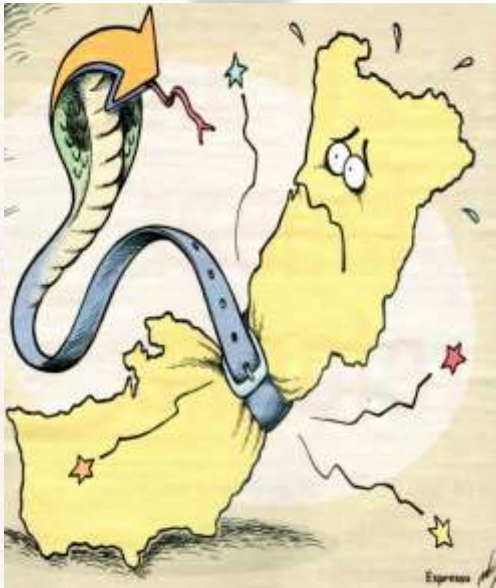


Escrito na pedra

O país não precisa de quem diga o que está errado; precisa de quem saiba o que está certo.

Agustina Bessa-Luís (1922-), escritora portuguesa





Life expectancies

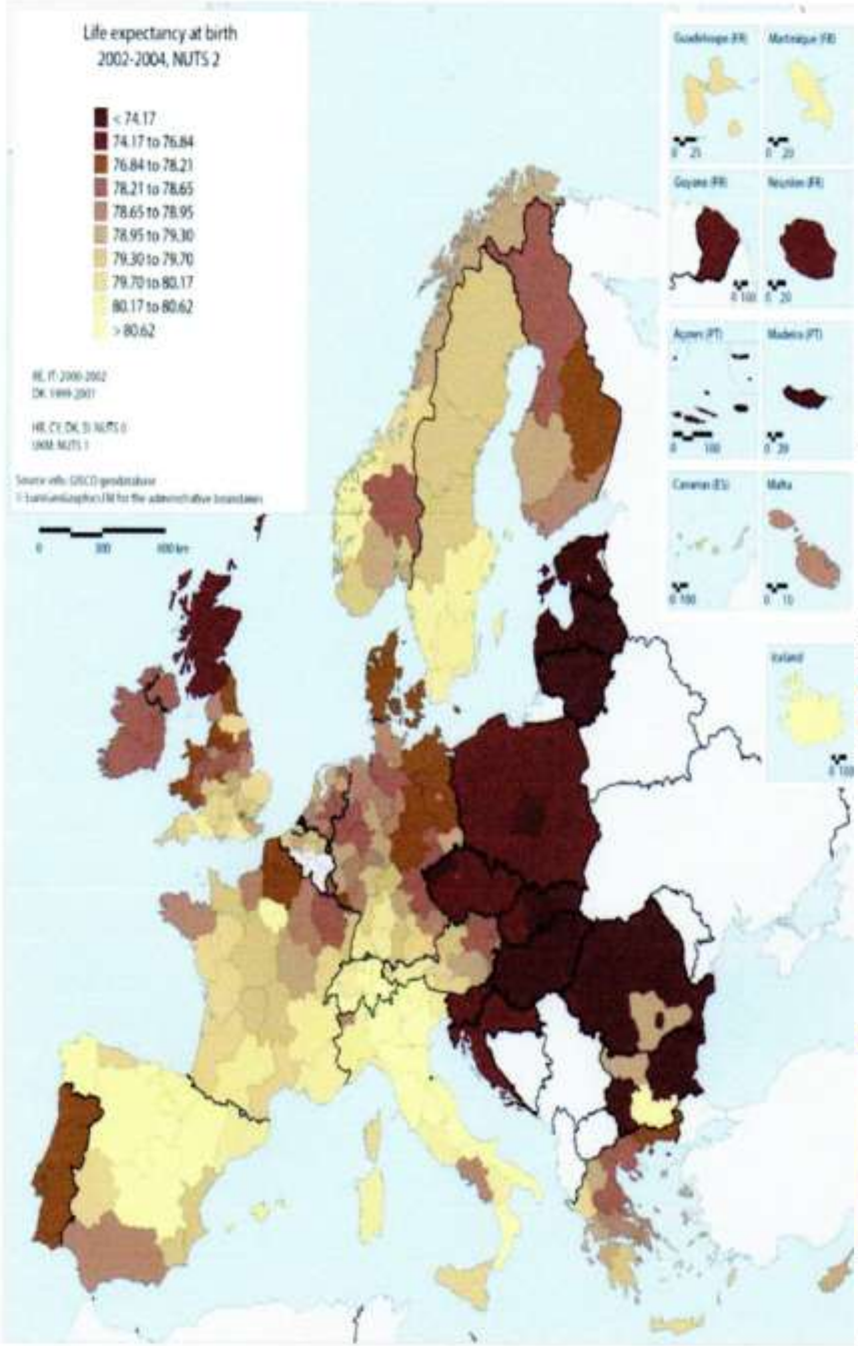
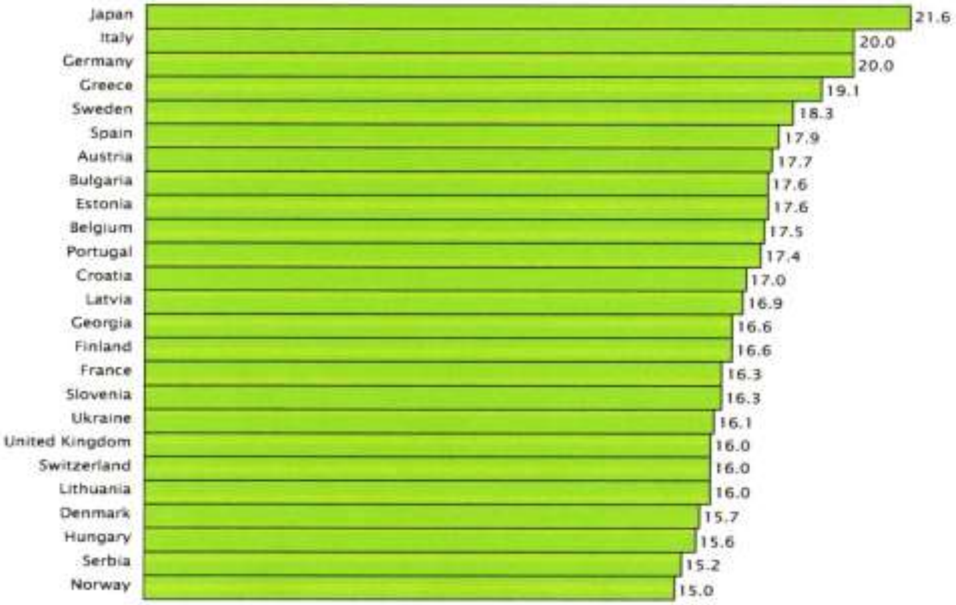

Life expectancy at birth
2002-2004, NUTS 2
< 74.17
74.17 to 76.84
76.84 to 78.21
78.21 to 78.65
78.65 to 78.95
78.95 to 79.30
79.30 to 79.70
79.70 to 80.17
80.17 to 80.62
> 80.62
BE, IT: 2000-2002
DK: 1999-2001
HR, CY, DK, SI: NUTS 0
UKM: NUTS 1
0
300
600 km
Guadeloupe (FR)
Martinique (FR)
Guyane (FR)
Réunion (FR)
Açores (PT)
Madeira (PT)
Canarias (ES)
Malta
Iceland

Figure 2-4.

The World's 25 Oldest Countries: 2008

(Percent of population aged 65 years and over)

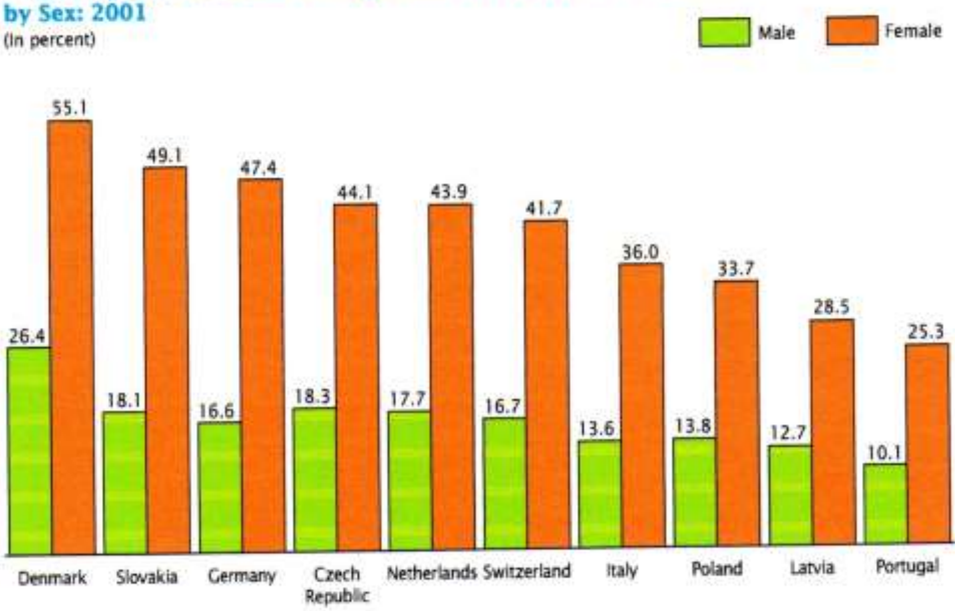


Source: U.S. Census Bureau, International Data Base, accessed on January 28, 2008.

Figure 6-8.

People Aged 65 and Over Living Alone in Ten European Nations by Sex: 2001

(In percent)

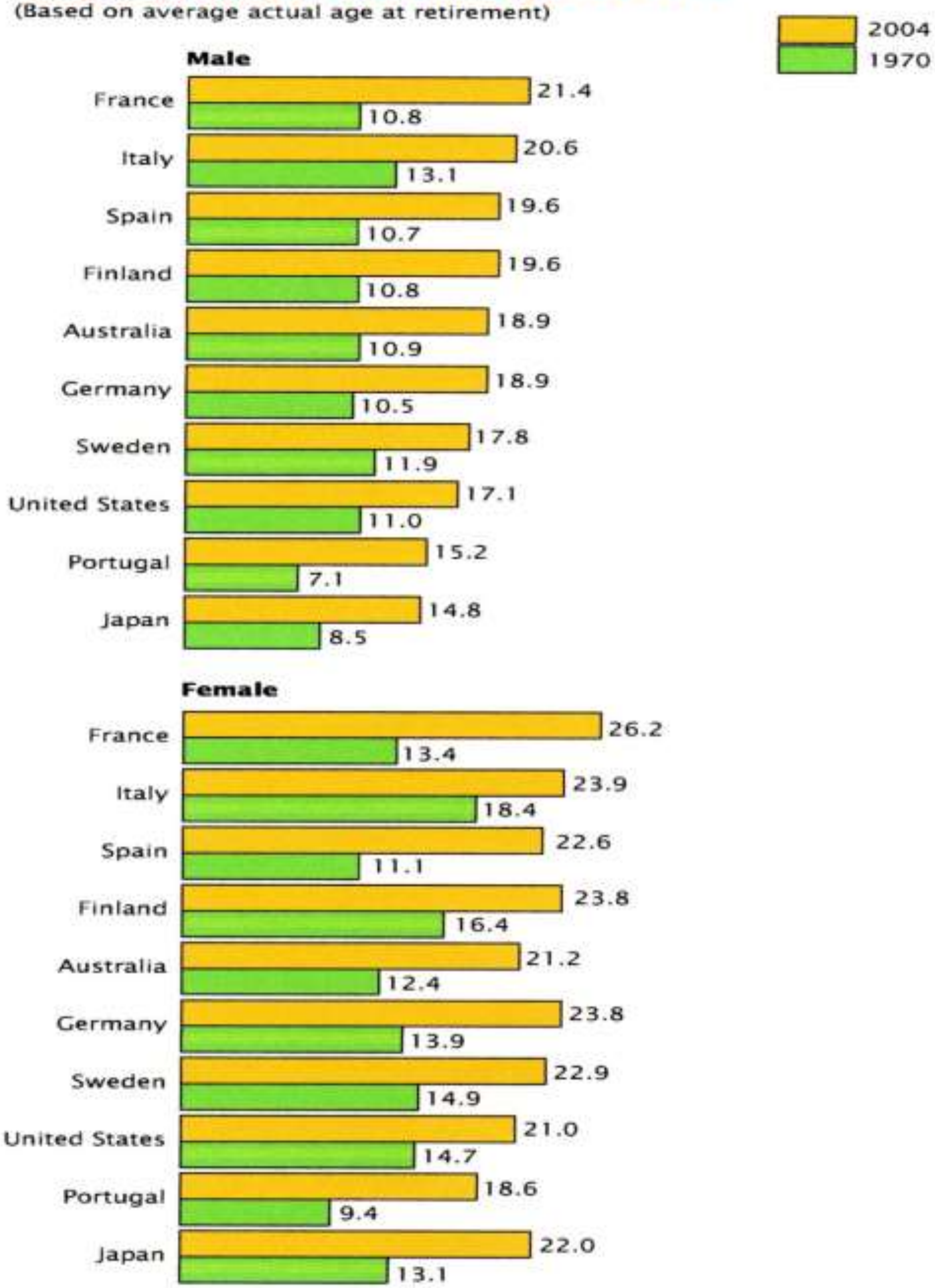


Source: Ireland Central Statistics Office, 2007.

Figure 9-10.

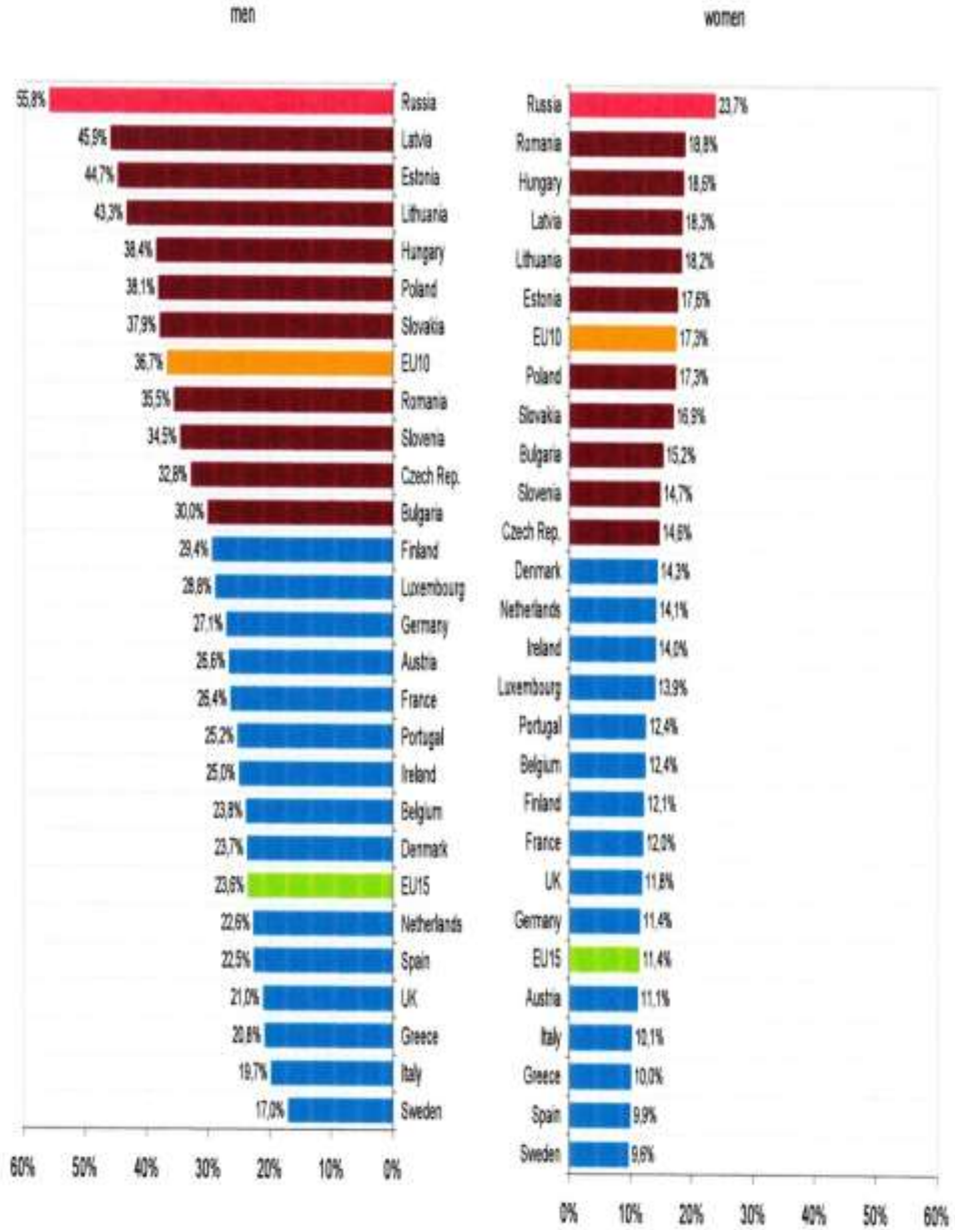
Years of Life Expectancy After Retirement in Ten Countries by Sex: 2004 Versus 1970

(Based on average actual age at retirement)



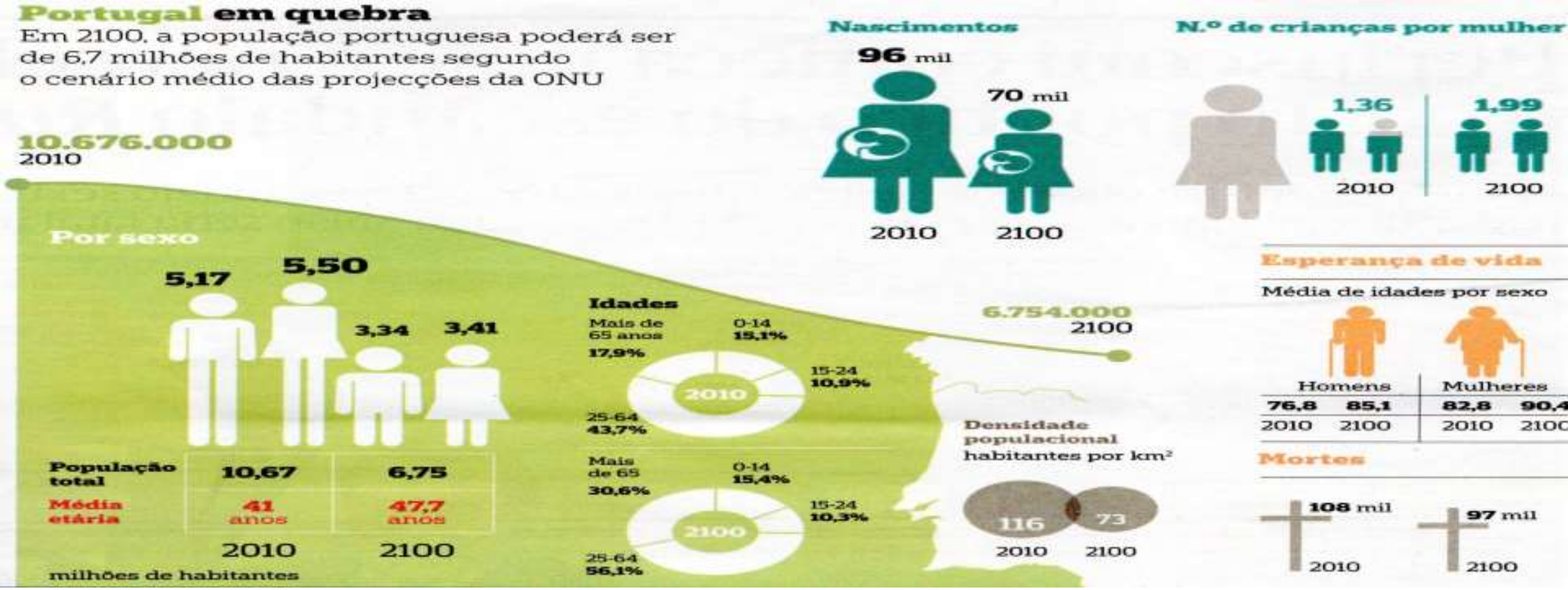
Source: Organisation for Economic Co-Operation and Development (OECD), 2006b.

Figure 6. Premature mortality: percentage of deaths in the age group 20-64 years - 2002



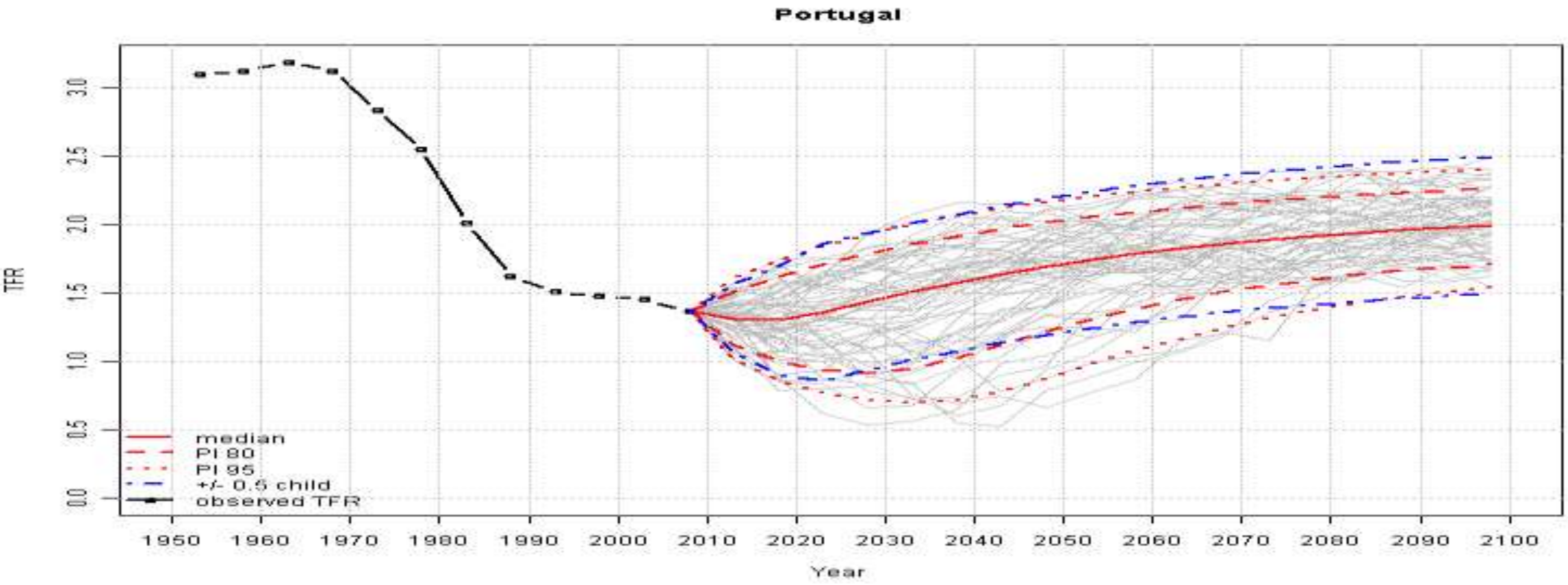
Belgium 1997, Denmark 2001

Source: WHO mortality statistics (http://www.who.int/whosis/mort/download/en/index.html)



Portugal em quebra

Em 2100, a população portuguesa poderá ser de 6,7 milhões de habitantes segundo o cenário médio das projecções da ONU



ISSN 0872-1114

ESTATÍSTICAS

MONICA
Monograph and
Multimedia Sourcebook

ELEMENTOS ESTATÍSTICOS
INFORMAÇÃO GERAL
SAÚDE / 2008

Direcção-Geral da Saúde
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Ministério da Saúde

DIRECÇÃO-GERAL DA SAÚDE

Gráfico nº2
Pirâmide etária, Portugal, 2008

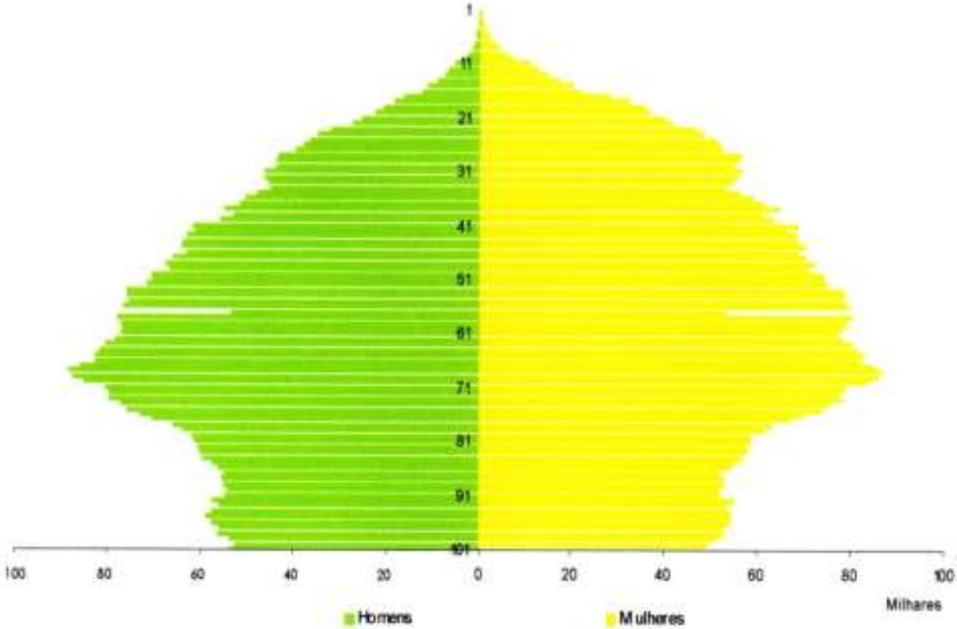
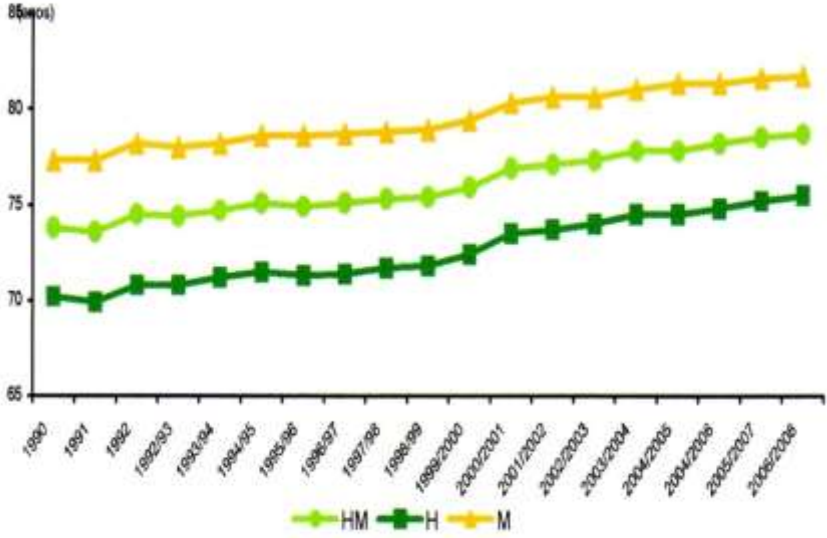
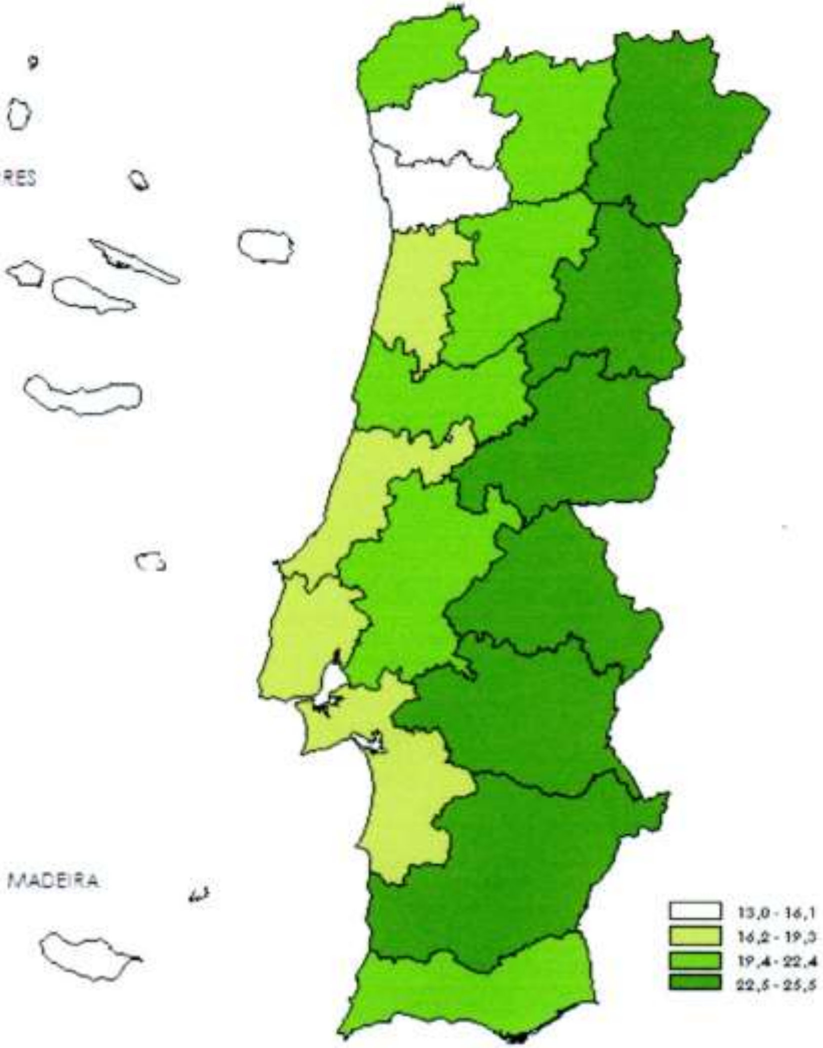


Gráfico nº 4
Esperança de vida à nascença, por sexos, Portugal, 1990-2006/2008



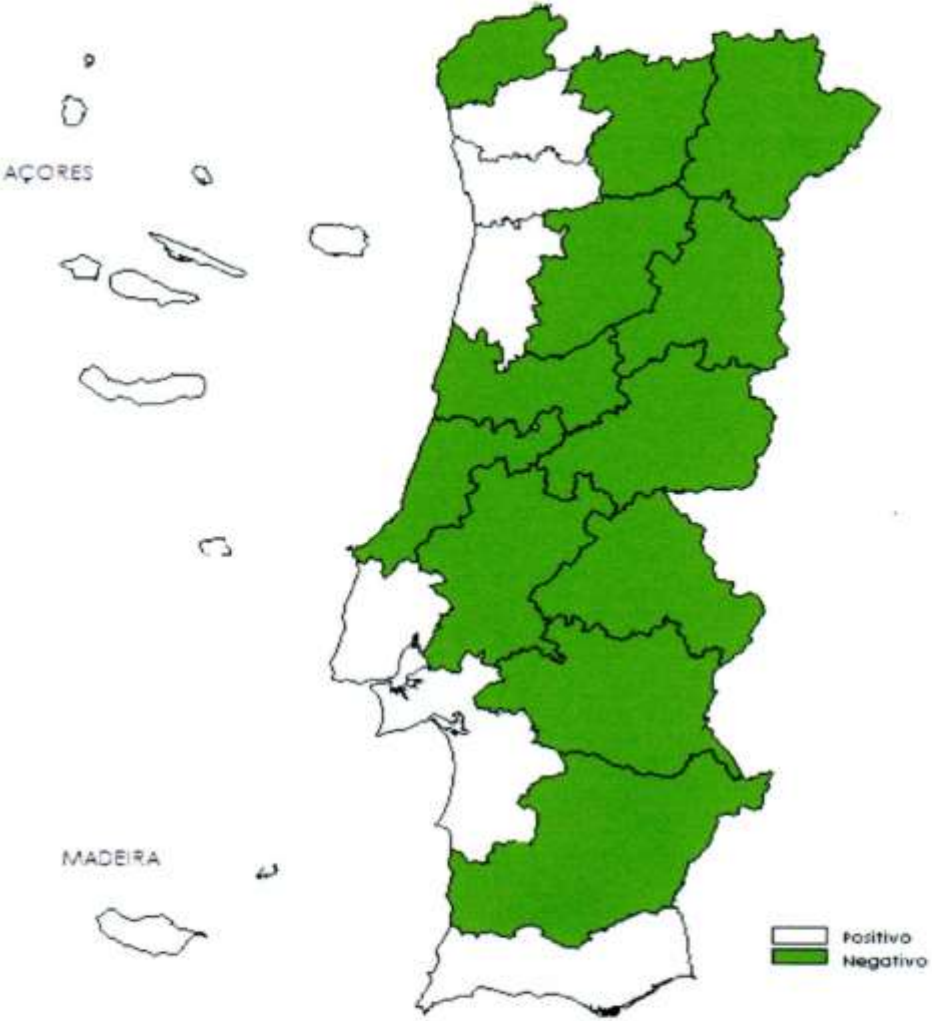
Fonte: INE, Estatísticas Demográficas

Cartograma nº 1
Percentagem da população com 65 e mais anos, por sub-regiões de saúde e RA, 200


AÇORES
MADEIRA
13,0 - 16,1
16,2 - 19,3
19,4 - 22,4
22,5 - 25,5

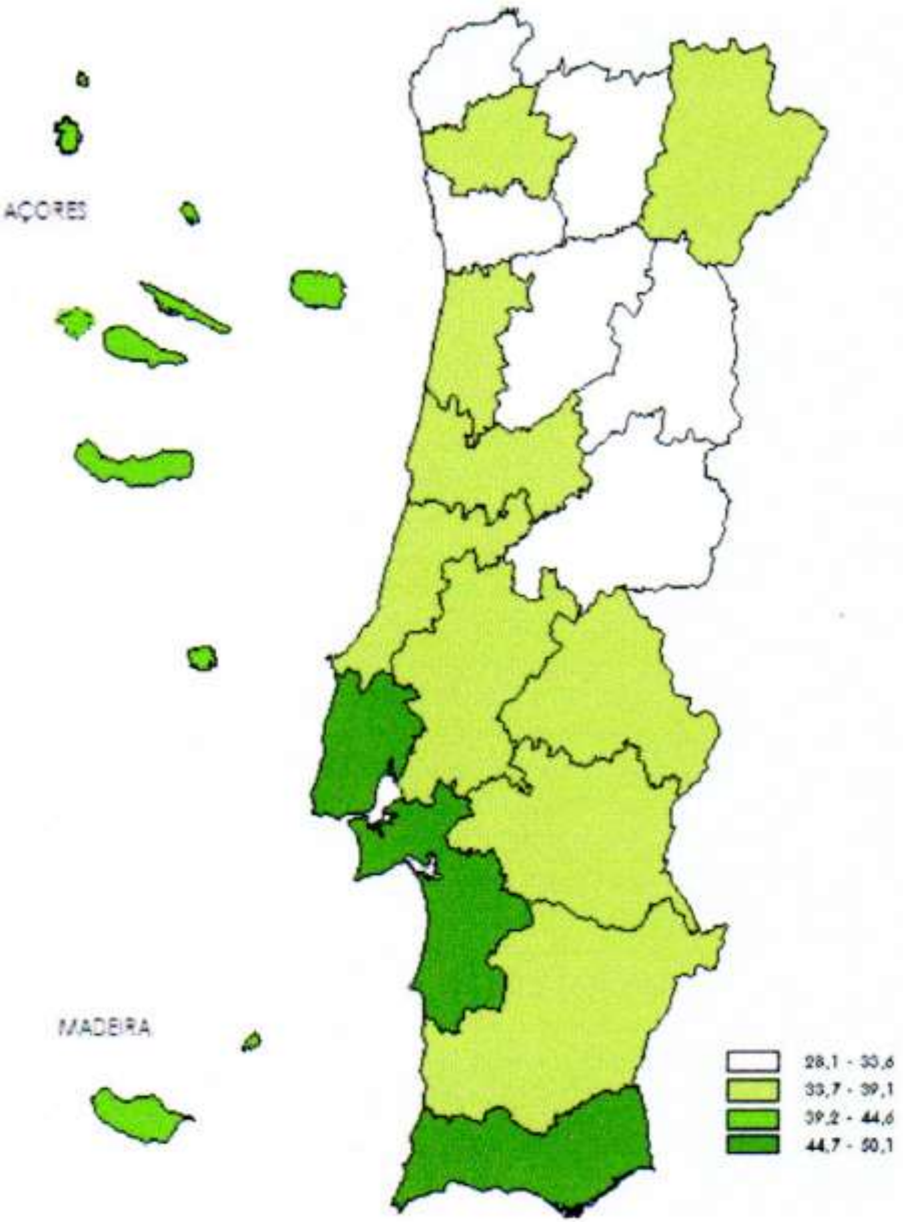
Fonte: INE, Estimativas da População Residente

Cartograma nº 2
Crescimento natural da população, por sub-regiões de saúde e RA, 2008


AÇORES
MADEIRA
Positivo
Negativo

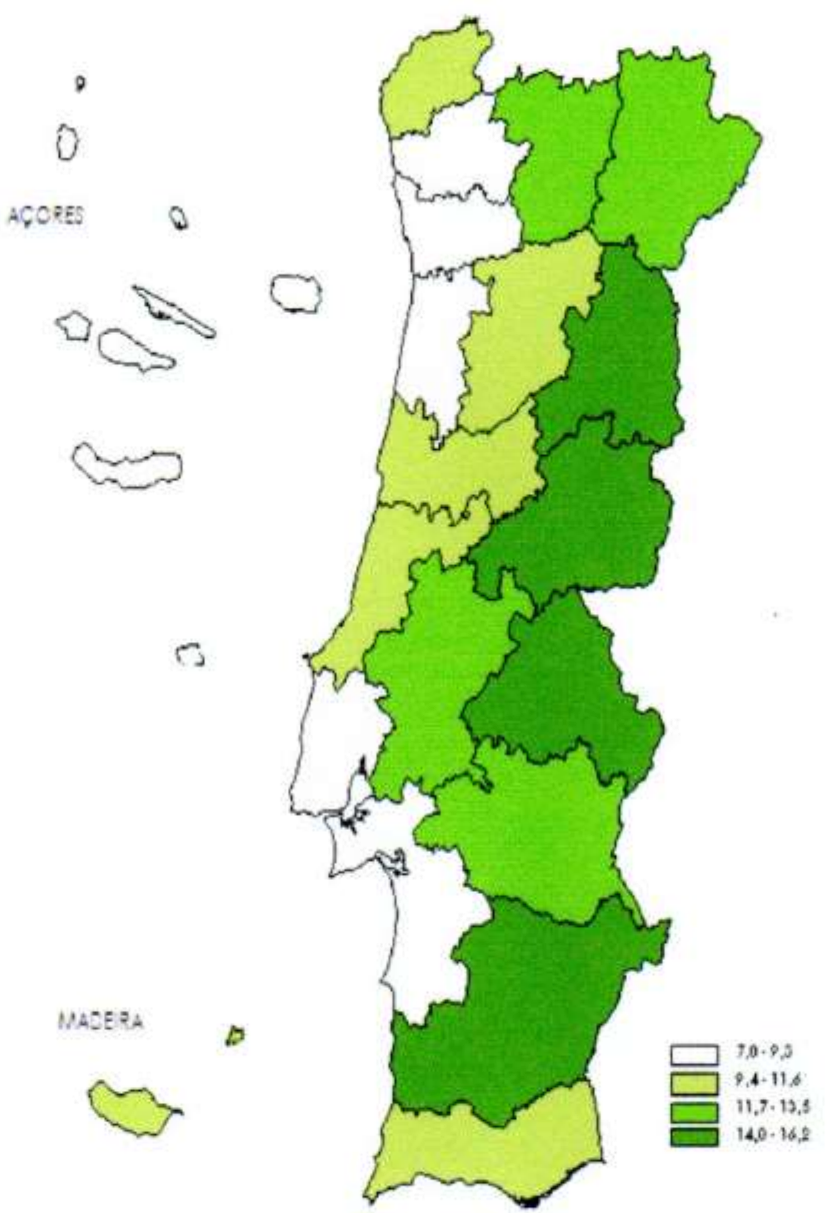
Fonte: INE, Estatísticas Demográficas

Cartograma nº 3
Taxa de fecundidade, por sub-regiões de saúde e RA, 2008


AÇORES
MADEIRA
28,1 - 33,6
33,7 - 39,1
39,2 - 44,6
44,7 - 50,1

Fonte: INE

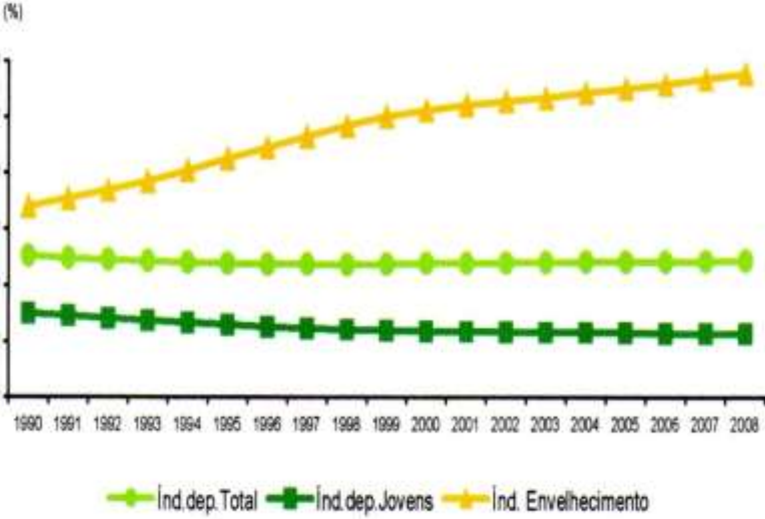
Cartograma nº 4
Taxa de mortalidade geral, por sub-regiões de saúde e RA, 2008


AÇORES
MADEIRA
7,0 - 9,3
9,4 - 11,6
11,7 - 13,5
14,0 - 16,2

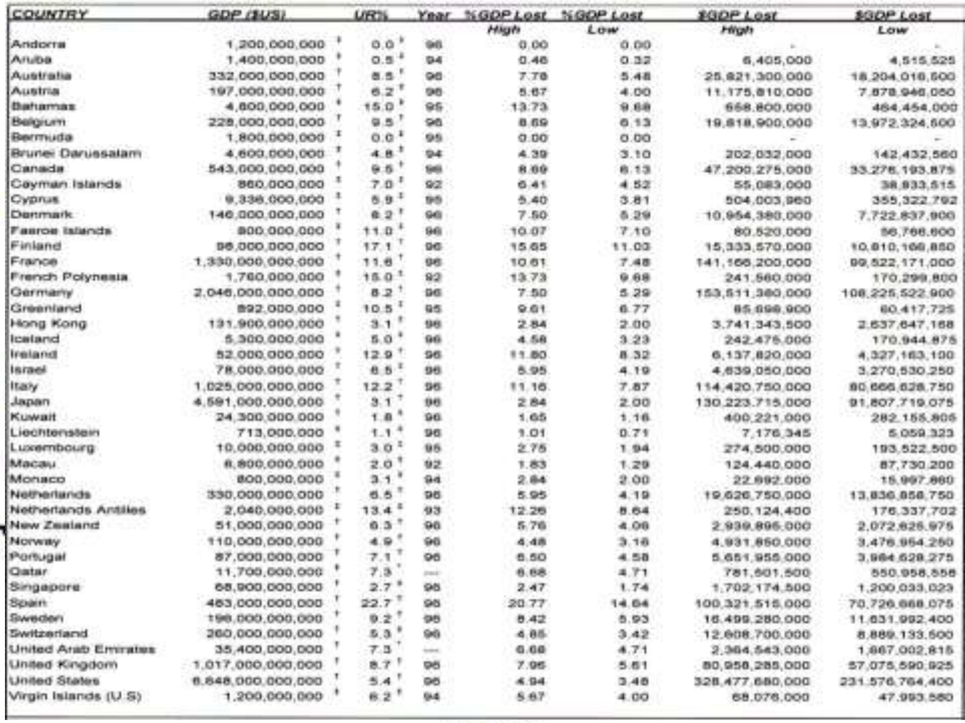
Fonte: INE

Gráfico nº 1

Evolução do índice de dependência total, índice de dependência dos jovens e índice de envelhecimento, Portugal, 1990-2008



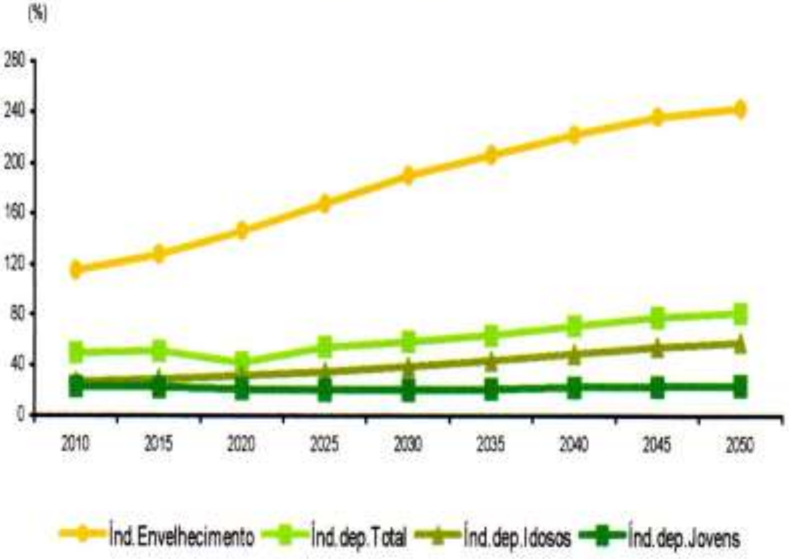
Fonte: INE, Estimativas da População Residente



COUNTRY	GDP ($US)		UR%		Year	%GDP Lost High	%GDP Lost Low	$GDP Lost High	$GDP Lost Low
Andorra	1,200,000,000	‡	0.0	‡	96	0.00	0.00	-	-
Aruba	1,400,000,000	‡	0.5	‡	94	0.46	0.32	6,405,000	4,515,525
Australia	332,000,000,000	†	8.5	†	96	7.78	5.48	25,821,300,000	18,204,016,500
Austria	197,000,000,000	†	6.2	†	96	5.67	4.00	11,175,810,000	7,878,946,050
Bahamas	4,800,000,000	*	15.0	‡	95	13.73	9.68	658,800,000	464,454,000
Belgium	228,000,000,000	†	9.5	†	96	8.69	6.13	19,818,900,000	13,972,324,500
Bermuda	1,800,000,000	‡	0.0	‡	95	0.00	0.00	-	-
Brunei Darussalam	4,600,000,000	†	4.8	‡	94	4.39	3.10	202,032,000	142,432,560
Canada	543,000,000,000	†	9.5	†	96	8.69	6.13	47,200,275,000	33,276,193,875
Cayman Islands	860,000,000	‡	7.0	‡	92	6.41	4.52	55,083,000	38,833,515
Cyprus	9,336,000,000	‡	5.9	‡	95	5.40	3.81	504,003,960	355,322,792
Denmark	146,000,000,000	†	8.2	†	96	7.50	5.29	10,954,380,000	7,722,837,900
Faeroe Islands	800,000,000	‡	11.0	‡	96	10.07	7.10	80,520,000	56,766,600
Finland	98,000,000,000	†	17.1	†	96	15.65	11.03	15,333,570,000	10,810,166,850
France	1,330,000,000,000	†	11.6	†	96	10.61	7.48	141,166,200,000	99,522,171,000
French Polynesia	1,760,000,000	*	15.0	†	92	13.73	9.68	241,560,000	170,299,800
Germany	2,046,000,000,000	†	8.2	†	96	7.50	5.29	153,511,380,000	108,225,522,900
Greenland	892,000,000	‡	10.5	‡	95	9.61	6.77	85,698,900	60,417,725
Hong Kong	131,900,000,000	†	3.1	†	96	2.84	2.00	3,741,343,500	2,637,647,168
Iceland	5,300,000,000	*	5.0	*	96	4.58	3.23	242,475,000	170,944,875
Ireland	52,000,000,000	†	12.9	†	96	11.80	8.32	6,137,820,000	4,327,163,100
Israel	78,000,000,000	†	6.5	‡	96	5.95	4.19	4,639,050,000	3,270,530,250
Italy	1,025,000,000,000	†	12.2	†	96	11.16	7.87	114,420,750,000	80,666,628,750
Japan	4,591,000,000,000	†	3.1	†	96	2.84	2.00	130,223,715,000	91,807,719,075
Kuwait	24,300,000,000	*	1.8	*	96	1.65	1.16	400,221,000	282,155,805
Liechtenstein	713,000,000	*	1.1	*	96	1.01	0.71	7,176,345	5,059,323
Luxembourg	10,000,000,000	‡	3.0	‡	95	2.75	1.94	274,500,000	193,522,500
Macau	6,800,000,000	*	2.0	†	92	1.83	1.29	124,440,000	87,730,200
Monaco	800,000,000	‡	3.1	*	94	2.84	2.00	22,692,000	15,997,860
Netherlands	330,000,000,000	†	6.5	†	96	5.95	4.19	19,626,750,000	13,836,858,750
Netherlands Antilles	2,040,000,000	‡	13.4	‡	93	12.26	8.64	250,124,400	176,337,702
New Zealand	51,000,000,000	†	6.3	†	96	5.76	4.06	2,939,895,000	2,072,625,975
Norway	110,000,000,000	†	4.9	*	96	4.48	3.16	4,931,850,000	3,476,954,250
Portugal	87,000,000,000	†	7.1	†	96	6.50	4.58	5,651,955,000	3,984,628,275
Qatar	11,700,000,000	*	7.3	'	—	6.68	4.71	781,501,500	550,958,558
Singapore	68,900,000,000	†	2.7	*	96	2.47	1.74	1,702,174,500	1,200,033,023
Spain	483,000,000,000	†	22.7	†	96	20.77	14.64	100,321,515,000	70,726,668,075
Sweden	196,000,000,000	†	9.2	†	96	8.42	5.93	16,499,280,000	11,631,992,400
Switzerland	260,000,000,000	†	5.3	*	96	4.85	3.42	12,608,700,000	8,889,133,500
United Arab Emirates	35,400,000,000	†	7.3	'	—	6.68	4.71	2,364,543,000	1,667,002,815
United Kingdom	1,017,000,000,000	†	8.7	†	96	7.96	5.61	80,958,285,000	57,075,590,925
United States	6,648,000,000,000	†	5.4	†	96	4.94	3.48	328,477,680,000	231,576,764,400
Virgin Islands (U.S)	1,200,000,000	*	6.2	†	94	5.67	4.00	68,076,000	47,993,580

Gráfico nº3

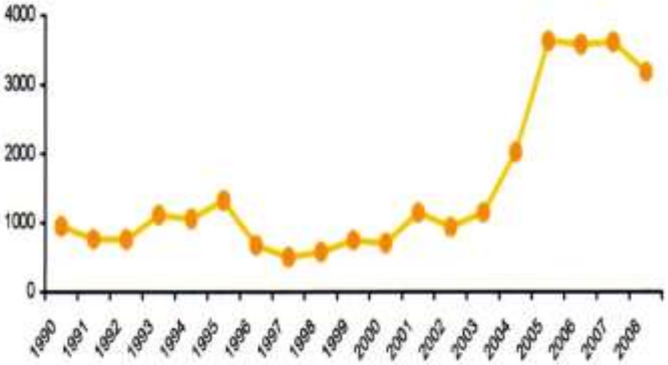
Projecção da evolução dos índices de envelhecimento e dependência, Portugal 2000-2050



Fonte: INE, Projecções da População Residente

Gráfico nº 12

Evolução do número de pensionistas com incapacidade permanente (1), em resultado de doenças profissionais contraídas, Continente, 1990-2008



(1) Os pensionistas com incapacidade permanente incluem: pensionistas com incapacidade parcial permanente; pensionistas com incapacidade permanente absoluta para o trabalho habitual e pensionistas com incapacidade permanente e absoluta para qualquer trabalho.

Fonte: MSST, Instituto de Informática e Estatística da Solidariedade

2.1.3 DOENÇAS CRÓNICAS

População inquirida que tem ou já teve doença crónica, por tipo de doença, sexo, NUTS I, 2005/2006

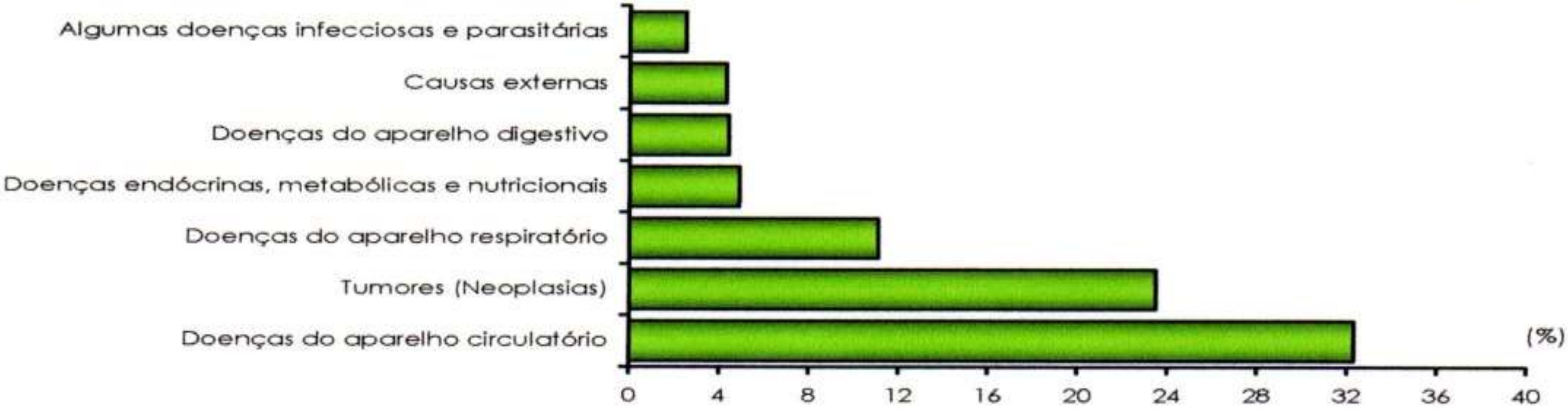
(%)

Tipo de doença	Continente			R.A.Açores			R.A.Madeira		
	HM	H	M	HM	H	M	HM	H	M
Diabetes	6,5	5,9	7,1	6,7	5,2	8,2	4,6	3,4	5,7
Asma	5,5	4,8	6,2	5,8	5,2	6,4	4,4	4,7	4,1
Tensão arterial alta	20,0	16,4	23,4	16,3	12,0	20,5	13,1	9,1	16,7
Dor crónica	16,3	12,7	19,8	10,0	7,7	12,2	7,2	5,1	9,0
Doença reumática	16,3	11,4	20,9	12,9	8,4	17,3	6,0	3,6	8,2
Osteoporose	6,3	1,1	11,1	5,6	1,6	9,4	4,1	1,3	6,6
Glaucoma	0,7	0,5	0,9	0,7	0,4	0,9	0,4	0,3	0,4
Retinopatia	0,8	0,7	0,8	0,3	0,3	0,3	1,2	1,1	1,3
Tumor maligno/cancro	1,9	1,7	2,2	1,4	1,1	1,6	0,8	0,6	1,1
Pedra nos rins	4,9	4,8	5,1	3,5	2,8	4,1	0,9	1,2	0,7
Insuficiência renal	1,6	1,4	1,8	0,6	0,6	0,6	0,8	0,6	0,9
Ansiedade crónica	4,6	2,6	6,4	4,4	2,0	6,8	0,9	0,9	1,0
Ferida crónica	0,9	0,8	1,1	0,8	0,5	1,0	0,6	0,7	0,5
Enfisema, bronquite crónica	3,7	3,5	3,9	2,1	2,3	1,9	2,0	2,2	1,8
Acidente vascular cerebral	1,6	1,8	1,5	1,4	1,6	1,3	1,3	1,2	1,4
Obesidade	3,9	3,0	4,7	2,2	1,4	3,1	0,6	0,3	1,0
Depressão	8,3	4,0	12,5	5,4	2,6	8,2	4,1	2,2	5,7
Enfarte do miocárdio	1,3	1,9	0,8	1,0	1,2	0,9	0,9	1,1	0,7
Outra doença crónica	24,4	23,2	25,5	25,5	23,1	27,7	21,9	20,3	23,3

Fonte: INSA, Inquérito Nacional de Saúde, 2005/2006

Gráfico Nº 24

Distribuição percentual dos óbitos por algumas causas de morte, Portugal, 2008



Fonte: INE, Estatísticas da Saúde; Estatísticas Demográficas

DGS/ DSEES

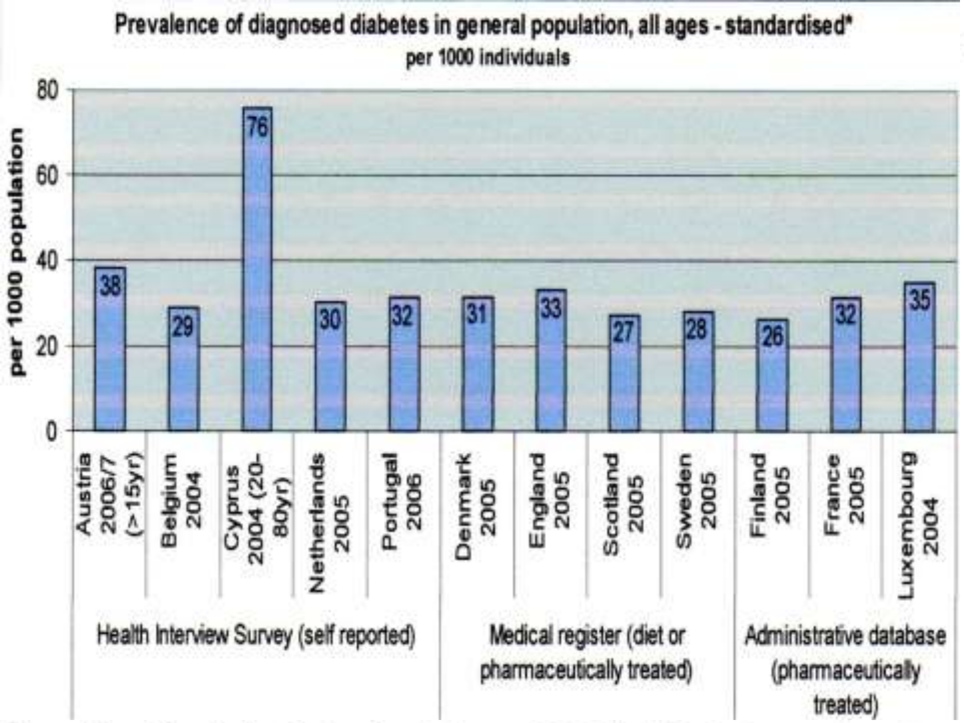


Figure 16a Standardised rates of mortality per 100.000 individuals in general population with primary or secondary cause of death of diabetes

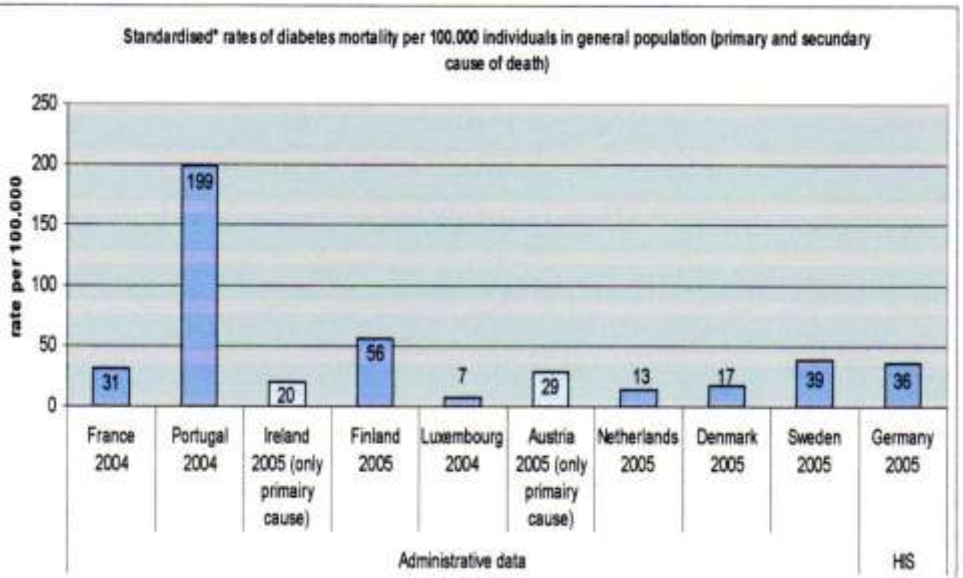


Gráfico nº 8
Percentagem da população com excesso de peso, por grupos etários, Continente, 2005/2006

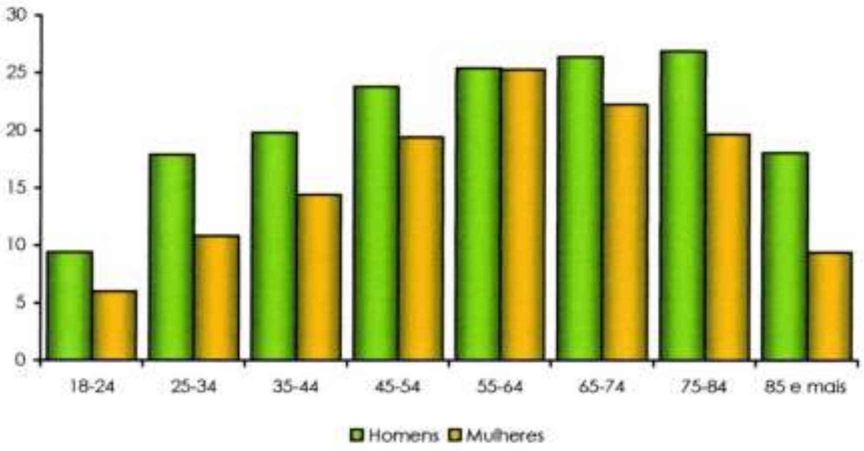
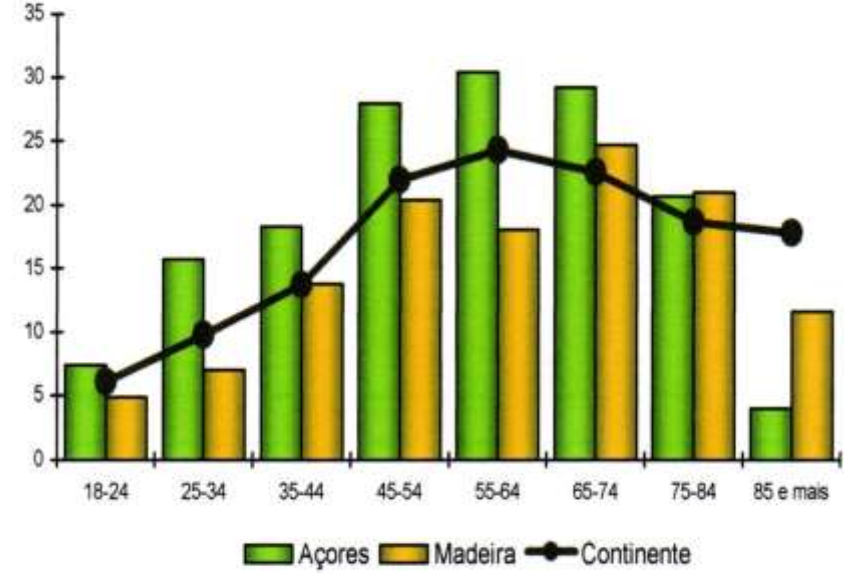
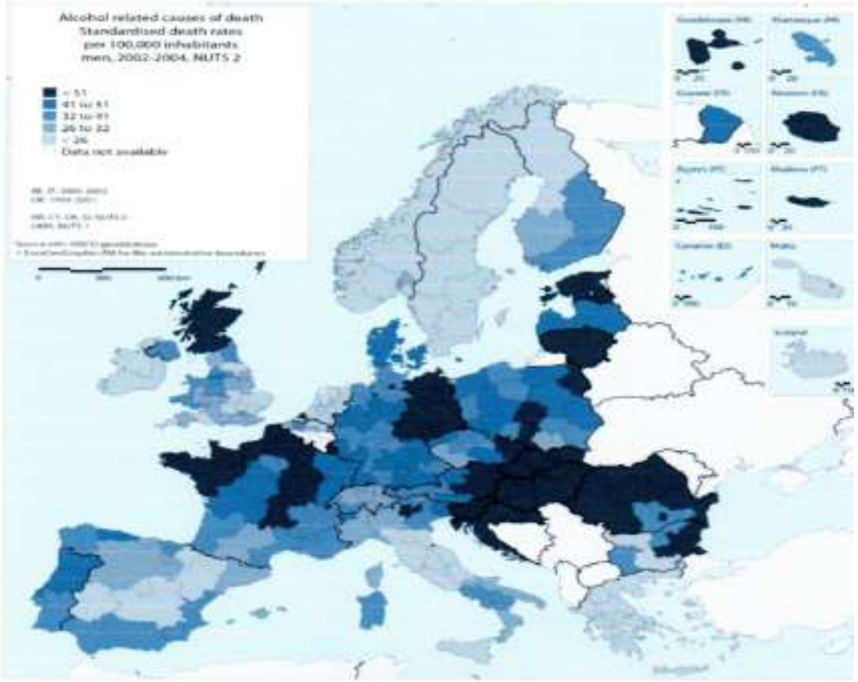


Gráfico nº 9
Percentagem da população com obesidade, por grupos etários, NUTS I, 2005/2006



Fonte: INSA, Inquérito Nacional de Saúde, 2005/2006

Alcohol-related mortality


Alcohol related causes of death
Standardised death rates
per 100,000 inhabitants
men, 2002-2004, NUTS 2
> 51
41 to 51
32 to 41
26 to 32
< 26
Data not available

Transport accidents

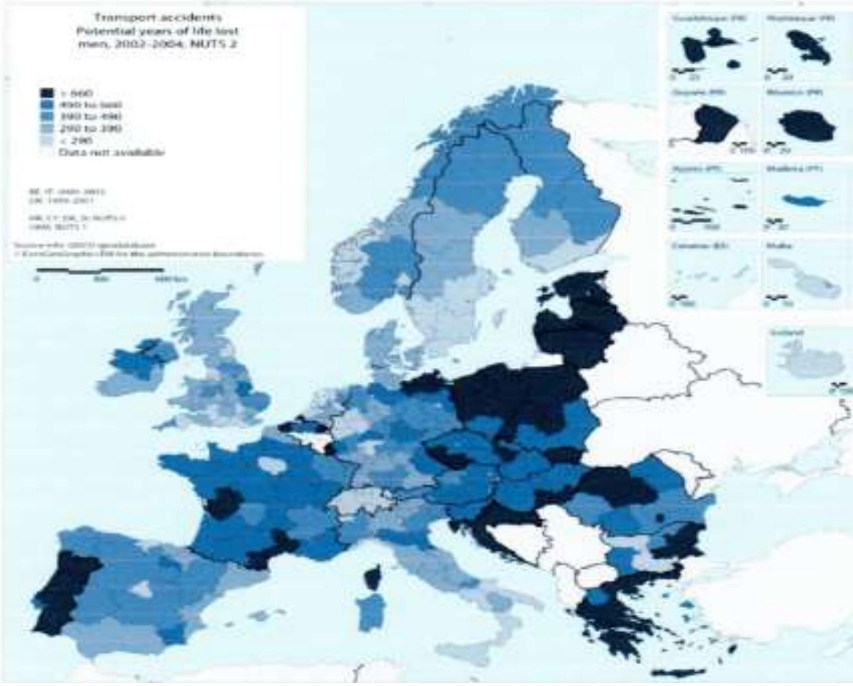
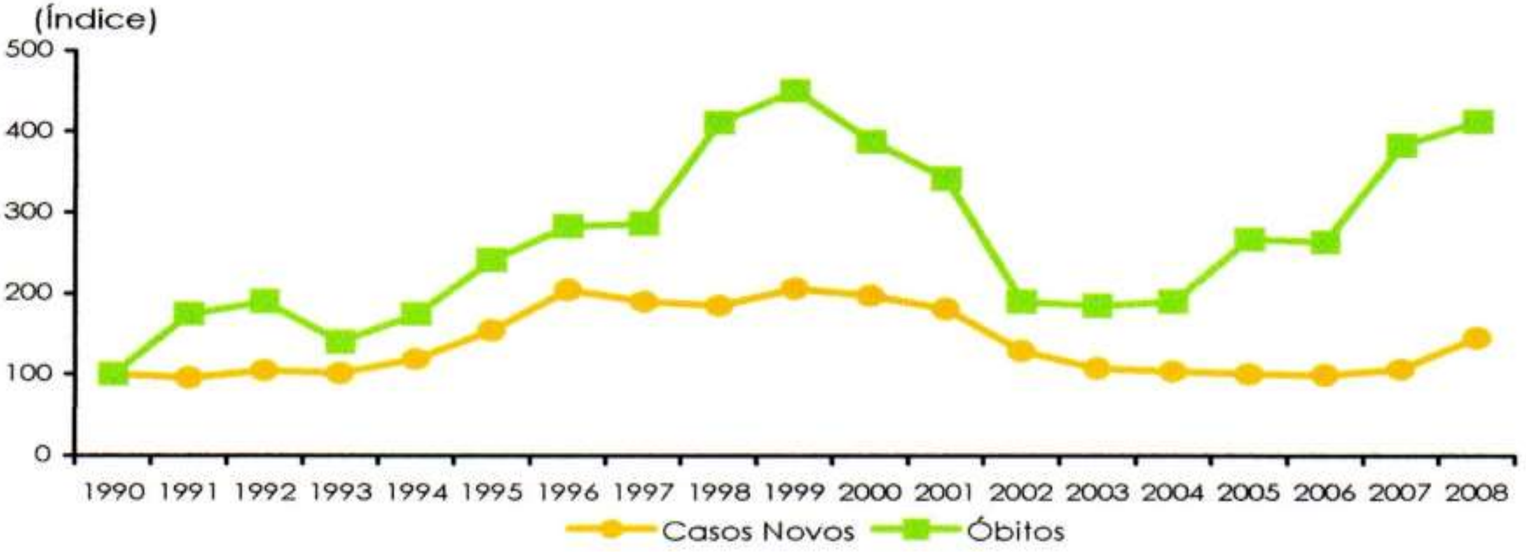
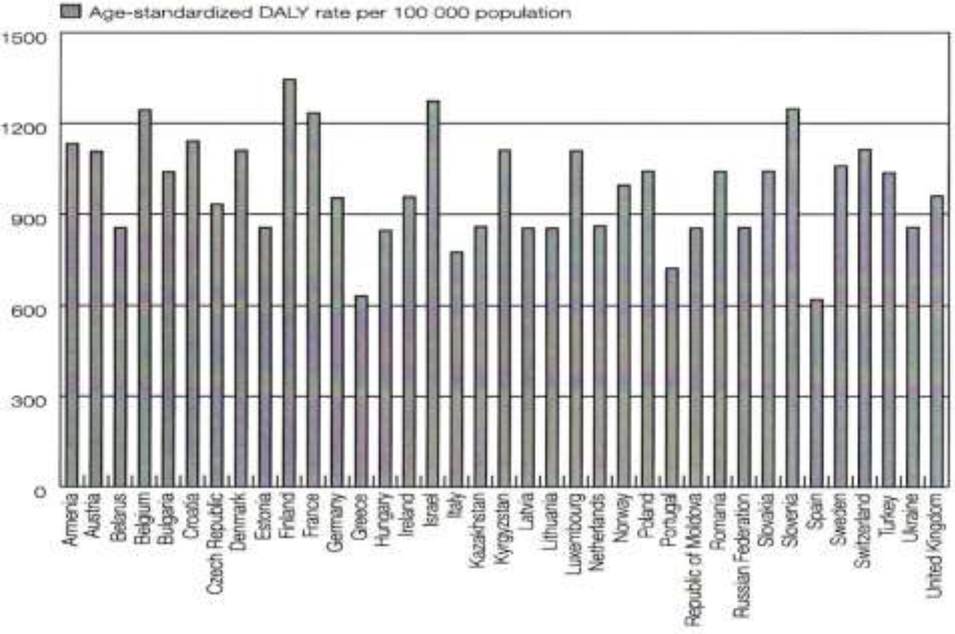

Transport accidents
Potential years of life lost
men, 2002-2004, NUTS 2
> 560
490 to 560
390 to 490
290 to 390
< 290
Data not available

Gráfico nº 19
Índices de variação de casos novos e de óbitos relacionados com o uso ilícito de droga, 1990-2008, (1990=100)



Fonte: Instituto da Droga e da Toxicodependência

Fig. 2.5 *Burden of disease attributable to unipolar depressive disorder in selected countries in the WHO European Region (2004)*



Source: WHO 2009.

Suicide

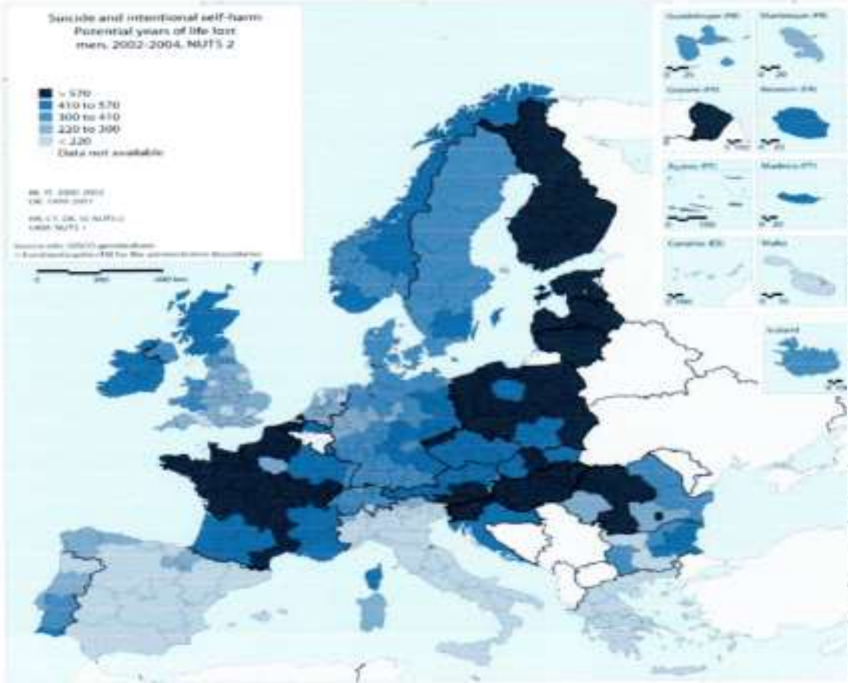
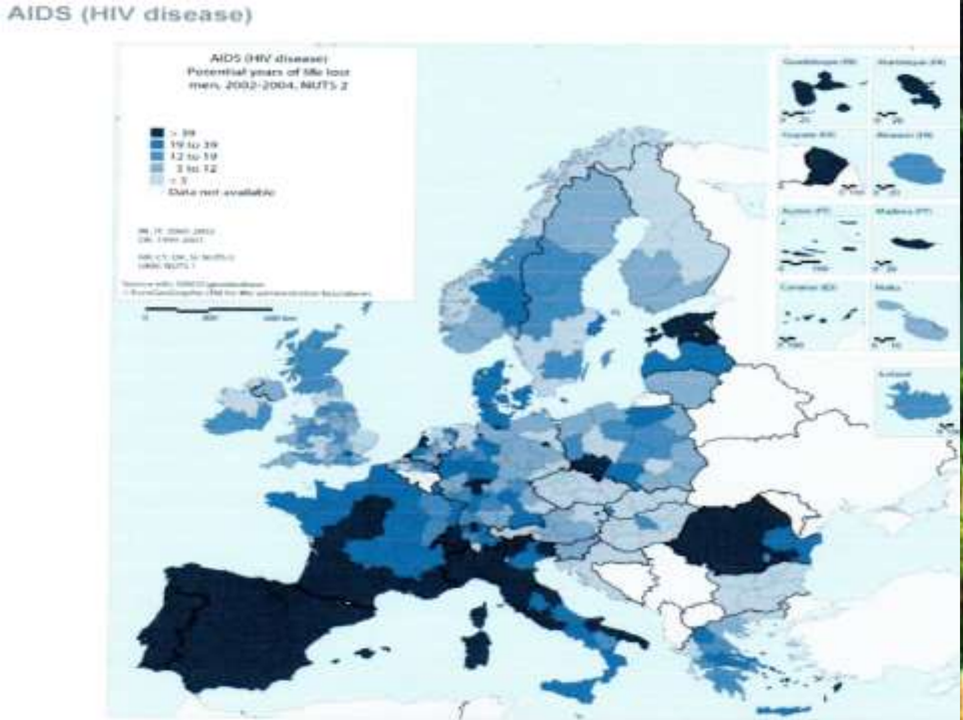
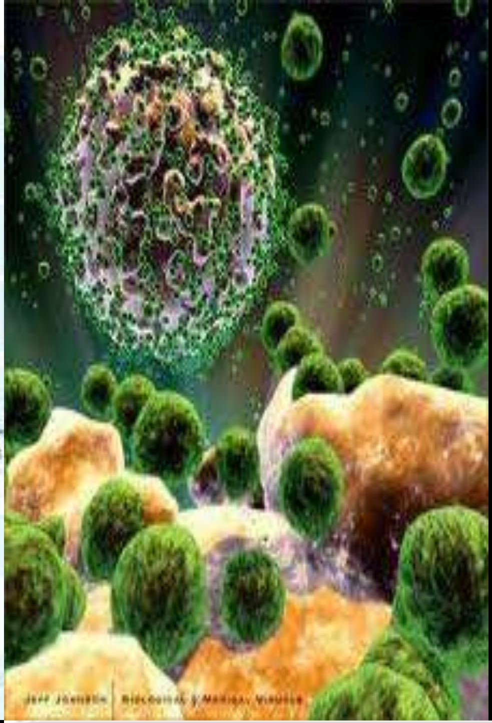


Table 1 The estimated number of people with dementia in Europe*

Country	Age group	Number of people with dementia (EURODEM)	As % of total population	Number of people with dementia (Ferri et al.)	As % of total population
Austria	30-94	104,428	1.27	94,441	1.15
Belgium	30-99	140,639	1.35	127,174	1.22
Bulgaria	30-99	87,797	1.13	76,556	0.99
Cyprus	30-99	6,725	0.9	6,054	0.81
Czech Republic	30-99	105,553	1.03	93,973	0.92
Denmark	30-99	68,430	1.26	62,318	1.15
Estonia (2004)	30-99	15,065	1.12	12,955	0.96
Finland	30-99	65,362	1.25	59,360	1.13
France	30-99	847,808	1.36	760,715	1.22
Germany	30-94	1,118,429	1.36	1,010,245	1.22
Greece	30-99	135,566	1.22	123,700	1.12
Hungary	30-89	100,567	1	88,070	0.87
Ireland	30-94	35,381	0.86	31,940	0.78
Italy	30-99	905,713	1.55	820,462	1.4
Latvia	30-99	25,969	1.13	22,509	0.98
Lithuania	30-99	35,298	1.03	30,169	0.88
Luxembourg	30-94	4,857	1.07	4,370	0.96
Malta	30-89	3,427	0.85	3,148	0.78
Netherlands	30-99	183,485	1.13	165,585	1.02
Poland	30-99	350,511	0.92	300,447	0.79
Portugal	30-94	129,916	1.23	119,308	1.13
Romania	30-99	200,893	0.93	172,130	0.79
Slovenia	30-99	21,788	1.09	19,302	0.97
Slovakia	30-99	44,813	0.83	38,232	0.71
Spain	30-99	583,208	1.36	533,388	1.24
Sweden	30-99	138,641	1.54	128,220	1.42
UK (2004)	30-89	660,573	1.11	621,717	1.04
EU27 TOTAL		**6,120,842**	**1.25**	**5,526,488**	**1.13**
Iceland	30-99	2,845	0.97	2,584	0.88
Norway	30-99	61,077	1.33	56,227	1.22
Switzerland	30-94	97,068	1.31	88,900	1.2
Turkey	30-74	129,715	0.18	78,546	0.11
other countries TOTAL		**290,705**		**226,257**	
GRAND TOTAL		**6,411,547**		**5,752,745**	

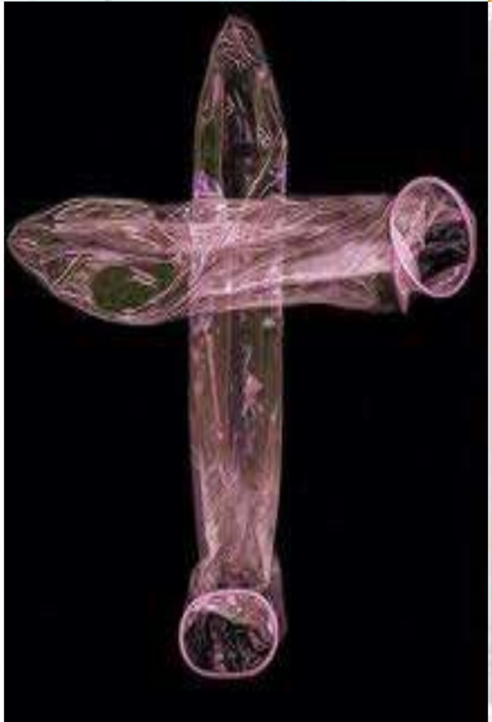
*The figures in this table are from 2005 unless stated otherwise


AIDS (HIV disease)
AIDS (HIV disease)
Potential years of life lost
men, 2002-2004, NUTS 2
> 39
19 to 39
12 to 19
3 to 12
< 3
Data not available



AIDS

STOP
AIDS



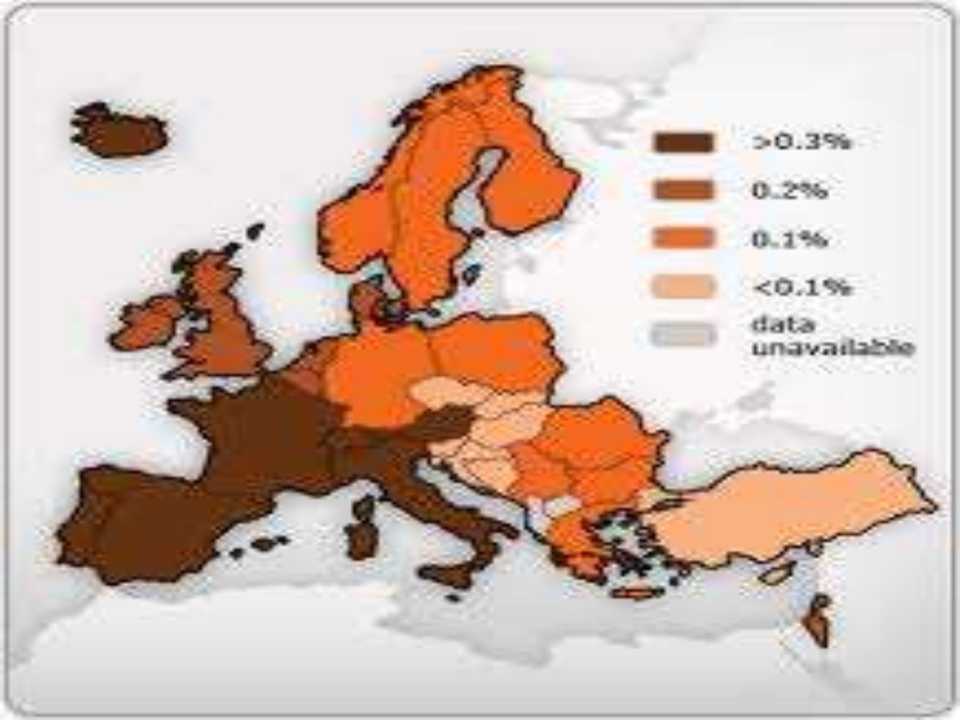
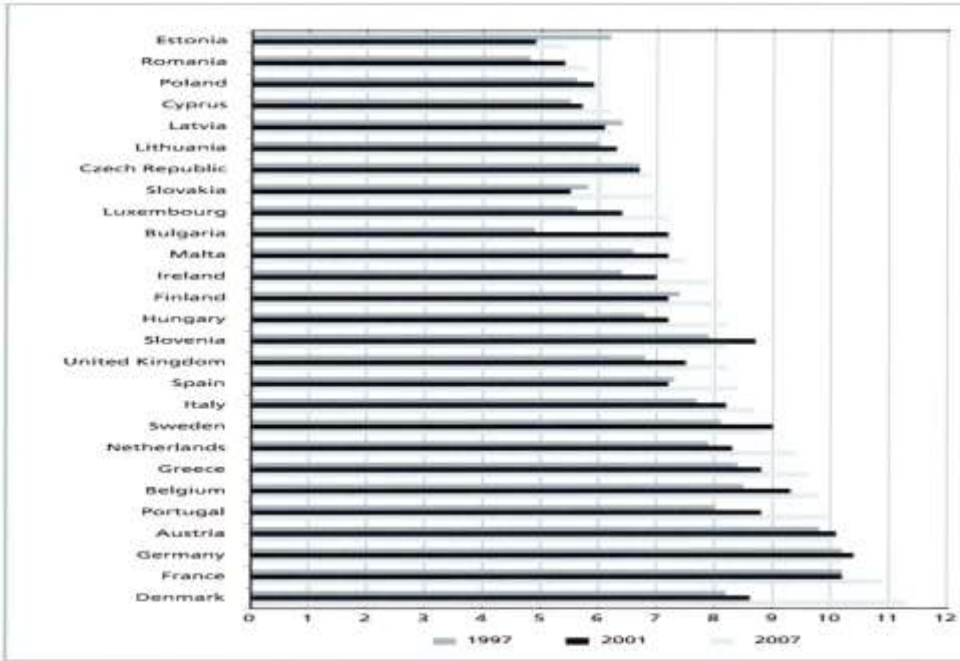
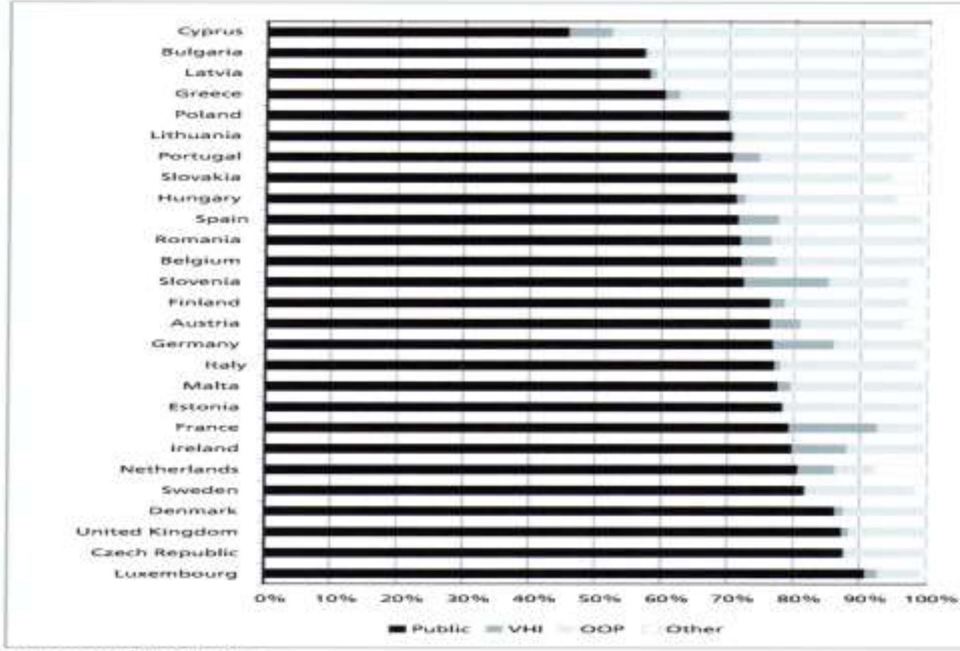

>0.3%
0.2%
0.1%
<0.1%
data unavailable

Fig. 4. Total health spending as a percent of GDP in current EU countries, 1997, 2001 and 2007



Source: WHO 2009 (81).

Fig. 5. Sources of health finance by country, 2007

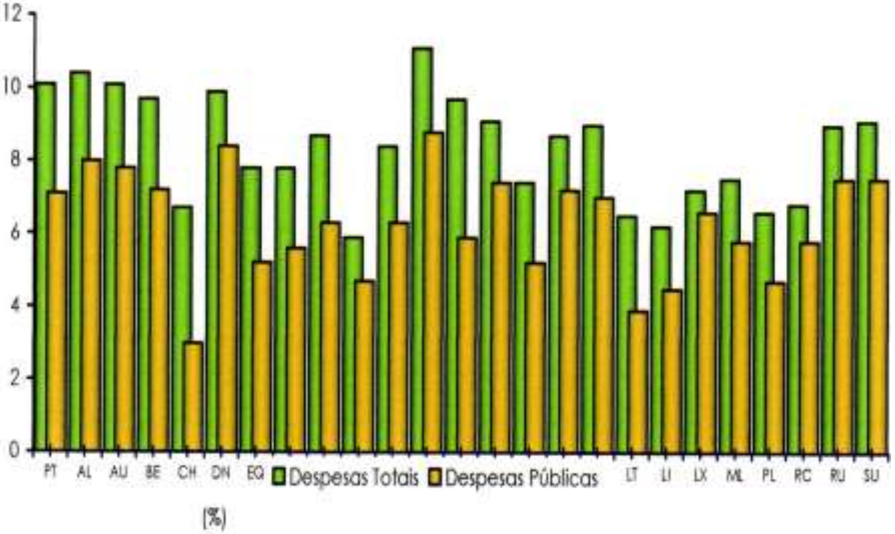


Source: WHO 2009 (81).

Notes: VHI: Voluntary health insurance; OOP: out-of-pocket (payment).

Gráfico nº 69

Despesas totais e públicas em saúde (percentagem) em relação ao PIB, na UE, 2008

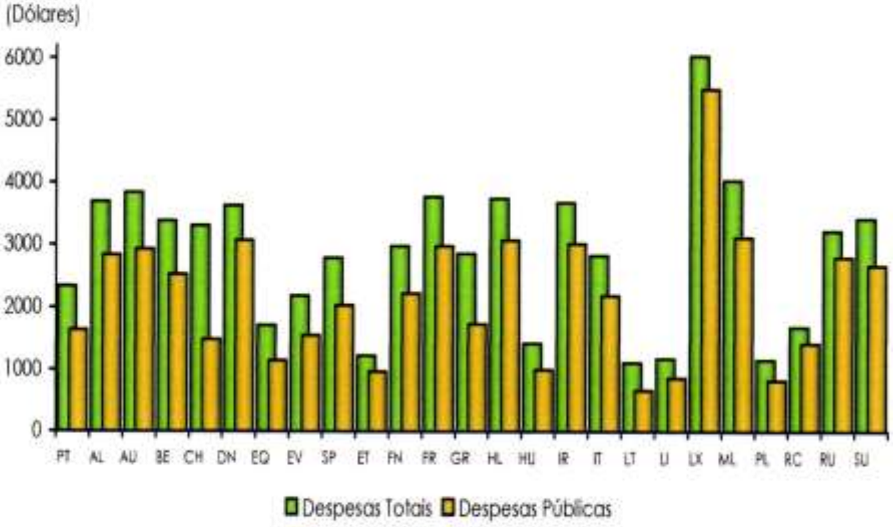


Nota: os dados do gráfico referem-se ao último ano disponível.

Fonte: *OECD, Health Data 2008 (November 2010)*

Gráfico nº 70

Despesas totais e públicas em saúde *per capita* (Dólares PPP), na UE, 2008



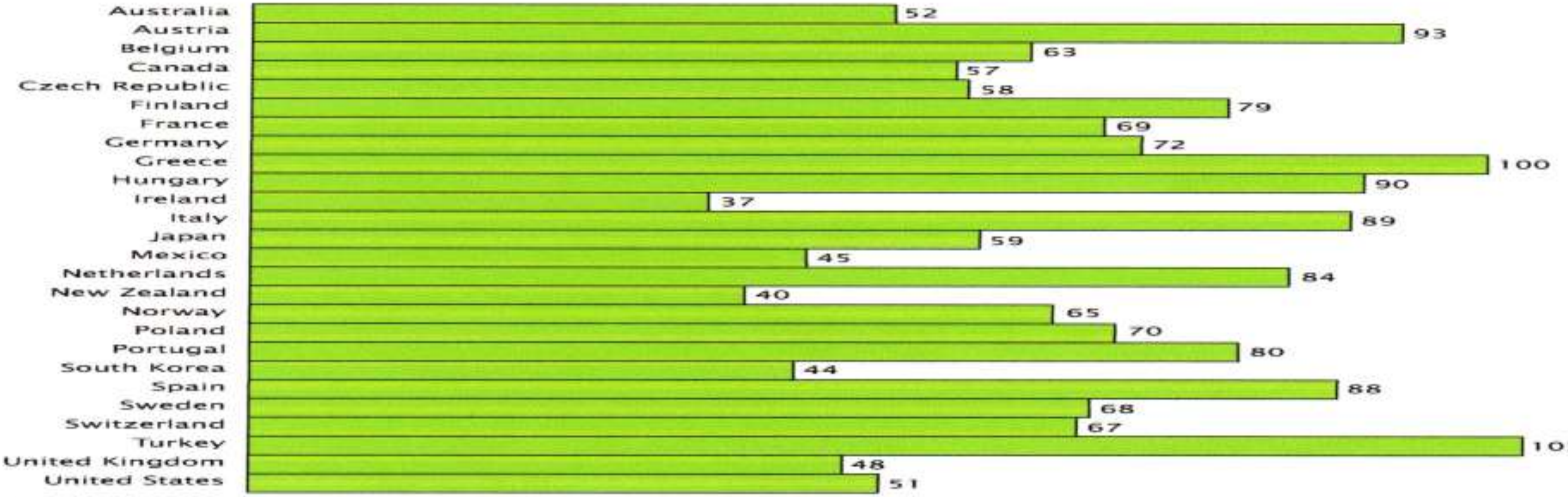
Nota: os dados do gráfico referem-se ao último ano disponível.

Fonte: *OECD, Health Data 2008 (November 2010)*

Figure 10-4.

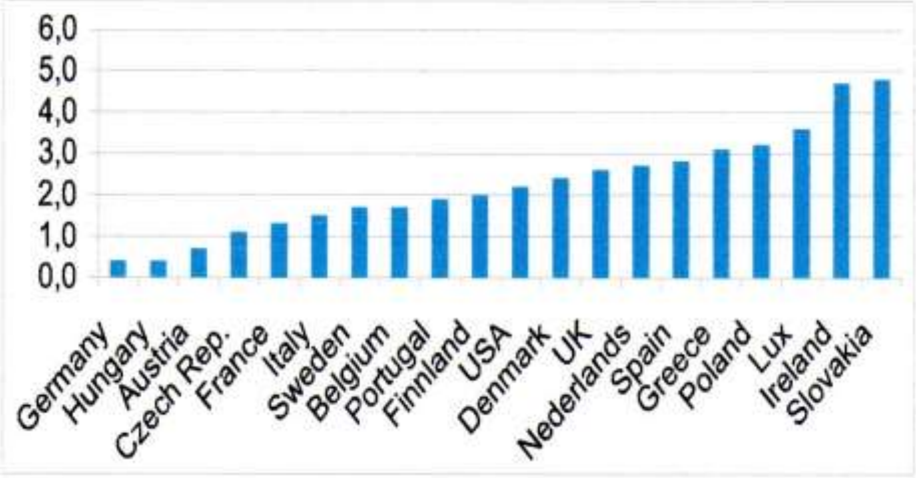
Net Replacement Rate in Mandatory Pension Programs for Men in Selected Countries: 2005

(Percent)



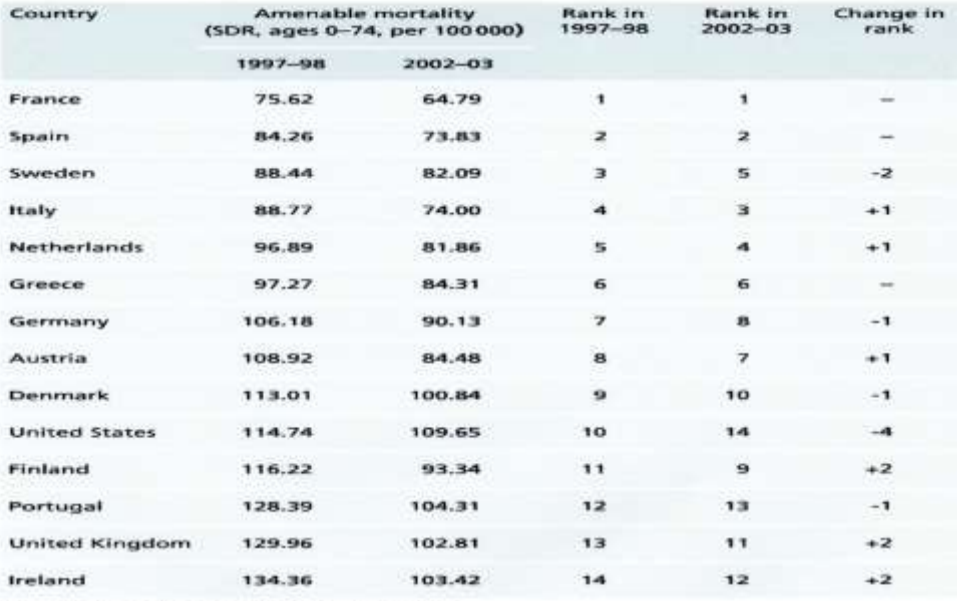
Note: Data refer to average individual pension entitlements as a percentage of preretirement earnings (net of taxes and contributions).
Source: Organisation for Economic Co-Operation and Development (OECD), 2005.

Graph 1: Sustainability gap* of the HCS by country, percent of GDP



*Difference between average real growth rate of per capita total health care spending and real per capita GDP growth rate 2000-2008; Own calculations.
Source: OECD, Eurostat.

Table 1. OECD countries ranked by level of age-standardized mortality from causes amenable to health care, 1997–98 and 2002–03

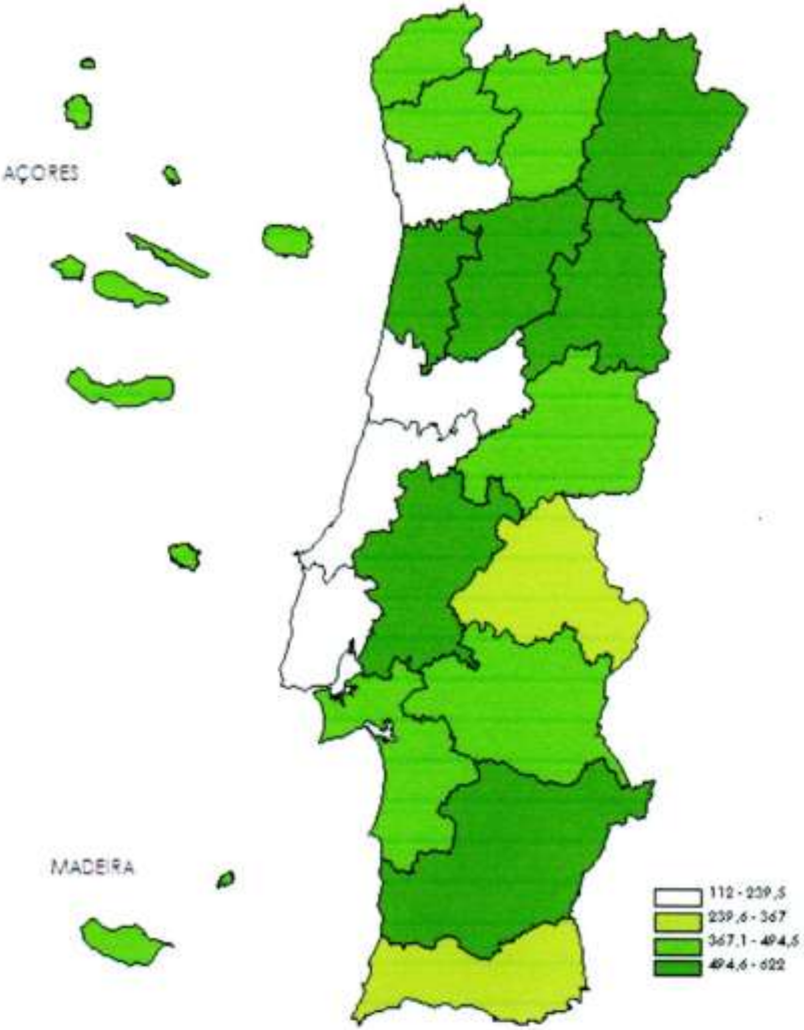


Country	Amenable mortality (SDR, ages 0–74, per 100 000) 1997–98	Amenable mortality (SDR, ages 0–74, per 100 000) 2002–03	Rank in 1997–98	Rank in 2002–03	Change in rank
France	75.62	64.79	1	1	–
Spain	84.26	73.83	2	2	–
Sweden	88.44	82.09	3	5	-2
Italy	88.77	74.00	4	3	+1
Netherlands	96.89	81.86	5	4	+1
Greece	97.27	84.31	6	6	–
Germany	106.18	90.13	7	8	-1
Austria	108.92	84.48	8	7	+1
Denmark	113.01	100.84	9	10	-1
United States	114.74	109.65	10	14	-4
Finland	116.22	93.34	11	9	+2
Portugal	128.39	104.31	12	13	-1
United Kingdom	129.96	102.81	13	11	+2
Ireland	134.36	103.42	14	12	+2

Source: adapted from Nolte and McKee (33).

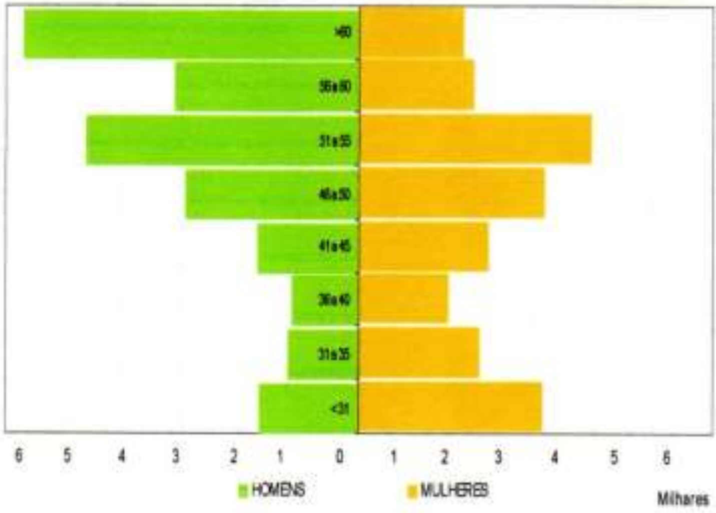
Notes: Amenable mortality is deaths before age 75 that are potentially preventable with timely and appropriate medical care; SDR: standardized death rate; Denmark 2000–01; Sweden 2001–02; United States 2002.

Cartograma nº 14
Índice habitante/médico, por sub-regiões de Saúde e RA, 2008


AÇORES
MADEIRA
112 - 239,5
239,6 - 367
367,1 - 494,5
494,6 - 622

Fonte: Ordem dos Médicos

Gráfico nº 55
Distribuição dos médicos (2) por grupos etários e sexos, Portugal, 2008



Fonte: Ordem dos Médicos

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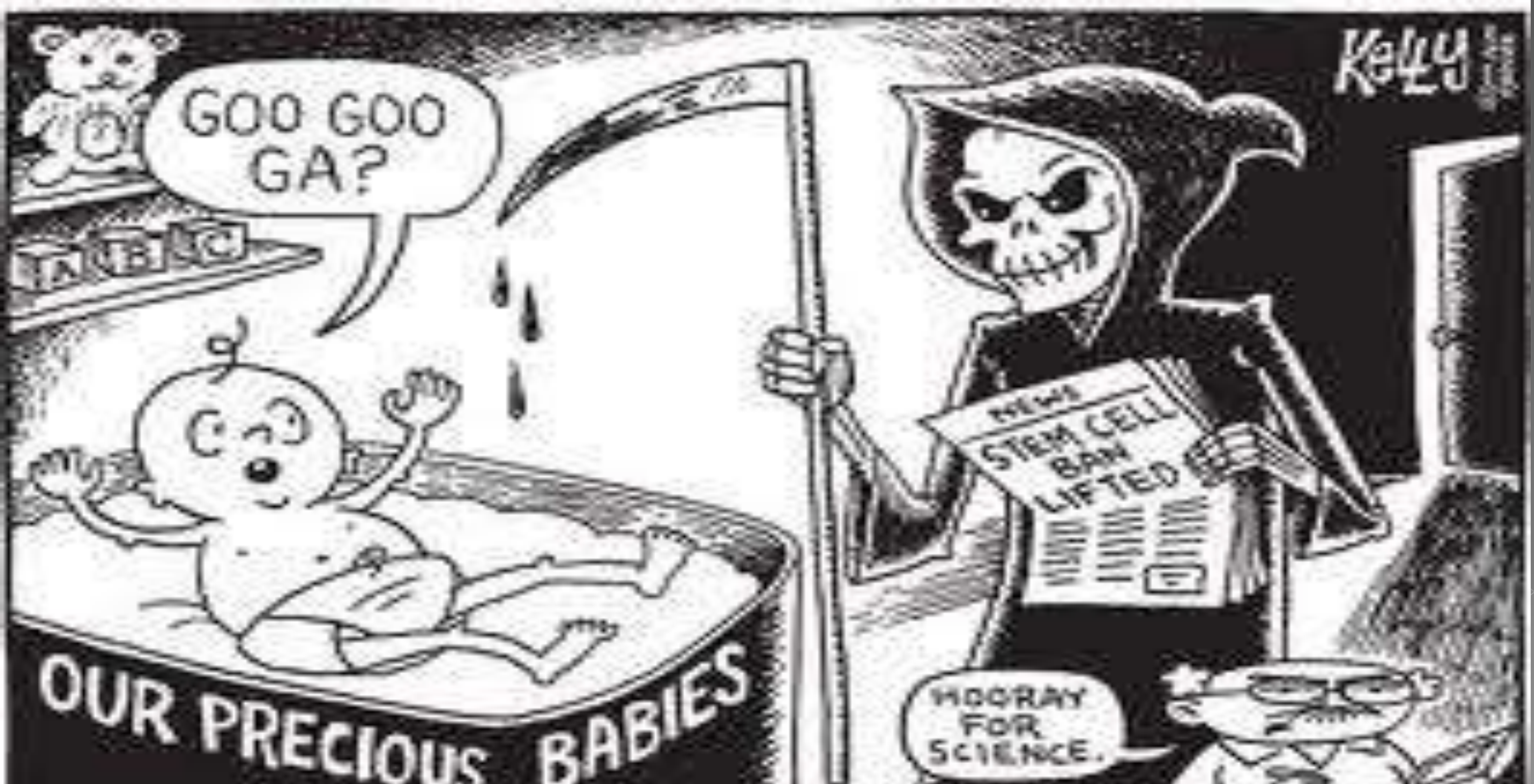
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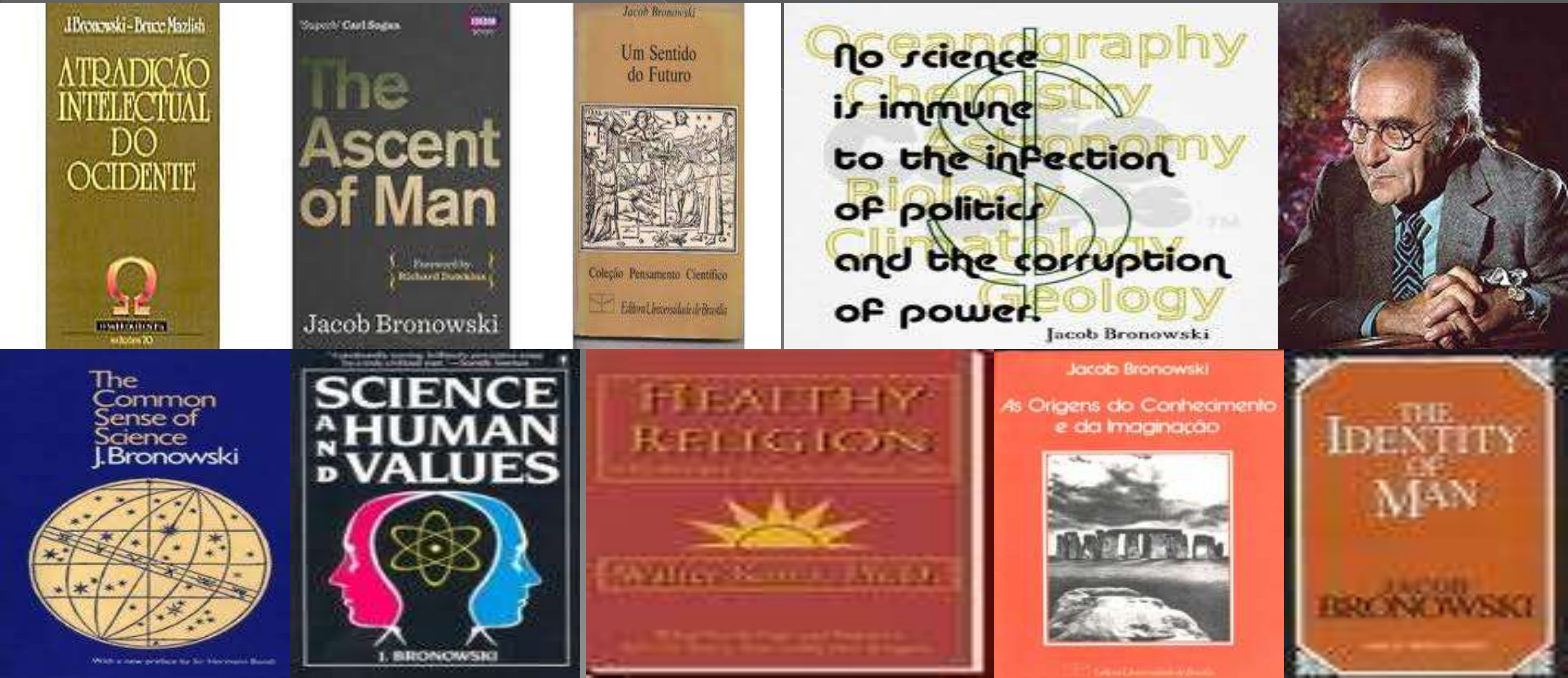
- *" … os três pilares fundamentais onde deve assentar o pensamento científico: Criatividade, Veracidade, e Sentido da Dignidade Humana … " (sic.)* *(Jacob Bronowski)*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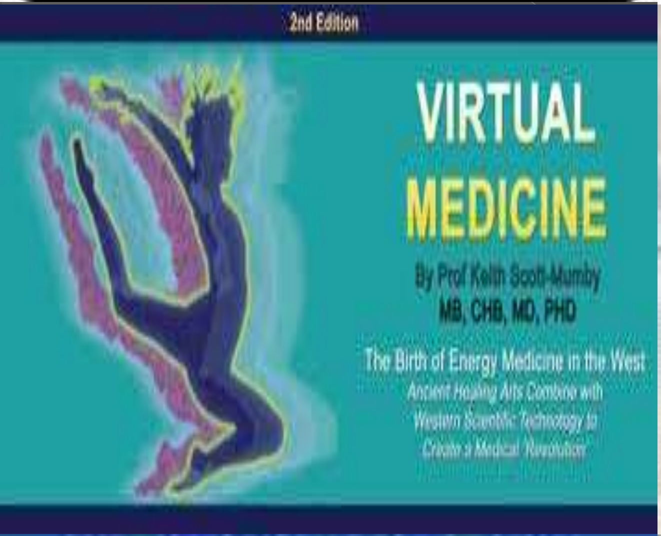
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Surveillance Sans Frontières: Internet-based Emerging Infectious Disease Intelligence and the HealthMap Project

John S. Brownstein; Clark C. Freifeld; Ben Y. Reis; Kenneth D. Mandl

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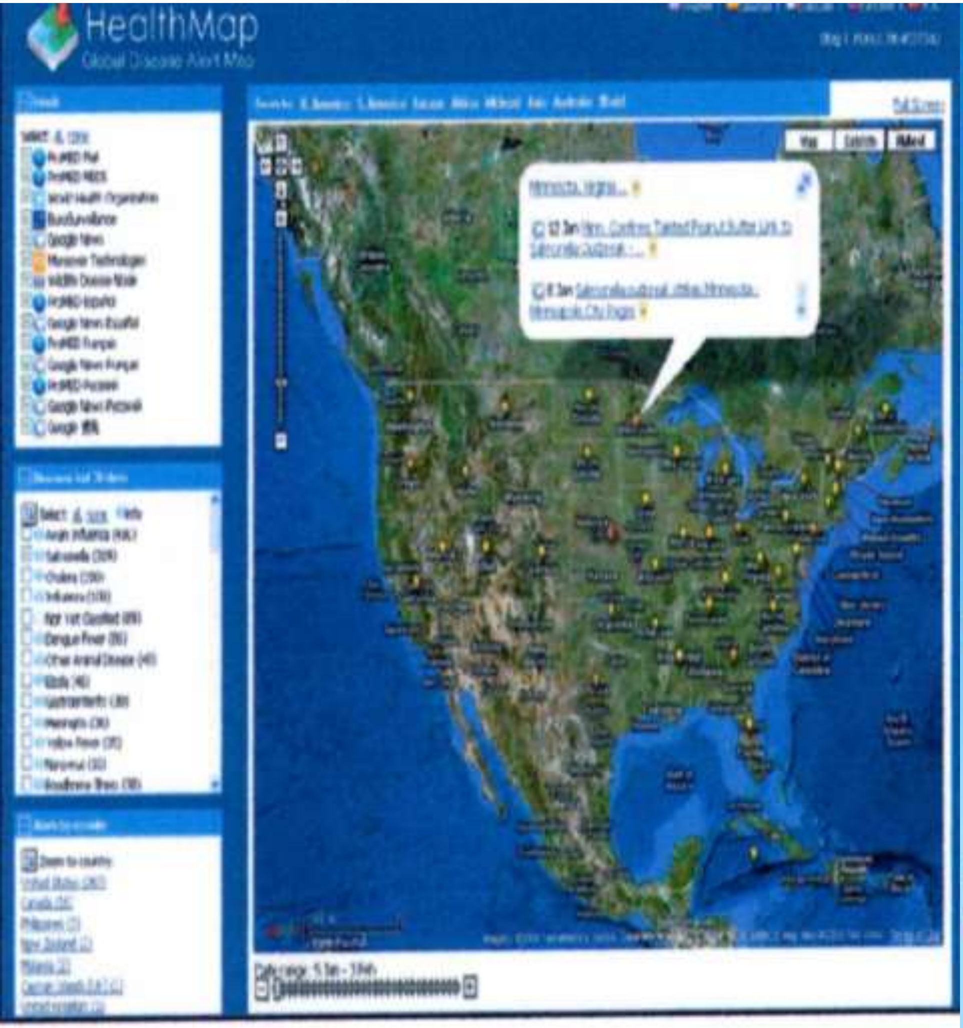
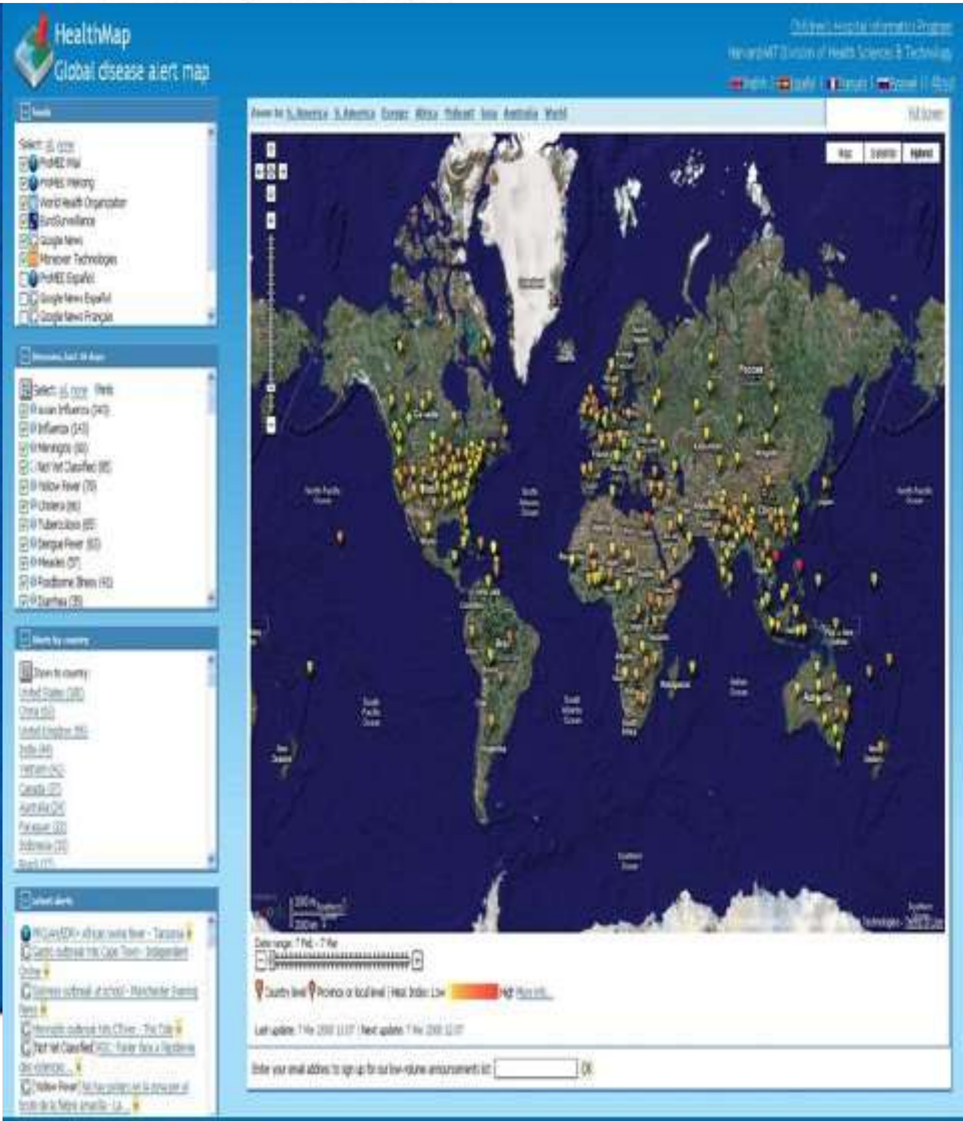

HealthMap
Global Disease Alert Map

Screen Shot of HealthMap during the Recent *Salmonella* Typhimurium Outbreak.

HealthMap displays 319 articles about the outbreak that has affected 38 U.S. states.


HealthMap
Global disease alert map

Medscape

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IF SMALLPOX STRIKES PORTLAND . . .

BY CHRIS L. BARRETT, STEPHEN G. EUBANK AND JAMES P. SMITH

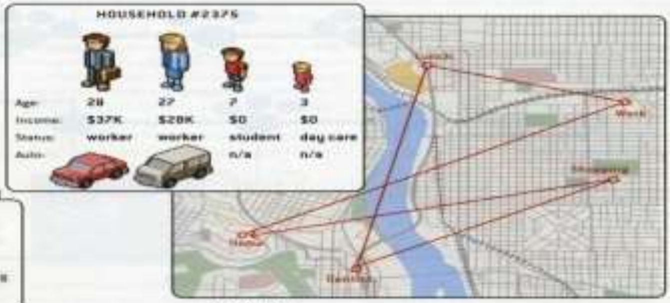
"EPISIMS" UNLEASHES VIRTUAL PLAGUES IN REAL CITIES TO SEE HOW SOCIAL NETWORKS SPREAD DISEASE. THAT KNOWLEDGE MIGHT HELP STOP EPIDEMICS

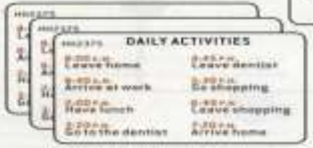
CREATING THE EPISIMS

The original EpiSims model was based on Portland, Ore., but gathering sufficiently detailed information about 1.6 million real people and their activities would have been difficult and intrusive. A synthetic population, statistically indistinguishable from the real one, could nonetheless be constructed and given realistic daily lives using publicly available data.

SYNTHETIC HOUSEHOLDS

The U.S. Census Bureau provided demographic information, such as age, household composition and income, for the entire city as well as 5 percent of its complete records for smaller study areas of a few square blocks. Through a statistical technique called iterative proportional fitting, these two data sets were combined to create households and individuals with statistically correct demographics and geographic distribution.


HOUSEHOLD #2375
Age: 28 27 7 3
Income: $37K $28K $0 $0
Status: worker worker student day care
Auto: n/a n/a
Lunch
Work
Shopping
Home
Dentist


HH2375
DAILY ACTIVITIES
8:00 A.M. Leave home
8:40 A.M. Arrive at work
12:00 P.M. Have lunch
2:20 P.M. Go to the dentist
3:45 P.M. Leave dentist
5:30 P.M. Go shopping
6:40 P.M. Leave shopping
7:20 P.M. Arrive home

ACTIVITIES

Most metropolitan planning offices conduct detailed traveler activity surveys for small population samples of a few thousand. These logs track the movements of each household member over the course of one or more days, noting the time of each activity. By matching the demographics of survey respondents to the entire synthetic population, realistic daily activities can be generated for every synthetic household member.

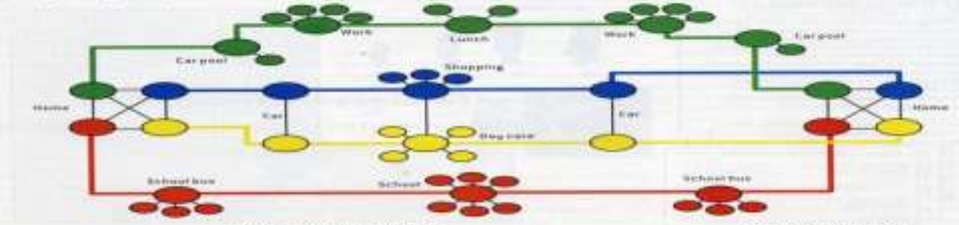
LOCATIONS

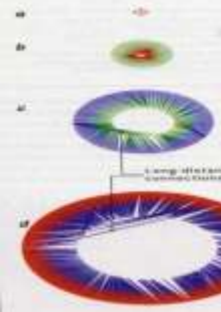
Setting the population in motion requires assigning locations to every household's activities. Land-use data for buildings, parking lots, parks and other places were associated with 180,000 locations in the model, providing estimates of the number of people performing various types of activities there. Activities were anchored to individuals' work or school locations, and then places were chosen for additional activities, such as grocery shopping or recreation, taking into account their distance and other measures of their appeal.

BUILDING SOCIAL NETWORKS

TYPICAL HOUSEHOLD'S CONTACTS

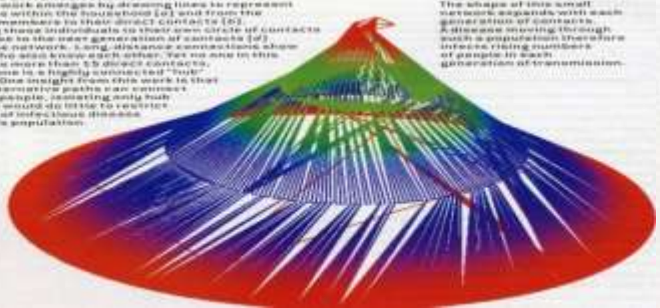
Constructing a social network for a household of two adults and two children starts by identifying their contacts with other people throughout a typical day. This diagram shows where the household members go and what they do all day but reveals little about how their individual contacts might be interconnected or connected to others.


Work
Lunch
Work
Car pool
Car pool
Shopping
Home
Car
Car
Home
Day care
School bus
School
School bus


a
b
c
Long-distance connections
d

LOCAL SOCIAL NETWORK

A social network emerges by drawing lines to represent connections within the household [a] and from the household members to their direct contacts [b]. Connecting those individuals to their own circle of contacts [c] and those to the next generation of contacts [d] enlarges the network. Long-distance connections show contacts who also know each other. Yet no one in this network has more than 15 direct contacts, meaning none is a highly connected "hub" of society. One insight from this work is that so many alternative paths can connect any pair of people, isolating only hub individuals would do little to restrict the spread of infectious disease through this population.

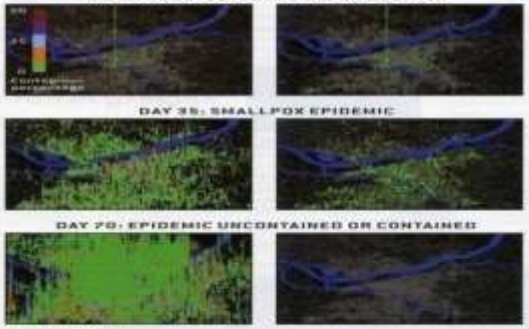


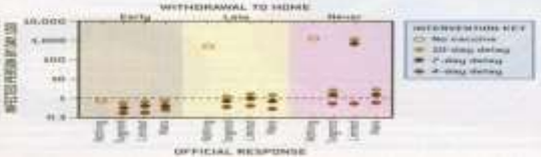
EXPANDER GRAPH

The shape of this small network expands with each generation of contacts. A disease moving through such a population therefore infects rising numbers of people in each generation of transmission.

SIMULATED SMALLPOX ATTACKS

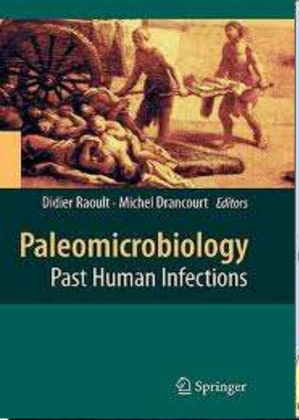
EpiSims animations depict simulated outbreaks and the effects of official interventions. In the still frames below, vertical lines indicate the number of infected people present at a location, and color shows the percentage of them who are contagious. In both scenarios shown, smallpox is released at a university in central Portland, but the attack is not detected until victims start experiencing symptoms 10 days later. The left-hand images show no public health response as a baseline. In the right-hand images, infected and exposed individuals are targeted for vaccination and quarantine. Results from a series of such simulations (bottom) show that people withdrawing to their homes early in an outbreak makes the biggest difference in death toll. The speed of official response, regardless of the strategy chosen, proved to be the second most important factor.


DAY 1: UNDETECTED SMALLPOX RELEASE
NO RESPONSE
INFECTED: 1,281
DEAD: 0
50
25
0
Contagious percentage
TARGETED VACCINATION AND QUARANTINE STARTING DAY 14
INFECTED: 1,281
QUARANTINED: 0
VACCINATED: 0
DEAD: 0
DAY 35: SMALLPOX EPIDEMIC
INFECTED: 23,919
DEAD: 551
INFECTED: 2,564
QUARANTINED: 29,910
VACCINATED: 30,560
DEAD: 312
DAY 70: EPIDEMIC UNCONTAINED OR CONTAINED
INFECTED: 380,582
DEAD: 12,499
INFECTED: 2,564
QUARANTINED: 36,725
VACCINATED: 37,207
DEAD: 435



RESPONSE EFFECTIVENESS

Simulations allowed people to withdraw to their homes because they felt ill or were following officials' instructions. Withdrawal could be "early," before anyone became contagious, or "never," meaning people continued moving about unless they died. "Late" withdrawal, 24 hours after becoming contagious, was less effective than early withdrawal, which prevented an epidemic without other intervention. Official responses included doing nothing, or targeted vaccination and quarantine with unlimited personnel, or targeted vaccination limited by only half the necessary personnel being available, or mass vaccination of the entire population. The interventions began four, seven or 10 days after the first victims became symptomatic.

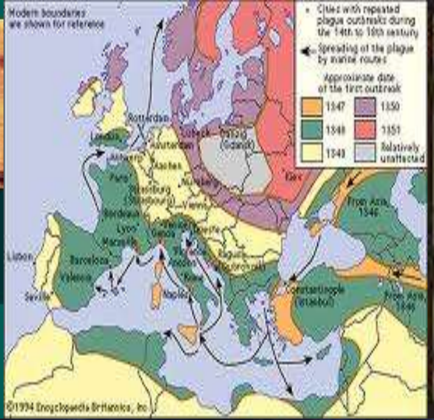


Didier Raoult · Michel Drancourt *Editors*

Paleomicrobiology

Past Human Infections

Springer


Modern boundaries are shown for reference
Cities with repeated plague outbreaks during the 14th to 18th century
Spreading of the plague by marine routes
Approximate date of the first outbreak
1347
1348
1349
1350
1351
Relatively unaffected
Rotterdam
London
Amsterdam
Antwerp
Aachen
Paris
Strasbourg
Bordeaux
Lyon
Marseille
Barcelona
Valencia
Lisbon
Seville
Genoa
Napoli
Constantinople (Istanbul)
Lubeck
Danzig (Gdansk)
Kiev
From Asia 1346
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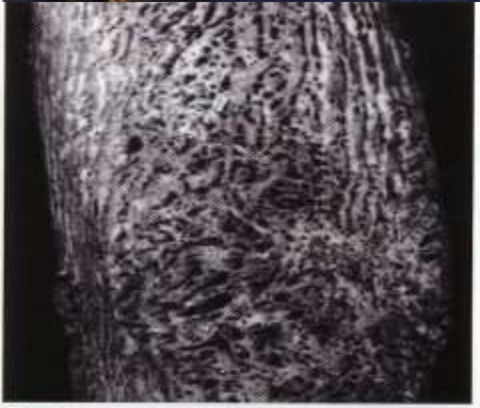
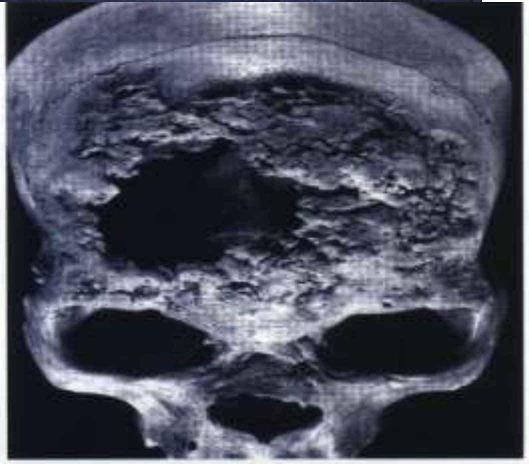
The
Black
Death
25 Million
People Dead

The Plague and Medicine

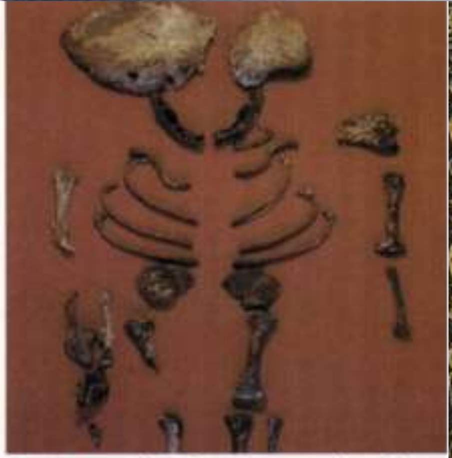
F. Pannier - Le toit du monde



8. TIBIA DROIT D'UNE JEUNE FEMME (Gloucester, XIIIᵉ-XIVᵉ siècles) présentant une lésion liée à une tréponématose. Antérieur à 1493, ce cas, avec d'autres observations réalisées en Grande-Bretagne, conforte la thèse d'une origine européenne de la syphilis.



9. CRÂNE FÉMININ présentant des lésions typiques de tréponématose (Mexique, époque pré-colombienne). Les lésions du tréponème, prennent, sur le crâne, un aspect de nodules, nommés gommes.



10. FŒTUS d'environ sept mois présent dans la cavité pelvienne de sa mère (Costebelle, IVᵉ siècle). Les lésions résultent d'une syphilis congénitale et infirment l'origine américaine de la maladie.

Breuiſſima relación
de la conſtrupción de la Infectologia
de Badajoz: colegida por el doctᵒʳ dõ
Aguſtin Muñoz Sanz / del Seruiçio
Extremeño de Salud y de
la Uniuerſidad de
Extremadura

INFLUENZA

- Séc. XVIII
  - Três grandes epidemias
- Séc. IX
  - Quatro grandes epidemias
- 1918 – 1920
  - “Gripe Espanhola”
    - 20.000.000 – 40.000.000 mortos
- 1957
  - “Gripe Asiática”
    - 4.000.000 mortos
- 1968
  - “Gripe de Hong Kong”
    - 1.000.000 mortos

Seattle Police Officers Wearing Protective Face Masks during the Influenza Epidemic of 1918.

Tissue samples and a list of child victims of the 1918 influenza pandemic

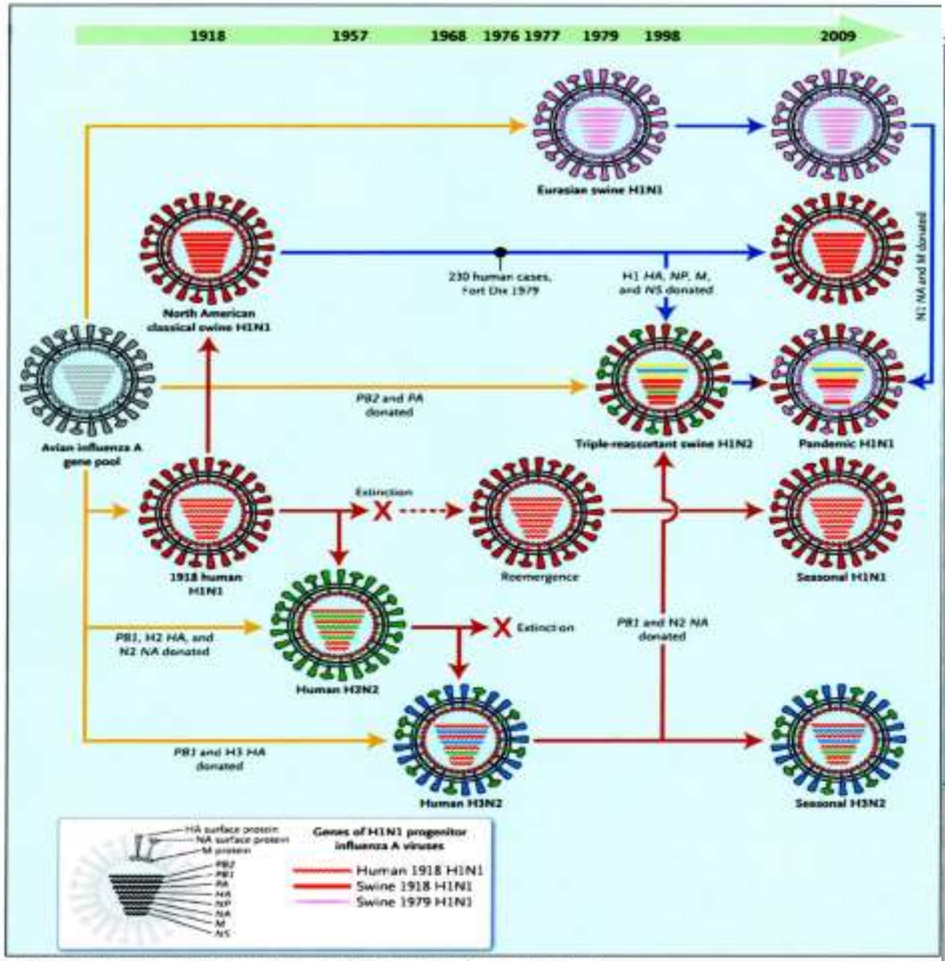
The NEW ENGLAND JOURNAL of MEDICINE

REVIEW ARTICLE

CURRENT CONCEPTS

Historical Perspective — Emergence of Influenza A (H1N1) Viruses

Shanta M. Zimmer, M.D., and Donald S. Burke, M.D.


1918
1957
1968
1976 1977
1979
1998
2009
Eurasian swine H1N1
North American classical swine H1N1
230 human cases, Fort Dix 1979
H1 HA, NP, M, and NS donated
N1 NA and M donated
Avian influenza A gene pool
PB2 and PA donated
Triple-reassortant swine H1N2
Pandemic H1N1
Extinction
1918 human H1N1
Reemergence
Seasonal H1N1
PB1, H2 HA, and N2 NA donated
Human H2N2
Extinction
PB1 and N2 NA donated
PB1 and H3 HA donated
Human H3N2
Seasonal H3N2
HA surface protein
NA surface protein
M protein
PB2
PB1
PA
HA
NP
NA
M
NS
Genes of H1N1 progenitor influenza A viruses
Human 1918 H1N1
Swine 1918 H1N1
Swine 1979 H1N1

Genetic Relationships among Human and Relevant Swine Influenza Viruses, 1918–2009.

Yellow arrows reflect exportation of one or more genes from the avian influenza A virus gene pool. The dashed red arrow indicates a period without circulation. Solid red arrows indicate the evolutionary paths of human influenza virus lineages; solid blue arrows, of swine influenza virus lineages; and the blue-to-red arrow, of a swine-origin human influenza virus. All influenza A viruses contain eight genes that encode the following proteins (shown from top to bottom within each virus): polymerase PB2, polymerase PB1, polymerase PA, hemagglutinin (HA), nuclear protein (NP), neuraminidase (NA), matrix proteins (M), and nonstructural proteins (NS). The genes of the 1918 human and swine H1N1 and the 1979 H1N1 influenza A viruses were all recently descended from avian influenza A genes, and some have been "donated" to the pandemic human H1N1 strain.

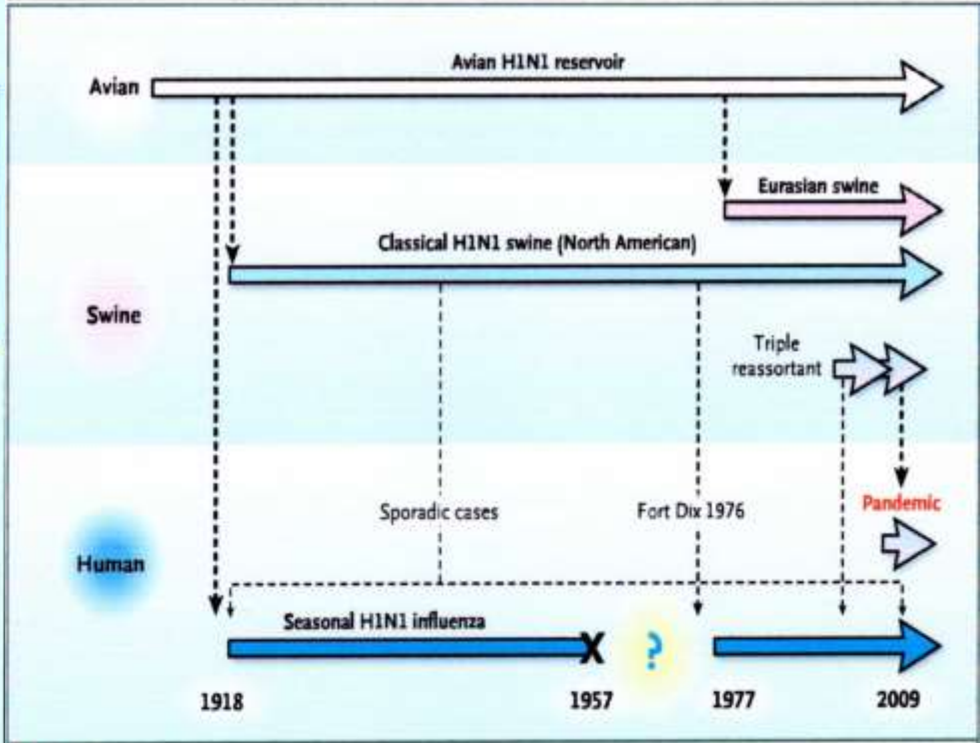

Avian
Avian H1N1 reservoir
Eurasian swine
Classical H1N1 swine (North American)
Swine
Triple reassortant
Sporadic cases
Fort Dix 1976
Pandemic
Human
Seasonal H1N1 influenza
X
?
1918
1957
1977
2009

Figure 1. Emergence of Influenza A (H1N1) Viruses from Birds and Swine into Humans.

The diagram shows the important events and processes in the emergence of influenza A (H1N1) viruses during the past 91 years. Avian, swine, and human populations are represented in the top, middle, and bottom of the diagram, respectively. Epidemic or zoonotic viruses are shown as wide horizontal arrows (white for avian viruses, light blue or pink for swine viruses, and dark blue for human viruses). Cross-species transmissions are shown as vertical dashed lines, with thick lines for transfers that gave rise to sustained transmission in the new host and thin lines for those that were transient and resulted in a self-limited number of cases. Principal dates are shown along the bottom of the diagram. The disappearance of H1N1 in 1957 most likely represents competition by the emerging pandemic H2N2 strain in the face of population immunity to H1N1. The reemergence in 1977 is unexplained and probably represents reintroduction to humans from a laboratory source.

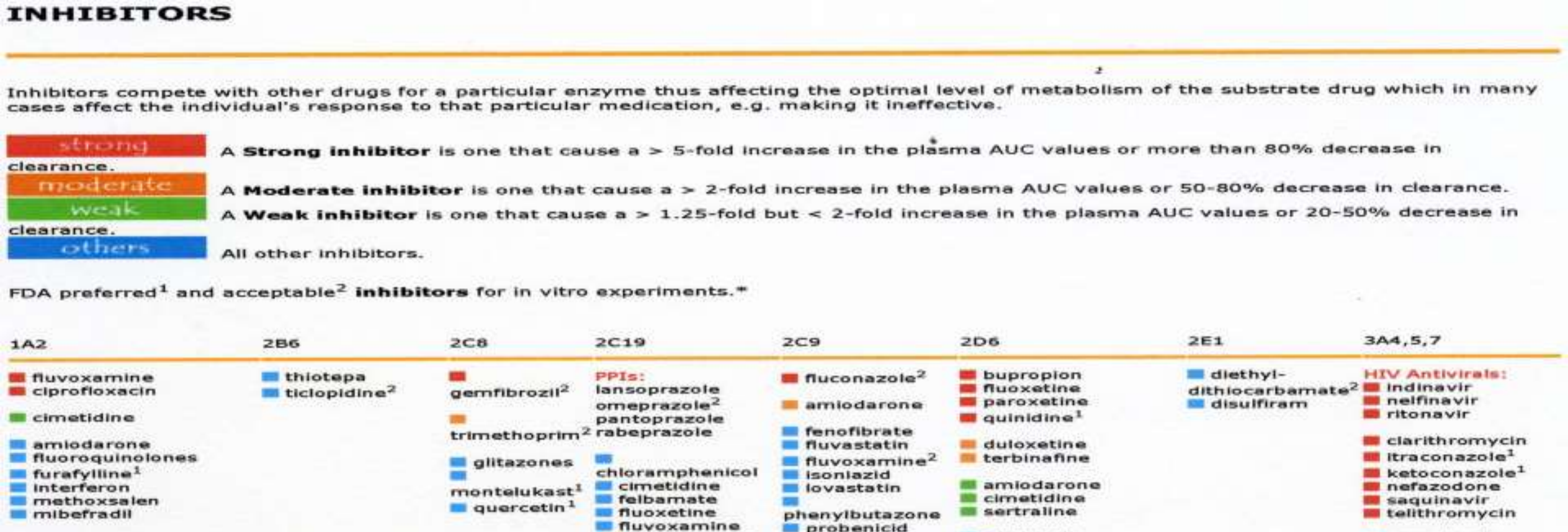
Sistema P450 na Metabolização dos Fármacos: I

SUBSTRATES

FDA preferred[1] and acceptable[2] **substrates** for in vitro experiments.*

1A2	2B6	2C8	2C19	2C9	2D6	2E1	3A4,5,7
amitriptyline caffeine[2] clomipramine clozapine cyclobenzaprine estradiol fluvoxamine haloperidol imipramine N-DeMe mexilletine naproxen olanzapine ondansetron phenacetin[1] ==> acetaminophen->NAPQI propranolol riluzole ropivacaine tacrine[2] theophylline[2] tizanidine verapamil (R)warfarin zileuton zolmitriptan	bupropion[1] cyclophosphamide efavirenz[1] ifosfamide methadone	paclitaxel torsemide amodiaquine[2] cerivastatin repaglinide	**Proton Pump Inhibitors:** lansoprazole omeprazole[2] pantoprazole rabeprazole E-3810 **Anti-epileptics:** diazepam ==>Nor phenytoin(O) S-mephenytoin[1] phenobarbitone amitriptyline carisoprodol citalopram chloramphenicol clomipramine clopidogrel cyclophosphamide hexobarbital imipramine N-DeME indomethacin R-mephobarbital moclobemide nelfinavir nilutamide primidone progesterone proguanil propranolol teniposide R-warfarin ==>8-OH	**NSAIDs:** diclofenac[1] ibuprofen lornoxicam meloxicam S-naproxen==>Nor piroxicam suprofen **Oral Hypoglycemic Agents:** tolbutamide[1] glipizide **Angiotensin II Blockers:** losartan irbesartan **Sulfonylureas:** glyburide/glibenclamide glipizide glimepiride tolbutamide amitriptyline celecoxib fluoxetine fluvastatin glyburide nateglinide phenytoin-4-OH[2] rosiglitazone tamoxifen torsemide S-warfarin[1]	**Beta Blockers:** carvedilol S-metoprolol propafenone timolol **Antidepressants:** amitriptyline clomipramine desipramine imipramine paroxetine **Antipsychotics:** haloperidol perphenazine risperidone->9OH thioridazine zuclopenthixol alprenolol amphetamine aripiprazole atomoxetine bufuralol[1] chlorpheniramine chlorpromazine codeine (->O-desMe) debrisoquine[2] dexfenfluramine dextromethorphan[1] duloxetine encainide flecainide fluoxetine fluvoxamine lidocaine metoclopramide methoxyamphetamine mexilletine minaprine nebivolol nortriptyline ondansetron oxycodone perhexiline phenacetin phenformin promethazine propranolol sparteine tamoxifen tramadol venlafaxine	**Anesthetics:** enflurane halothane isoflurane methoxyflurane sevoflurane acetaminophen ->NAPQI aniline[2] benzene chlorzoxazone[1] ethanol N,N-dimethyl formamide theophylline ->8-OH	**Macrolide antibiotics:** clarithromycin erythromycin[2] (not 3A5) NOT azithromycin telithromycin **Anti-arrhythmics:** quinidine->3-OH (not 3A5) **Benzodiazepines:** alprazolam diazepam->3OH midazolam[1] triazolam[2] **Immune Modulators:** cyclosporine tacrolimus (FK506) **HIV Antivirals:** indinavir nelfinavir ritonavir saquinavir **Prokinetic:** cisapride **Antihistamines:** astemizole chlorpheniramine terfenadine[2] **Calcium Channel Blockers:** amlodipine diltiazem felodipine lercanidipine nifedipine[2] nisoldipine nitrendipine verapamil **HMG CoA Reductase Inhibitors:** atorvastatin cerivastatin lovastatin NOT pravastatin simvastatin **Steroid 6beta-OH:** estradiol hydrocortisone progesterone testosterone[1] **Miscellaneous:** alfentanyl aprepitant aripiprazole buspirone cafergot caffeine->TMU cilostazol cinacalcet cocaine codeine- N-demethylation dapsone dexamethasone dextromethorphan[2] docetaxel domperidone eplerenone fentanyl finasteride gleevec haloperidol irinotecan LAAM lapatinib lidocaine methadone nateglinide ondansetron pimozide propranolol quetiapine quinine risperidone NOT rosuvastatin salmeterol sildenafil sirolimus tamoxifen taxol terfenadine trazodone vincristine zaleplon ziprasidone zolpidem

Sistema P450 na Metabolização dos Fármacos: II



INHIBITORS

Inhibitors compete with other drugs for a particular enzyme thus affecting the optimal level of metabolism of the substrate drug which in many cases affect the individual's response to that particular medication, e.g. making it ineffective.

🟥 strong — A **Strong inhibitor** is one that cause a > 5-fold increase in the plasma AUC values or more than 80% decrease in clearance.

🟧 moderate — A **Moderate inhibitor** is one that cause a > 2-fold increase in the plasma AUC values or 50-80% decrease in clearance.

🟩 weak — A **Weak inhibitor** is one that cause a > 1.25-fold but < 2-fold increase in the plasma AUC values or 20-50% decrease in clearance.

🟦 others — All other inhibitors.

FDA preferred[1] and acceptable[2] **inhibitors** for in vitro experiments.*

1A2

- 🟥 fluvoxamine
- 🟥 ciprofloxacin
- 🟩 cimetidine
- 🟦 amiodarone
- 🟦 fluoroquinolones
- 🟦 furafylline[1]
- 🟦 interferon
- 🟦 methoxsalen
- 🟦 mibefradil

2B6

- 🟦 thiotepa
- 🟦 ticlopidine[2]

2C8

- 🟥 gemfibrozil[2]
- 🟧 trimethoprim[2]
- 🟦 glitazones
- 🟦 montelukast[1]
- 🟦 quercetin[1]

2C19

PPIs:
- lansoprazole
- omeprazole[2]
- pantoprazole
- rabeprazole
- 🟦 chloramphenicol
- 🟦 cimetidine
- 🟦 felbamate
- 🟦 fluoxetine
- 🟦 fluvoxamine
- 🟦 indomethacin
- 🟦 ketoconazole
- 🟦 modafinil
- 🟦 oxcarbazepine
- 🟦 probenicid
- 🟦 ticlopidine[2]
- 🟦 topiramate

2C9

- 🟥 fluconazole[2]
- 🟧 amiodarone
- 🟦 fenofibrate
- 🟦 fluvastatin
- 🟦 fluvoxamine[2]
- 🟦 isoniazid
- 🟦 lovastatin
- 🟦 phenylbutazone
- 🟦 probenicid
- 🟦 sertraline
- 🟦 sulfamethoxazole
- 🟦 sulfaphenazole[1]
- 🟦 teniposide
- 🟦 voriconazole
- 🟦 zafirlukast

2D6

- 🟥 bupropion
- 🟥 fluoxetine
- 🟥 paroxetine
- 🟥 quinidine[1]
- 🟧 duloxetine
- 🟧 terbinafine
- 🟩 amiodarone
- 🟩 cimetidine
- 🟩 sertraline
- 🟦 celecoxib
- 🟦 chlorpheniramine
- 🟦 chlorpromazine
- 🟦 cinacalcet
- 🟦 citalopram
- 🟦 clemastine
- 🟦 clomipramine
- 🟦 cocaine
- 🟦 diphenhydramine
- 🟦 doxepin
- 🟦 doxorubicin
- 🟦 escitalopram
- 🟦 goldenseal
- 🟦 halofantrine
- 🟦 histamine H1 receptor antagonists
- 🟦 hydroxyzine
- 🟦 levomepromazine
- 🟦 methadone
- 🟦 metoclopramide
- 🟦 mibefradil
- 🟦 midodrine
- 🟦 moclobemide
- 🟦 perphenazine
- 🟦 ranitidine
- 🟦 red-haloperidol
- 🟦 ritonavir
- 🟦 ticlopidine
- 🟦 tripelennamine

2E1

- 🟦 diethyl-dithiocarbamate[2]
- 🟦 disulfiram

3A4,5,7

HIV Antivirals:
- 🟥 indinavir
- 🟥 nelfinavir
- 🟥 ritonavir
- 🟥 clarithromycin
- 🟥 itraconazole[1]
- 🟥 ketoconazole[1]
- 🟥 nefazodone
- 🟥 saquinavir
- 🟥 telithromycin
- 🟧 aprepitant
- 🟧 erythromycin
- 🟧 fluconazole
- 🟧 grapefruit juice
- 🟧 verapamil[2]
- 🟧 diltiazem
- 🟩 cimetidine
- 🟦 amiodarone
- 🟦 NOT azithromycin
- 🟦 chloramphenicol
- 🟦 delaviridine
- 🟦 diethyl-dithiocarbamate
- 🟦 fluvoxamine
- 🟦 gestodene
- 🟦 imatinib
- 🟦 mibefradil
- 🟦 mifepristone
- 🟦 norfloxacin
- 🟦 norfluoxetine
- 🟦 star fruit
- 🟦 voriconazole

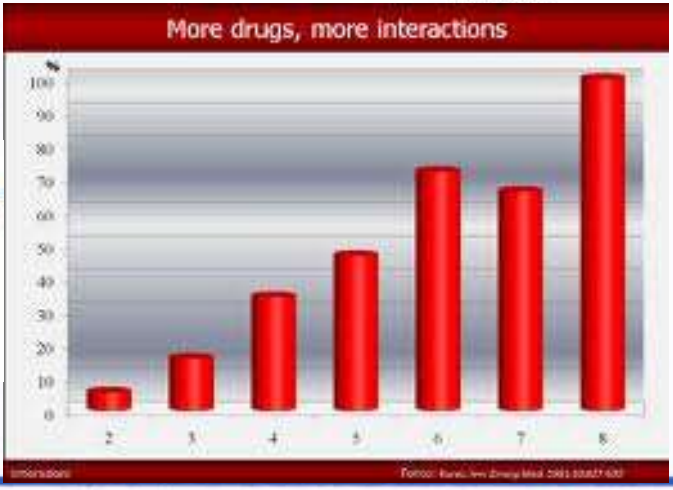
Sistema P450 na Metabolização dos Fármacos: III

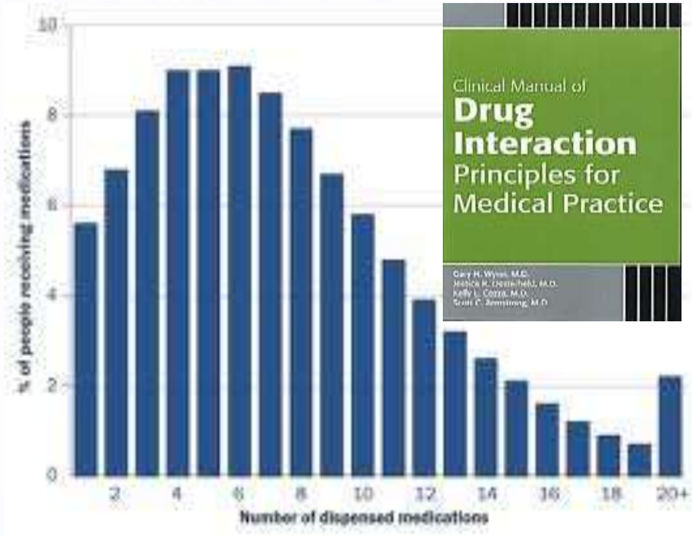
INDUCERS

Inducers stimulate the production of the enzyme thus increasing the rate of metabolism causing the substrate drug to clear out of the system faster. This will also affect the individual's response to the medication, i.e. making he drug ineffective because it has not been in the system long enough to have an effect.

FDA preferred[1] and acceptable[2] **inducers** for in vitro experiments.*

1A2	2B6	2C8	2C19	2C9	2D6	2E1	3A,4,5,7
broccoli brussel sprouts char-grilled meat insulin methylcholanthrene[1] modafinil nafcillin beta-naphthoflavone[1] omeprazole[1] tobacco	phenobarbital rifampin	rifampin[1]	carbamazepine norethindrone NOT pentobarbital prednisone rifampin[1]	rifampin secobarbital	dexamethasone rifampin	ethanol isoniazid	HIV Antivirals: efavirenz nevirapine barbiturates carbamazepine efavirenz glucocorticoids modafinil nevirapine oxcarbazepine phenobarbital[2] phenytoin[2] pioglitazone rifabutin rifampin[1] St. John's wort troglitazone[1]





GENETICS

1A2	2B6	2C8	2C19	2C9	2D6	2E1	3A4,5,7
Chr15	Chr19	Chr10	Chr10	Chr10	Chr22	Chr10	Chr7

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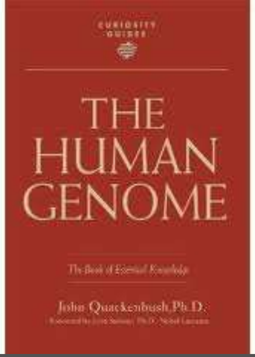
Genome Medicine
Medicine in the post-genomic era

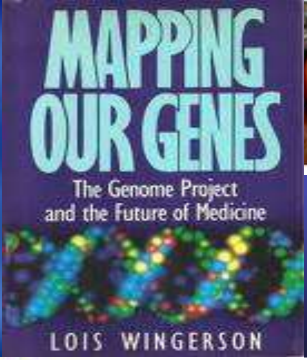

CURIOSITY GUIDES

THE HUMAN GENOME

The Book of Essential Knowledge

John Quackenbush, Ph.D.

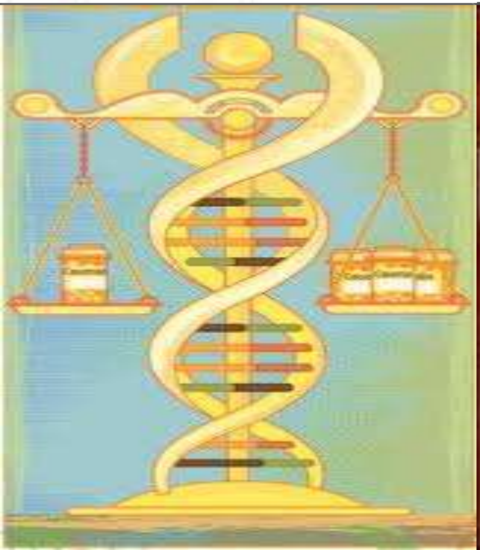
Proteins
Peptides
Reagents

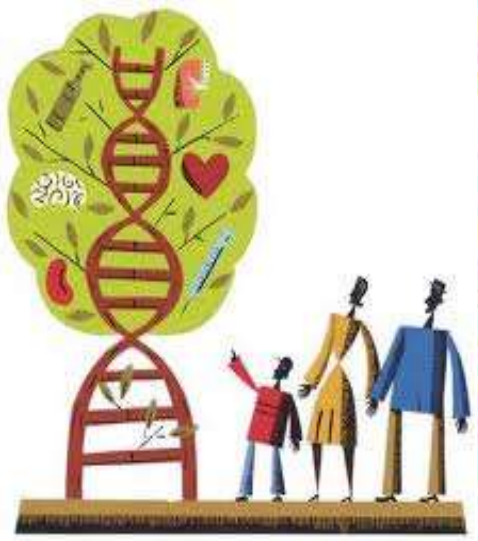

MAPPING OUR GENES
The Genome Project and the Future of Medicine

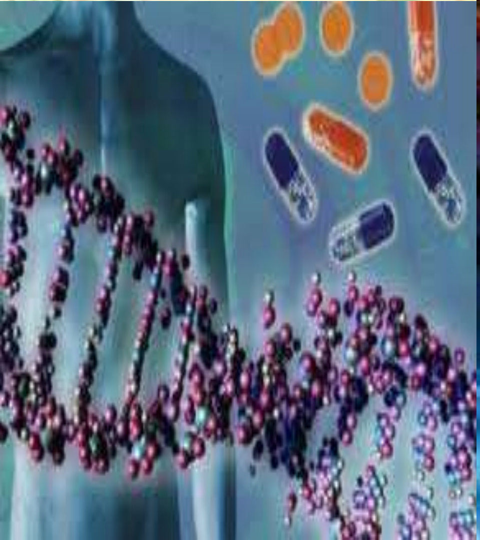
LOIS WINGERSON

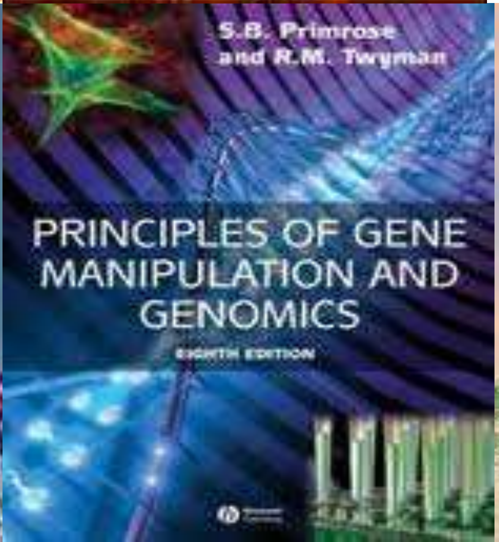
GENOMIC MEDICINE:
TURNING PROMISE INTO PRACTICE

Genomic Medicine








S.B. Primrose and R.M. Twyman

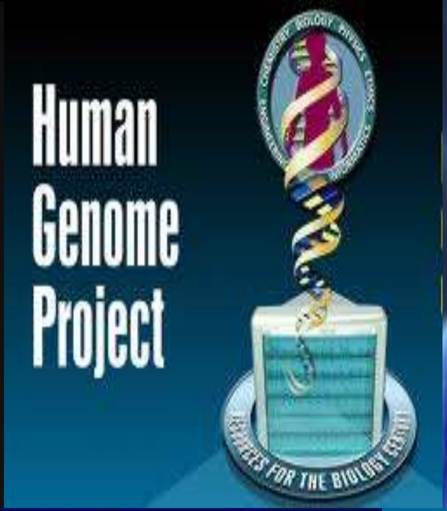
PRINCIPLES OF GENE MANIPULATION AND GENOMICS
EIGHTH EDITION

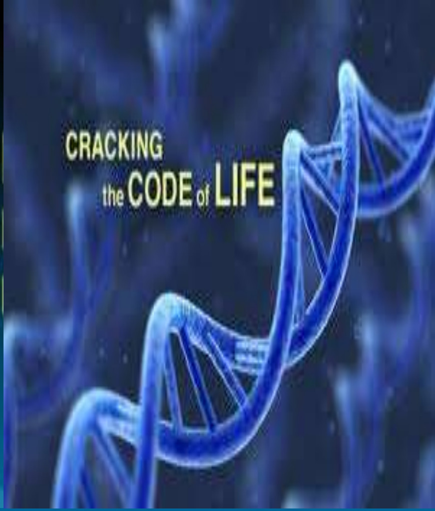
GENOME RESEARCH

Genomic achievements since the Human Genome Project

Genoma Humano

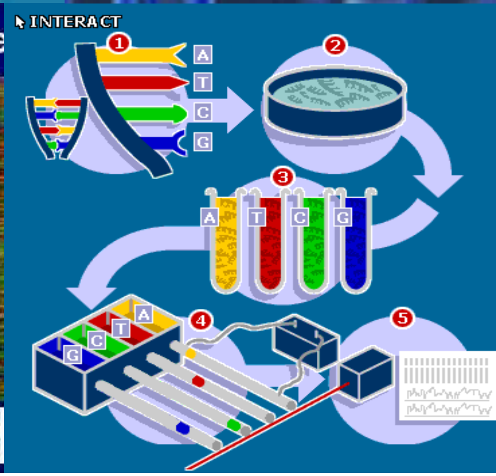
- 23 (22+1) pares de Cromosomas
- 23.000 Genes
- 3.000.000.000 de pares de Nucleotidos

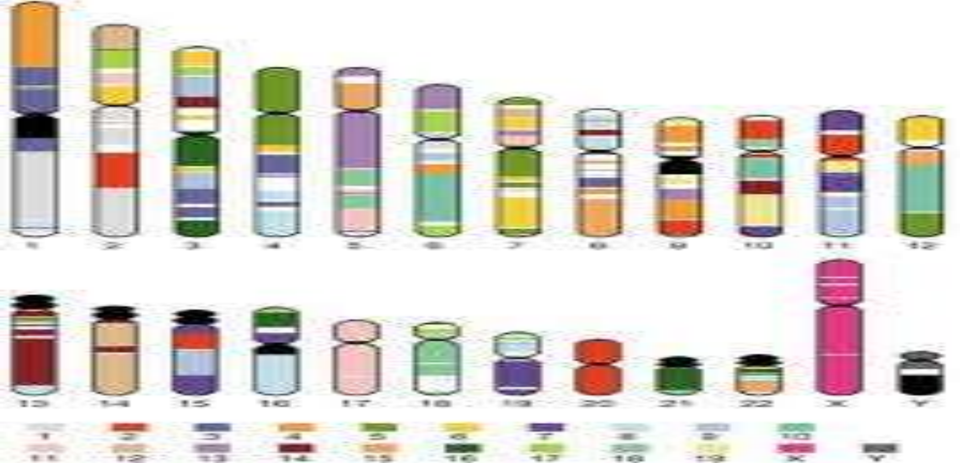

Human
Genome
Project
BIOLOGY
PHYSICS
RESOURCES FOR THE BIOLOGY SERIES


CRACKING
the CODE of LIFE

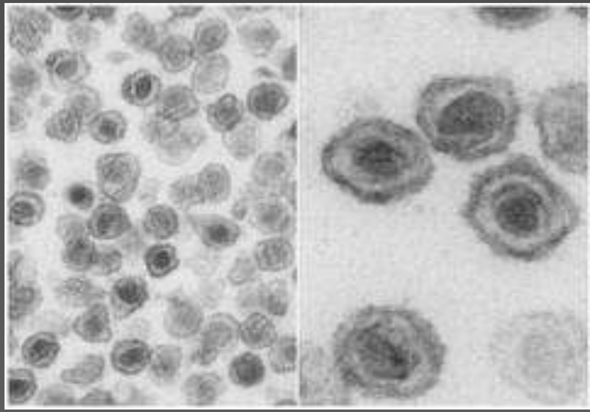
GENOME MAP
What We Know about the Human Genome
DNA: The Secret Book of Life

Finished Human Genome
Human
Genome
Project
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 X Y
Wellcome Trust
Sanger Institute


INTERACT
①
A
T
C
G
②
③
A
T
C
G
④
A
T
C
G
⑤

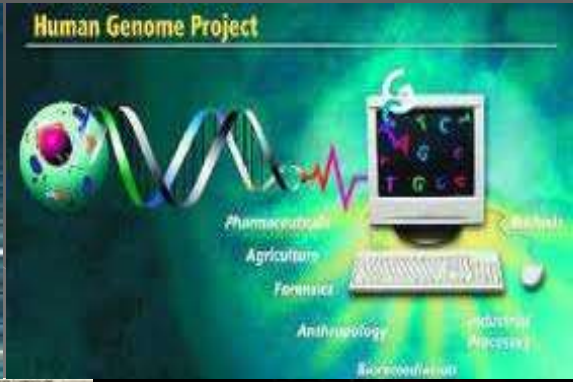


A Questão dos Endoretrovírus



- **ERVs (Endo-Retrovírus)** *(Singh,S et al, Brit. J. Dermat., 2009, 161, 6, 1225-1231)*
  - Estudos remontam à década de 70
  - 8% do total do Genoma Humano
  - Já foram identificados cerca de 20 estirpes diferentes
  - Tiveram origem numa integração que remonta há 25.000.000 anos
  - Estão presentes em muitos Símios
  - Poderão ter uma relação etiopatogénica c/ várias D. ditas ideopáticas e crónicas (Neoplasias, D. auto-imunes, etc)
    - Esclerose Múltipla
    - Artrite Reumatóide
    - Esquizofrenia
    - Lupus Eritematoso Sistémico
    - Psoríase
    - Sindromas Linfoproliferativos
    - Melanoma
    - Tumores das Células Germinais

nature
DEEP VIRAL IMPACT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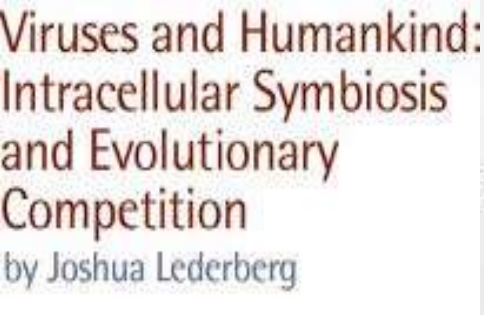
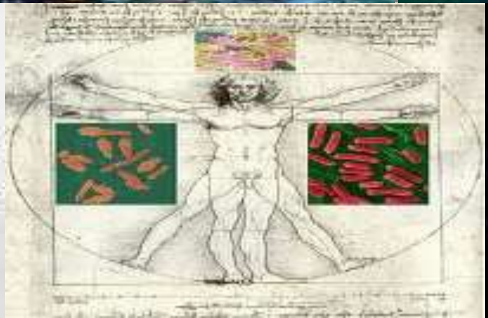
Pharmaceuticals
Agriculture
Forensics
Anthropology


Viruses and Humankind: Intracellular Symbiosis and Evolutionary Competition
by Joshua Lederberg

HUMAN — VIRUS



Future
Human
Evolution

Discovery and analysis of the first endogenous lentivirus

Aris Katzourakis*, Michael Tristem†, Oliver G. Pybus*, and Robert J. Gifford‡§

*Department of Zoology, University of Oxford, South Parks Road, Oxford OX1 3PS, United Kingdom; †Division of Biology, Imperial College London, Silwood Park, Ascot, Berkshire SL5 7PY, United Kingdom; and ‡Division of Infectious Diseases, Stanford University, Stanford, CA 94305

Edited by John M. Coffin, Tufts University School of Medicine, Boston, MA, and approved February 13, 2007 (received for review January 17, 2007)

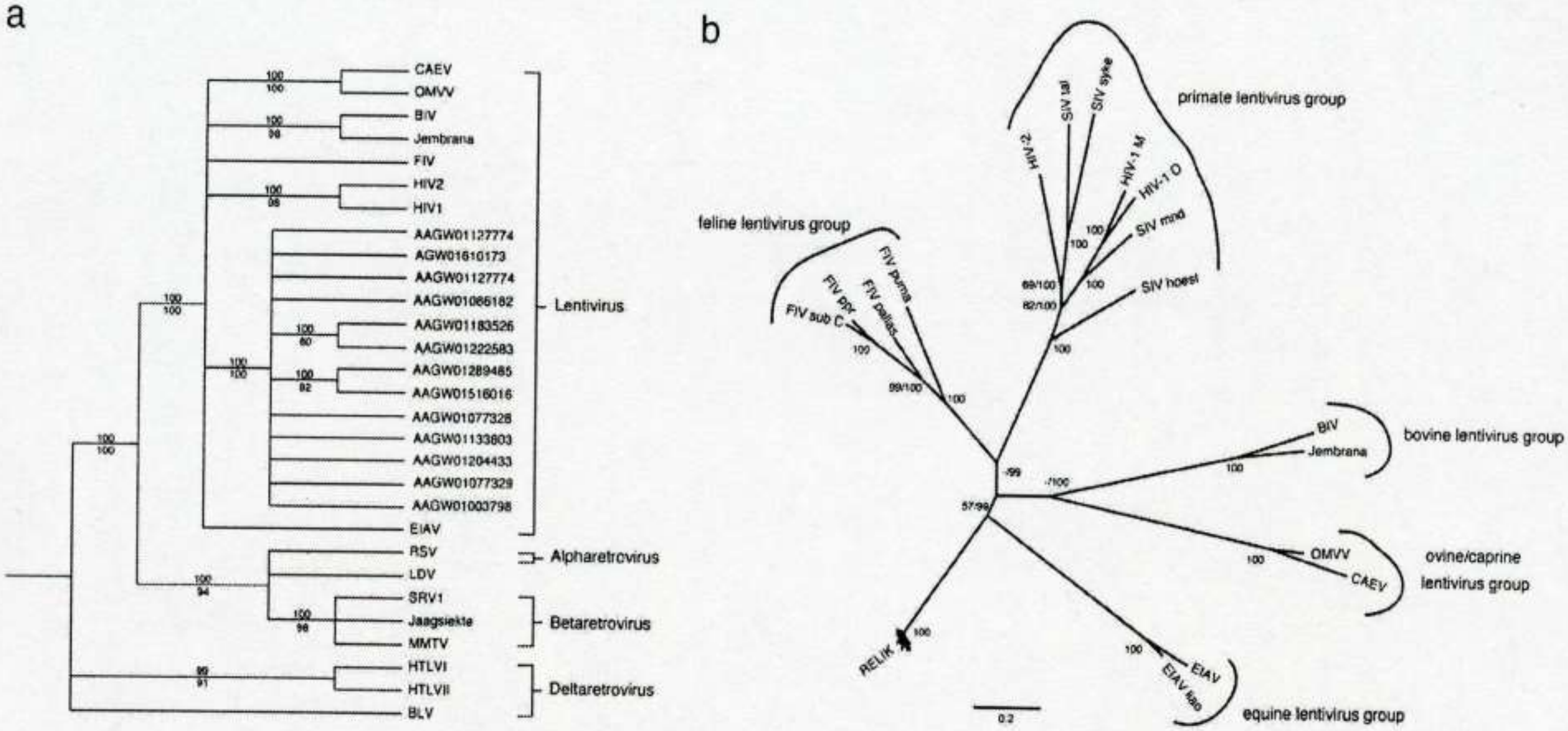

a
CAEV
OMVV
BIV
Jembrana
FIV
HIV2
HIV1
AAGW01127774
AGW01610173
AAGW01127774
AAGW01066182
AAGW01183526
AAGW01222583
AAGW01289485
AAGW01516016
AAGW01077328
AAGW01133603
AAGW01204433
AAGW01077329
AAGW01003798
EIAV
RSV
LDV
SRV1
Jaagsiekte
MMTV
HTLVI
HTLVII
BLV
Lentivirus
Alpharetrovirus
Betaretrovirus
Deltaretrovirus
b
primate lentivirus group
HIV-2
SIV tal
SIV syke
HIV-1 M
HIV-1 O
SIV mnd
SIV lhoest
feline lentivirus group
FIV puma
FIV pallas
FIV ppr
FIV sub C
bovine lentivirus group
BIV
Jembrana
ovine/caprine lentivirus group
OMVV
CAEV
equine lentivirus group
EIAV
EIAV lao
RELIK
0.2

Fig. 3. Phylogenetic relationships of RELIK to other retroviruses. (*a*) Phylogeny of RELIK and other lentiviruses together with a sample of nonlentiviral exogenous retroviruses, rooted on BLV, HTLV1, and HTLV2. Support for the ML trees was assessed via 1,000 nonparametric bootstrap replicates, and posterior clade probabilities were assessed for the Bayesian phylogeny. Both support indices are indicated as values out of 100, with posterior clade probabilities indicated above the branches and bootstrap scores below. Branches with posterior probabilities <95% were collapsed. The RELIK sequences are indicated by their accession numbers. (*b*) Unrooted phylogeny showing the relationships of the lentiviruses. Bootstrap scores and Bayesian posterior probabilities are indicated to the left and right of the forward slash, respectively, and nodes with only 100 indicated showed maximal support under both measures.

Emerging Infectious Determinants of Chronic Diseases

Siobhán M. O'Connor,* Christopher E. Taylor,† and James M. Hughes‡

Timeline	Infectious agent*	Chronic disease
1950	*Schistosoma* spp	Bladder cancer
	Epstein-Barr virus	Burkitt lymphoma
	Hepatitis B virus	Chronic liver disease, hepatocellular carcinoma
	Human papillomavirus	Cervical cancer
	Borrelia burgdorferi	Chronic Lyme arthritis
	Human T-lymphotropic virus type 1	Acute T-cell leukemia/lymphoma
	Helicobacter pylori	Chronic gastritis, peptic ulcer disease
	Campylobacter jejuni	Guillain-Barré syndrome (persistent sequelae)
	Human T-lymphotropic virus type 1	Tropical spastic paraparesis, chronic arthropathy
	B. burgdorferi	Neuroborreliosis
	Hepatitis C virus	Chronic liver disease, hepatocellular carcinoma
	Bartonella henselae	Bacillary angiomatosis
	Hepatitis C virus	Mixed cryoglobulinemia
	Tropheryma whipplei	Whipple disease
	KSHV/human herpesvirus 8	Kaposi sarcoma
	New variant CJD agent	Variant CJD
2000 ↓	West Nile virus	Paralysis (persistent postpoliomyelitis)

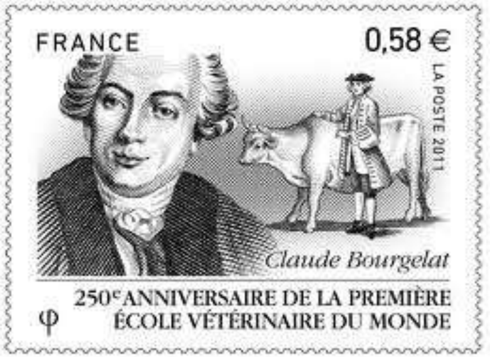
*KSHV, Kaposi sarcoma herpesvirus; CJD, Creutzfeldt-Jakob disease

Figure 1. Emergence timeline for infectious determinants of chronic diseases. For references to support this figure, see online version (available from http://www.cdc.gov/ncidod/EID/vol12no07/06-0037-G1.htm)

Pathogens	Syndromes and organ systems	Triggers and outcomes	Duration of infection	Timing of infection
Bacteria Fungi Parasites Prions Viruses	Cardiovascular Endocrine Gastrointestinal Immune Musculoskeletal Neurologic Neuropsychiatric Ocular Pulmonary Renal Respiratory Skin	1 microbe → multiple syndromes Several microbes → 1 outcome	Acute Persistent active Persistent non-replicating Cleared Enduring normal flora	Prenatal Infancy Childhood Adolescence Adulthood Recurrent or coinfection

Figure 2. Infectious determinants of chronic diseases.

One Health
initiative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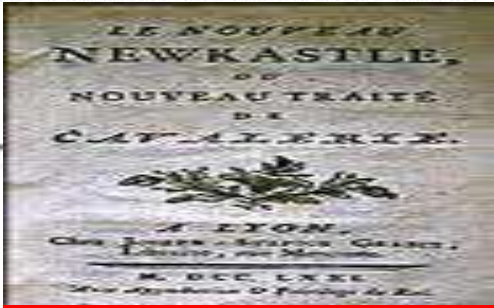
LA POSTE 2011
Claude Bourgelat
250e ANNIVERSAIRE DE LA PREMIÈRE
ÉCOLE VÉTÉRINAIRE DU MONDE

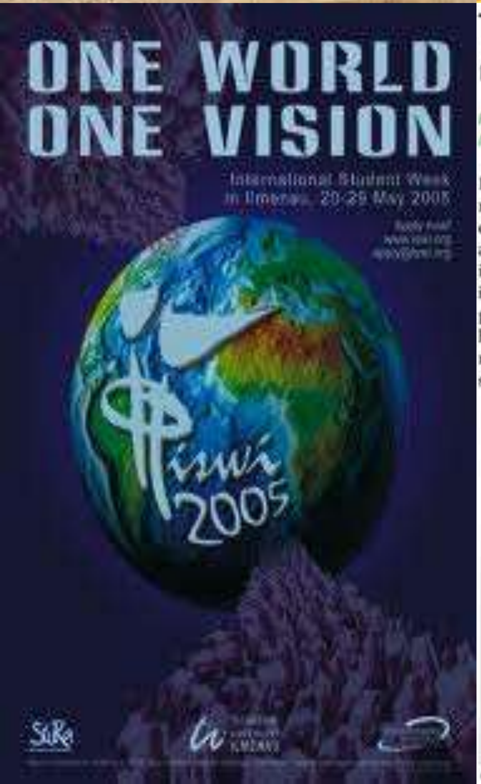
THE LANCET Infectious Diseases



LE NOUVEAU
NEWKASTLE,
OU
NOUVEAU TRAITÉ
DE
CAVALERIE.

A LYON,
[illegible]
[illegible]

M. DCC. LXXI
[illegible]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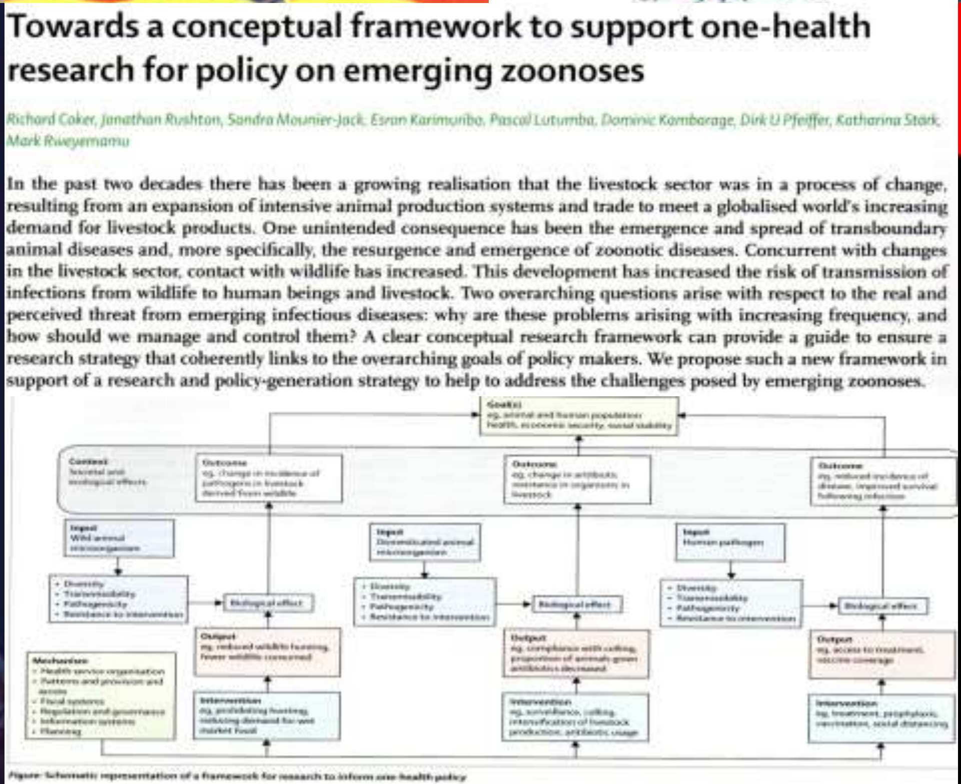


Towards a conceptual framework to support one-health research for policy on emerging zoonoses

Richard Coker, Jonathan Rushton, Sandra Mounier-Jack, Esron Karimuribo, Pascal Lutumba, Dominic Kambarage, Dirk U Pfeiffer, Katharina Stärk, Mark Rweyemamu

In the past two decades there has been a growing realisation that the livestock sector was in a process of change, resulting from an expansion of intensive animal production systems and trade to meet a globalised world's increasing demand for livestock products. One unintended consequence has been the emergence and spread of transboundary animal diseases and, more specifically, the resurgence and emergence of zoonotic diseases. Concurrent with changes in the livestock sector, contact with wildlife has increased. This development has increased the risk of transmission of infections from wildlife to human beings and livestock. Two overarching questions arise with respect to the real and perceived threat from emerging infectious diseases: why are these problems arising with increasing frequency, and how should we manage and control them? A clear conceptual research framework can provide a guide to ensure a research strategy that coherently links to the overarching goals of policy makers. We propose such a new framework in support of a research and policy-generation strategy to help to address the challenges posed by emerging zoonoses.

Goal(s)
eg, animal and human population health, economic security, social stability
Context
Societal and ecological effects
Outcome
eg, change in incidence of pathogens in livestock derived from wildlife
Outcome
eg, change in antibiotic resistance in organisms in livestock
Outcome
eg, reduced incidence of disease, improved survival following infection
Input
Wild animal microorganism
Input
Domesticated animal microorganism
Input
Human pathogen
Diversity
Transmissibility
Pathogenicity
Resistance to intervention
Biological effect
Output
eg, reduced wildlife hunting, fewer wildlife consumed
Output
eg, compliance with culling, proportion of animals given antibiotics decreased
Output
eg, access to treatment, vaccine coverage
Mechanism
Health service organisation
Patterns and provision and access
Fiscal systems
Regulation and governance
Information systems
Planning
Intervention
eg, prohibiting hunting, reducing demand for wet market food
Intervention
eg, surveillance, culling, intensification of livestock production, antibiotic usage
Intervention
eg, treatment, prophylaxis, vaccination, social distancing

Figure: Schematic representation of a framework for research to inform one-health policy

STEPHEN MICHAEL APATOW

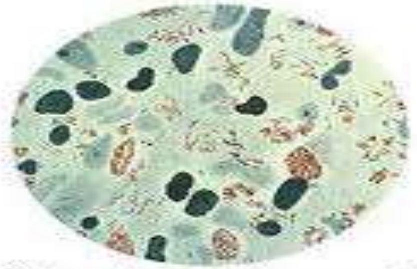
ONE WORLD
ONE HEALTH

One Health Initiative

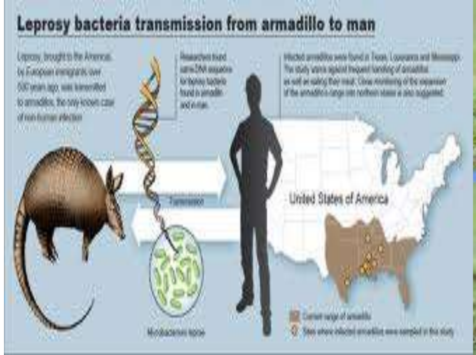
SMA MEDIA COMMUNICATIONS: INTERNATIONAL

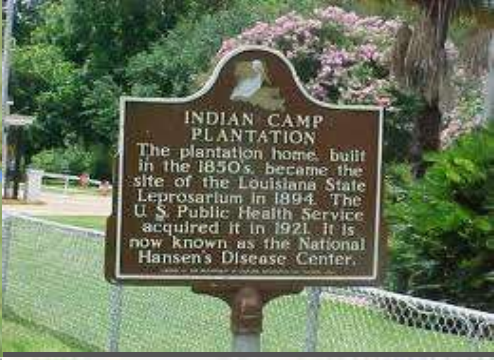
24 X 7

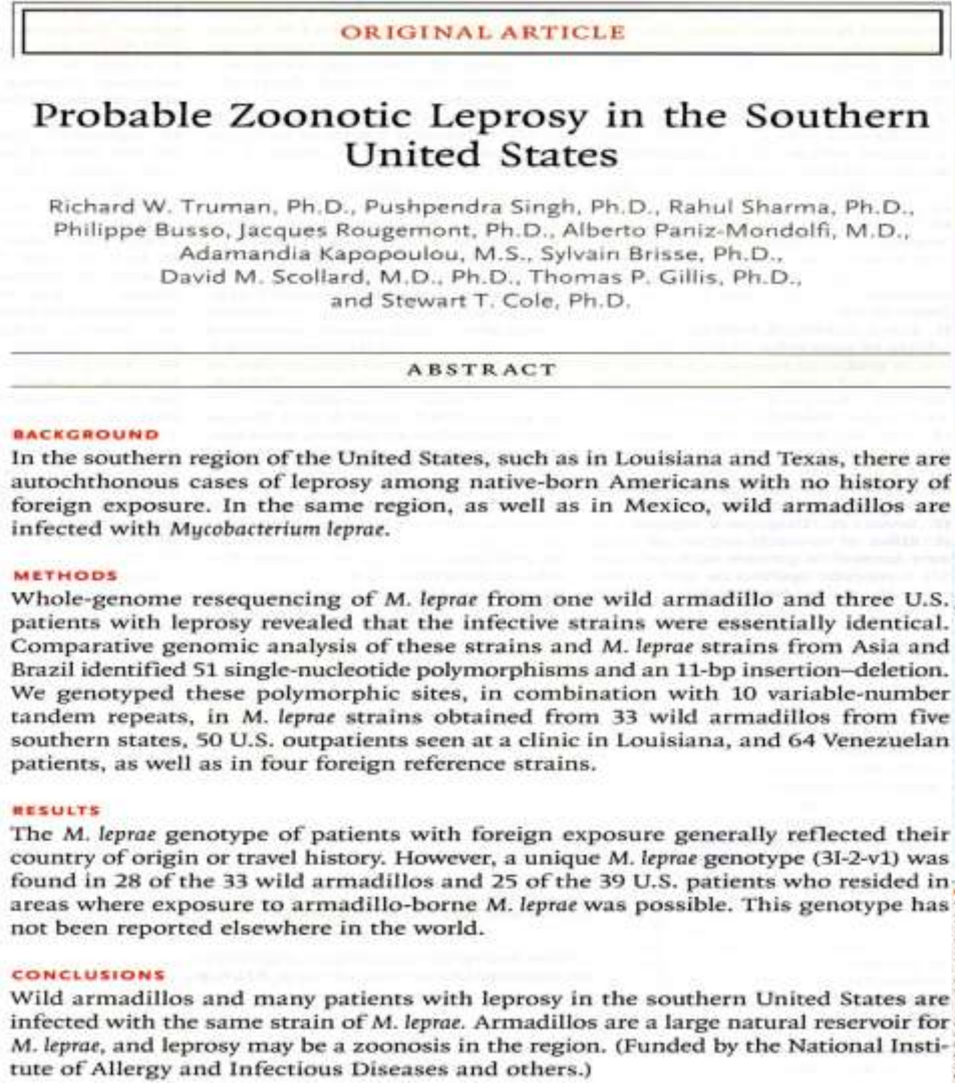
HUMANITARIAN RESOURCE INSTITUTE:
GLOBAL ARTS INTEGRATION INTO EDUCATION
W W W . U N A R T S . O R G



M. leprae bacteria, the cause of leprosy. Source: U.S. Centers for Disease Control and Prevention


Leprosy bacteria transmission from armadillo to man
United States of America


INDIAN CAMP
PLANTATION
The plantation home, built
in the 1850's, became the
site of the Louisiana State
Leprosarium in 1894. The
U.S. Public Health Service
acquired it in 1921. It is
now known as the National
Hansen's Disease Center.



ORIGINAL ARTICLE

Probable Zoonotic Leprosy in the Southern United States

Richard W. Truman, Ph.D., Pushpendra Singh, Ph.D., Rahul Sharma, Ph.D.,
Philippe Busso, Jacques Rougemont, Ph.D., Alberto Paniz-Mondolfi, M.D.,
Adamandia Kapopoulou, M.S., Sylvain Brisse, Ph.D.,
David M. Scollard, M.D., Ph.D., Thomas P. Gillis, Ph.D.,
and Stewart T. Cole, Ph.D.

ABSTRACT

BACKGROUND

In the southern region of the United States, such as in Louisiana and Texas, there are autochthonous cases of leprosy among native-born Americans with no history of foreign exposure. In the same region, as well as in Mexico, wild armadillos are infected with *Mycobacterium leprae*.

METHODS

Whole-genome resequencing of *M. leprae* from one wild armadillo and three U.S. patients with leprosy revealed that the infective strains were essentially identical. Comparative genomic analysis of these strains and *M. leprae* strains from Asia and Brazil identified 51 single-nucleotide polymorphisms and an 11-bp insertion–deletion. We genotyped these polymorphic sites, in combination with 10 variable-number tandem repeats, in *M. leprae* strains obtained from 33 wild armadillos from five southern states, 50 U.S. outpatients seen at a clinic in Louisiana, and 64 Venezuelan patients, as well as in four foreign reference strains.

RESULTS

The *M. leprae* genotype of patients with foreign exposure generally reflected their country of origin or travel history. However, a unique *M. leprae* genotype (3I-2-v1) was found in 28 of the 33 wild armadillos and 25 of the 39 U.S. patients who resided in areas where exposure to armadillo-borne *M. leprae* was possible. This genotype has not been reported elsewhere in the world.

CONCLUSIONS

Wild armadillos and many patients with leprosy in the southern United States are infected with the same strain of *M. leprae*. Armadillos are a large natural reservoir for *M. leprae*, and leprosy may be a zoonosis in the region. (Funded by the National Institute of Allergy and Infectious Diseases and others.)

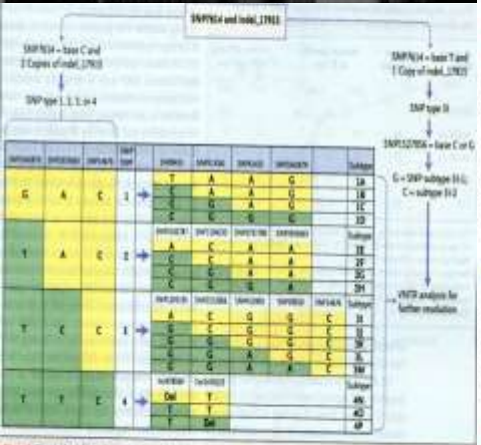


Figure 2. Genotyping of Mycobacterium leprae Strains.

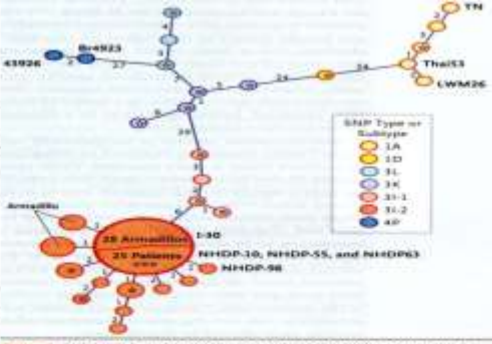
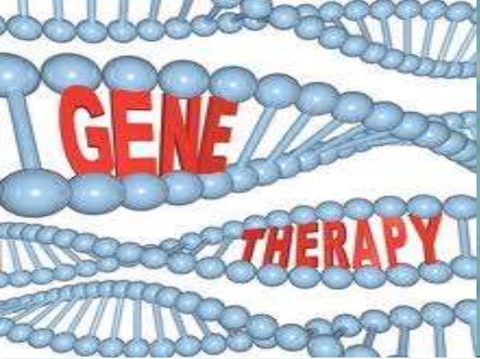
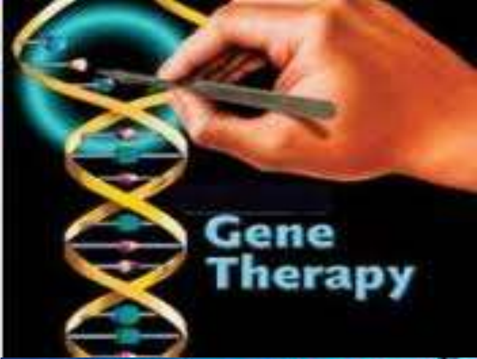
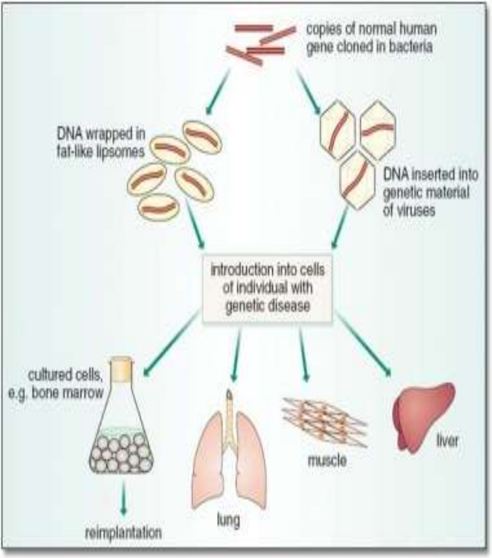
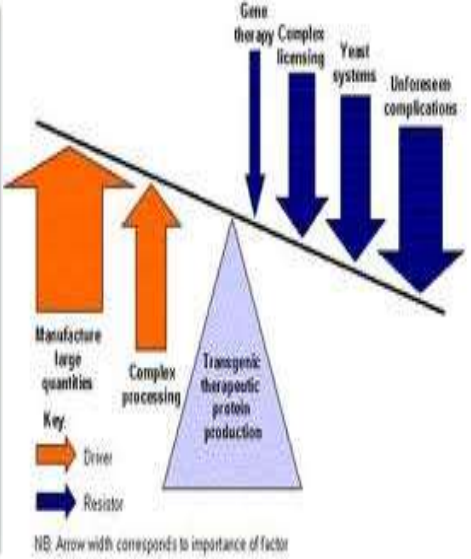

TN
Thai53
LWM26
Br4923
43926
SNP Type or Subtype
1A
1D
3L
3K
3I-1
3I-2
4P
Armadillo
28 Armadillos
25 Patients
I-30
NHDP-10, NHDP-55, and NHDP63
NHDP-98

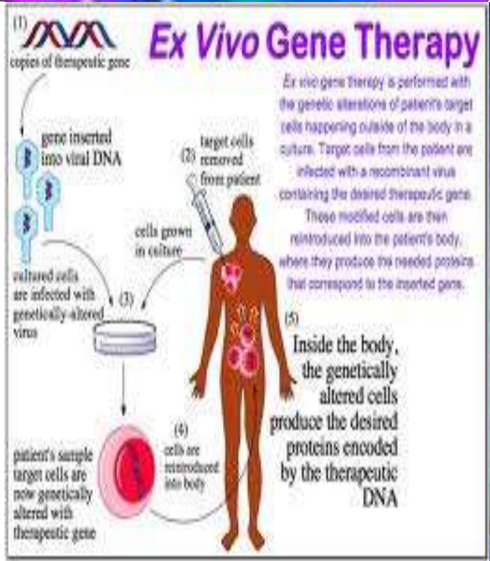
Figure 3. Minimum-Spanning Phylogenetic Tree of Mycobacterium leprae Genotypes Based on Analysis of Single-Nucleotide Polymorphisms (SNPs) and Variable-Number Tandem Repeats (VNTRs).


GENE
THERAPY


Gene
Therapy


copies of normal human gene cloned in bacteria
DNA wrapped in fat-like lipsomes
DNA inserted into genetic material of viruses
introduction into cells of individual with genetic disease
cultured cells, e.g. bone marrow
reimplantation
lung
muscle
liver


Gene therapy licensing
Complex licensing
Yeast systems
Unforeseen complications
Manufacture large quantities
Complex processing
Transgenic therapeutic protein production
Key:
Driver
Resistor
NB: Arrow width corresponds to importance of factor

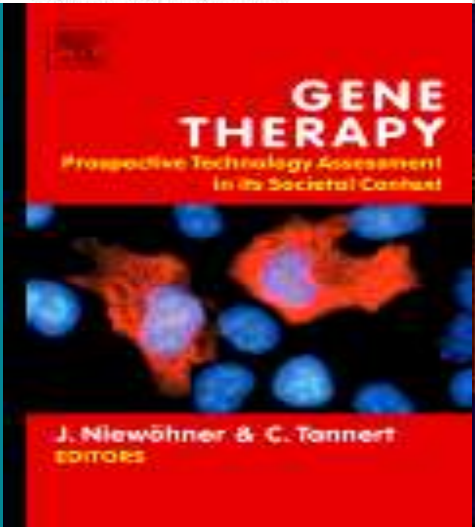

Ex Vivo Gene Therapy
(1)
copies of therapeutic gene
gene inserted into viral DNA
(2) target cells removed from patient
cells grown in culture
cultured cells are infected with genetically-altered virus
(3)
(4) cells are reintroduced into body
patient's sample target cells are now genetically altered with therapeutic gene
(5)

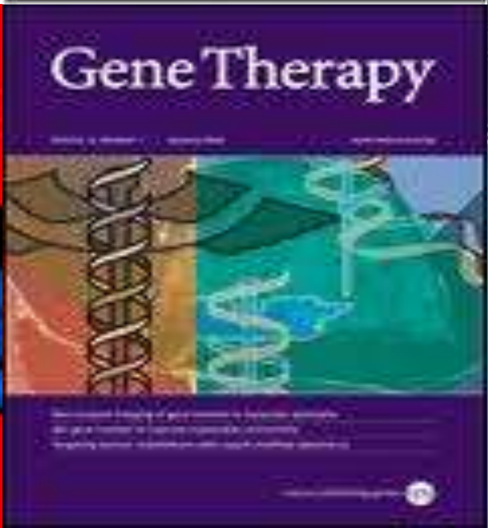
Ex vivo gene therapy is performed with the genetic alterations of patient's target cells happening outside of the body in a culture. Target cells from the patient are infected with a recombinant virus containing the desired therapeutic gene. These modified cells are then reintroduced into the patient's body, where they produce the needed proteins that correspond to the inserted gene.

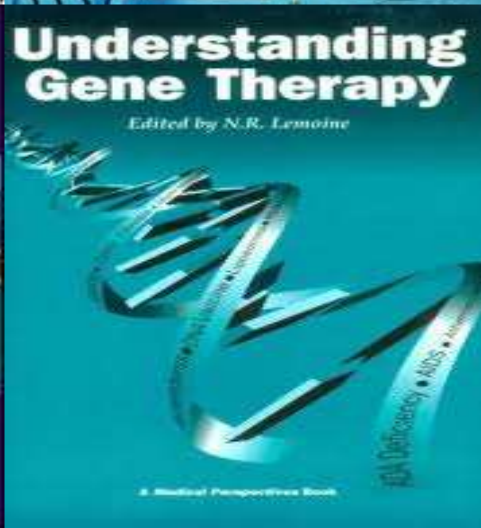
Inside the body, the genetically altered cells produce the desired proteins encoded by the therapeutic DNA

GENE THERAPY
A LEAP INTO THE FUTURE
History
Method:
Approaches
Add gene
Substitute gene
Increase vulnerability to chemotherapy
Increase immune ability
Suicide
Defection
Angiogenesis
WHAT IS GENE THERAPY?
Ex vivo technique
In vivo technique

Human Gene Therapy
Including DNA, RNA, and Cell Therapies


GENE THERAPY
Prospective Technology Assessment in its Societal Context
J. Niewöhner & C. Tannert
EDITORS


Gene Therapy

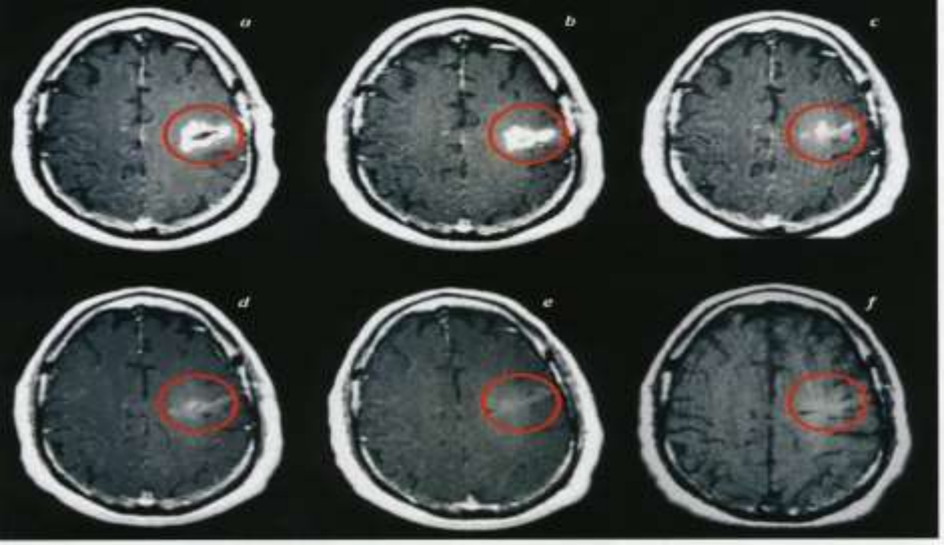

Understanding Gene Therapy
Edited by N.R. Lemoine
ADA Deficiency • AIDS
A Medical Perspectives Book

Des cancers
traités par des virus

J. ROMMELAERE, C. DINSART, A. RÉGNIER-VIGOUROUX, N. SALOMÉ, J. SCHLEHOFER

Les traitements conventionnels contre les cancers ont une efficacité limitée dans de nombreux cas. La thérapie oncolytique, fondée sur l'utilisation de virus tueurs de tumeurs, offre de nouvelles perspectives dans la lutte contre ce fléau mondial.

1. **Cette bulle stérile** protégeait David, atteint d'un déficit immunitaire combiné sévère (DICS), maladie héréditaire. Un essai de thérapie génique, réalisé en 1999 à l'Hôpital Necker de Paris, a permis de soigner huit enfants. Par la suite, des améliorations des vecteurs rétroviraux ont été proposées.

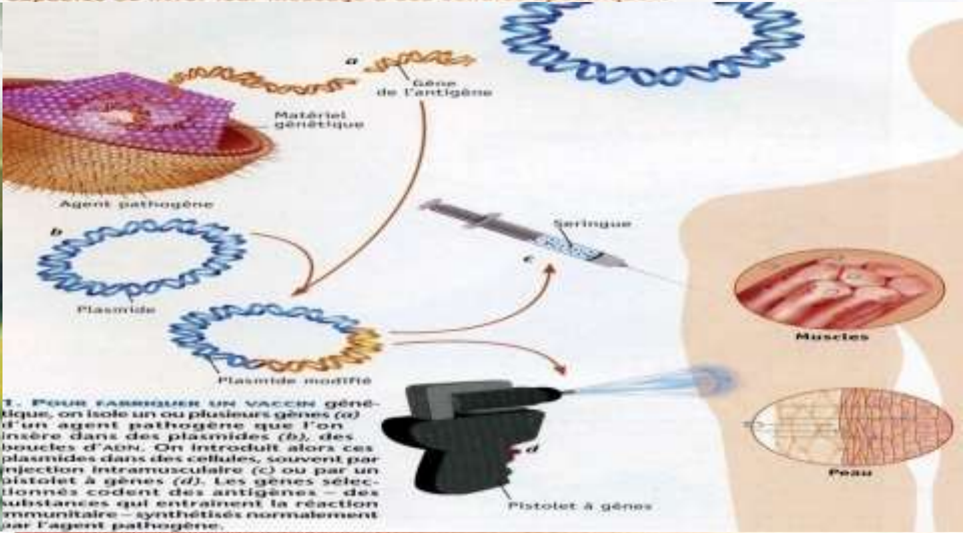


3. **Régression d'une tumeur cérébrale.** Des essais cliniques ont montré l'efficacité de la thérapie oncolytique sur des cellules gliales cancéreuses du cerveau. L'injection de virus de la maladie de Newcastle a provoqué la régression de la tumeur *(de a à f)*, comme le montrent les images par résonance magnétique prises lors du test, en 2006.

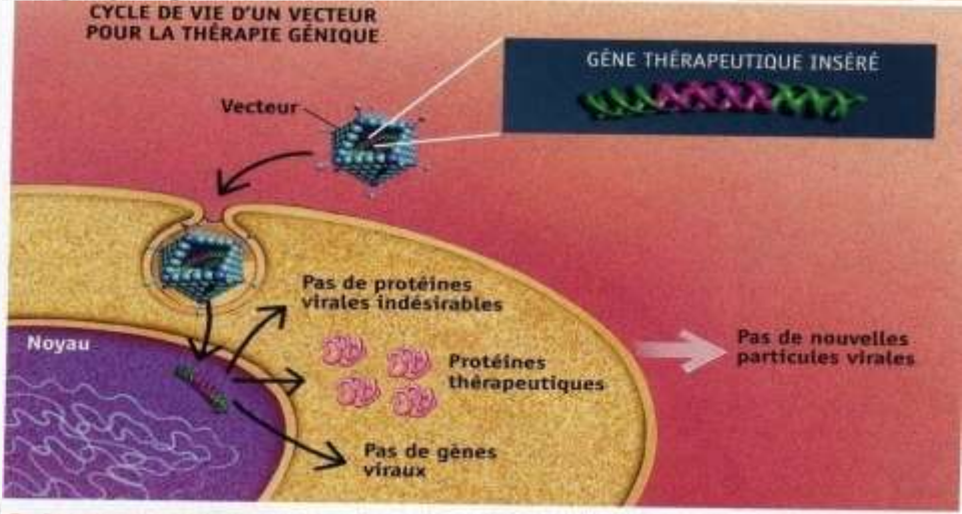
Les virus vecteurs
de molécules thérapeutiques

Jean-Christophe PAGÈS et Éric PIVER

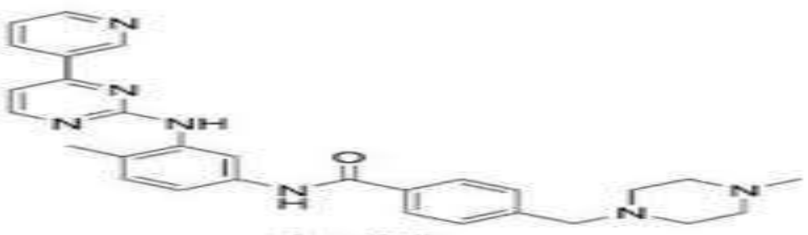
En désamorçant leur pouvoir pathogène, on convertit des virus en vecteurs d'instructions génétiques. Ceux-ci deviennent des outils thérapeutiques, capables de livrer leur message à des cellules spécifiques.


a
Gène de l'antigène
Matériel génétique
Agent pathogène
b
Plasmide
Plasmide modifié
Seringue
c
Muscles
d
Pistolet à gènes
Peau

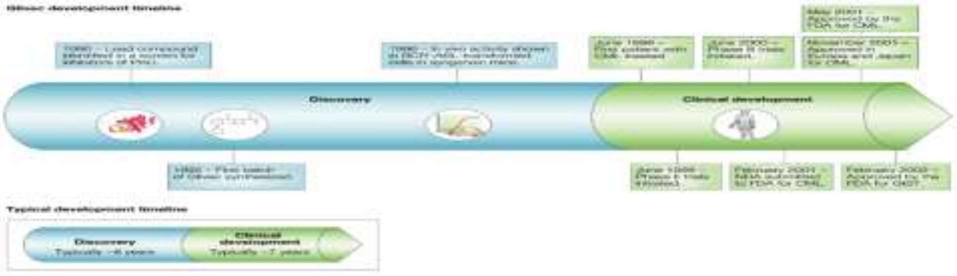
1. **Pour fabriquer un vaccin** génétique, on isole un ou plusieurs gènes *(a)* d'un agent pathogène que l'on insère dans des plasmides *(b)*, des boucles d'ADN. On introduit alors ces plasmides dans des cellules, souvent par injection intramusculaire (c) ou par un pistolet à gènes *(d)*. Les gènes sélectionnés codent des antigènes – des substances qui entraînent la réaction immunitaire – synthétisés normalement par l'agent pathogène.


CYCLE DE VIE D'UN VECTEUR POUR LA THÉRAPIE GÉNIQUE
GÈNE THÉRAPEUTIQUE INSÉRÉ
Vecteur
Pas de protéines virales indésirables
Noyau
Protéines thérapeutiques
Pas de nouvelles particules virales
Pas de gènes viraux

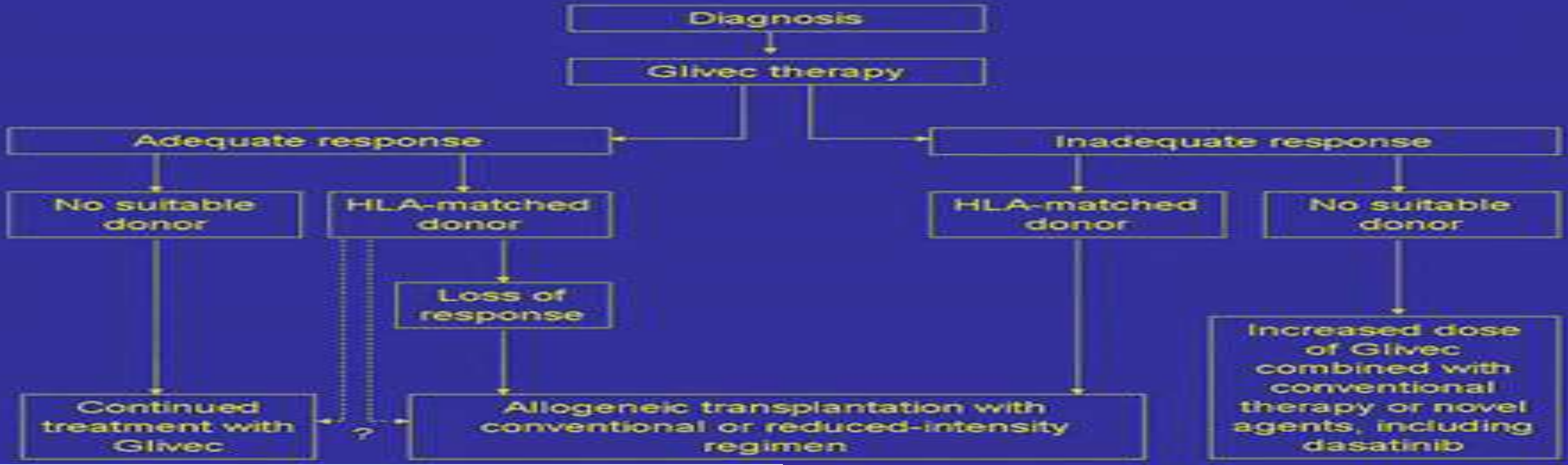
3. **Le cycle d'un vecteur viral** est tronqué par rapport à celui d'un virus : ne sont conservés que l'entrée et le transfert nucléaire du génome, qui permettront l'expression du gène thérapeutique. Comme les gènes structuraux ne sont plus présents dans le génome du vecteur, celui-ci est incapable de se multiplier.



imatinib
STI-571
Gleevec


Discovery
Clinical development
Typical development timeline
Discovery
Clinical development

Nature Reviews | Drug Discovery



Diagnosis

Glivec therapy

Adequate response

Inadequate response

No suitable donor

HLA-matched donor

HLA-matched donor

No suitable donor

Loss of response

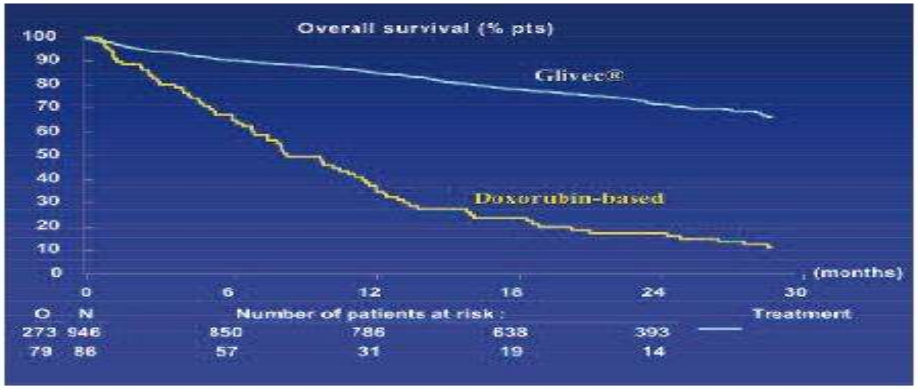
Continued treatment with Glivec

?

Allogeneic transplantation with conventional or reduced-intensity regimen

Increased dose of Glivec combined with conventional therapy or novel agents, including dasatinib

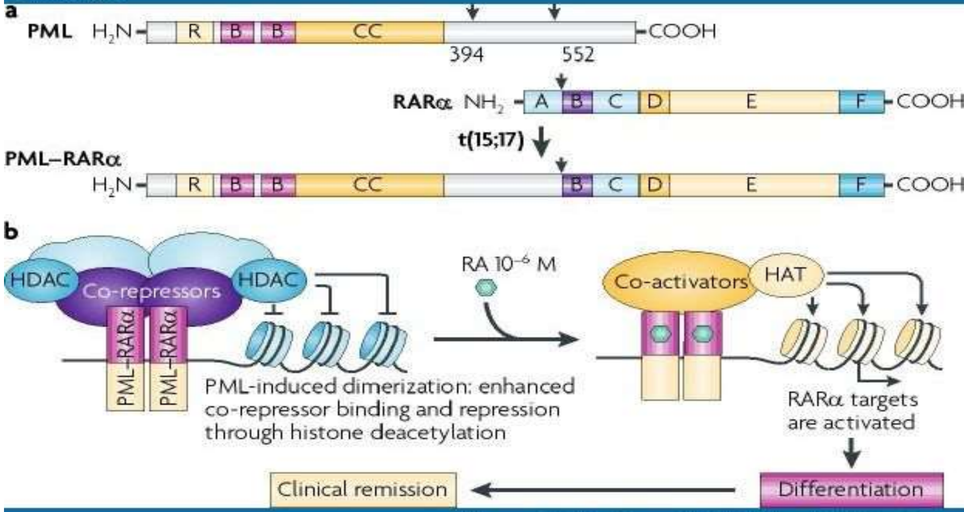
IMATINIB GREATLY IMPROVED SURVIVAL IN GIST



Results from the Conticanet series of GIST patients demonstrated the huge survival benefit conferred by the new therapy

Source: Adapted from J Verweij et al. *The Lancet* 2004, 364:1127–1134

Medscape


a
PML
H2N
R
B
B
CC
COOH
394
552
RARα
NH2
A
B
C
D
E
F
COOH
t(15;17)
PML–RARα
H2N
R
B
B
CC
B
C
D
E
F
COOH
b
HDAC
Co-repressors
HDAC
PML–RARα
PML–RARα
RA 10⁻⁶ M
Co-activators
HAT
PML-induced dimerization: enhanced co-repressor binding and repression through histone deacetylation
RARα targets are activated
Clinical remission
Differentiation

Source: Nat Rev Cancer © 2010 Nature Publishing Group

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drug discovery world
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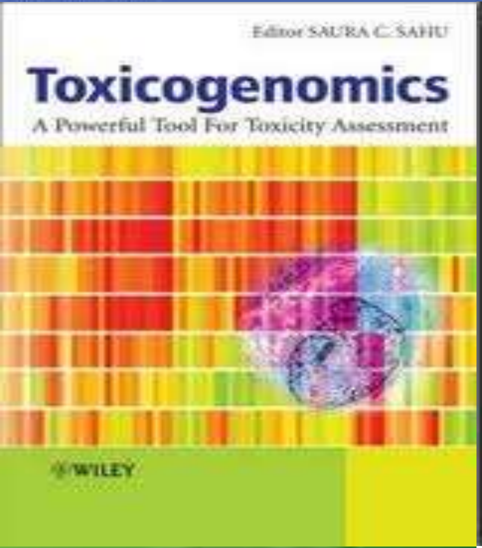
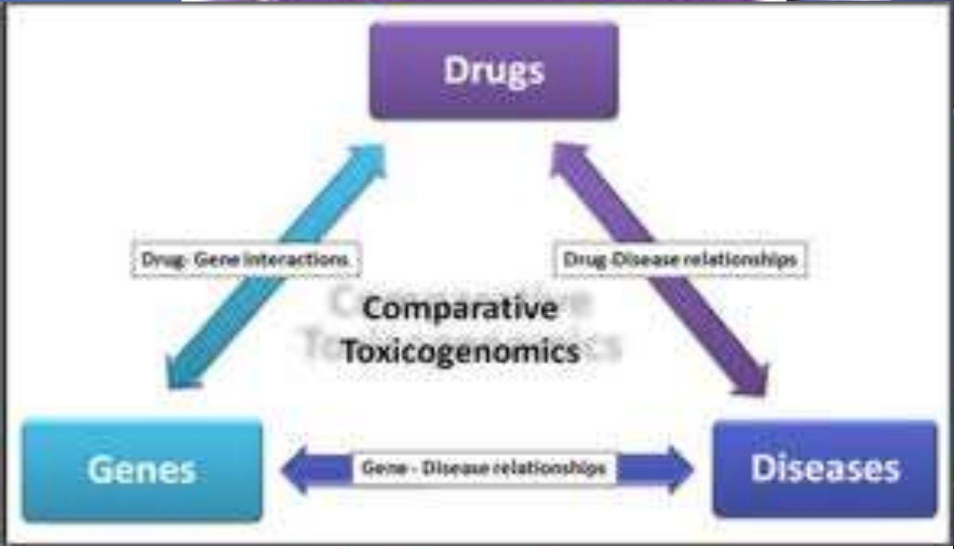
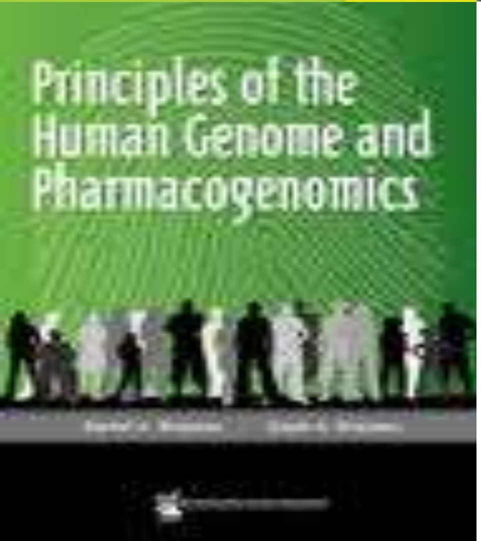
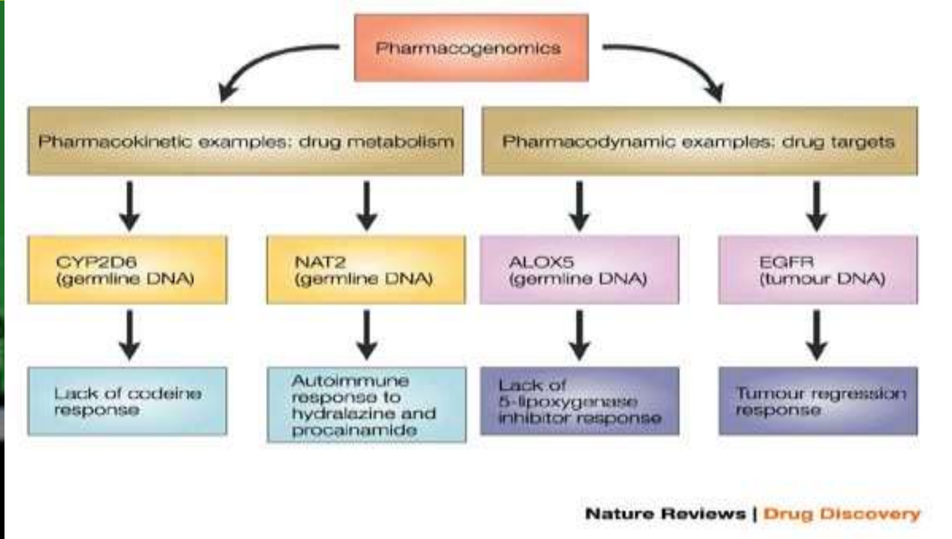
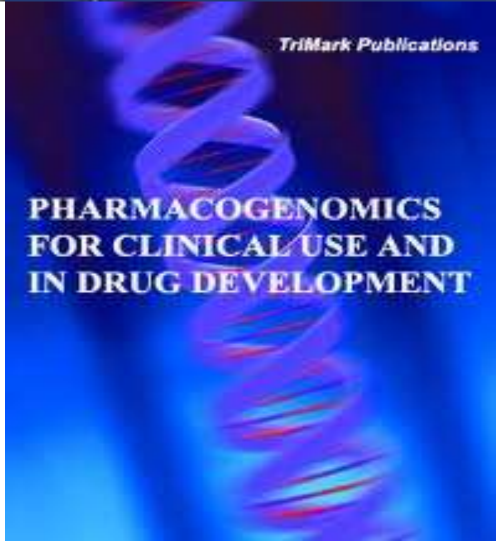

Editor SAURA C. SAHU
Toxicogenomics
A Powerful Tool For Toxicity Assessment
WILEY


Drugs
Drug- Gene interactions
Drug-Disease relationships
Comparative
Toxicogenomics
Genes
Gene - Disease relationships
Diseases

Comparative
Toxicogenomics


Principles of the
Human Genome and
Pharmacogenomics


Pharmacogenomics
Pharmacokinetic examples: drug metabolism
Pharmacodynamic examples: drug targets
CYP2D6 (germline DNA)
NAT2 (germline DNA)
ALOX5 (germline DNA)
EGFR (tumour DNA)
Lack of codeine response
Autoimmune response to hydralazine and procainamide
Lack of 5-lipoxygenase inhibitor response
Tumour regression response
Nature Reviews | Drug Discovery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PHARMACOGENOMICS
FOR CLINICAL USE AND
IN DRUG DEVELOPMENT

NDC 0173-0661-01

ZIAGEN®
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℞ only

60 Tablets

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See prescribing information for dosage information.

Notice to Authorized Dispenser:
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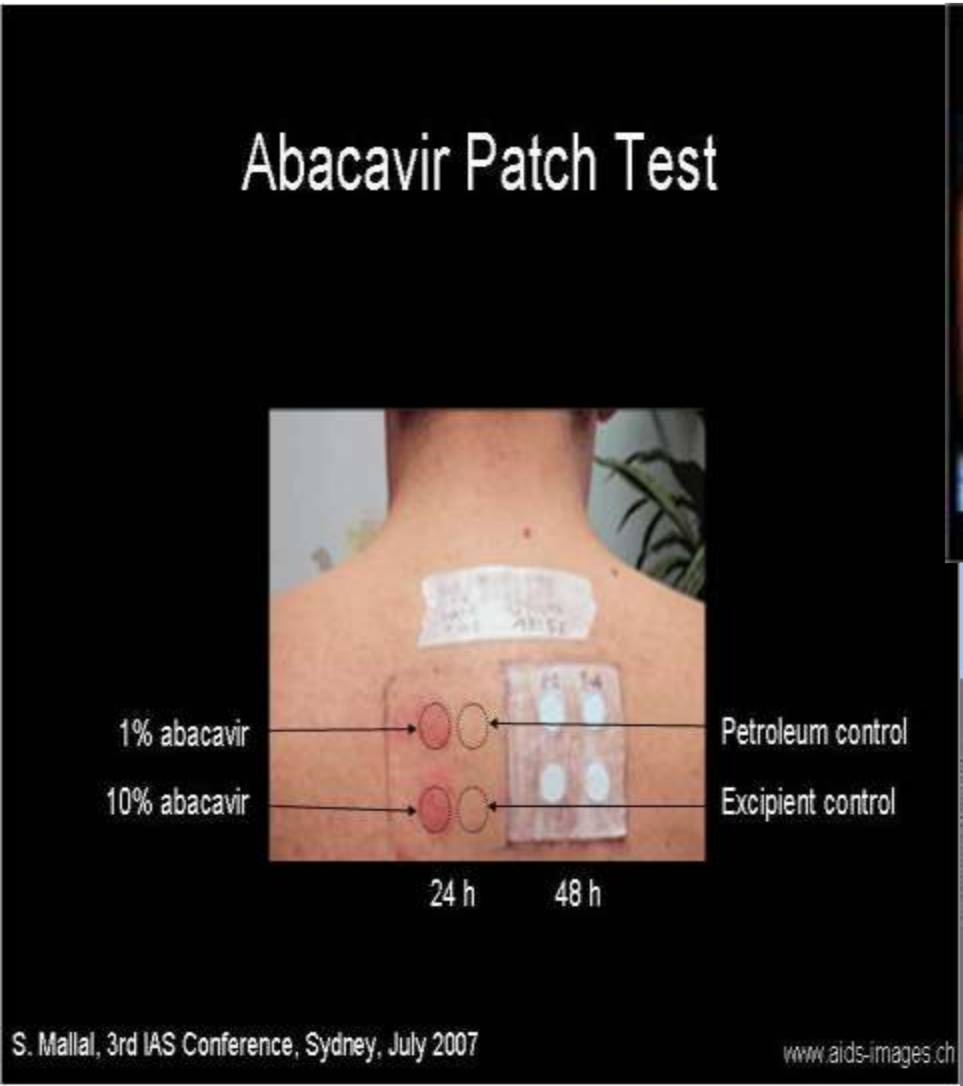
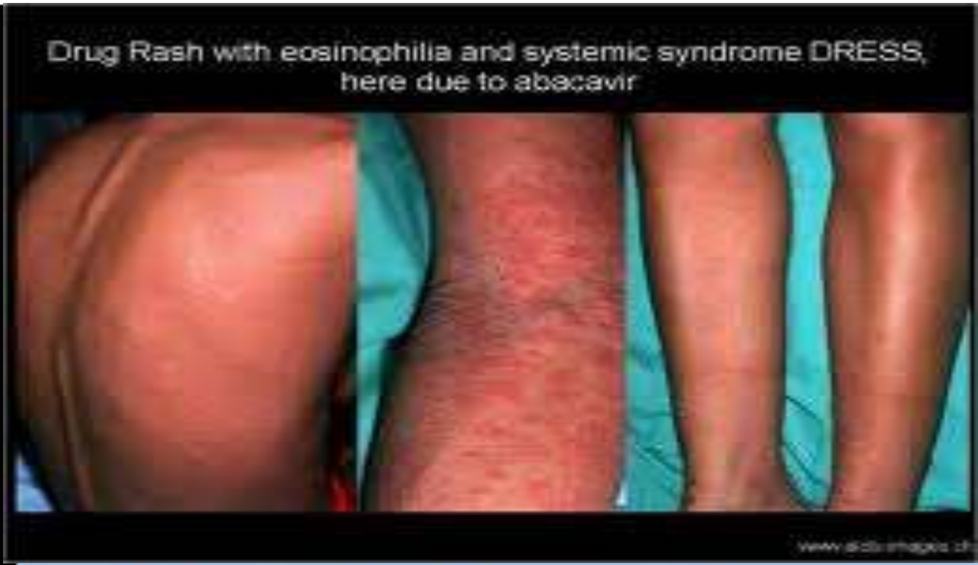
GX 623



Abacavir Patch Test

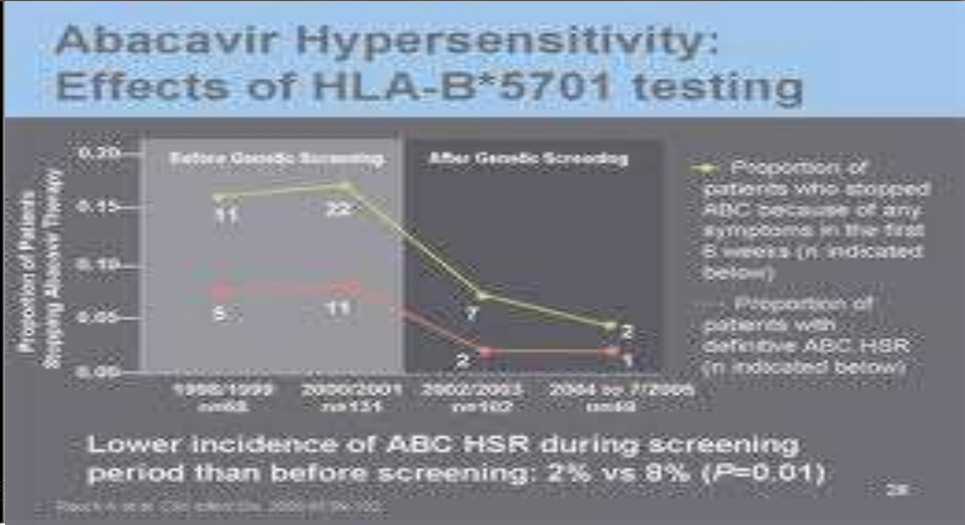
S. Mallal, 3rd IAS Conference, Sydney, July 2007

www.aids-images.ch



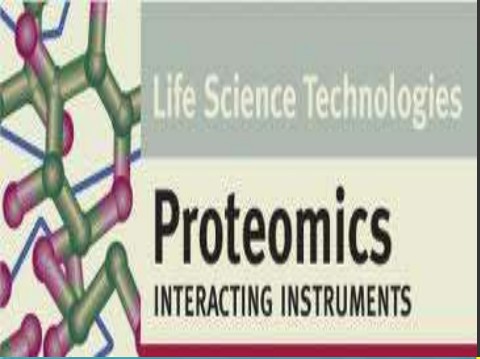
Drug Rash with eosinophilia and systemic syndrome DRESS, here due to abacavir

www.aids-images.ch



Abacavir Hypersensitivity: Effects of HLA-B*5701 testing

Lower incidence of ABC HSR during screening period than before screening: 2% vs 8% (P=0.01)


Life Science Technologies

Proteomics

INTERACTING INSTRUMENTS

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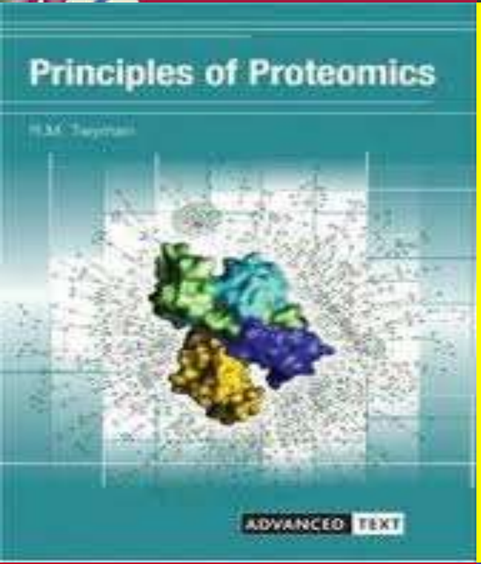
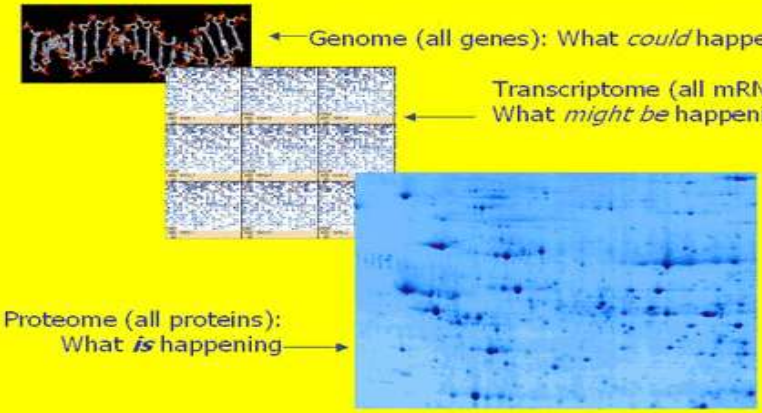

Principles of Proteomics

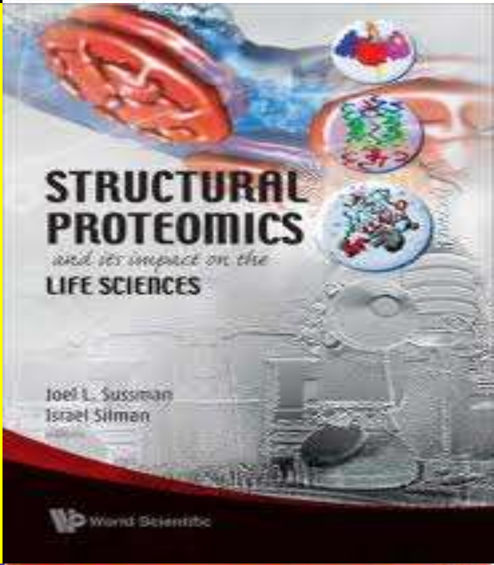
ADVANCED TEXT

Genome, Transcriptome, Proteome


Genome (all genes): What *could* happen

Transcriptome (all mRNA's):
What *might be* happening

Proteome (all proteins):
What *is* happening


STRUCTURAL PROTEOMICS
and its impact on the
LIFE SCIENCES

Joel L. Sussman
Israel Silman

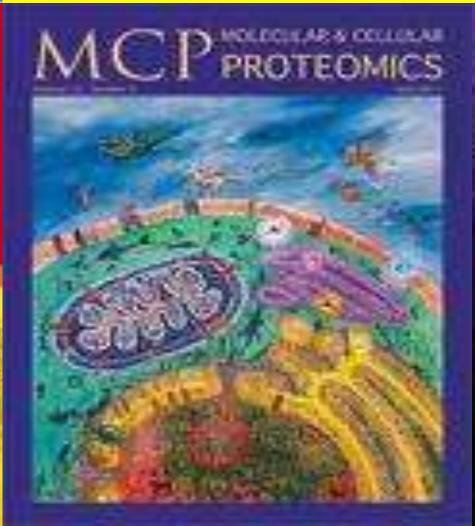
World Scientific

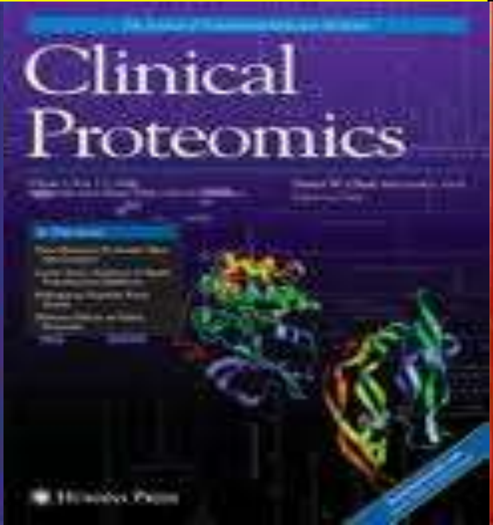
Hubert Rehm Thomas Letzel

Der Experimentator
Proteinbiochemie / Proteomics

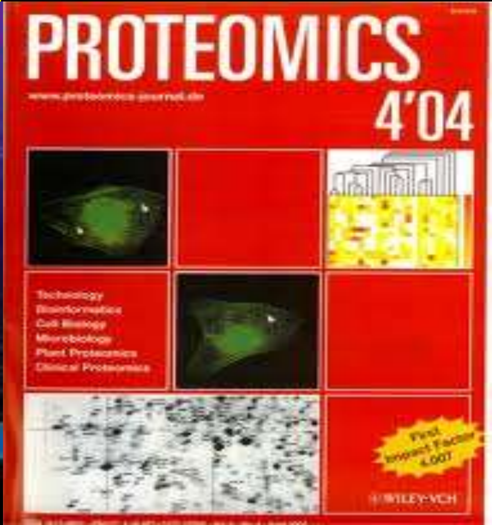
Der Experimentator

Spektrum


MCP MOLECULAR & CELLULAR PROTEOMICS


Clinical Proteomics

Humana Press


PROTEOMICS
www.proteomics-journal.de
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Plant Proteomics
Clinical Proteomics

First Impact Factor 4.007

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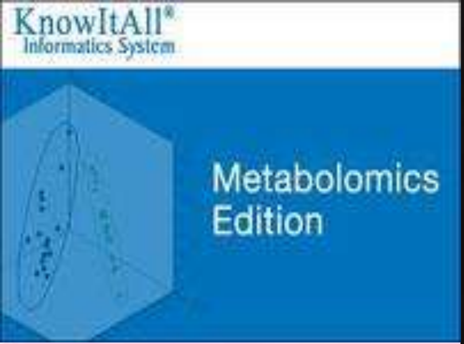
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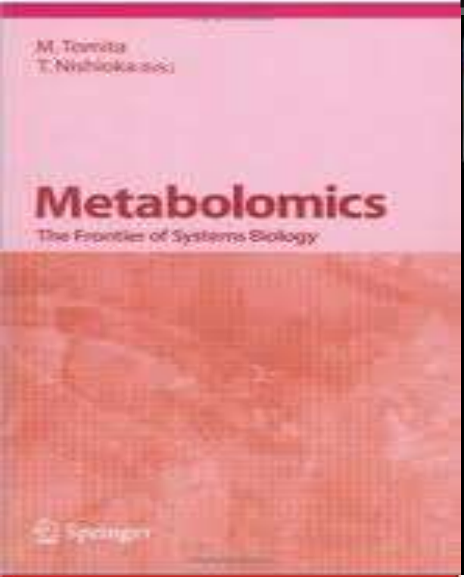
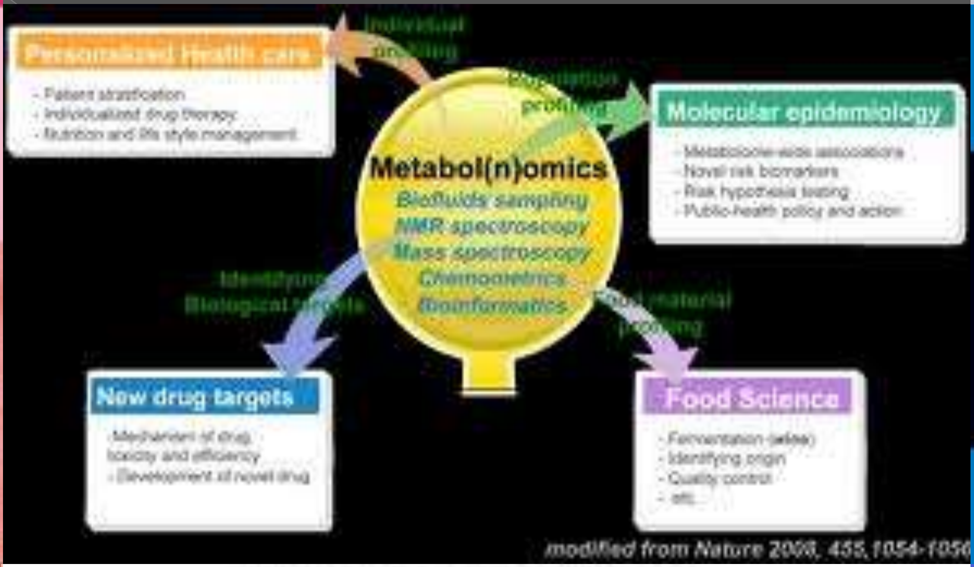
Edition

Metabolomics


M. Tomita
T. Nishioka (Eds.)
Metabolomics
The Frontiers of Systems Biology
Springer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- Patient stratification
- Individualized drug therapy
- Nutrition and life style management
Individual profiling
Population profiling
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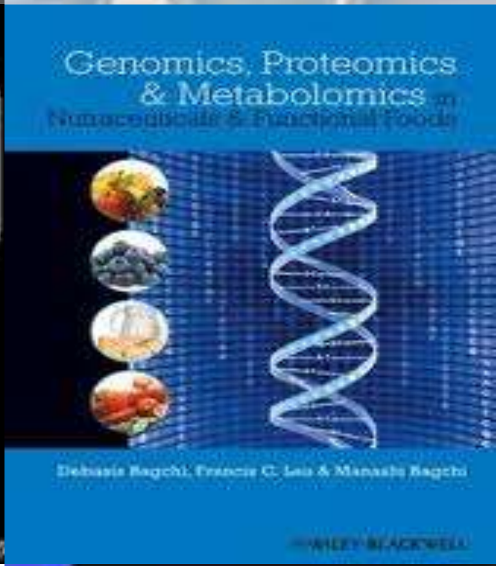
- Metabolome-wide associations
- Novel risk biomarkers
- Risk hypothesis testing
- Public-health policy and action
Metabol(n)omics
Biofluids sampling
NMR spectroscopy
Mass spectroscopy
Chemometrics
Bioinformatics
Identifying Biological targets
Food material profiling
New drug targets
- Mechanism of drug toxicity and efficiency
- Development of novel drug
Food Science
- Fermentation (wine)
- Identifying origin
- Quality control
- etc.

modified from Nature 2008, 455,1054-1056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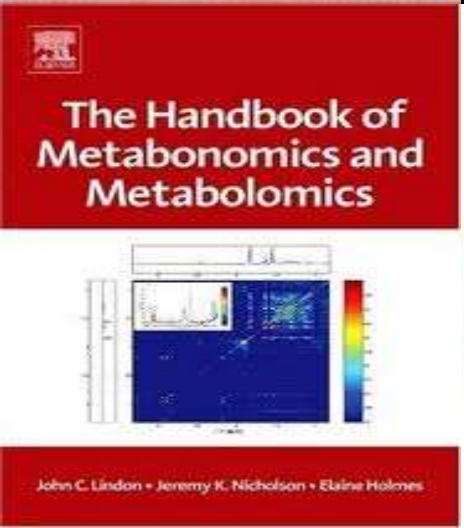
Debasis Bagchi, Francis C. Lau & Manashi Bagchi
WILEY-BLACKWELL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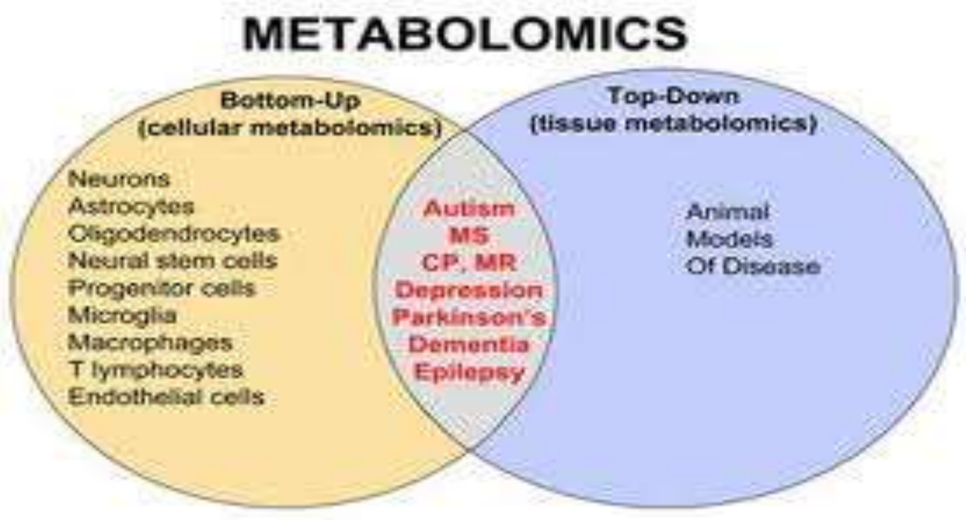
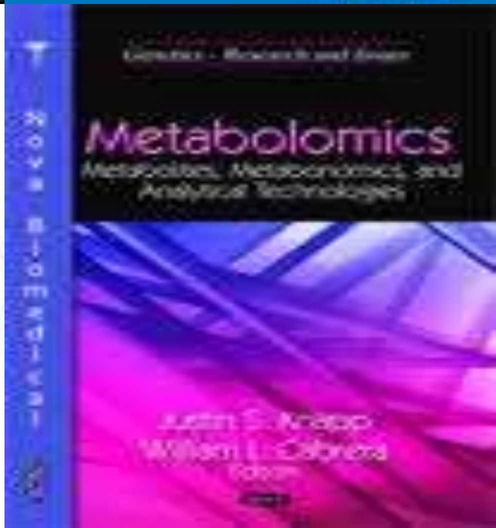

METABOLOMICS
Bottom-Up
(cellular metabolomics)
Top-Down
(tissue metabolomics)
Neurons
Astrocytes
Oligodendrocytes
Neural stem cells
Progenitor cells
Microglia
Macrophages
T lymphocytes
Endothelial cells
Autism
MS
CP, MR
Depression
Parkinson's
Dementia
Epilepsy
Animal
Models
Of Disease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Metabolites, Metabonomics, and Analytical Technologies
Justin S. Knapp
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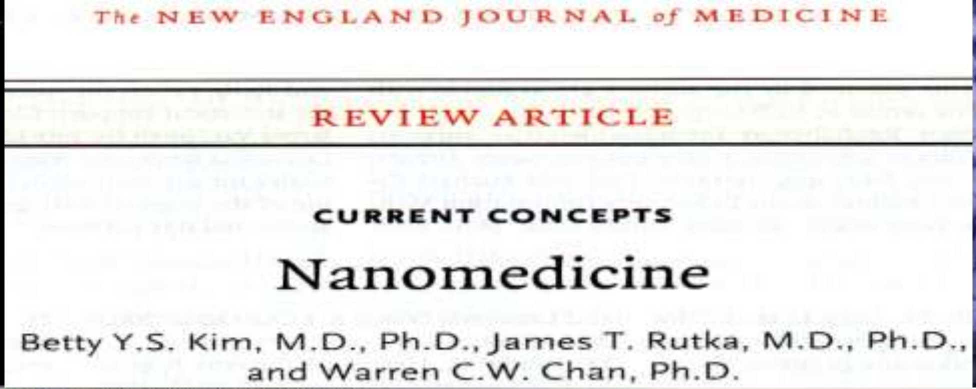
TRANSIENT ELASTOGRAPHY
URINE PROTEOMICS



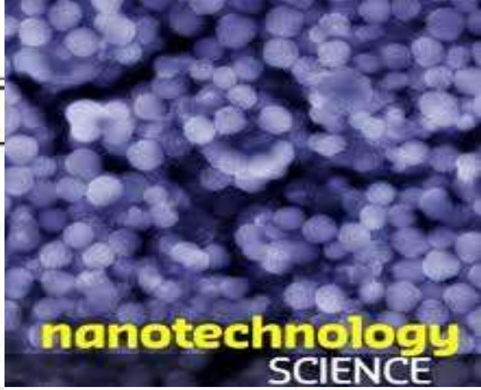
The NEW ENGLAND JOURNAL of MEDICINE

REVIEW ARTICLE

CURRENT CONCEPTS

Nanomedicine

Betty Y.S. Kim, M.D., Ph.D., James T. Rutka, M.D., Ph.D.,
and Warren C.W. Chan, Ph.D.


nanotechnology
SCIENCE

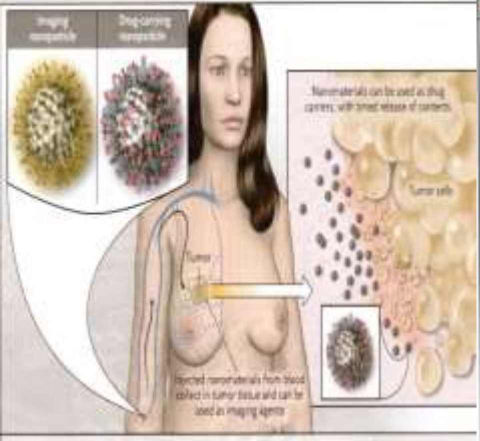

Imaging nanoparticle
Drug-carrying nanoparticle
Tumor cells
Tumor
Injected nanomaterials from blood collect in tumor tissue and can be used as imaging agents

Figure 3. Nanomaterials Used as Drug Carriers or Contrast Agents for In Vivo Cancer Applications.

Tumors have poor lymphatic drainage, and their vessels are highly porous. This enables nanomaterials to diffuse and accumulate in the tumor matrix. Nanomaterials that carry chemotherapeutic agents can target and kill tumor cells, whereas nanomaterials that are magnetic or fluorescent are used as imaging agents for detecting tumors.

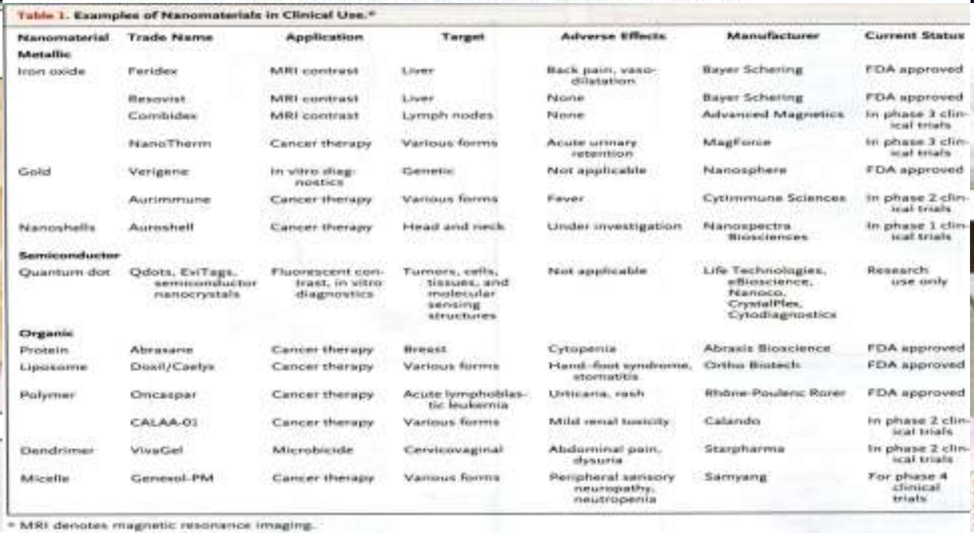


Table 1. Examples of Nanomaterials in Clinical Use.*

Nanomaterial	Trade Name	Application	Target	Adverse Effects	Manufacturer	Current Status
Metallic						
Iron oxide	Feridex	MRI contrast	Liver	Back pain, vasodilatation	Bayer Schering	FDA approved
	Resovist	MRI contrast	Liver	None	Bayer Schering	FDA approved
	Combidex	MRI contrast	Lymph nodes	None	Advanced Magnetics	In phase 3 clinical trials
	NanoTherm	Cancer therapy	Various forms	Acute urinary retention	MagForce	In phase 3 clinical trials
Gold	Verigene	In vitro diagnostics	Genetic	Not applicable	Nanosphere	FDA approved
	Aurimmune	Cancer therapy	Various forms	Fever	CytImmune Sciences	In phase 2 clinical trials
Nanoshells	Auroshell	Cancer therapy	Head and neck	Under investigation	Nanospectra Biosciences	In phase 1 clinical trials
Semiconductor						
Quantum dot	Qdots, EviTags, semiconductor nanocrystals	Fluorescent contrast, in vitro diagnostics	Tumors, cells, tissues, and molecular sensing structures	Not applicable	Life Technologies, eBioscience, Nanoco, CrystalPlex, Cytodiagnostics	Research use only
Organic						
Protein	Abraxane	Cancer therapy	Breast	Cytopenia	Abraxis Bioscience	FDA approved
Liposome	Doxil/Caelyx	Cancer therapy	Various forms	Hand–foot syndrome, stomatitis	Ortho Biotech	FDA approved
Polymer	Oncaspar	Cancer therapy	Acute lymphoblastic leukemia	Urticaria, rash	Rhône-Poulenc Rorer	FDA approved
	CALAA-01	Cancer therapy	Various forms	Mild renal toxicity	Calando	In phase 2 clinical trials
Dendrimer	VivaGel	Microbicide	Cervicovaginal	Abdominal pain, dysuria	Starpharma	In phase 2 clinical trials
Micelle	Genexol-PM	Cancer therapy	Various forms	Peripheral sensory neuropathy, neutropenia	Samyang	For phase 4 clinical trials

* MRI denotes magnetic resonance imaging.

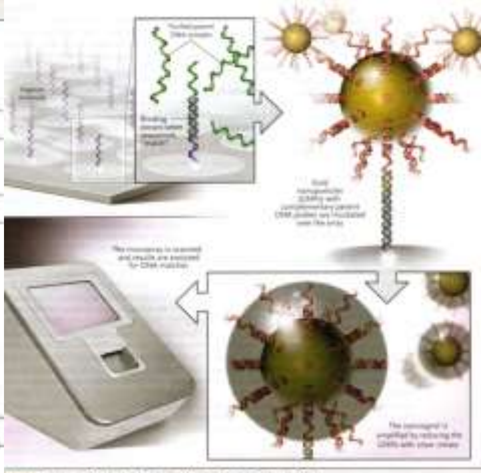
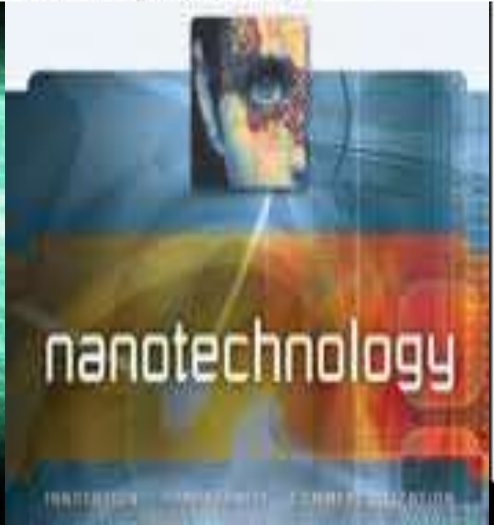
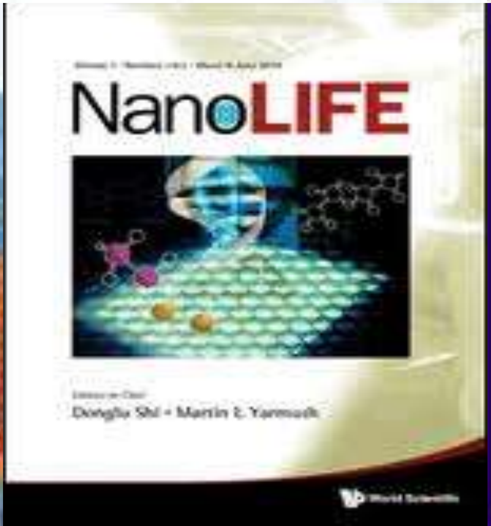


Figure 4. Nanomaterials Used as Labels to Amplify Detection Signals in Diagnostic Devices.

NANOTECHNOLOGY


nanotechnology


NanoLIFE
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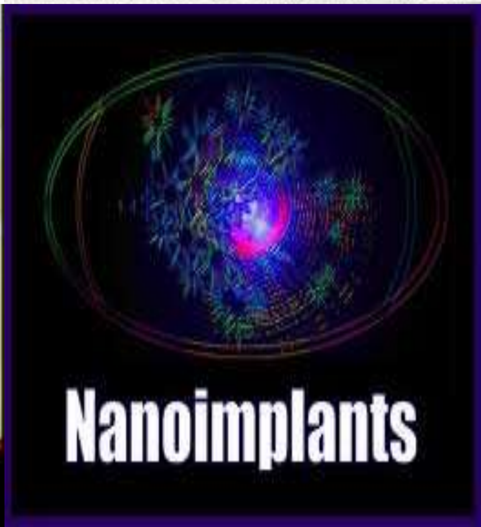
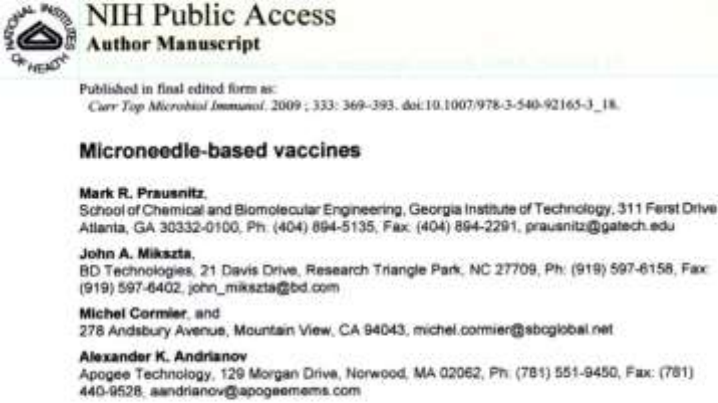

Nanoimplants



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Microneedle-based vaccines

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School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, 311 Ferst Drive Atlanta, GA 30332-0100, Ph: (404) 894-5135, Fax: (404) 894-2291, prausnitz@gatech.edu

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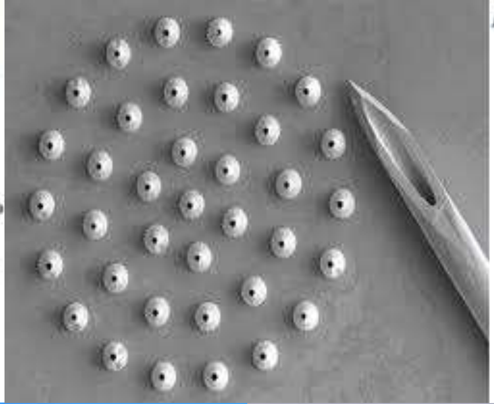
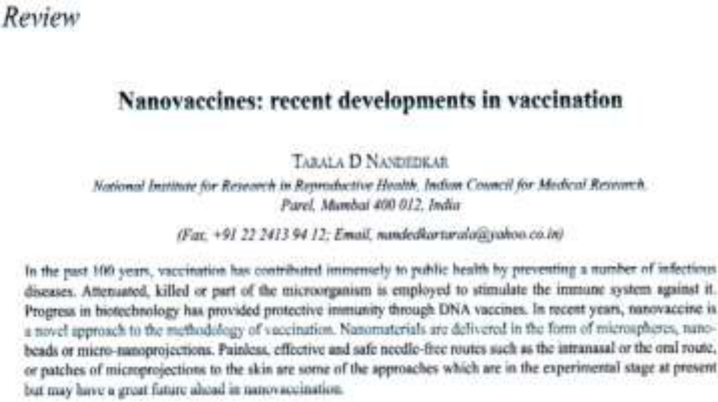
Apogee Technology, 129 Morgan Drive, Norwood, MA 02062, Ph: (781) 551-9450, Fax: (781) 440-9528, aandrianov@apogeemems.com





Review

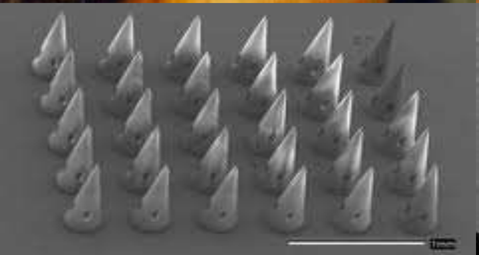
Nanovaccines: recent developments in vaccination

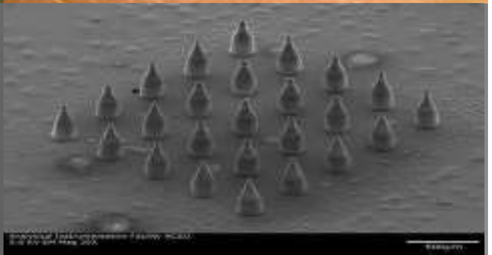
Tarala D Nandedkar

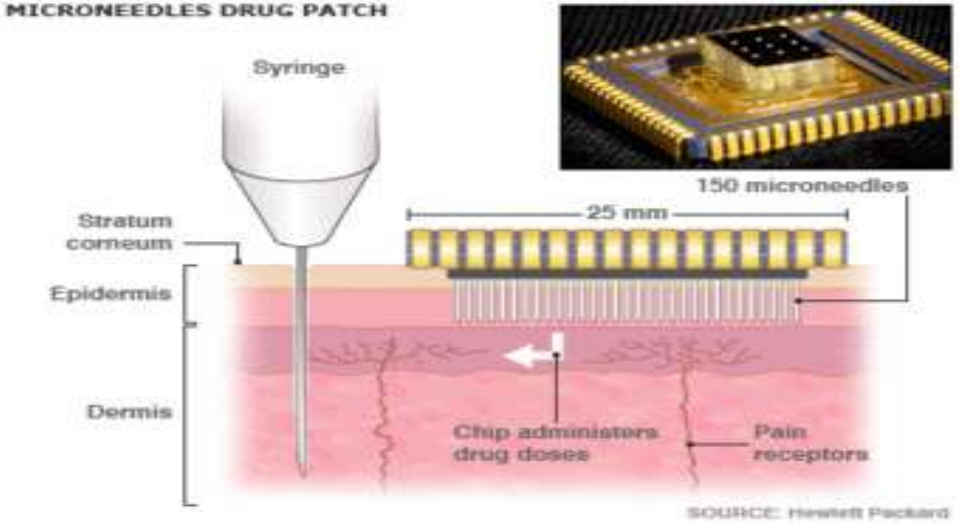
National Institute for Research in Reproductive Health, Indian Council for Medical Research,
Parel, Mumbai 400 012, India

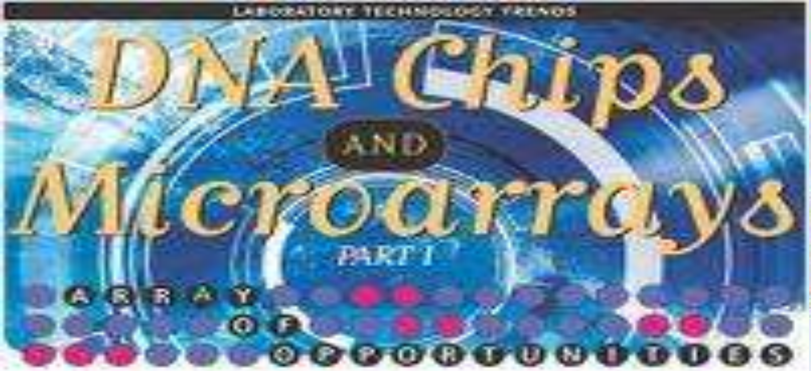
(Fax: +91 22 2413 94 12; Email: nandedkartarala@yahoo.co.in)

In the past 100 years, vaccination has contributed immensely to public health by preventing a number of infectious diseases. Attenuated, killed or part of the microorganism is employed to stimulate the immune system against it. Progress in biotechnology has provided protective immunity through DNA vaccines. In recent years, nanovaccine is a novel approach to the methodology of vaccination. Nanomaterials are delivered in the form of microspheres, nanobeads or micro-nanoprojections. Painless, effective and safe needle-free routes such as the intranasal or the oral route, or patches of microprojections to the skin are some of the approaches which are in the experimental stage at present but may have a great future ahead in nanovaccination.

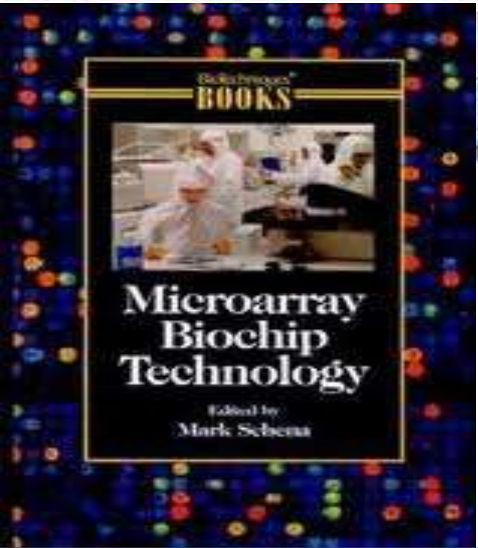


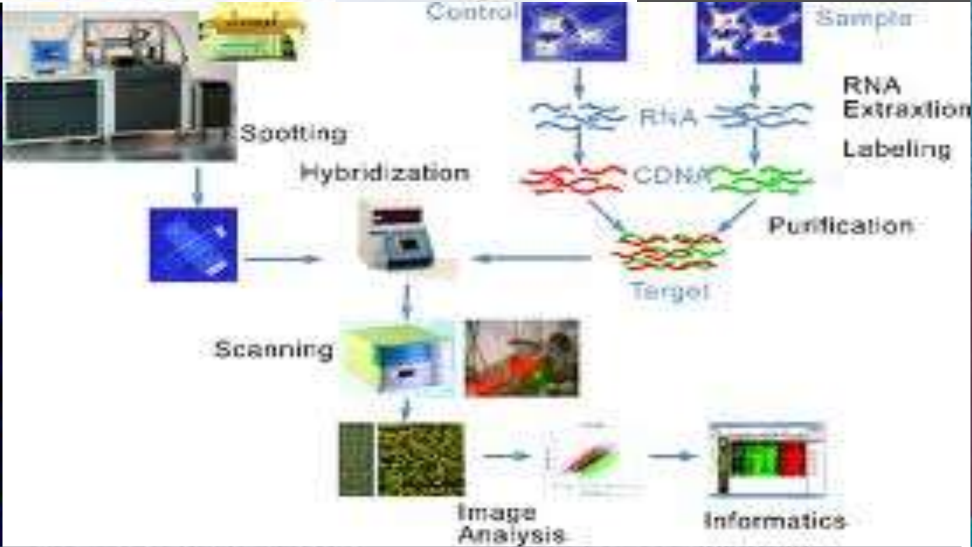


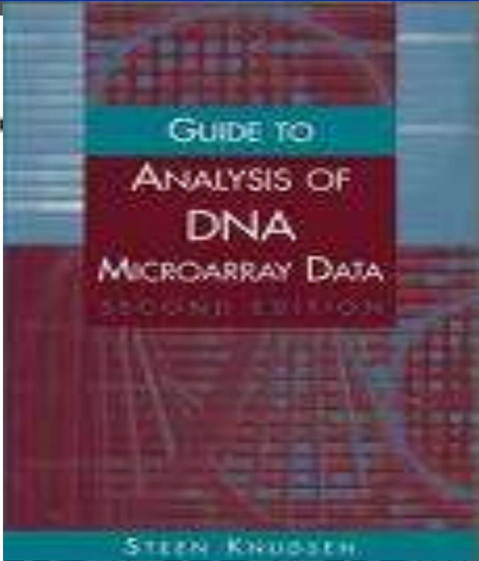



LABORATORY TECHNOLOGY TRENDS
DNA Chips
AND
Microarrays
PART I
ARRAY OF OPPORTUNITIES

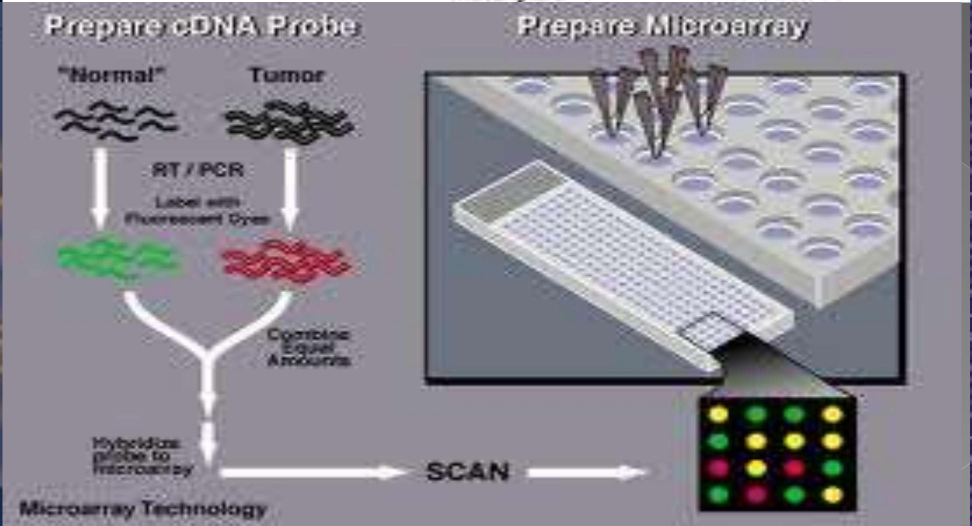
MICROARRAY CENTRE
μA
University Health Network

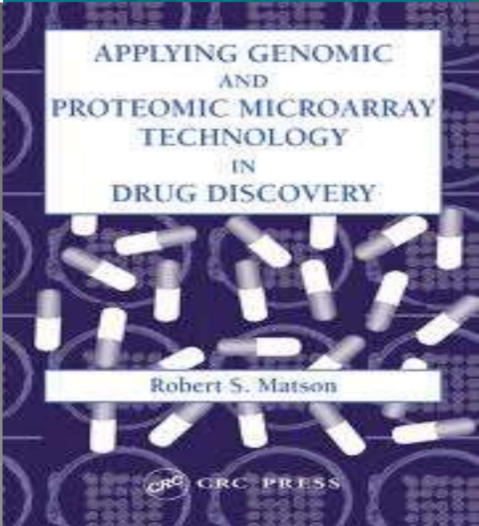

BioTechniques BOOKS
Microarray Biochip Technology
Edited by
Mark Schena


Control
Sample
RNA Extraxtion
RNA
Labeling
CDNA
Spotting
Hybridization
Purification
Target
Scanning
Image Analysis
Informatics


GUIDE TO
ANALYSIS OF
DNA
MICROARRAY DATA
SECOND EDITION
STEEN KNUDSEN

U.R. Müller · D.V. Nicolau
Microarray Technology and Its Applications
Springer
BIOLOGICAL AND MEDICAL PHYSICS
BIOMEDICAL ENGINEERING

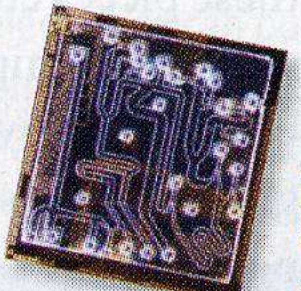

Prepare cDNA Probe
Prepare Microarray
"Normal"
Tumor
RT / PCR
Label with Fluorescent Dyes
Combine Equal Amounts
Hybridize probe to microarray
SCAN
Microarray Technology


APPLYING GENOMIC AND PROTEOMIC MICROARRAY TECHNOLOGY IN DRUG DISCOVERY
Robert S. Matson
CRC PRESS

Big Lab on a Tiny Chip

Squeezing a chemistry lab down to fingernail size could provide instant medical tests at home and on the battlefield

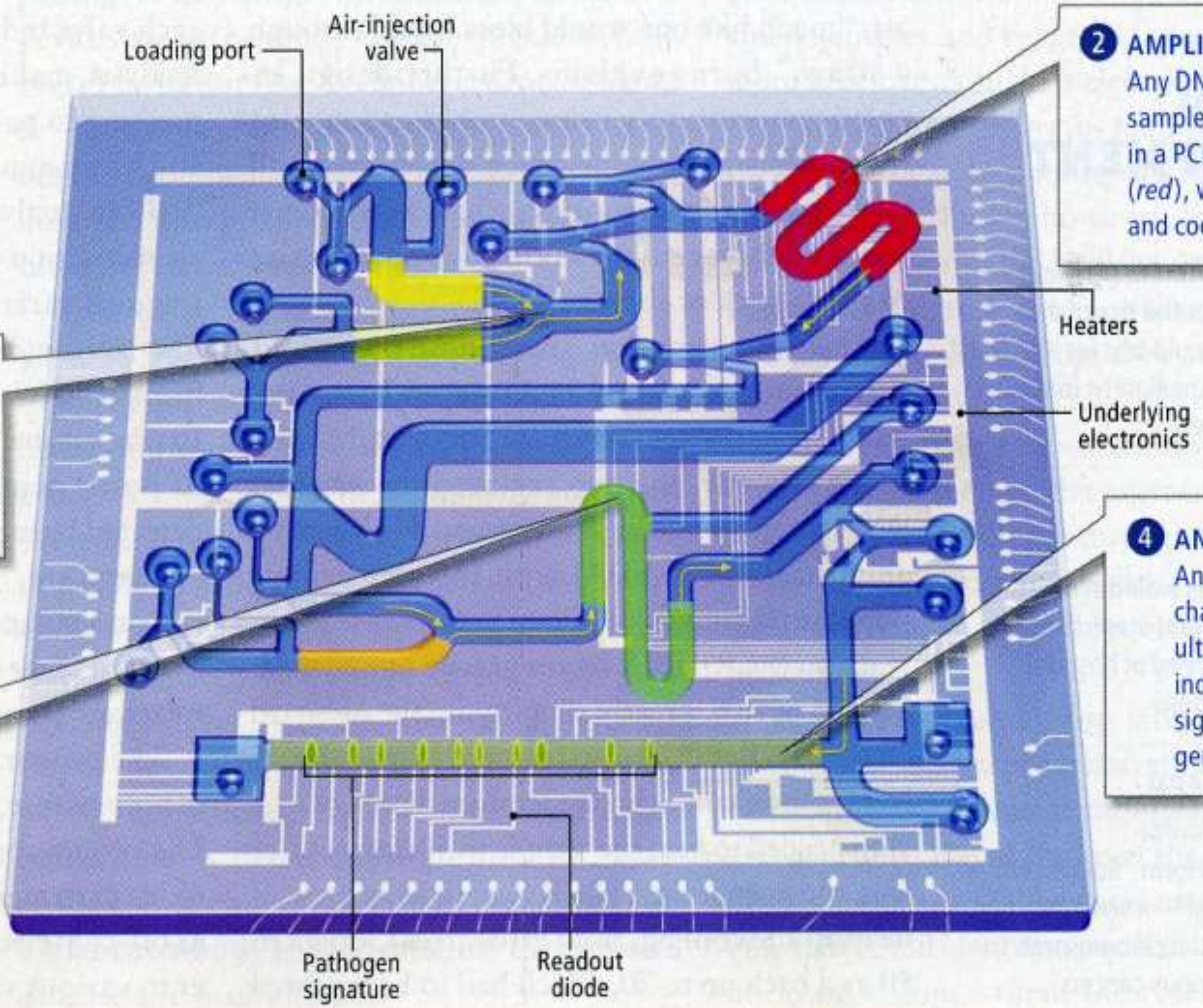
By Charles Q. Choi



ACTUAL SIZE: The University of Michigan's influenza chip measures 1.5 by 1.6 centimeters.

Influenza Detector

A prototype from the University of Michigan moves droplets through a microfluidic maze. Tests on a blood sample could show influenza or other pathogens within 15 minutes.

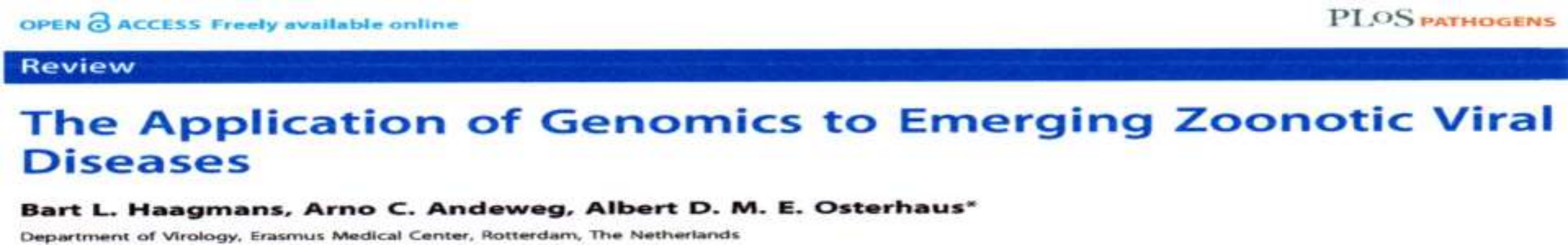

Loading port
Air-injection valve
Heaters
Underlying electronics
Pathogen signature
Readout diode

1 LOAD
Blood sample (*yellow*) and amplification reagent (*green*) are loaded, then pushed along by air pressure.

2 AMPLIFY
Any DNA in the sample is amplified in a PCR chamber (*red*), which heats and cools 35 times.

3 REACT
Amplified DNA mixes with a reagent (*gold*) that reacts to influenza inside a reaction chamber (*green*).

4 ANALYZE
An electrophoresis channel read with ultraviolet light indicates a telltale signature if pathogens are present.



OPEN ACCESS Freely available online

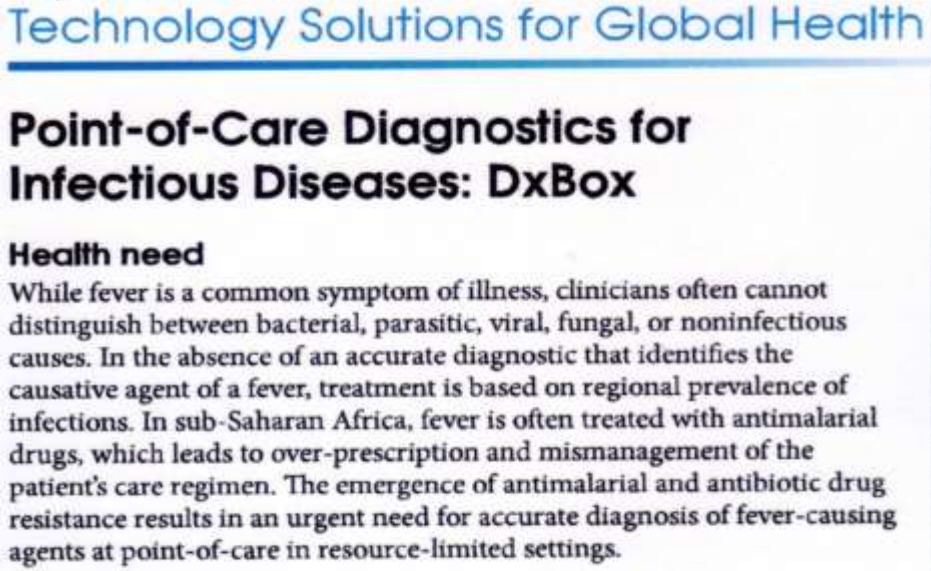
PLoS PATHOGENS

Review

The Application of Genomics to Emerging Zoonotic Viral Diseases

Bart L. Haagmans, Arno C. Andeweg, Albert D. M. E. Osterhaus*

Department of Virology, Erasmus Medical Center, Rotterdam, The Netherlands

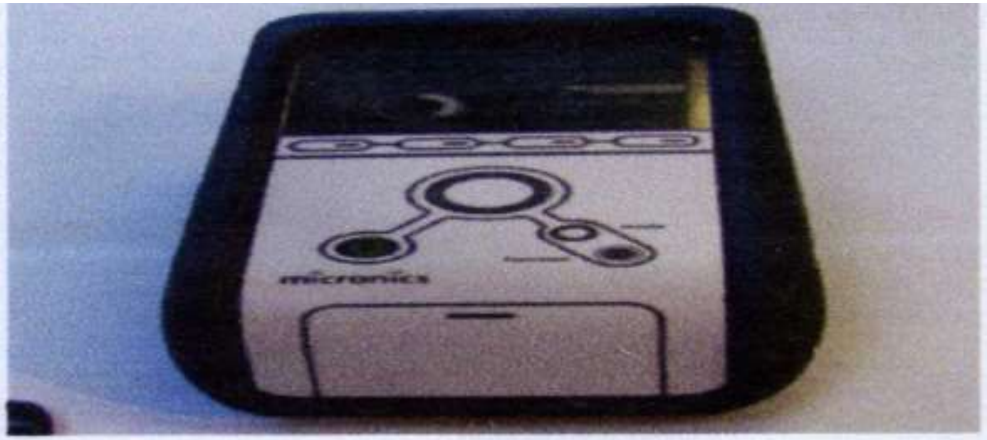


Technology Solutions for Global Health

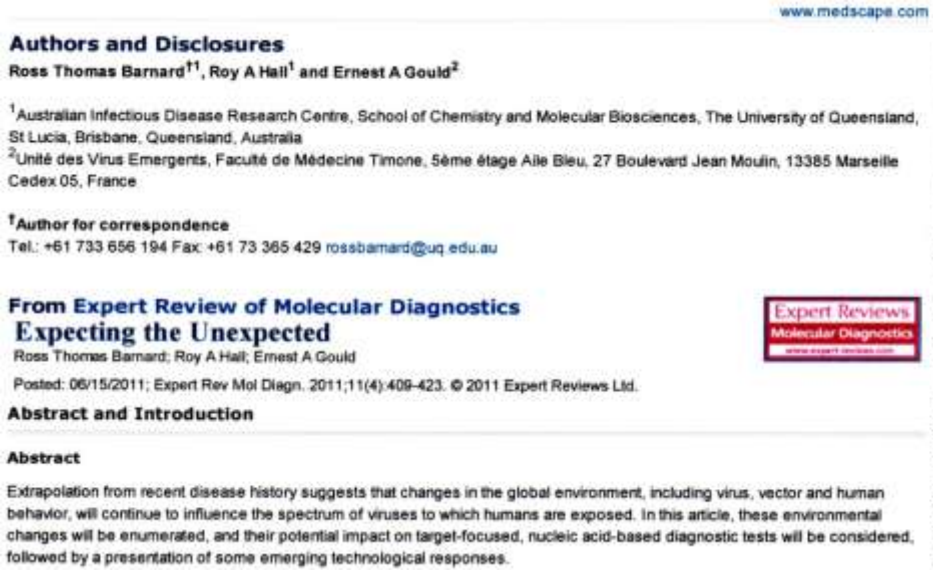
Point-of-Care Diagnostics for Infectious Diseases: DxBox

Health need

While fever is a common symptom of illness, clinicians often cannot distinguish between bacterial, parasitic, viral, fungal, or noninfectious causes. In the absence of an accurate diagnostic that identifies the causative agent of a fever, treatment is based on regional prevalence of infections. In sub-Saharan Africa, fever is often treated with antimalarial drugs, which leads to over-prescription and mismanagement of the patient's care regimen. The emergence of antimalarial and antibiotic drug resistance results in an urgent need for accurate diagnosis of fever-causing agents at point-of-care in resource-limited settings.



Prototype of the DxBox instrument with a disposable device.



www.medscape.com

Authors and Disclosures

Ross Thomas Barnard†[1], Roy A Hall[1] and Ernest A Gould[2]

[1]Australian Infectious Disease Research Centre, School of Chemistry and Molecular Biosciences, The University of Queensland, St Lucia, Brisbane, Queensland, Australia
[2]Unité des Virus Emergents, Faculté de Médecine Timone, 5ème étage Aile Bleu, 27 Boulevard Jean Moulin, 13385 Marseille Cedex 05, France

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From Expert Review of Molecular Diagnostics

Expecting the Unexpected

Ross Thomas Barnard; Roy A Hall; Ernest A Gould

Posted: 06/15/2011; Expert Rev Mol Diagn. 2011;11(4):409-423. © 2011 Expert Reviews Ltd.

Abstract and Introduction

Abstract

Extrapolation from recent disease history suggests that changes in the global environment, including virus, vector and human behavior, will continue to influence the spectrum of viruses to which humans are exposed. In this article, these environmental changes will be enumerated, and their potential impact on target-focused, nucleic acid-based diagnostic tests will be considered, followed by a presentation of some emerging technological responses.

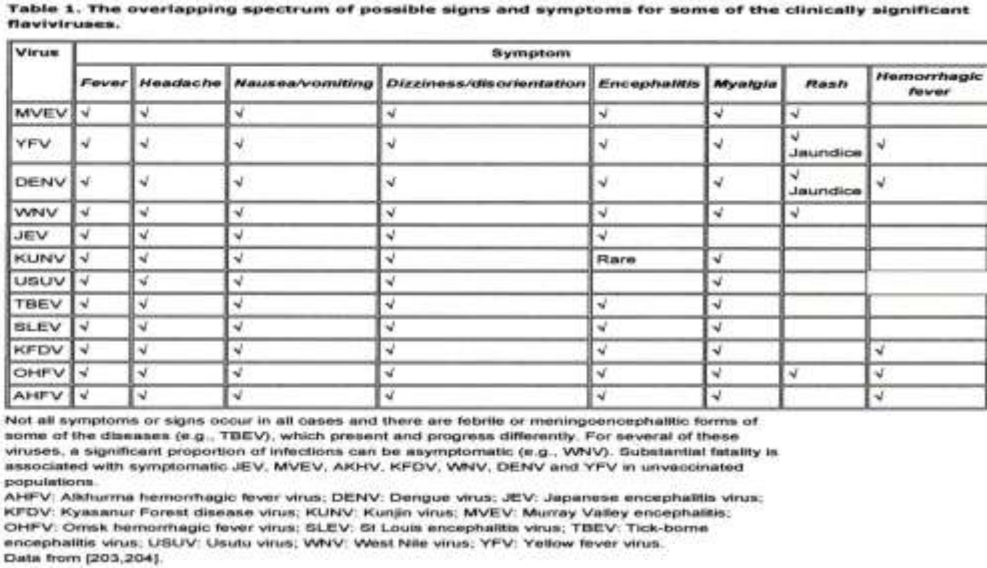


Table 1. The overlapping spectrum of possible signs and symptoms for some of the clinically significant flaviviruses.

Virus	Symptom							
	Fever	*Headache*	*Nausea/vomiting*	*Dizziness/disorientation*	*Encephalitis*	*Myalgia*	*Rash*	*Hemorrhagic fever*
MVEV	✓	✓	✓	✓	✓	✓	✓	
YFV	✓	✓	✓	✓	✓	✓	✓ Jaundice	✓
DENV	✓	✓	✓	✓	✓	✓	✓ Jaundice	✓
WNV	✓	✓	✓	✓	✓	✓	✓	
JEV	✓	✓	✓	✓	✓			
KUNV	✓	✓	✓	✓	Rare	✓		
USUV	✓	✓	✓	✓		✓		
TBEV	✓	✓	✓	✓	✓	✓		
SLEV	✓	✓	✓	✓	✓	✓		
KFDV	✓	✓	✓	✓	✓	✓		✓
OHFV	✓	✓	✓	✓	✓	✓	✓	✓
AHFV	✓	✓	✓	✓	✓	✓		✓

Not all symptoms or signs occur in all cases and there are febrile or meningoencephalitic forms of some of the diseases (e.g., TBEV), which present and progress differently. For several of these viruses, a significant proportion of infections can be asymptomatic (e.g., WNV). Substantial fatality is associated with symptomatic JEV, MVEV, AKHV, KFDV, WNV, DENV and YFV in unvaccinated populations.
AHFV: Alkhurma hemorrhagic fever virus; DENV: Dengue virus; JEV: Japanese encephalitis virus; KFDV: Kyasanur Forest disease virus; KUNV: Kunjin virus; MVEV: Murray Valley encephalitis; OHFV: Omsk hemorrhagic fever virus; SLEV: St Louis encephalitis virus; TBEV: Tick-borne encephalitis virus; USUV: Usutu virus; WNV: West Nile virus; YFV: Yellow fever virus.
Data from [203,204].

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 SEPTEMBER 9, 2010 VOL. 363 NO. 11

Rapid Molecular Detection of Tuberculosis and Rifampin Resistance

Catharina C. Boehme, M.D., Pamela Nabeta, M.D., Doris Hillemann, Ph.D., Mark P. Nicol, Ph.D., Shubhada Shenai, Ph.D., Fiorella Krapp, M.D., Jenny Allen, B.Tech., Rasim Tahirli, M.D., Robert Blakemore, B.S., Roxana Rustomjee, M.D., Ph.D., Ana Milovic, M.S., Martin Jones, Ph.D., Sean M. O'Brien, Ph.D., David H. Persing, M.D., Ph.D., Sabine Ruesch-Gerdes, M.D., Eduardo Gotuzzo, M.D., Camilla Rodrigues, M.D., David Alland, M.D., and Mark D. Perkins, M.D.

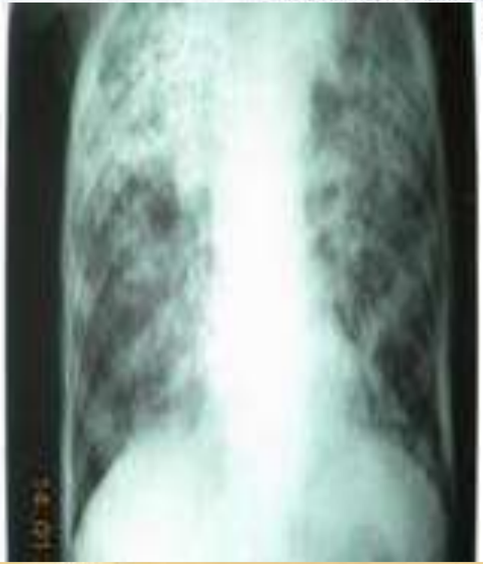
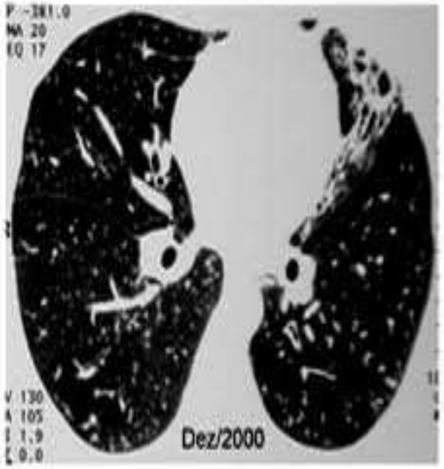


Figure 9.

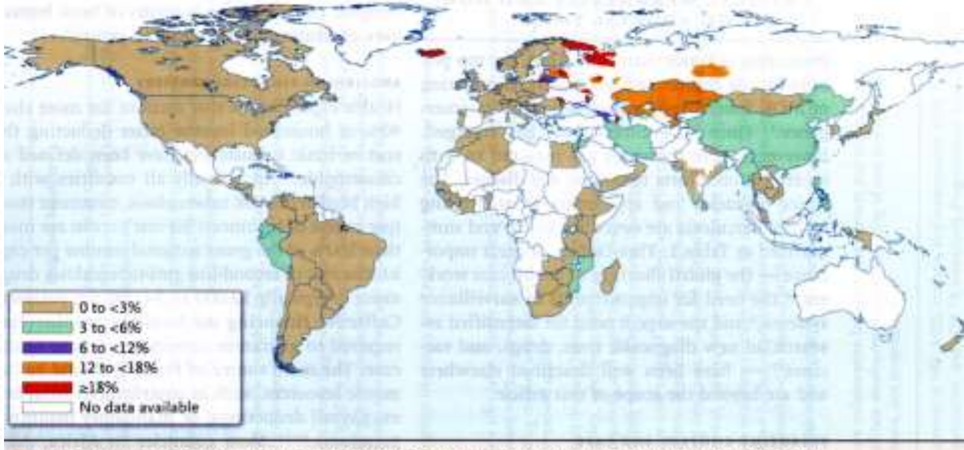

P -381.0
WA 20
IQ 17
V 130
105
1.9
0.0
Dez/2000

REVIEW ARTICLE

CURRENT CONCEPTS

MDR Tuberculosis — Critical Steps for Prevention and Control

Eva Nathanson, M.Sc., Paul Nunn, F.R.C.P., Mukund Uplekar, M.D., Katherine Floyd, Ph.D., Ernesto Jaramillo, M.D., Ph.D., Knut Lönnroth, M.D., Ph.D., Diana Weil, M.Sc., and Mario Raviglione, M.D.



🟫	0 to <3%
🟩	3 to <6%
🟦	6 to <12%
🟧	12 to <18%
🟥	≥18%
☐	No data available

Figure 1. Distribution of the Proportion of Cases of MDR Tuberculosis among New Cases of Tuberculosis, 1994–2009.

The following 27 countries are responsible for 85% of the world's estimated cases of MDR tuberculosis and are classified as countries with a high burden of MDR tuberculosis: China, India, Russia, Pakistan, Bangladesh, South Africa, Ukraine, Indonesia, Philippines, Nigeria, Uzbekistan, Democratic Republic of Congo, Kazakhstan, Vietnam, Ethiopia, Myanmar, Tajikistan, Azerbaijan, Moldova, Kyrgyzstan, Belarus, Georgia, Bulgaria, Lithuania, Armenia, Latvia, and Estonia. Adapted from the 2010 report on MDR and XDR tuberculosis from the WHO.[1]

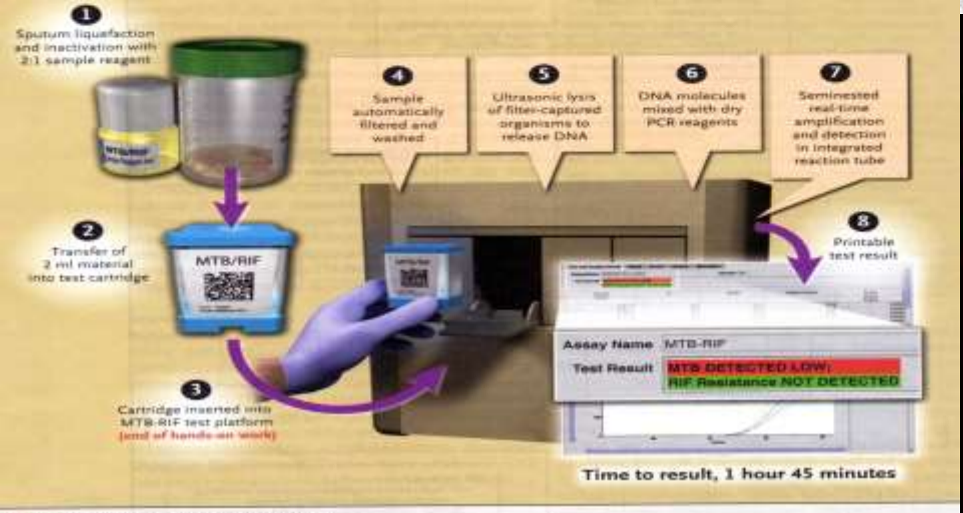
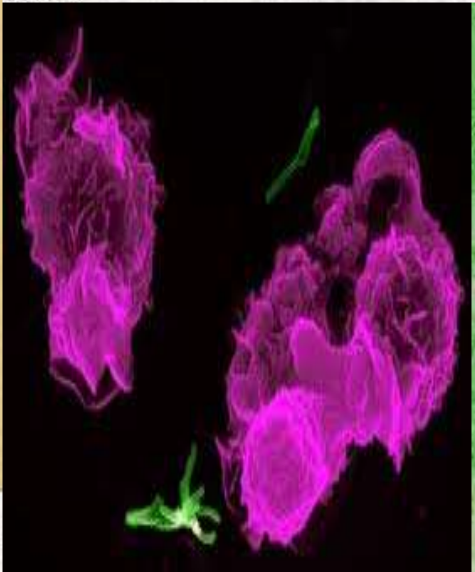

1
Sputum liquefaction and inactivation with 2:1 sample reagent
2
Transfer of 2 ml material into test cartridge
MTB/RIF
3
Cartridge inserted into MTB-RIF test platform (end of hands-on work)
4
Sample automatically filtered and washed
5
Ultrasonic lysis of filter-captured organisms to release DNA
6
DNA molecules mixed with dry PCR reagents
7
Seminested real-time amplification and detection in integrated reaction tube
8
Printable test result
Assay Name MTB-RIF
Test Result MTB DETECTED LOW;
RIF Resistance NOT DETECTED
Time to result, 1 hour 45 minutes

Figure 2. Assay Procedure for the MTB/RIF Test.

Two volumes of sample treatment reagent are added to each volume of sputum. The mixture is shaken, incubated at room temperature for 15 minutes, and shaken again. Next, a sample of 2 to 3 ml is transferred to the test cartridge, which is then loaded into the instrument. All subsequent steps occur automatically. The user is provided with a printable test result, such as "MTB detected; RIF resistance not detected." PCR denotes polymerase chain reaction.

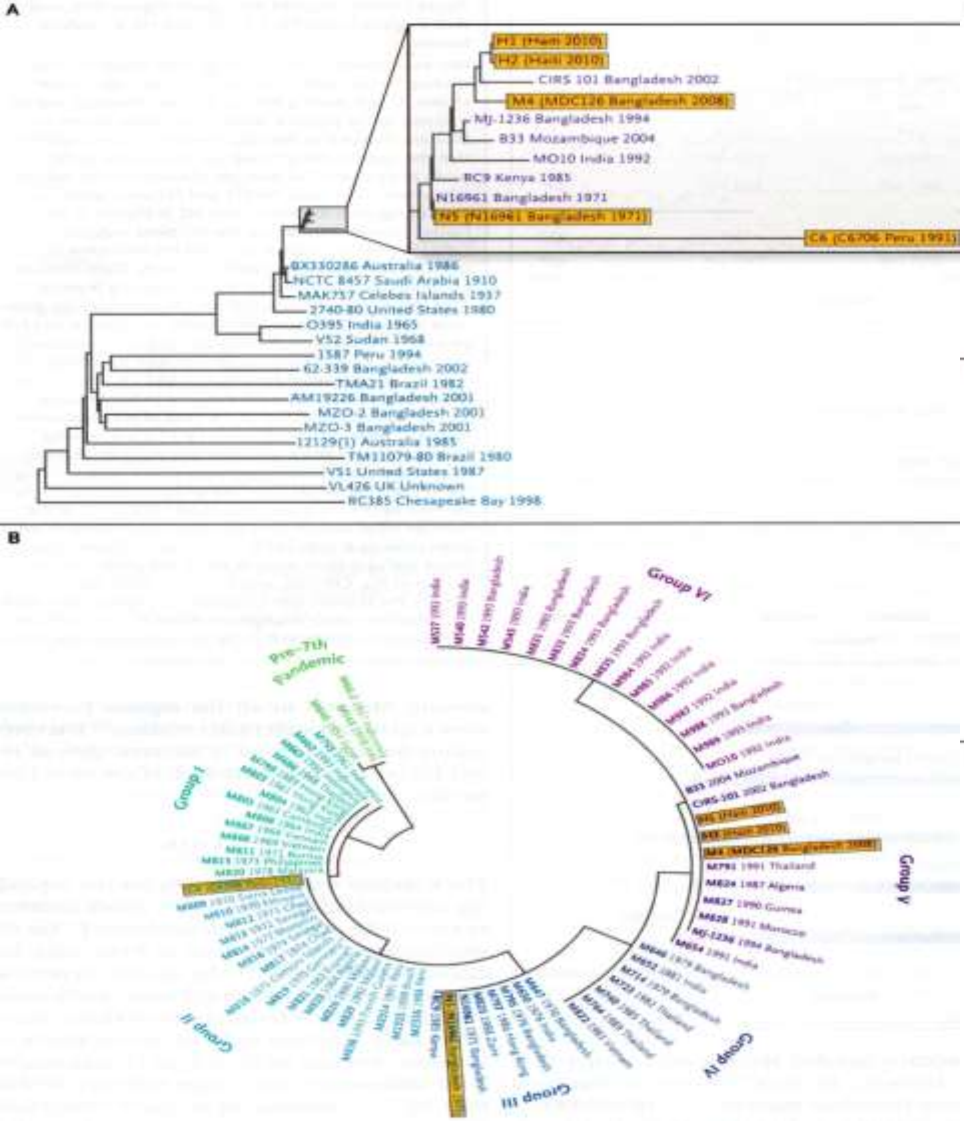


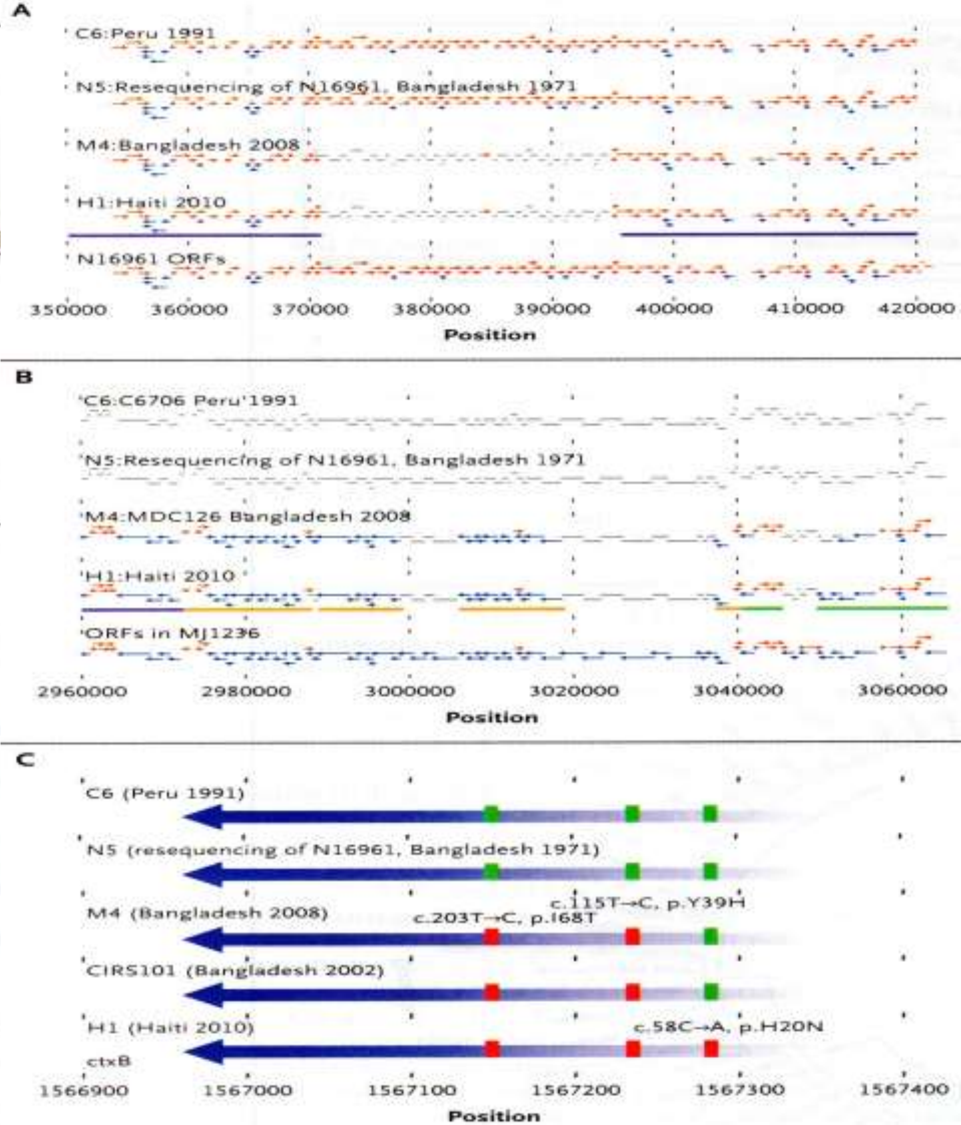
Haiti
Registered Cholera Cases & Cholera Treatment Centers and Units
Nov. 2010
Legend
Cumulative Cases
Pan American Health Organization

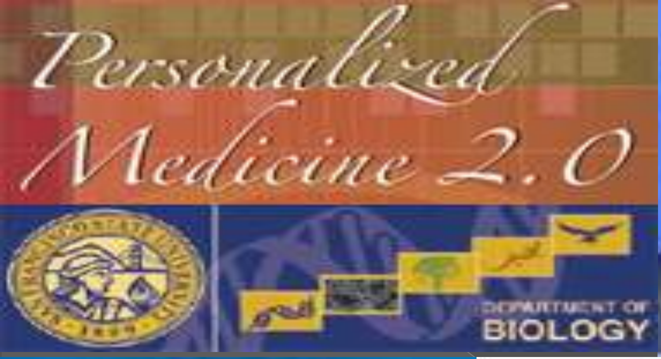
ORIGINAL ARTICLE

The Origin of the Haitian Cholera Outbreak Strain

Chen-Shan Chin, Ph.D., Jon Sorenson, Ph.D., Jason B. Harris, M.D.,
William P. Robins, Ph.D., Richelle C. Charles, M.D., Roger R. Jean-Charles, M.D.,
James Bullard, Ph.D., Dale R. Webster, Ph.D., Andrew Kasarskis, Ph.D.,
Paul Peluso, Ph.D., Ellen E. Paxinos, Ph.D., Yoshiharu Yamaichi, Ph.D.,
Stephen B. Calderwood, M.D., John J. Mekalanos, Ph.D., Eric E. Schadt, Ph.D.,
and Matthew K. Waldor, M.D., Ph.D.

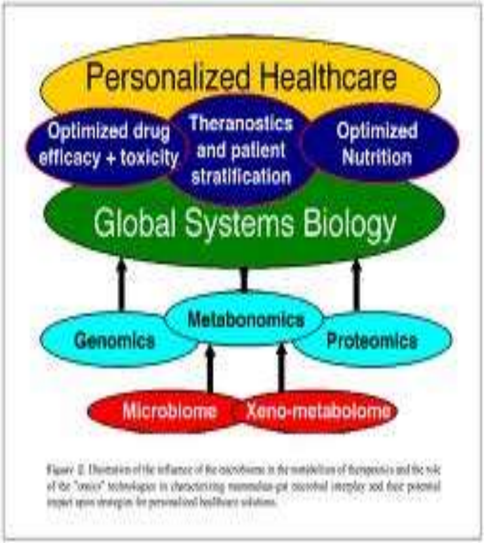

A
H1 (Haiti 2010)
H2 (Haiti 2010)
CIRS 101 Bangladesh 2002
M4 (MDC126 Bangladesh 2008)
MJ-1236 Bangladesh 1994
B33 Mozambique 2004
MO10 India 1992
RC9 Kenya 1985
N16961 Bangladesh 1971
N5 (N16961 Bangladesh 1971)
C6 (C6706 Peru 1991)
BX330286 Australia 1986
NCTC 8457 Saudi Arabia 1910
MAK757 Celebes Islands 1937
2740-80 United States 1980
O395 India 1965
V52 Sudan 1968
1587 Peru 1994
62-339 Bangladesh 2002
TMA21 Brazil 1982
AM19226 Bangladesh 2001
MZO-2 Bangladesh 2001
MZO-3 Bangladesh 2001
12129(1) Australia 1985
TM11079-80 Brazil 1980
V51 United States 1987
VL426 UK Unknown
RC385 Chesapeake Bay 1998
B
Group VI
Pre-7th Pandemic
Group I
Group II
Group III
Group IV
Group V
B33 2004 Mozambique
CIRS-101 2002 Bangladesh
H1 (Haiti 2010)
H2 (Haiti 2010)
M4 (MDC126 Bangladesh 2008)
MJ-1236 1994 Bangladesh

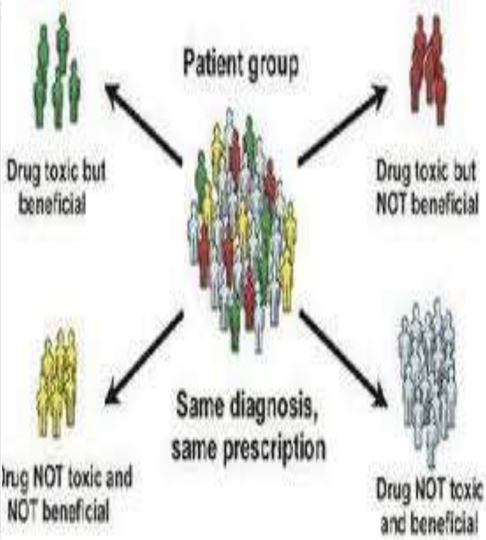


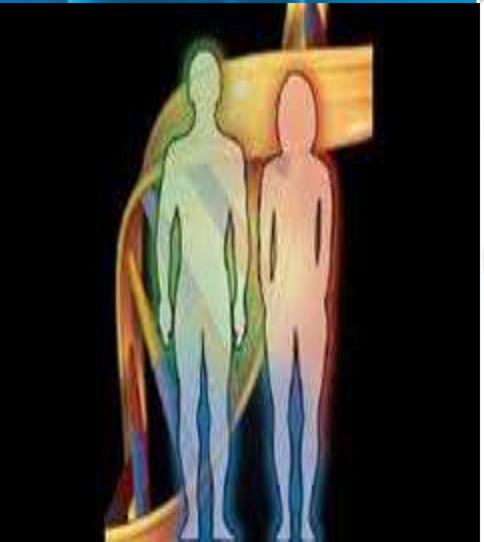

Personalized Medicine 2.0
DEPARTMENT OF BIOLOGY

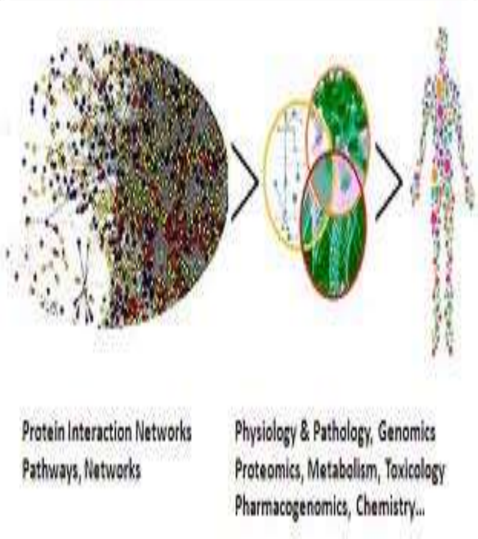
Getting Personal: Genomic Medicine is Near

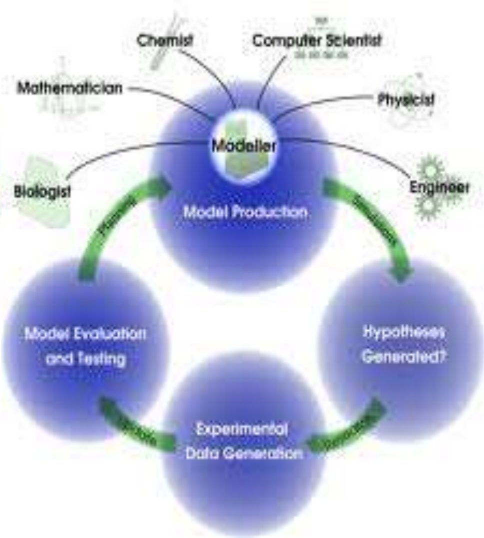
Personalized Medicine
www.futuremedicine.com

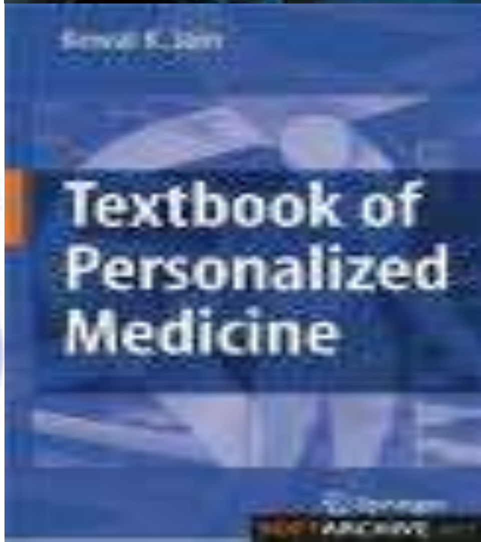

Personalized Healthcare
Optimized drug efficacy + toxicity
Theranostics and patient stratification
Optimized Nutrition
Global Systems Biology
Genomics
Metabonomics
Proteomics
Microbiome
Xeno-metabolome


Patient group
Drug toxic but beneficial
Drug toxic but NOT beneficial
Same diagnosis, same prescription
Drug NOT toxic and NOT beneficial
Drug NOT toxic and beneficial



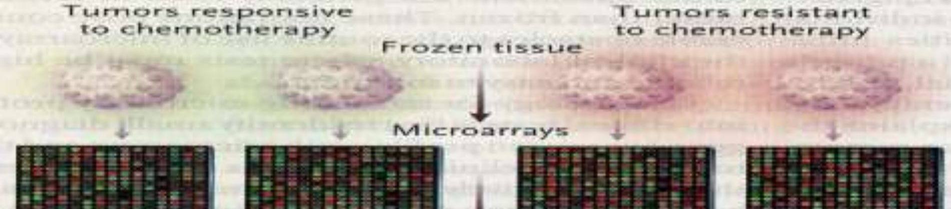

Protein Interaction Networks
Pathways, Networks
Physiology & Pathology, Genomics
Proteomics, Metabolism, Toxicology
Pharmacogenomics, Chemistry...

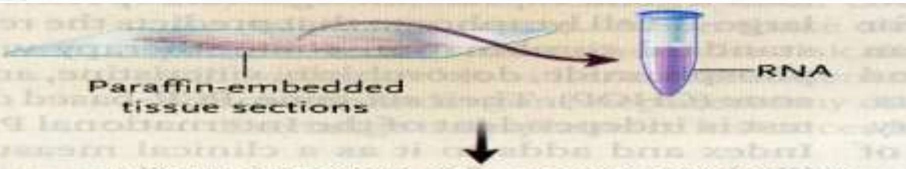

Chemist
Computer Scientist
Mathematician
Physicist
Modeller
Biologist
Engineer
Model Production
Model Evaluation and Testing
Hypotheses Generated?
Experimental Data Generation


Textbook of Personalized Medicine

DES MÉDICAMENTS SUR MESURE

« Soigner chacun selon son patrimoine génétique »


Tumors responsive to chemotherapy
Tumors resistant to chemotherapy
Frozen tissue
Microarrays
Identification of molecular markers of chemosensitivity or resistance to chemotherapy
Samples
Genes
Development and application of quantitative RT-PCR assays



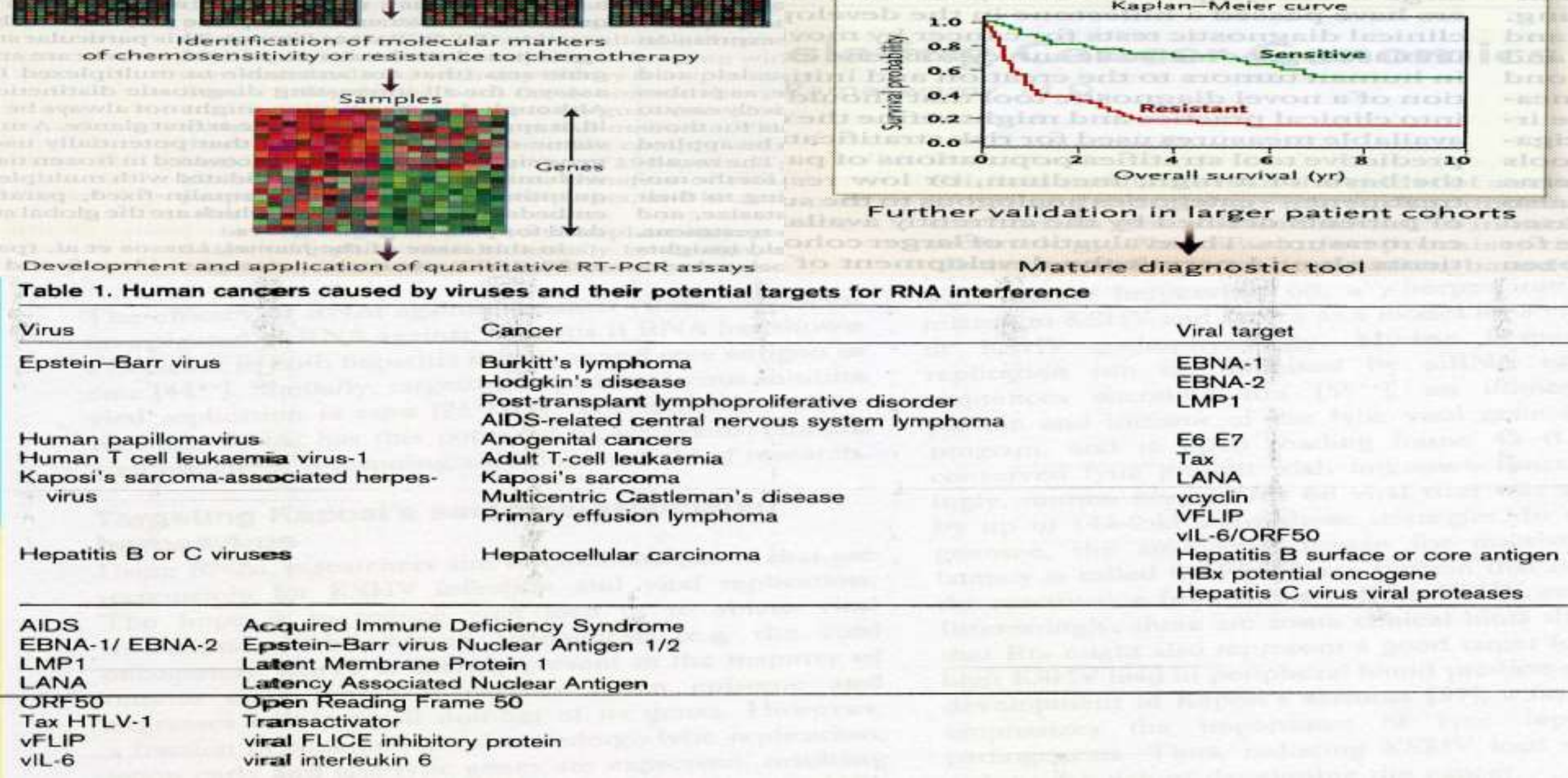
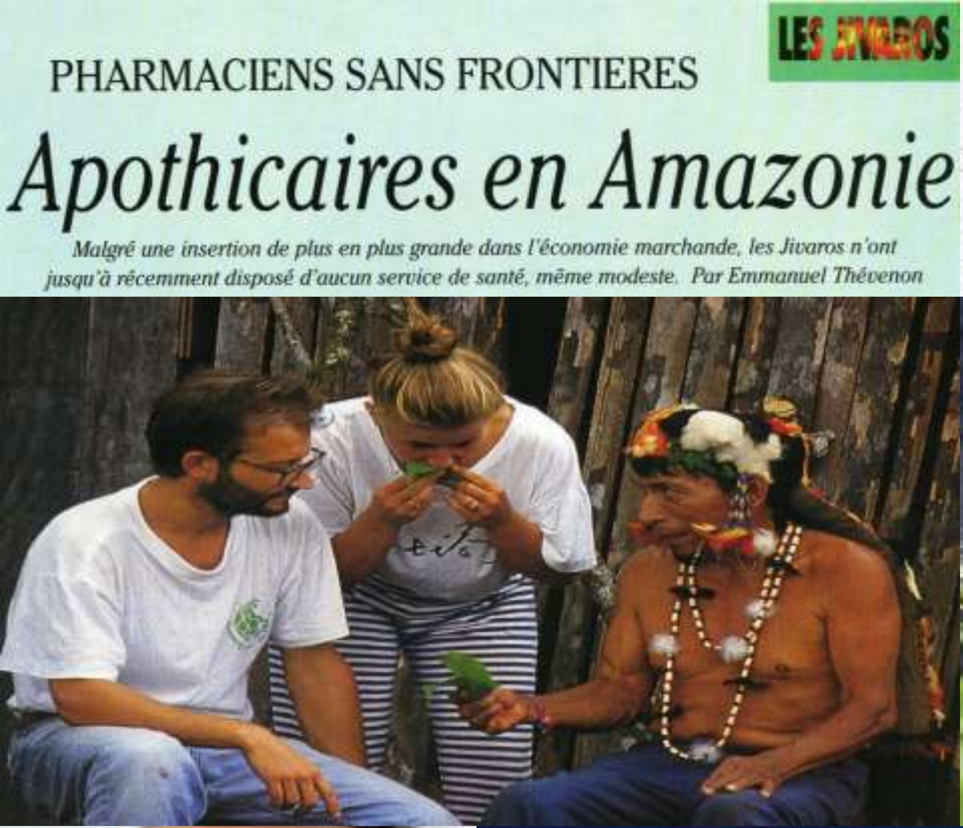


Table 1. Human cancers caused by viruses and their potential targets for RNA interference

Virus	Cancer	Viral target
Epstein–Barr virus	Burkitt's lymphoma Hodgkin's disease Post-transplant lymphoproliferative disorder AIDS-related central nervous system lymphoma	EBNA-1 EBNA-2 LMP1
Human papillomavirus	Anogenital cancers	E6 E7
Human T cell leukaemia virus-1	Adult T-cell leukaemia	Tax
Kaposi's sarcoma-associated herpes-virus	Kaposi's sarcoma Multicentric Castleman's disease Primary effusion lymphoma	LANA vcyclin VFLIP vIL-6/ORF50
Hepatitis B or C viruses	Hepatocellular carcinoma	Hepatitis B surface or core antigen HBx potential oncogene Hepatitis C virus viral proteases

AIDS	Acquired Immune Deficiency Syndrome
EBNA-1/ EBNA-2	Epstein–Barr virus Nuclear Antigen 1/2
LMP1	Latent Membrane Protein 1
LANA	Latency Associated Nuclear Antigen
ORF50	Open Reading Frame 50
Tax HTLV-1	Transactivator
vFLIP	viral FLICE inhibitory protein
vIL-6	viral interleukin 6

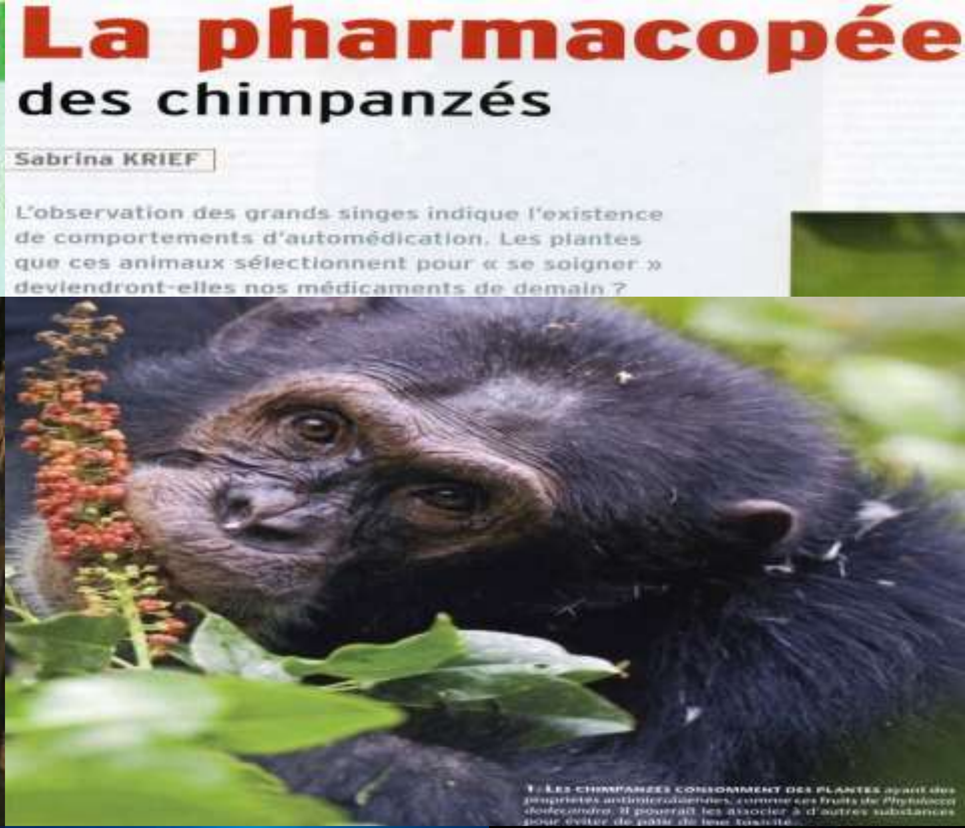


LES JIVAROS

PHARMACIENS SANS FRONTIERES

Apothicaires en Amazonie

Malgré une insertion de plus en plus grande dans l'économie marchande, les Jivaros n'ont jusqu'à récemment disposé d'aucun service de santé, même modeste. Par Emmanuel Thévenon



La pharmacopée des chimpanzés

Sabrina KRIEF

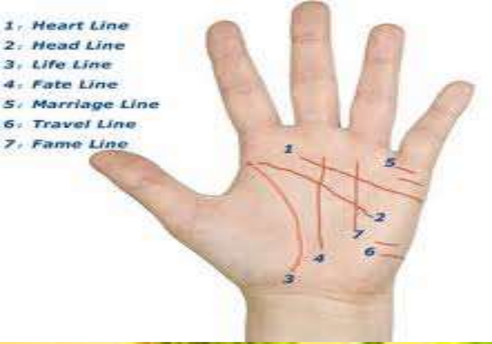
L'observation des grands singes indique l'existence de comportements d'automédication. Les plantes que ces animaux sélectionnent pour « se soigner » deviendront-elles nos médicaments de demain ?

1 : LES CHIMPANZÉS CONSOMMENT DES PLANTES ayant des propriétés antimicrobiennes, comme ces fruits de *Phytolacca dodecandra*. Il pourrait les associer à d'autres substances pour éviter de pâtir de leur toxicité.

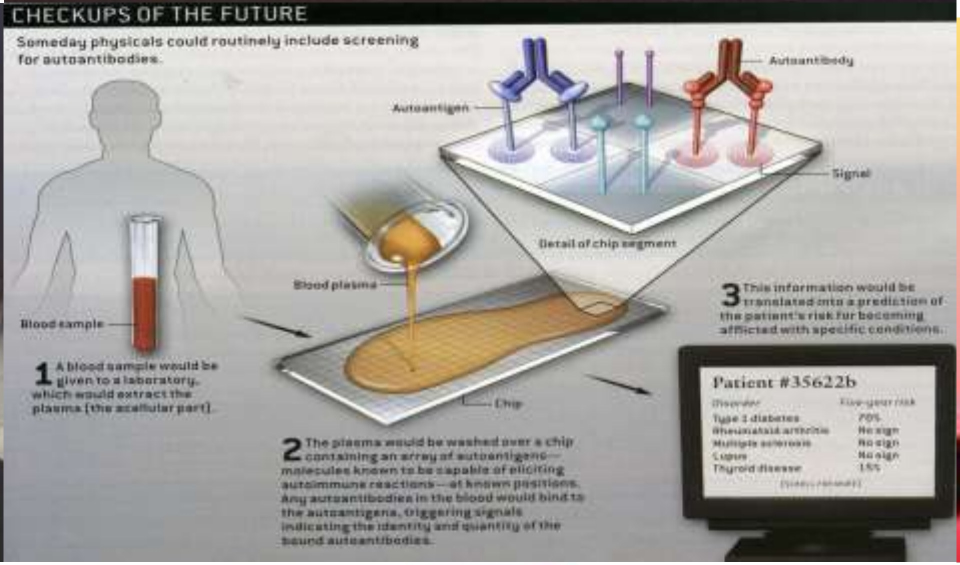
Will you get sick?

Antibodies could foretell the future of your health

Predicting Disease



1. Heart Line
2. Head Line
3. Life Line
4. Fate Line
5. Marriage Line
6. Travel Line
7. Fame Line
1
5
2
7
6
4
3



CHECKUPS OF THE FUTURE

Someday physicals could routinely include screening for autoantibodies.

Blood sample
Blood plasma
Autoantigen
Autoantibody
Signal
Detail of chip segment
Chip

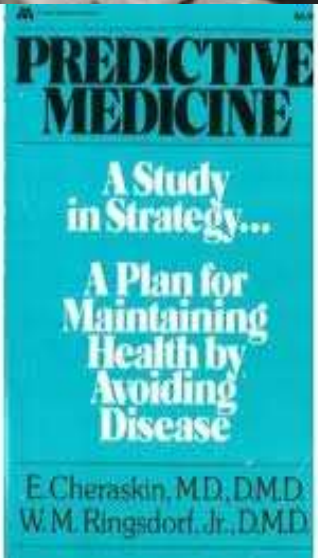
1 A blood sample would be given to a laboratory, which would extract the plasma (the acellular part).

2 The plasma would be washed over a chip containing an array of autoantigens—molecules known to be capable of eliciting autoimmune reactions—at known positions. Any autoantibodies in the blood would bind to the autoantigens, triggering signals indicating the identity and quantity of the bound autoantibodies.

3 This information would be translated into a prediction of the patient's risk for becoming afflicted with specific conditions.

Patient #35622b

Disorder	Five-year risk
Type 1 diabetes	70%
Rheumatoid arthritis	No sign
Multiple sclerosis	No sign
Lupus	No sign
Thyroid disease	15%

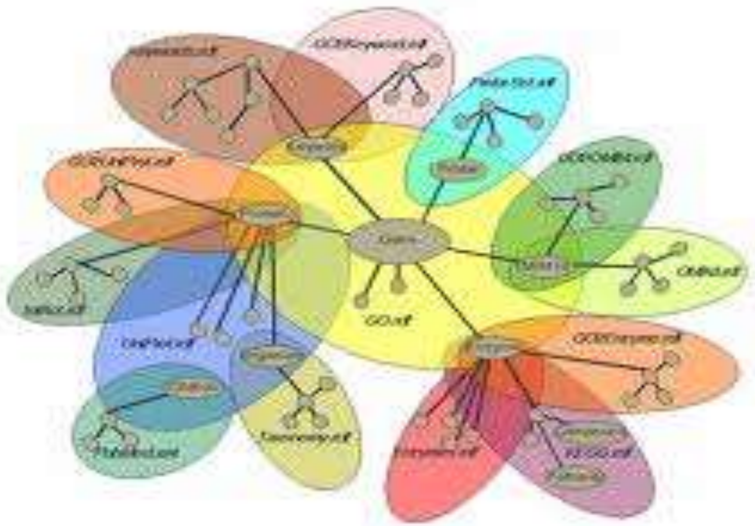


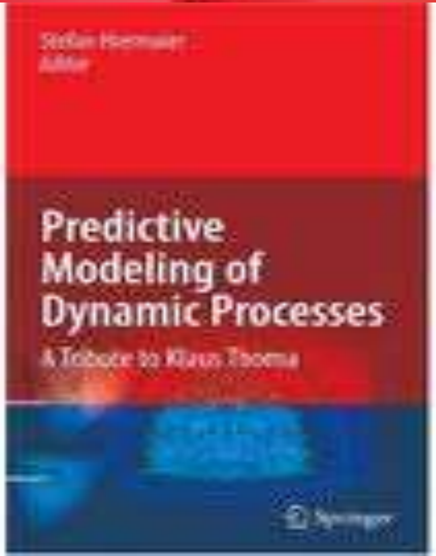
PREDICTIVE MEDICINE

A Study in Strategy...

A Plan for Maintaining Health by Avoiding Disease

E. Cheraskin, M.D., D.M.D.
W. M. Ringsdorf, Jr., D.M.D.





Predictive Modeling of Dynamic Processes

A Tribute to Klaus Thoma

Springer

Genetic variation in *IL28B* and spontaneous clearance of hepatitis C virus

David L. Thomas[1]*, Chloe L. Thio[1]*, Maureen P. Martin[2]*, Ying Qi[2], Dongliang Ge[3], Colm O'hUigin[2], Judith Kidd[4], Kenneth Kidd[4], Salim I. Khakoo[5], Graeme Alexander[6], James J. Goedert[7], Gregory D. Kirk[8], Sharyne M. Donfield[9], Hugo R. Rosen[10], Leslie H. Tobler[11], Michael P. Busch[11], John G. McHutchison[12], David B. Goldstein[3] & Mary Carrington[2,13]

GENOMICS

Hepatitis C virus gets personal

Shawn P. Iadonato and Michael G. Katze

Many people infected with the hepatitis C virus are not cured despite gruelling therapy. A human genetic variant that predicts successful treatment has been identified. So is personalized therapy now a possibility?

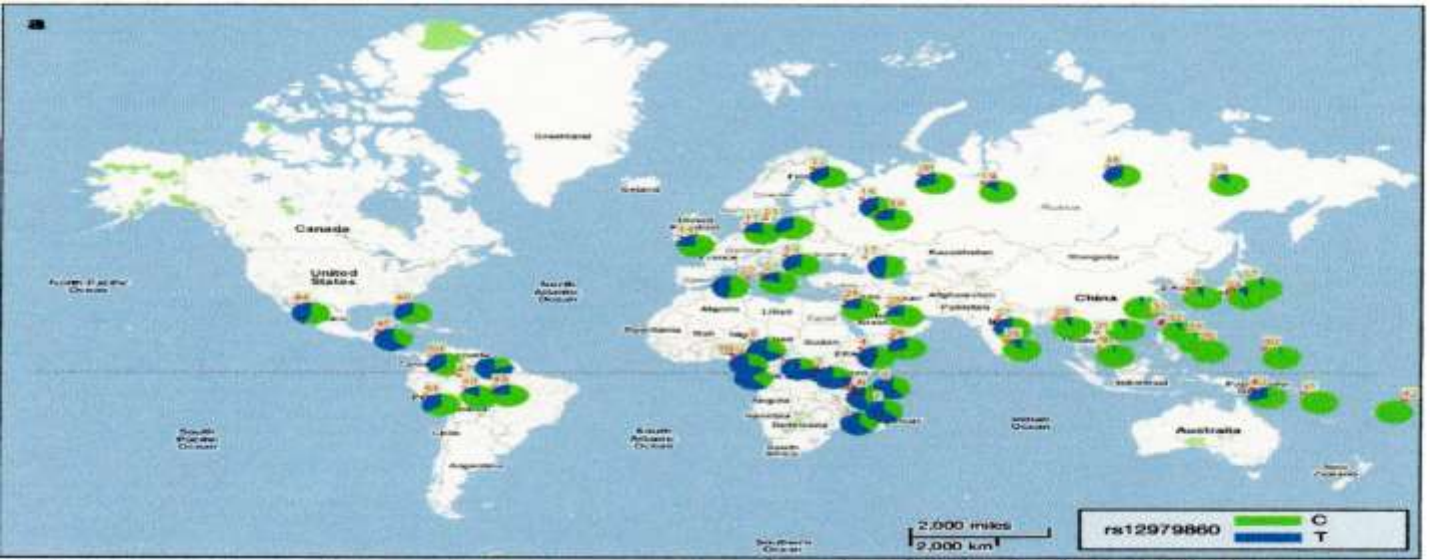


Figure 2 | Sampling locations, allele frequencies and degree of regional differentiation of the rs12979860 C allele. a, The numbers identifying populations are given in Table 3. The pie charts show the frequency of the C (green) and T (blue) alleles in each population sampled. **b**, Frequency distribution of F_{ST} values for 1,062 SNPs from 32 of the samples grouped into 6 regions (Africa, Europe, south Asia, southeast Asia, east Asia, Oceania). The red arrow indicates the position of the estimated F_{ST} for rs12979860.

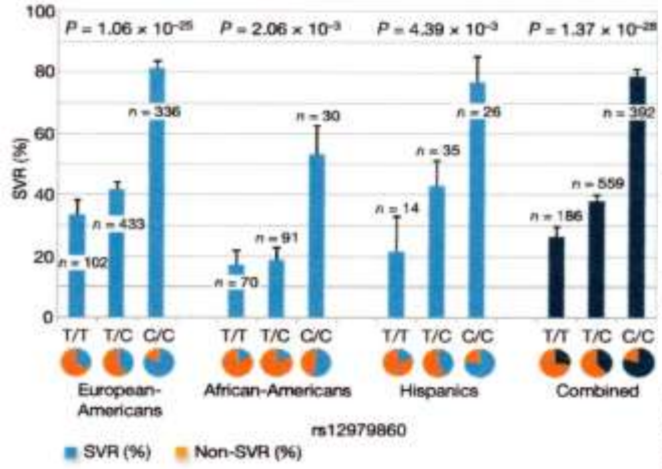


Figure 1 | Percentage of SVR by genotypes of rs12979860. Data are percentages + s.e.m.

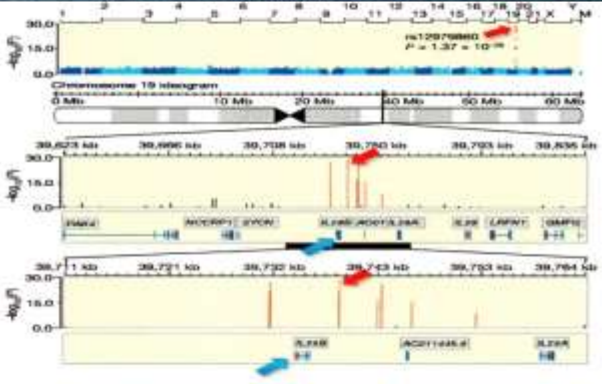


Figure 2 | Genomic overview of the region of 19q13.13 surrounding the genome-wide significant determinant of response to treatment and including the *IL28B* gene. The top panel shows a genome-wide view of the *P* values [$-\log_{10}(P)$]. Panels below show all genotyped SNPs in the region of significance and the structures of the surrounding genes. The SNPs that show genome-wide significant association with SVR are marked in red. The polymorphism rs12979860 (red arrow) is 3 kb upstream to the gene encoding IFN-λ-3 (*IL28B*, blue arrow). Other SNPs in the same region showing genome-wide significant *P* values largely reflect the same signal (Supplementary Information IX). The results were annotated using the WGAViewer software[17].

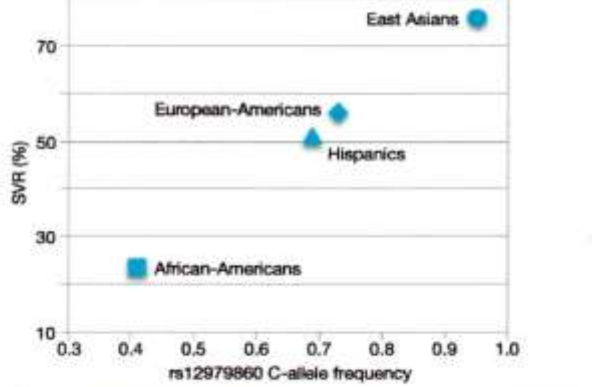


Figure 3 | Rate of SVR and rs12979860 C-allele frequency in diverse ethnic groups. The SVR rate in East Asians is adopted from Liu *et al.*[7]. Sample sizes for C-allele frequency: $n = 61$ (African-Americans); $n = 271$ (European-Americans); $n = 16$ (Hispanics); $n = 107$ (East Asians); sample sizes for SVR rate: $n = 191$ (African-Americans); $n = 871$ (European-Americans); $n = 75$ (Hispanics); $n = 154$ (East Asians).

XENOME

Xenotransplant

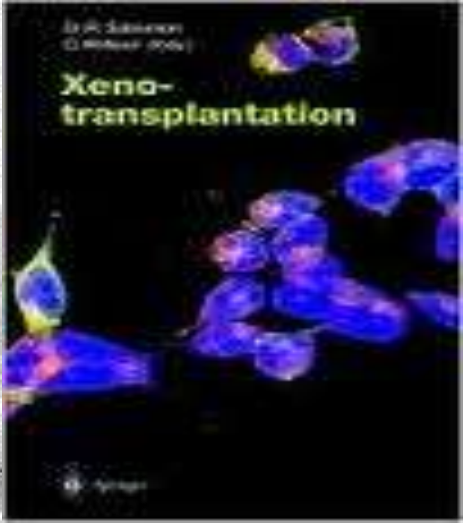
XENOTRANSPLANTATION

BASIC RESEARCH AND
CLINICAL APPLICATIONS

EDITED BY
JEFFREY L. PLATT, MD

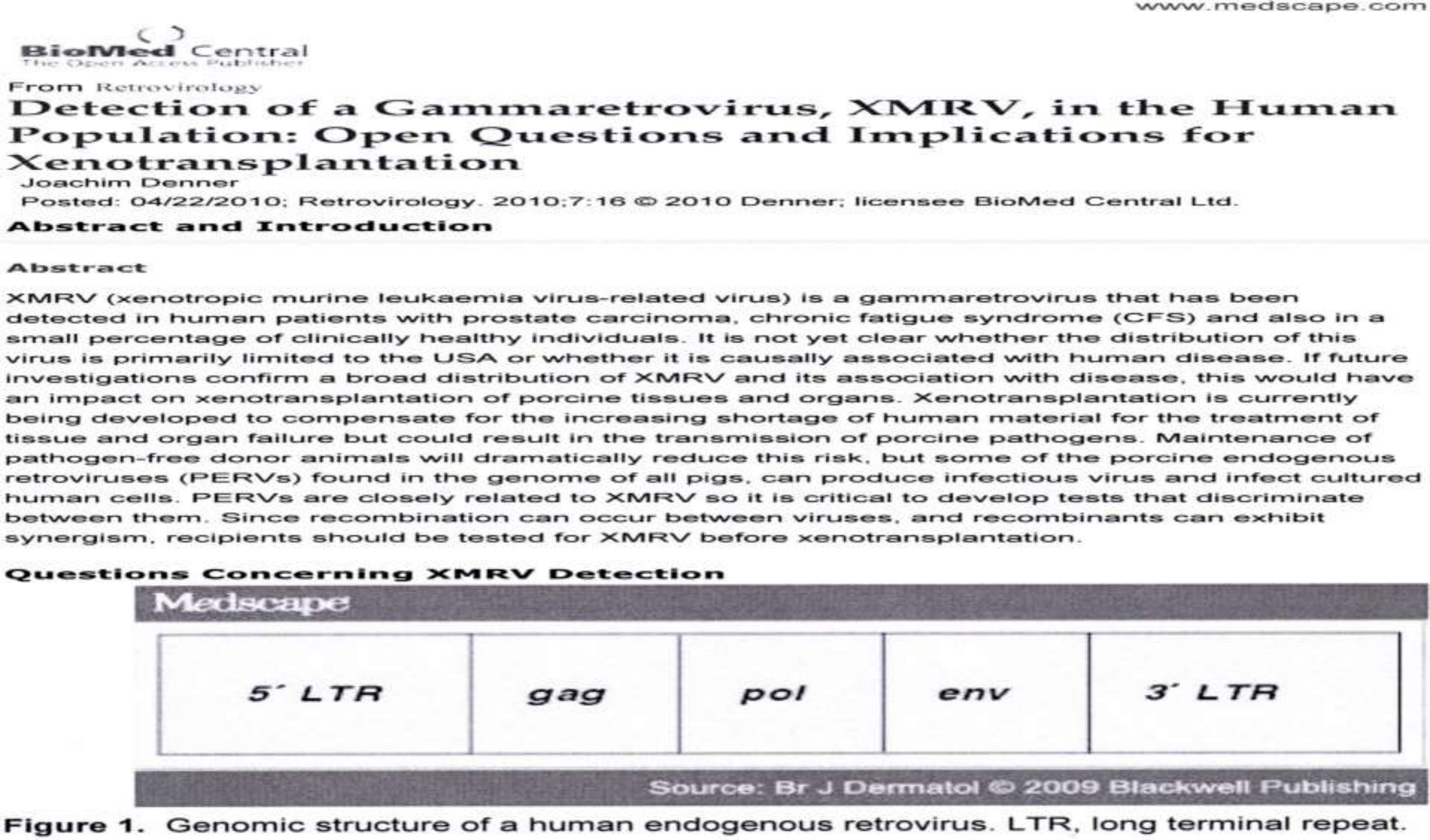
HUMANA PRESS

Page
SO HAVE YOU FILLED OUT YOUR ORGAN DONOR CARD YET??


Xeno-
transplantation

Springer

As Questões da Xenotransplantação e das Doenças Oncológicas



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From Retrovirology

Detection of a Gammaretrovirus, XMRV, in the Human Population: Open Questions and Implications for Xenotransplantation

Joachim Denner

Posted: 04/22/2010; Retrovirology. 2010;7:16 © 2010 Denner; licensee BioMed Central Ltd.

Abstract and Introduction

Abstract

XMRV (xenotropic murine leukaemia virus-related virus) is a gammaretrovirus that has been detected in human patients with prostate carcinoma, chronic fatigue syndrome (CFS) and also in a small percentage of clinically healthy individuals. It is not yet clear whether the distribution of this virus is primarily limited to the USA or whether it is causally associated with human disease. If future investigations confirm a broad distribution of XMRV and its association with disease, this would have an impact on xenotransplantation of porcine tissues and organs. Xenotransplantation is currently being developed to compensate for the increasing shortage of human material for the treatment of tissue and organ failure but could result in the transmission of porcine pathogens. Maintenance of pathogen-free donor animals will dramatically reduce this risk, but some of the porcine endogenous retroviruses (PERVs) found in the genome of all pigs, can produce infectious virus and infect cultured human cells. PERVs are closely related to XMRV so it is critical to develop tests that discriminate between them. Since recombination can occur between viruses, and recombinants can exhibit synergism, recipients should be tested for XMRV before xenotransplantation.

Questions Concerning XMRV Detection

Medscape

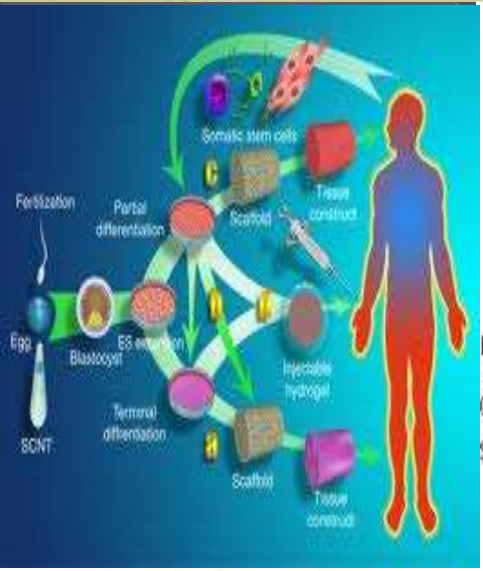
Source: Br J Dermatol © 2009 Blackwell Publishing

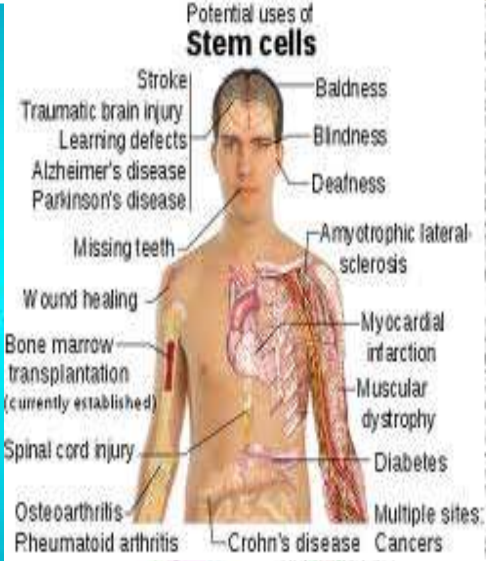
Figure 1. Genomic structure of a human endogenous retrovirus. LTR, long terminal repeat.

Regenerative
Medicine Today

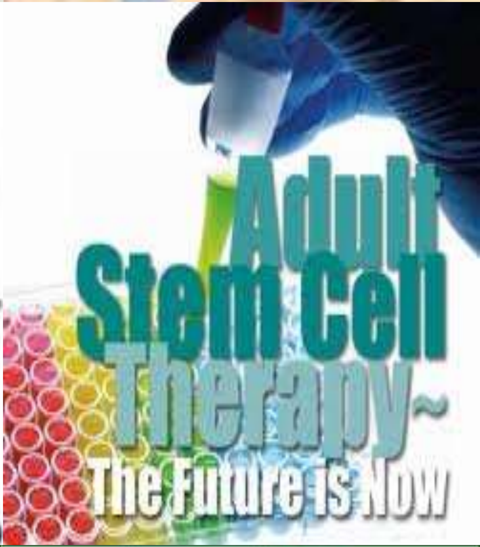
Non-Embryonic Stem Cell
Treatment, The Future is Here

Stem
CELLS

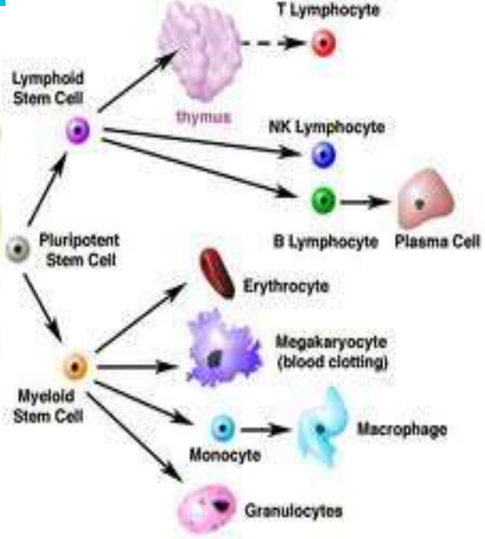

Somatic stem cells
Fertilization
Partial differentiation
Scaffold
Tissue construct
Egg
Blastocyst
ES extraction
Injectable hydrogel
SCNT
Terminal differentiation
Scaffold
Tissue construct

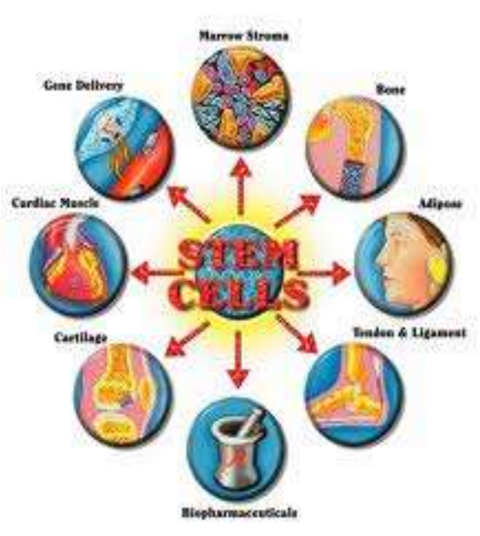

Potential uses of
Stem cells
Stroke
Traumatic brain injury
Learning defects
Alzheimer's disease
Parkinson's disease
Missing teeth
Wound healing
Bone marrow transplantation (currently established)
Spinal cord injury
Osteoarthritis
Rheumatoid arthritis
Baldness
Blindness
Deafness
Amyotrophic lateral sclerosis
Myocardial infarction
Muscular dystrophy
Diabetes
Multiple sites: Cancers
Crohn's disease

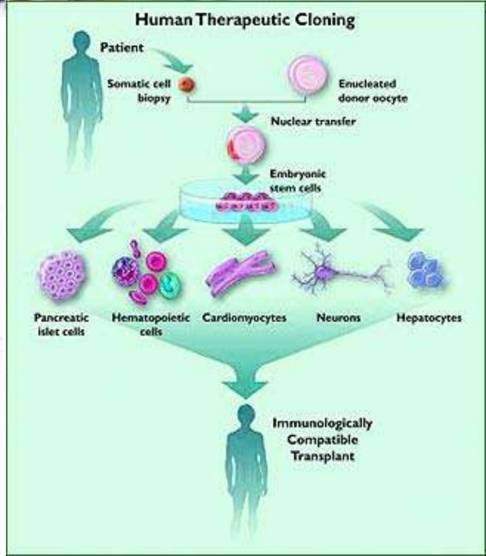
The building blocks of the body
Stem cell therapy
Sperm
Oocyte
Fertilised egg
Patient
Development of specialized cells
NEWSMILD


Adult
Stem Cell
Therapy~
The Future is Now

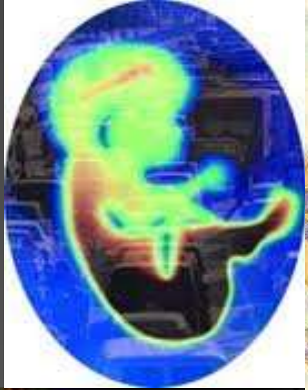
Umbilical cord blood is often stored after birth.
CORD BLOOD
COLD STORAGE

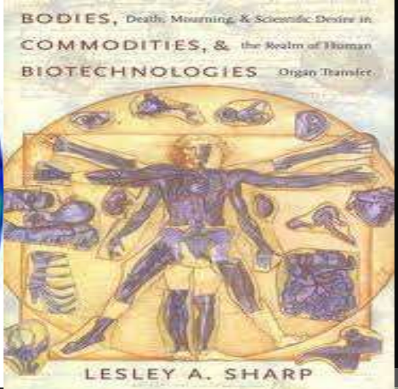

T Lymphocyte
Lymphoid Stem Cell
thymus
NK Lymphocyte
Pluripotent Stem Cell
B Lymphocyte
Plasma Cell
Erythrocyte
Megakaryocyte (blood clotting)
Myeloid Stem Cell
Monocyte
Macrophage
Granulocytes


Marrow Stroma
Gene Delivery
Bone
Cardiac Muscle
STEM CELLS
Adipose
Cartilage
Tendon & Ligament
Biopharmaceuticals

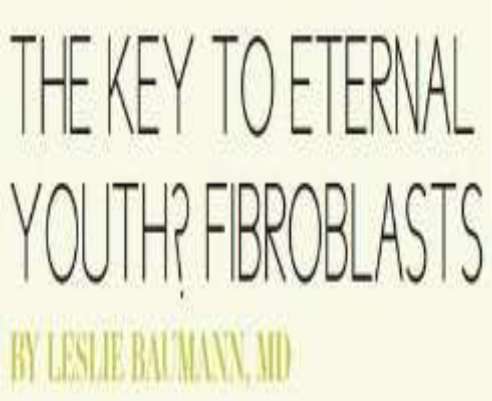

Human Therapeutic Cloning
Patient
Somatic cell biopsy
Enucleated donor oocyte
Nuclear transfer
Embryonic stem cells
Pancreatic islet cells
Hematopoietic cells
Cardiomyocytes
Neurons
Hepatocytes
Immunologically Compatible Transplant

HUMAN CLONING
right or wrong?




BODIES, COMMODITIES, & BIOTECHNOLOGIES
Death, Mourning, & Scientific Desire in the Realm of Human Organ Transfer
LESLEY A. SHARP

TIME
HUMAN CLONING IS CLOSER THAN YOU THINK
For couples who can't have a child— or who have lost one—the unthinkable may soon be possible. Here are the perils



THE KEY TO ETERNAL YOUTH? FIBROBLASTS

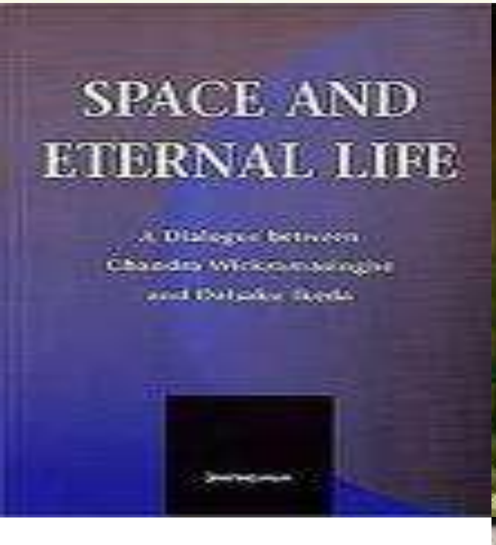
BY LESLIE BAUMANN, MD

I WANT TO LIVE FOREVER

I DO NOT WANT TO DIE

Eternal Youth
still you, just better

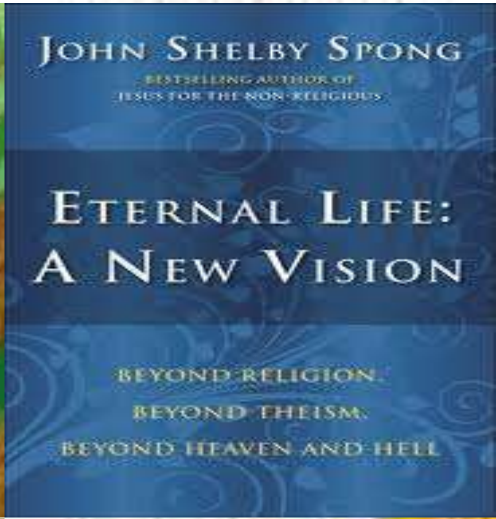
Eternal Youth
beauty salon



SPACE AND ETERNAL LIFE

A Dialogue between Chandra Wickramasinghe and Daisaku Ikeda

Permanent youth

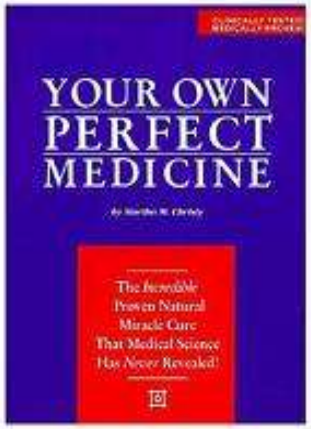


JOHN SHELBY SPONG

BESTSELLING AUTHOR OF JESUS FOR THE NON-RELIGIOUS

ETERNAL LIFE: A NEW VISION

BEYOND RELIGION, BEYOND THEISM, BEYOND HEAVEN AND HELL

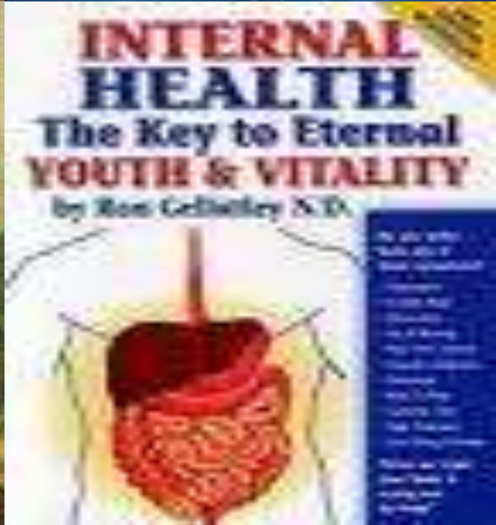


CLINICALLY TESTED MEDICALLY PROVEN

YOUR OWN PERFECT MEDICINE

by Martha M. Christy

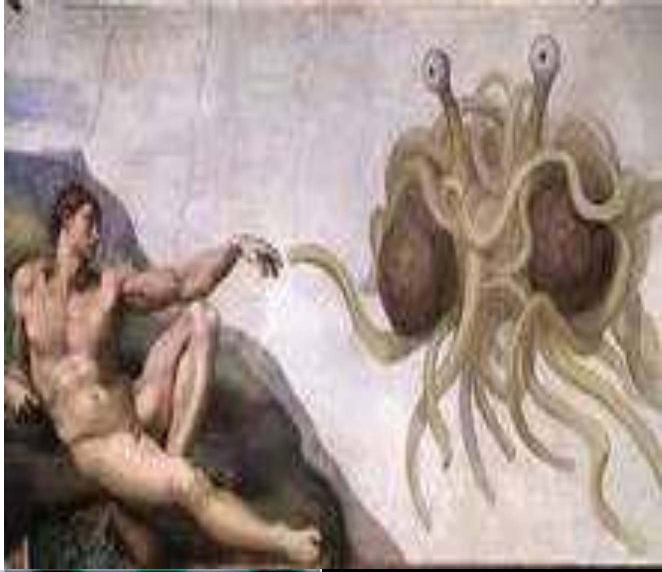
The *Incredible* Proven Natural Miracle Cure That Medical Science Has *Never* Revealed!



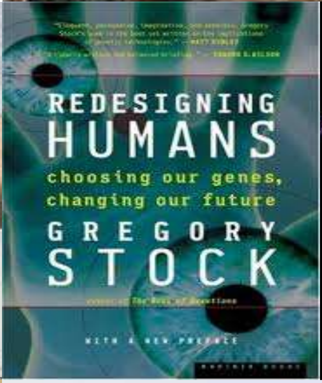
INTERNAL HEALTH

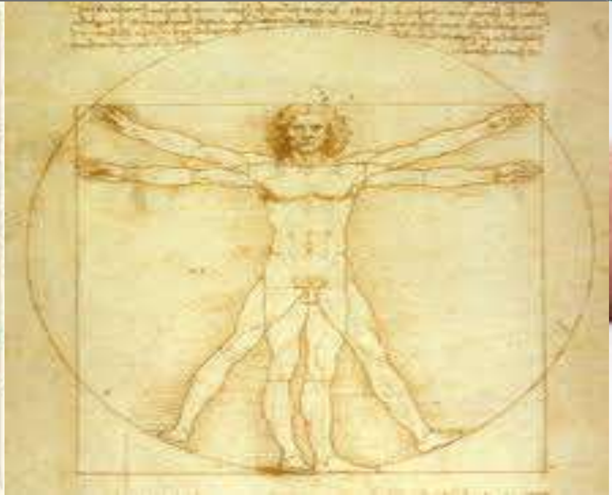
The Key to Eternal YOUTH & VITALITY

by Ron Gellatley N.D.



REVISED AND UPDATED
CLONING


REDESIGNING
HUMANS
choosing our genes,
changing our future
GREGORY
STOCK
WITH A NEW PREFACE

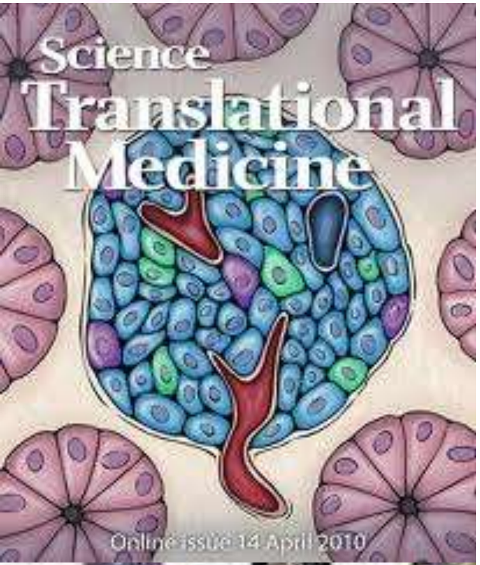


Translational
Medicine Alliance

Center for Translational Medicine
Academic Health Center
Augmenting the development and implementation of novel, investigator-initiated treatment strategies

Translational Medicine
CRITICAL LINK BETWEEN
DISCOVERY & PATIENTS

JOURNAL OF
TRANSLATIONAL MEDICINE


Science
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Medicine
Online issue 14 April 2010

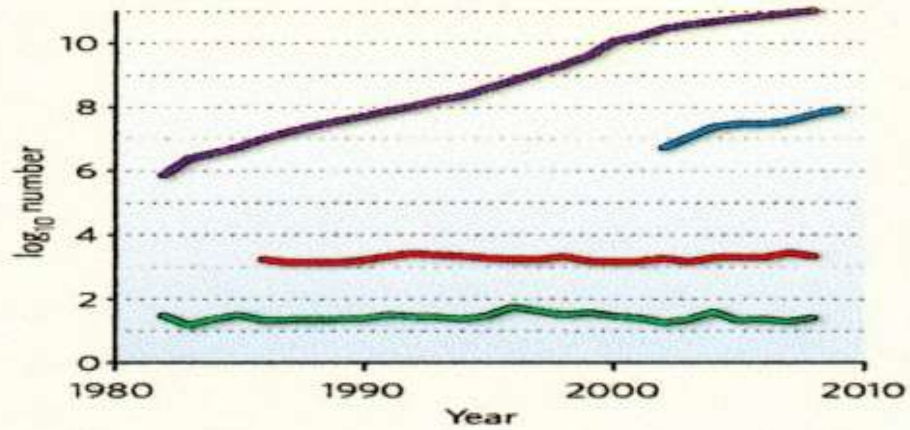
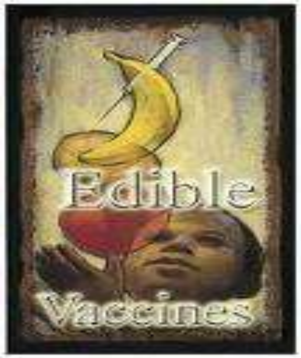


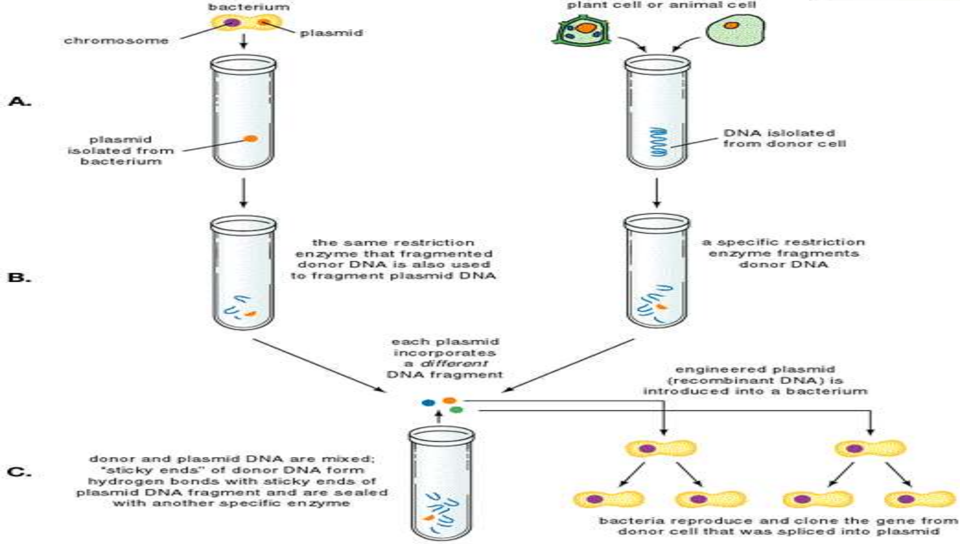
Figure 1 | The gap between genetic information and medical innovation. Although the amount of genetic and genomic information available to researchers is expanding rapidly, advances in medical innovation have not followed suit. The graph shows the size of the GenBank database (a collection of all publicly available DNA sequences) between 1982 and 2008 (purple); the number of submissions of human single nucleotide polymorphisms (SNPs) to the SNP database (dsSNP) of the National Center for Biotechnology Information (NCBI) between 2002 and 2009 (blue); the number of Investigational New Drug (IND) applications received by the Center for Drug Evaluation and Research/US Food and Drug Administration (CDER/FDA) during 1986–2008 (red); and the number of new molecular entities (drugs not previously marketed in the United States in any form) approved by the CDER/FDA between 1982 and 2008 (green). Data are compiled from the NCBI and FDA websites.

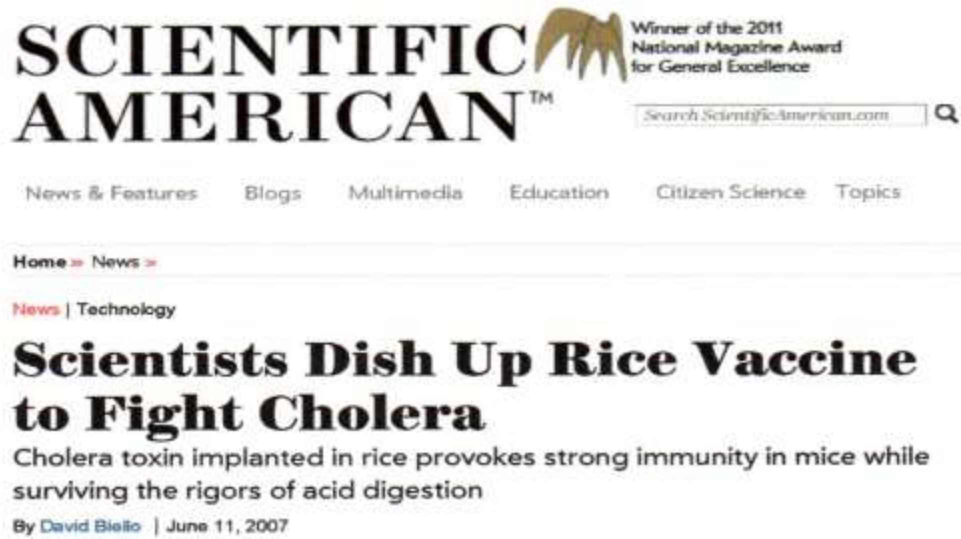
Science
Translational
Medicine
Online issue 14 October 2009

SCIENTIFIC AMERICAN
REPORTS
YOUR FUTURE WITH ROBOTS
How Smart Machines Will Change Everything
Robots at Home
Bill Gates's Future Vision
Mind Control
Command Robots by Thought
Artificial Muscles
Flexible Polymer Power

CANCER-KILLING VIRUSES • DANGEROUS MELTING IN THE ARCTIC
SCIENTIFIC AMERICAN
ARTIFICIAL MUSCLES
Shape-Shifting Plastics Replace Motors in Machines That Move
Star Clusters Born of Galactic Collisions
The Economics of Child Labor
Protecting Farms against Agricultural Terrorism


Edible
Vaccines


bacterium
chromosome
plasmid
plant cell or animal cell
A.
plasmid isolated from bacterium
DNA islolated from donor cell
B.
the same restriction enzyme that fragmented donor DNA is also used to fragment plasmid DNA
a specific restriction enzyme fragments donor DNA
each plasmid incorporates a *different* DNA fragment
engineered plasmid (recombinant DNA) is introduced into a bacterium
C.
donor and plasmid DNA are mixed; "sticky ends" of donor DNA form hydrogen bonds with sticky ends of plasmid DNA fragment and are sealed with another specific enzyme
bacteria reproduce and clone the gene from donor cell that was spliced into plasmid



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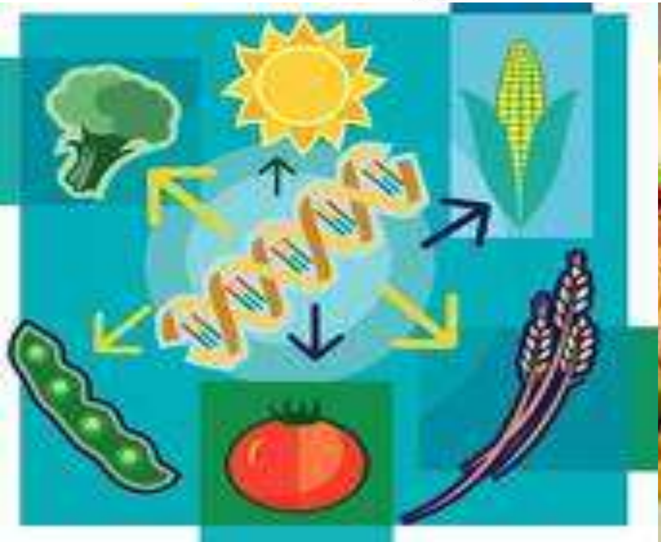
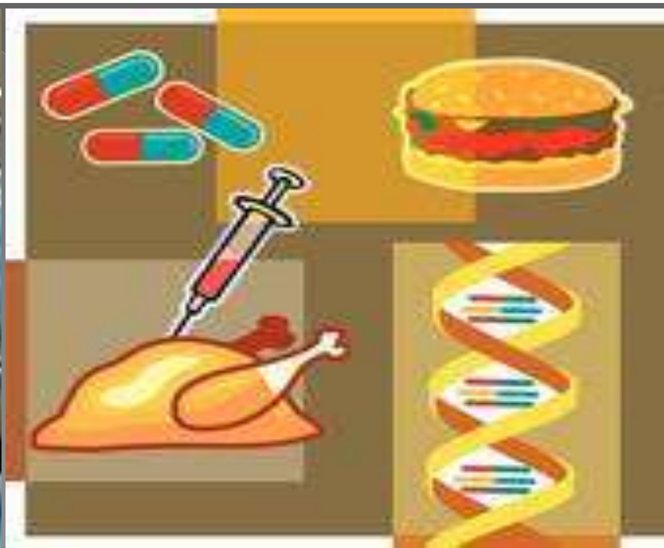
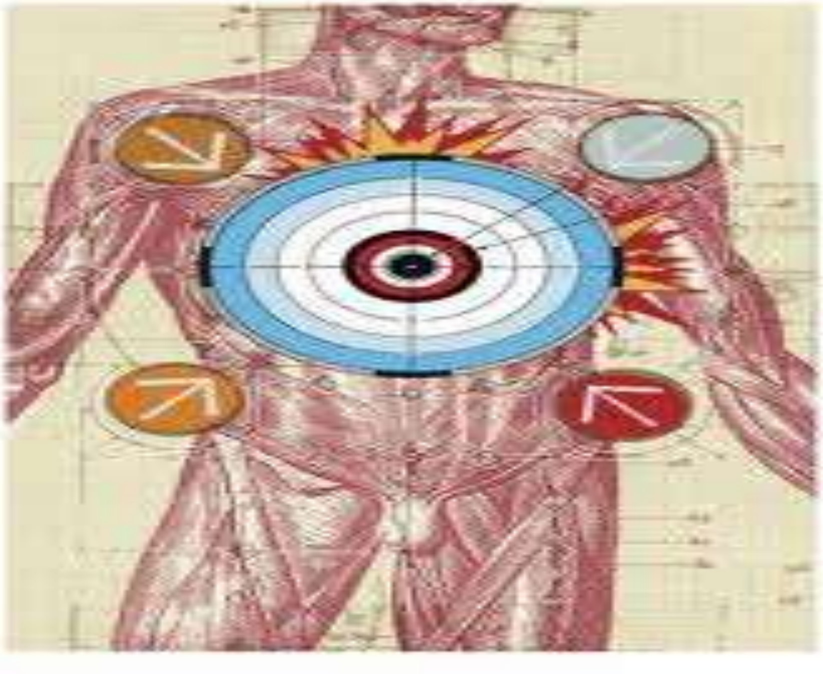
Scientists Dish Up Rice Vaccine to Fight Cholera

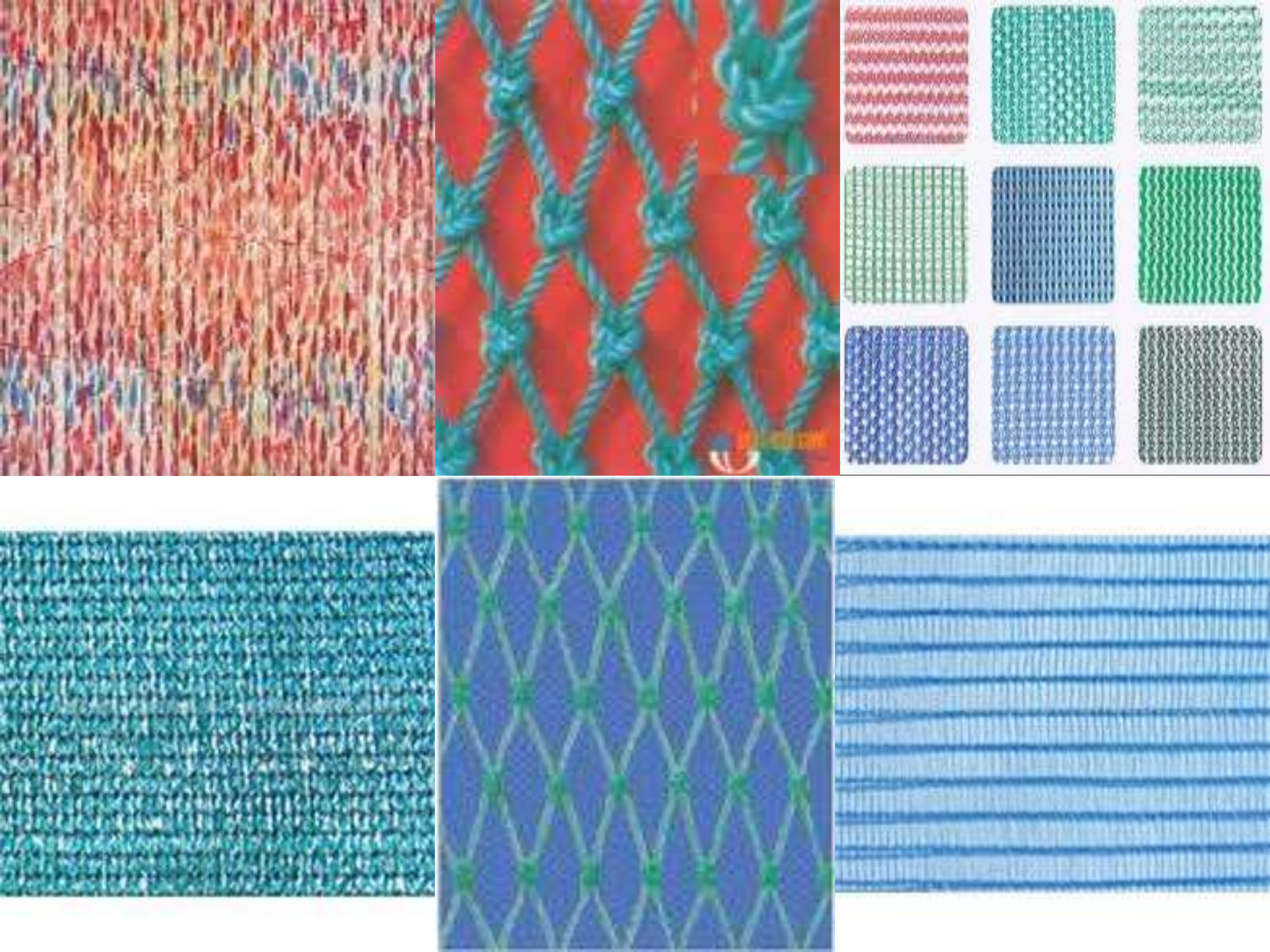
Cholera toxin implanted in rice provokes strong immunity in mice while surviving the rigors of acid digestion

By David Biello | June 11, 2007

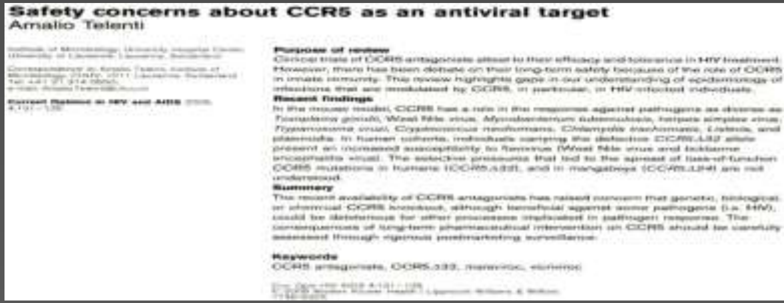








Clinical Spectrum of WNV Illness: Revised



Safety concerns about CCR5 as an antiviral target

Amalio Telenti

Purpose of review

Recent findings

Summary

Keywords

WN Fever

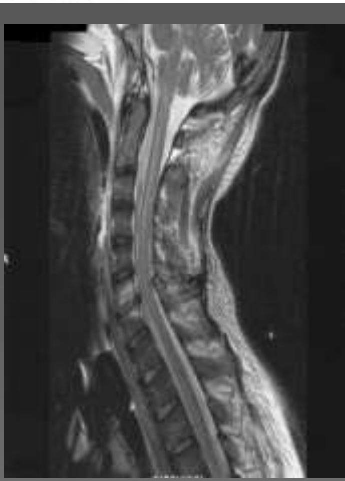
WN Meningitis

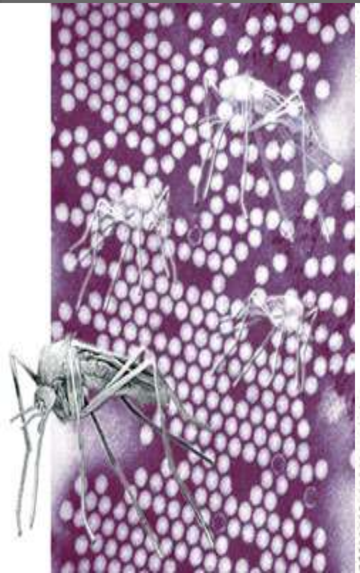
WN Encephalitis

WN “Poliomyelitis”

Inflammatory Neuropathy

Radiculopathy / plexopathy





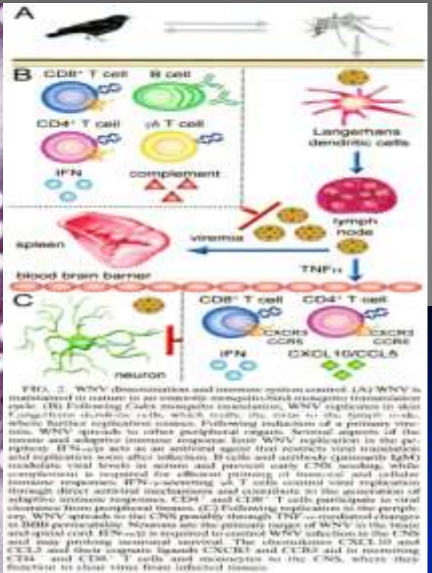
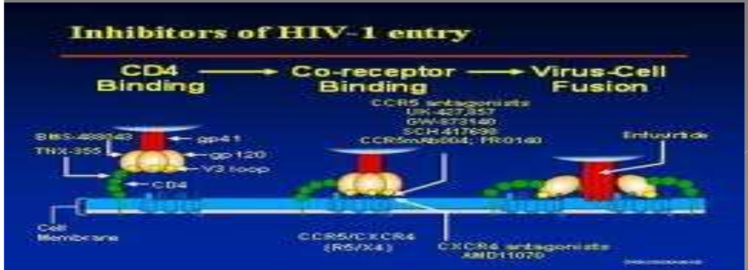
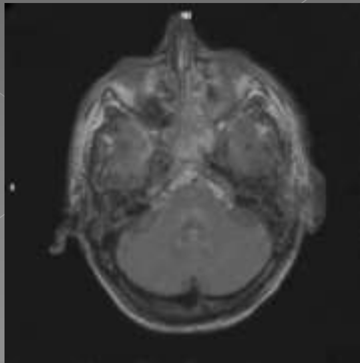

A
B
CD8⁺ T cell
B cell
CD4⁺ T cell
γδ T cell
IFN
complement
Langerhans dendritic cells
lymph node
viremia
spleen
TNFα
blood brain barrier
C
CD8⁺ T cell
CD4⁺ T cell
CXCR3 CCR5
CXCR3 CCR5
IFN
CXCL10/CCL5
neuron

FIG. 2.



Inhibitors of HIV-1 entry

CD4 Binding
Co-receptor Binding
Virus-Cell Fusion
CCR5 antagonists
UK-427,857
GW-873140
SCH 417690
CCR5mAb004; PRO140
Enfuvirtide
gp41
gp120
V3 loop
CD4
THX-355
Cell Membrane
CCR5/CXCR4 (R5/X4)
CXCR4 antagonists
AMD11070



SARS

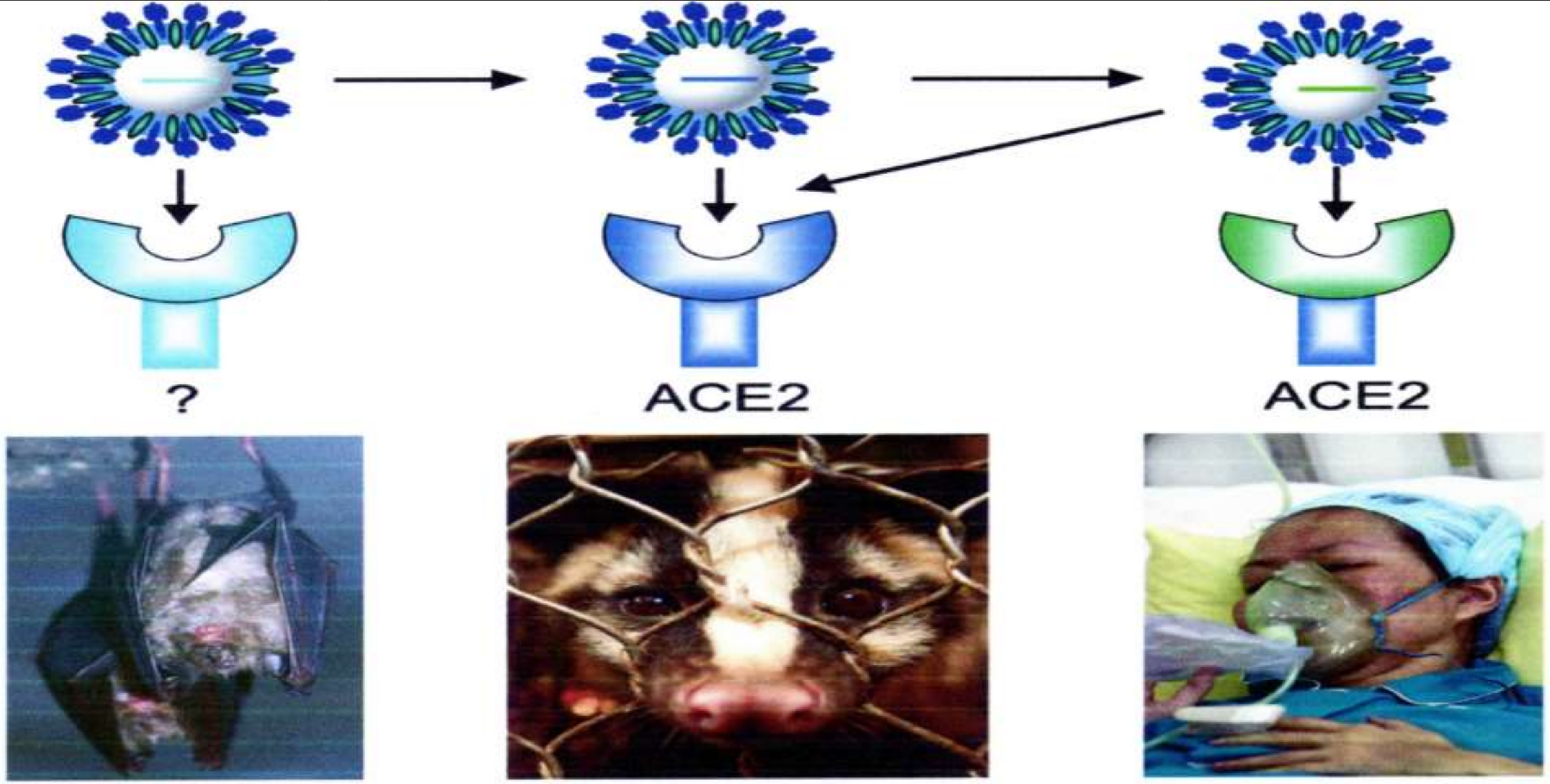
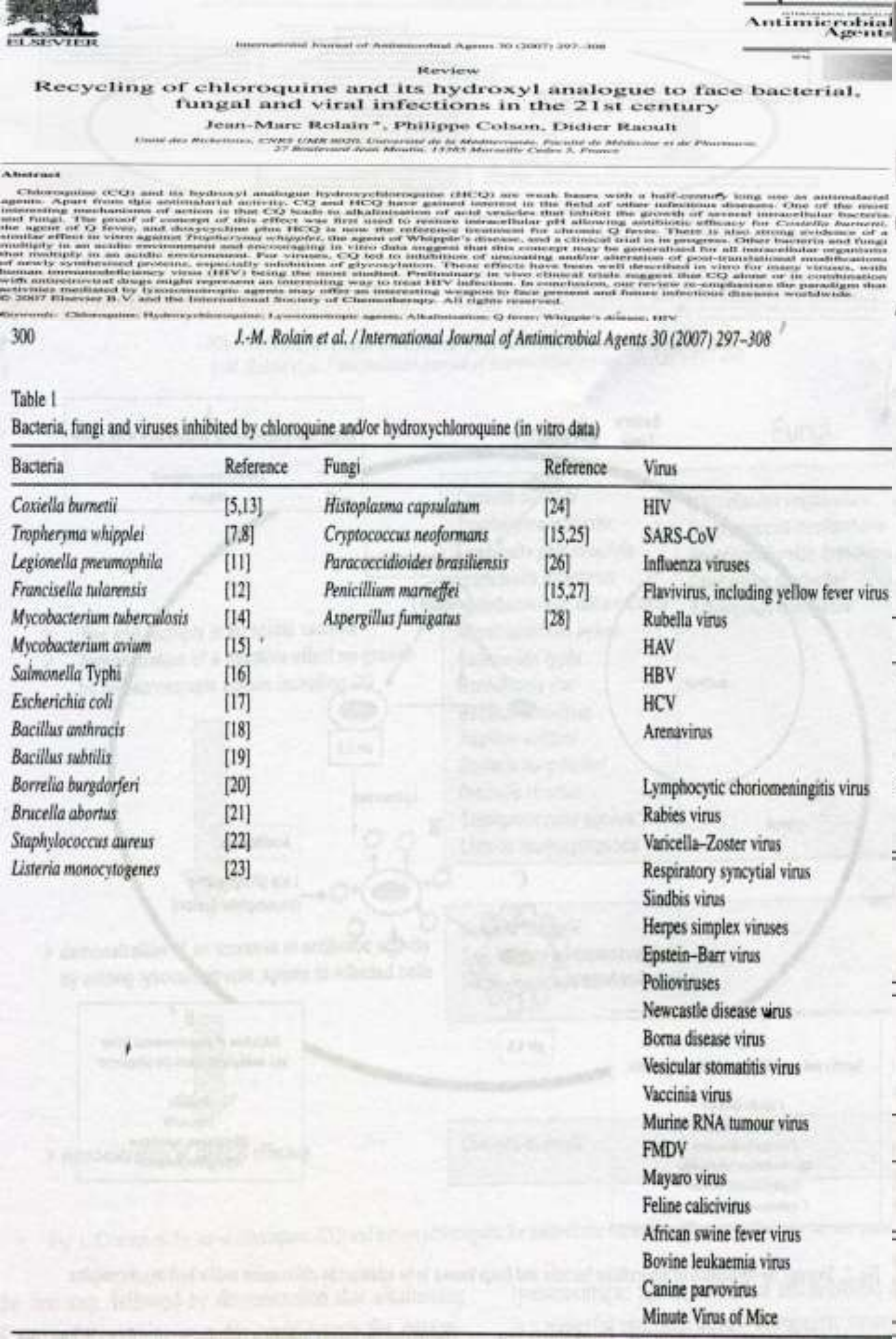


Figure 2. Zoonotic transmission of SARS-CoV. Genomic analyses provided evidence that genetic changes in the spike gene of SARS-CoV from bats (left) and civet cats (center) are essential for the animal-to-human transmission (horizontal arrows). Species-to-species genetic variation in the (thus far unidentified) viral receptor in bats and in the *angiotensin converting enzyme 2 (ACE2)* gene, encoding the SARS-CoV receptor in civet cats and humans also affects the efficiency with which the virus can enter cells (vertical arrows). The SARS-CoV that caused the epidemic evolved a high affinity for both civet (center) and human (right) ACE2 receptors (indicated by the single diagonal and the right side vertical arrow). Image credit: Bart Haagmans, Erasmus MC. Original images (left to right) by Dodoni, Paul Hilton, and Hoang Dinh Nam.
doi:10.1371/journal.ppat.1000557.g002



ELSEVIER

International Journal of Antimicrobial Agents 30 (2007) 297–308

Antimicrobial Agents

Review

Recycling of chloroquine and its hydroxyl analogue to face bacterial, fungal and viral infections in the 21st century

Jean-Marc Rolain *, Philippe Colson, Didier Raoult

Unité des Rickettsies, CNRS UMR 6020, Université de la Méditerranée, Faculté de Médecine et de Pharmacie, 27 Boulevard Jean Moulin, 13385 Marseille Cedex 5, France

Abstract

Chloroquine (CQ) and its hydroxyl analogue hydroxychloroquine (HCQ) are weak bases with a half-century long use as antimalarial agents. Apart from this antimalarial activity, CQ and HCQ have gained interest in the field of other infectious diseases. One of the most interesting mechanisms of action is that CQ leads to alkalinisation of acid vesicles that inhibit the growth of several intracellular bacteria and fungi. The proof of concept of this effect was first used to restore intracellular pH allowing antibiotic efficacy for *Coxiella burnetii*, the agent of Q fever, and doxycycline plus HCQ is now the reference treatment for chronic Q fever. There is also strong evidence of a similar effect in vitro against *Tropheryma whipplei*, the agent of Whipple's disease, and a clinical trial is in progress. Other bacteria and fungi multiply in an acidic environment and encouraging in vitro data suggest that this concept may be generalised for all intracellular organisms that multiply in an acidic environment. For viruses, CQ led to inhibition of uncoating and/or alteration of post-translational modifications of newly synthesised proteins, especially inhibition of glycosylation. These effects have been well described in vitro for many viruses, with human immunodeficiency virus (HIV) being the most studied. Preliminary in vivo clinical trials suggest that CQ alone or in combination with antiretroviral drugs might represent an interesting way to treat HIV infection. In conclusion, our review re-emphasises the paradigm that activities mediated by lysosomotropic agents may offer an interesting weapon to face present and future infectious diseases worldwide.

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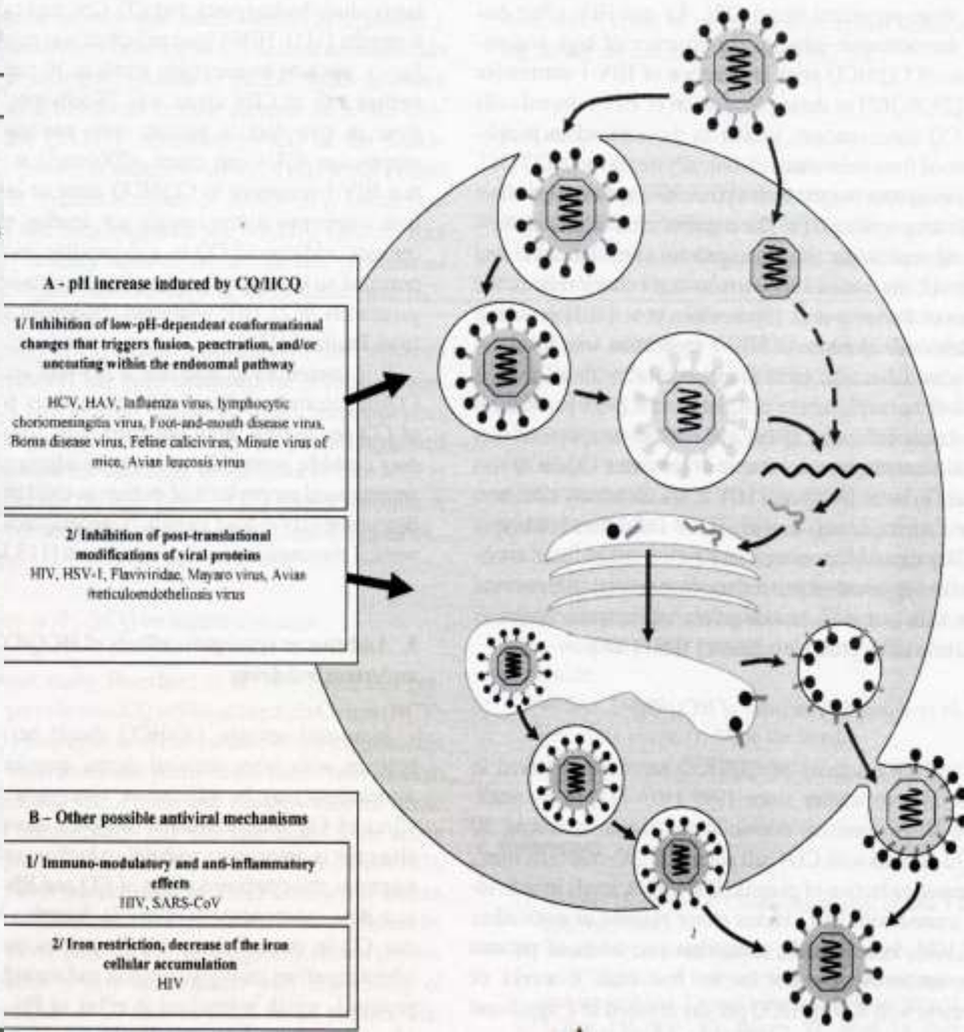
Keywords: Chloroquine; Hydroxychloroquine; Lysosomotropic agents; Alkalinisation; Q fever; Whipple's disease; HIV

Table 1
Bacteria, fungi and viruses inhibited by chloroquine and/or hydroxychloroquine (in vitro data)

Bacteria	Reference	Fungi	Reference	Virus
Coxiella burnetii	[5,13]	*Histoplasma capsulatum*	[24]	HIV
Tropheryma whipplei	[7,8]	*Cryptococcus neoformans*	[15,25]	SARS-CoV
Legionella pneumophila	[11]	*Paracoccidioides brasiliensis*	[26]	Influenza viruses
Francisella tularensis	[12]	*Penicillium marneffei*	[15,27]	Flavivirus, including yellow fever virus
Mycobacterium tuberculosis	[14]	*Aspergillus fumigatus*	[28]	Rubella virus
Mycobacterium avium	[15]			HAV
Salmonella Typhi	[16]			HBV
Escherichia coli	[17]			HCV
Bacillus anthracis	[18]			Arenavirus
Bacillus subtilis	[19]			
Borrelia burgdorferi	[20]			Lymphocytic choriomeningitis virus
Brucella abortus	[21]			Rabies virus
Staphylococcus aureus	[22]			Varicella–Zoster virus
Listeria monocytogenes	[23]			Respiratory syncytial virus
				Sindbis virus
				Herpes simplex viruses
				Epstein–Barr virus
				Polioviruses
				Newcastle disease virus
				Borna disease virus
				Vesicular stomatitis virus
				Vaccinia virus
				Murine RNA tumour virus
				FMDV
				Mayaro virus
				Feline calicivirus
				African swine fever virus
				Bovine leukaemia virus
				Canine parvovirus
				Minute Virus of Mice

Effects of chloroquine on viral infections: an old drug against today's diseases?

Andrea Savarino, Johan R Boelaert, Antonio Cassone, Giancarlo Majori, and Roberto Cauda.



A - pH increase induced by CQ/HCQ

1/ Inhibition of low-pH-dependent conformational changes that triggers fusion, penetration, and/or uncoating within the endosomal pathway

HCV, HAV, Influenza virus, lymphocytic choriomeningitis virus, Foot-and-mouth disease virus, Borna disease virus, Feline calicivirus, Minute virus of mice, Avian leucosis virus

2/ Inhibition of post-translational modifications of viral proteins

HIV, HSV-1, Flaviviridae, Mayaro virus, Avian reticuloendotheliosis virus

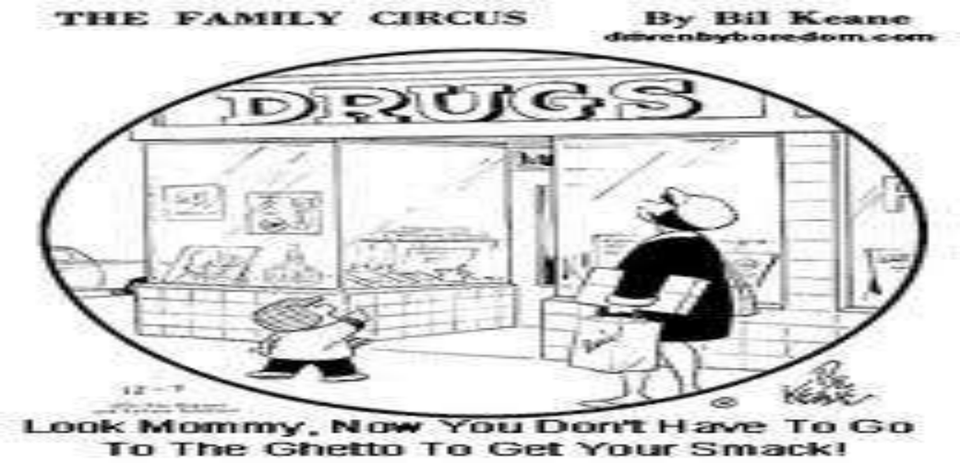
B – Other possible antiviral mechanisms

1/ Immuno-modulatory and anti-inflammatory effects

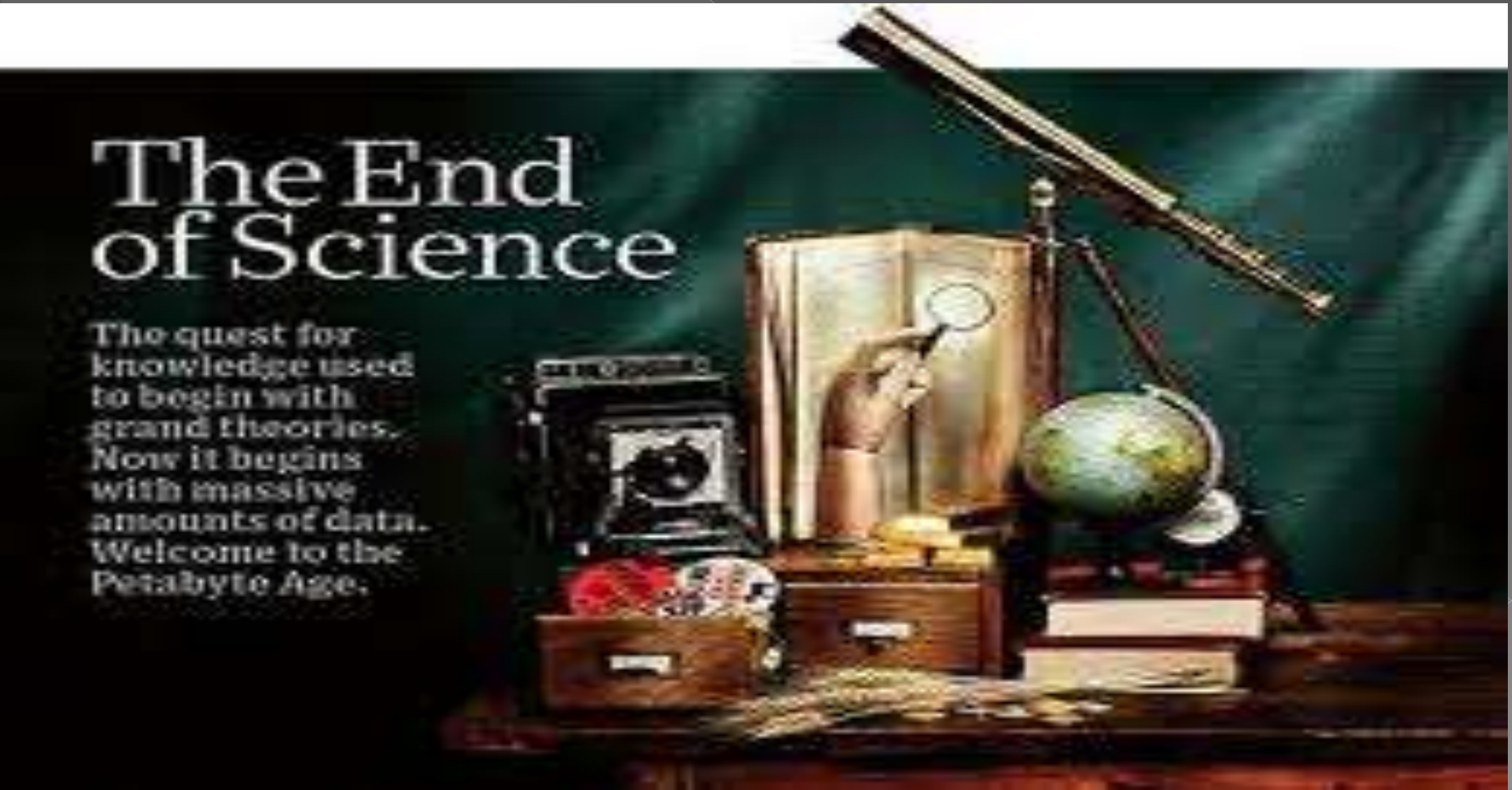
HIV, SARS-CoV

2/ Iron restriction, decrease of the iron cellular accumulation

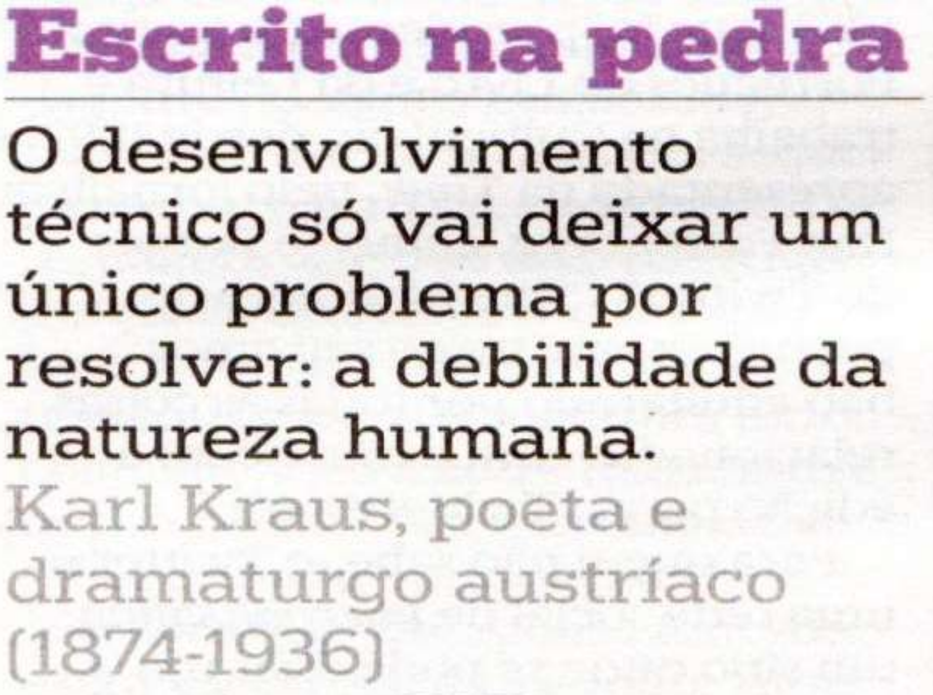
HIV


THE FAMILY CIRCUS
By Bil Keane
drivenbyboredom.com
DRUGS
Look Mommy, Now You Don't Have To Go To The Ghetto To Get Your Smack!

PROBLEMAS DECORRENTES da TECNOLOGIA


The End of Science
The quest for knowledge used to begin with grand theories. Now it begins with massive amounts of data. Welcome to the Petabyte Age.

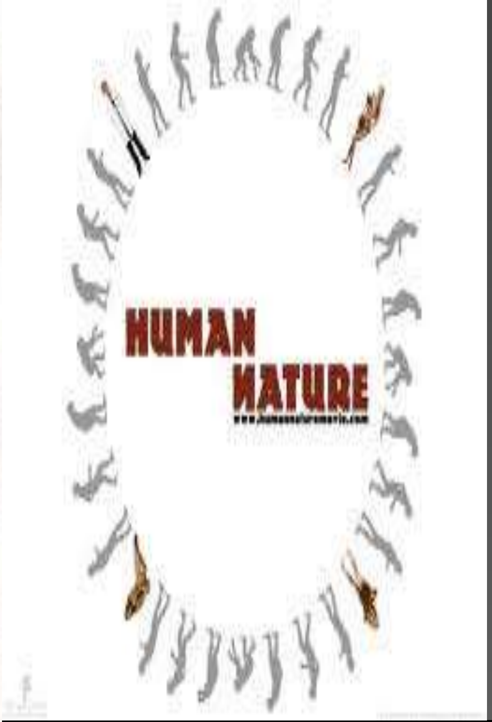
HUMAN
NATURE
KNOW
CARE
ANIMAL
MATTER
WANT
KNOW
CARE



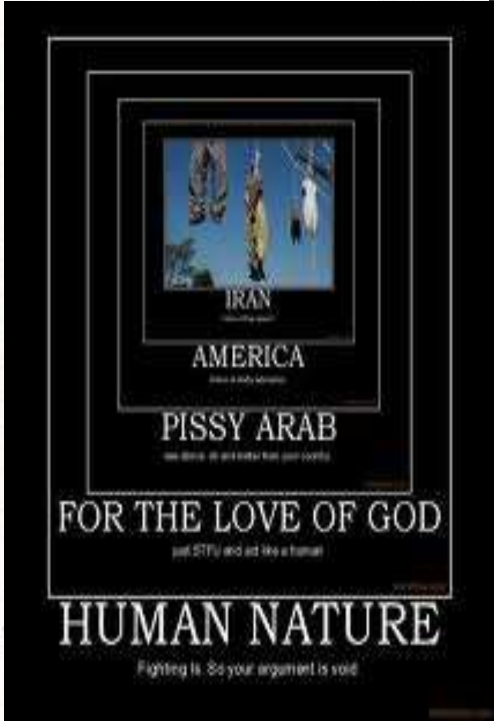
Escrito na pedra

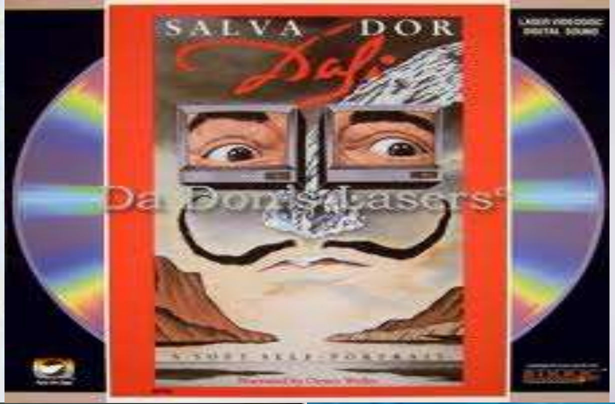
O desenvolvimento técnico só vai deixar um único problema por resolver: a debilidade da natureza humana.

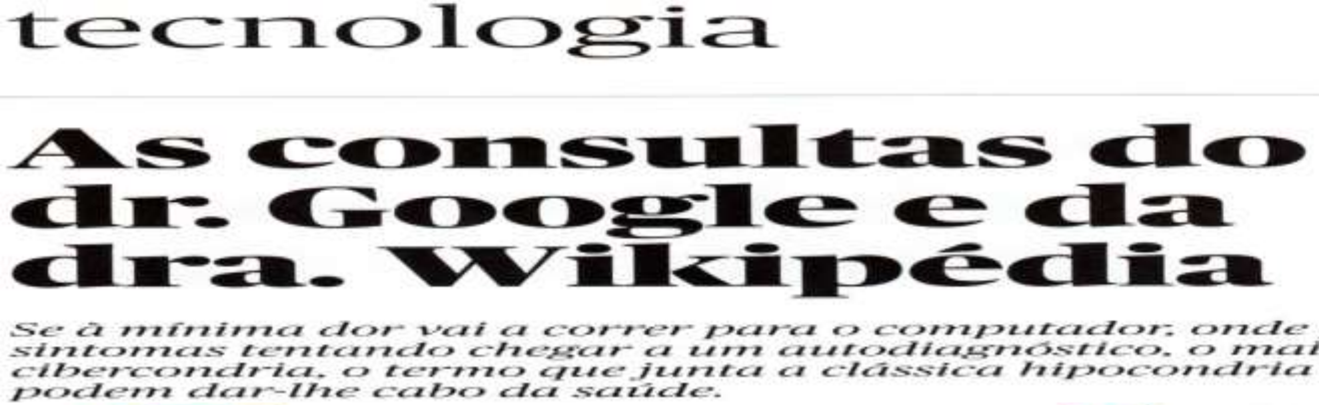
Karl Kraus, poeta e dramaturgo austríaco (1874-1936)


HUMAN
NATURE

Tim Robbins
Patricia Arquette
Rhys Ifans
Miranda Otto
HUMAN NATURE
Opens in Theaters April 12


IRAN
AMERICA
PISSY ARAB
FOR THE LOVE OF GOD
just STFU and act like a human
HUMAN NATURE
Fighting is. So your argument is void


SALVA DOR
Dalí
LASER VIDEODISC
DIGITAL SOUND
Da Dorf's Lasers
A SOFT SELF-PORTRAIT

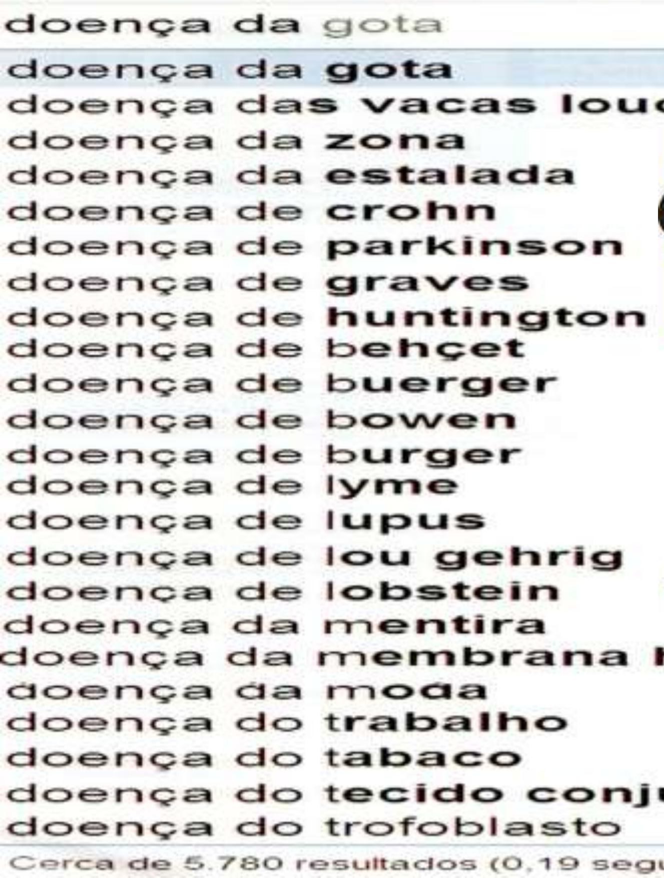


tecnologia

As consultas do dr. Google e da dra. Wikipédia

Se à mínima dor vai a correr para o computador, onde passa horas a pesquisar sintomas tentando chegar a um autodiagnóstico, o mais provável é que sofra de cibercondria, o termo que junta a clássica hipocondria à Internet. Juntas, elas podem dar-lhe cabo da saúde.

Search



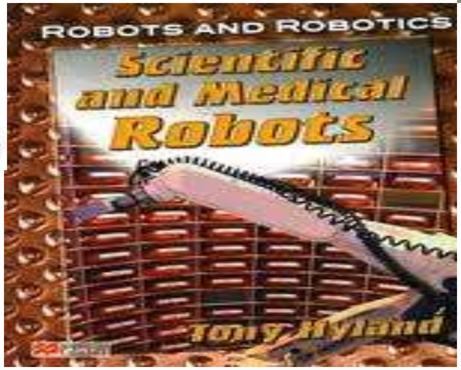
doença da gota ✕ Pesquisar

Pesquisa avançada
Ferramentas de linguagem

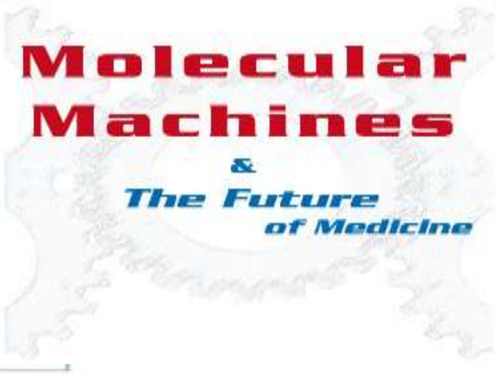
doença da **gota** Sinto-me doente »
doença da**s vacas loucas**
doença da **zona**
doença da **estalada**
doença de **crohn**
doença de **parkinson**
doença de **graves**
doença de **huntington**
doença de **behçet**
doença de **buerger**
doença de **bowen**
doença de **burger**
doença de **lyme**
doença de **lupus**
doença de **lou gehrig**
doença de **lobstein**
doença da **mentira**
doença da **membrana hialina**
doença da **moda**
doença do **trabalho**
doença do **tabaco**
doença do **tecido conjuntivo**
doença do **trofoblasto**

Cerca de 5.780 resultados (0,19 segundos) Pesquisa avançada

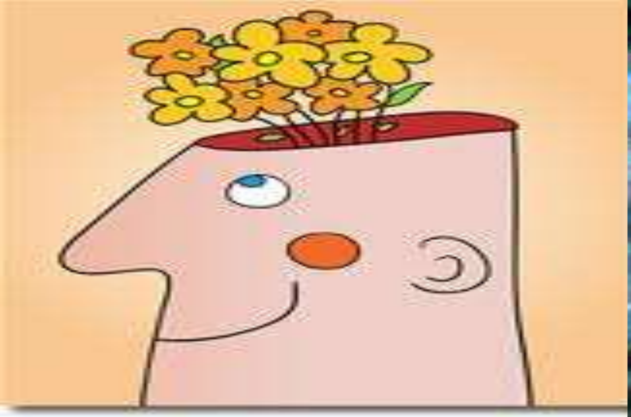
cisco
AVAILABLE
Cisco HealthPresence

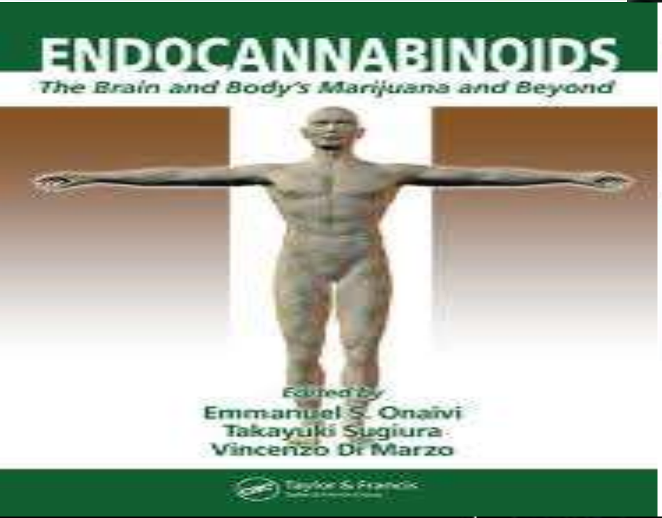


ROBOTS AND ROBOTICS
Scientific and Medical Robots
Tony Hyland



Molecular Machines
&
The Future
of Medicine



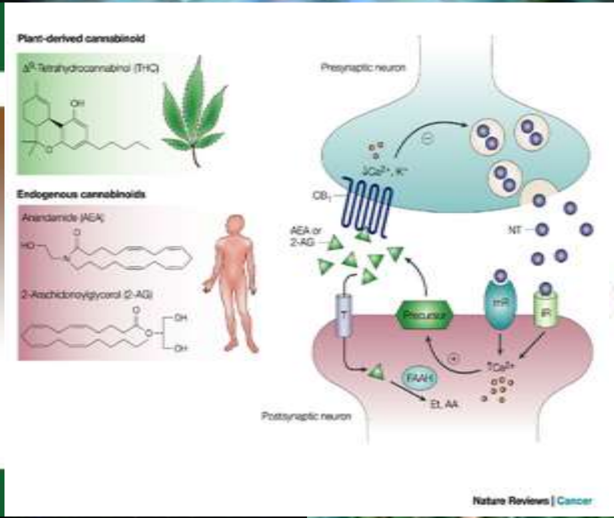


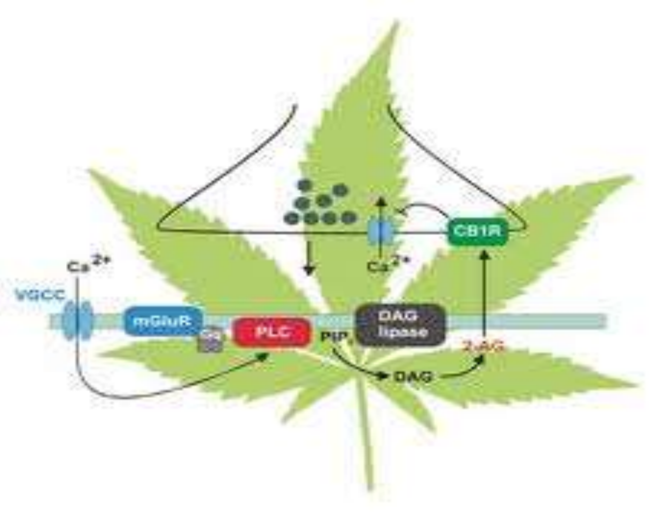
ENDOCANNABINOIDS

The Brain and Body's Marijuana and Beyond

Edited by
Emmanuel S. Onaivi
Takayuki Sugiura
Vincenzo Di Marzo

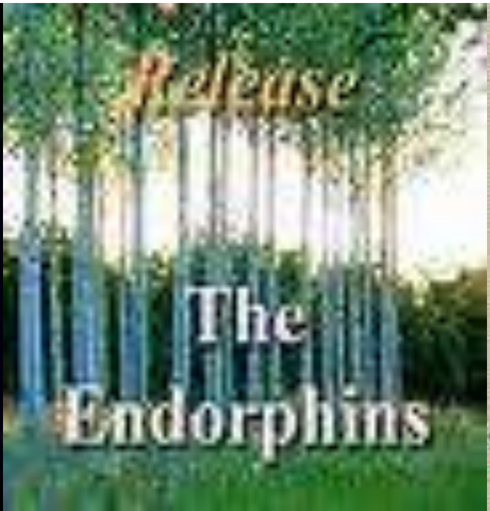
Taylor & Francis


Plant-derived cannabinoid
Δ9-Tetrahydrocannabinol (THC)
OH
Endogenous cannabinoids
Anandamide (AEA)
HO
N
O
2-Arachidonoylglycerol (2-AG)
O
OH
OH
Presynaptic neuron
↓Ca2+, K+
CB1
AEA or 2-AG
NT
T
Precursor
mR
iR
FAAH
Et, AA
↑Ca2+
Postsynaptic neuron
Nature Reviews | Cancer

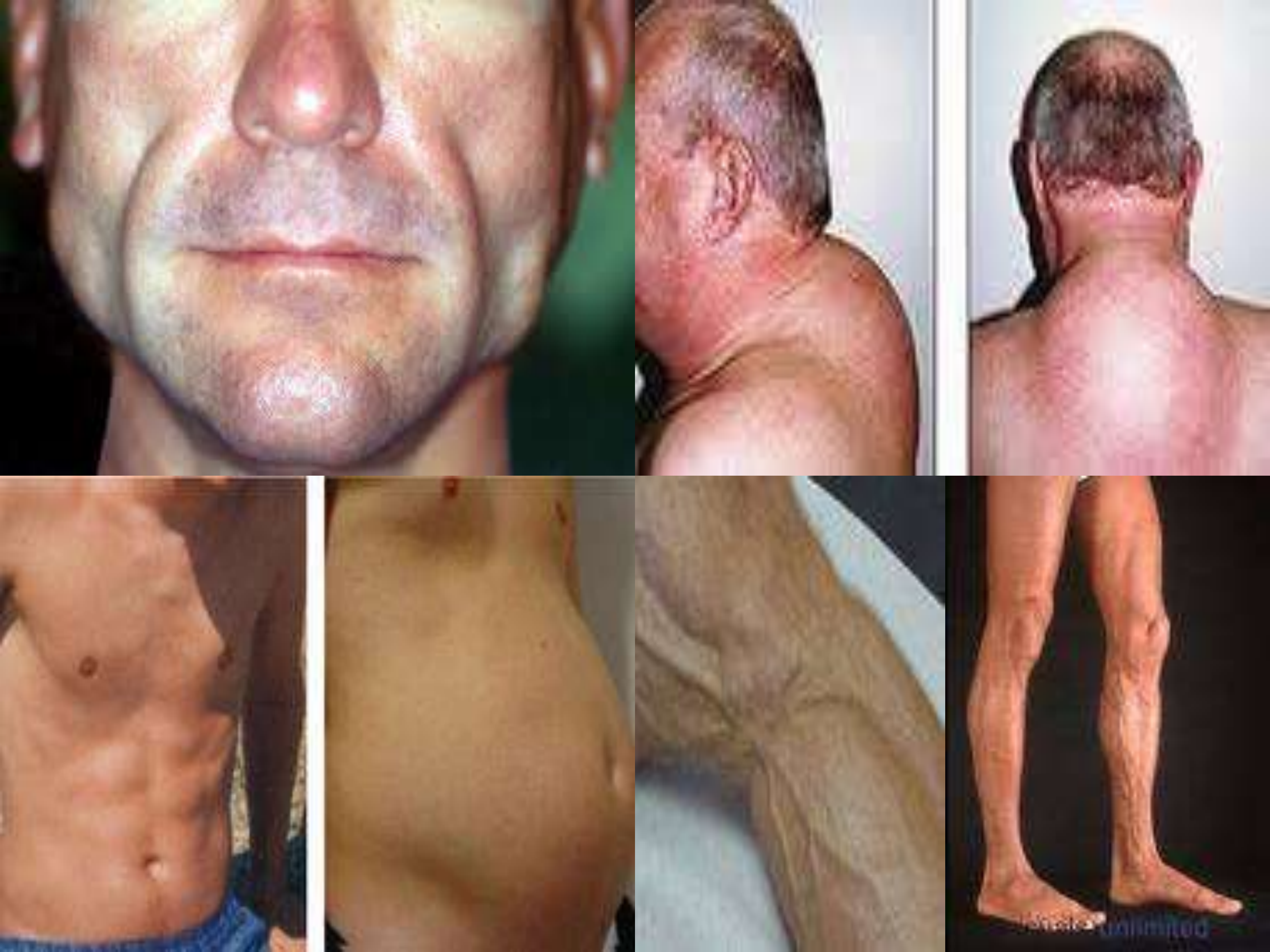

Ca2+
VGCC
mGluR
PLC
PIP
DAG lipase
Ca2+
CB1R
2-AG
DAG

Endorphins
The Rain Is Hilarious

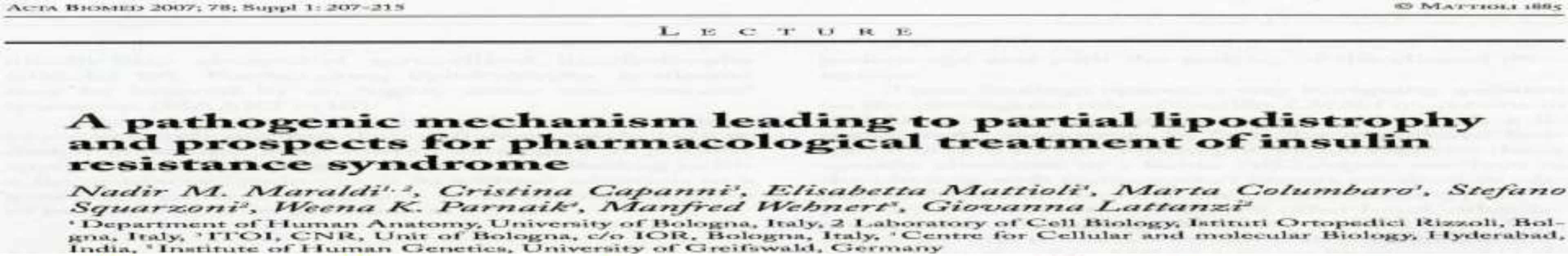
Endorphin Release


Release
The
Endorphins

Sorry, what?
I'm HIGH on
bite-induced
endorphins



Unlimited



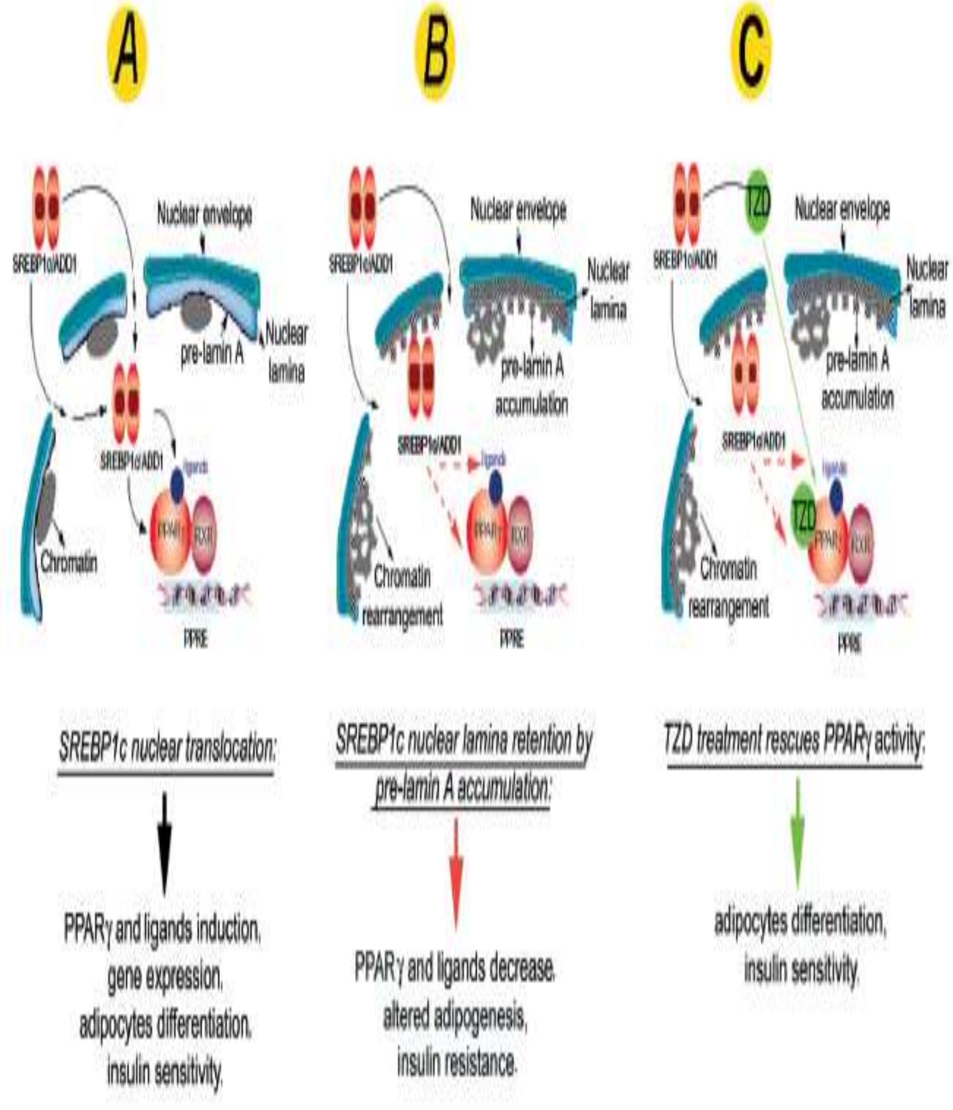
Acta Biomed 2007; 78; Suppl 1: 207-215 © Mattioli 1885

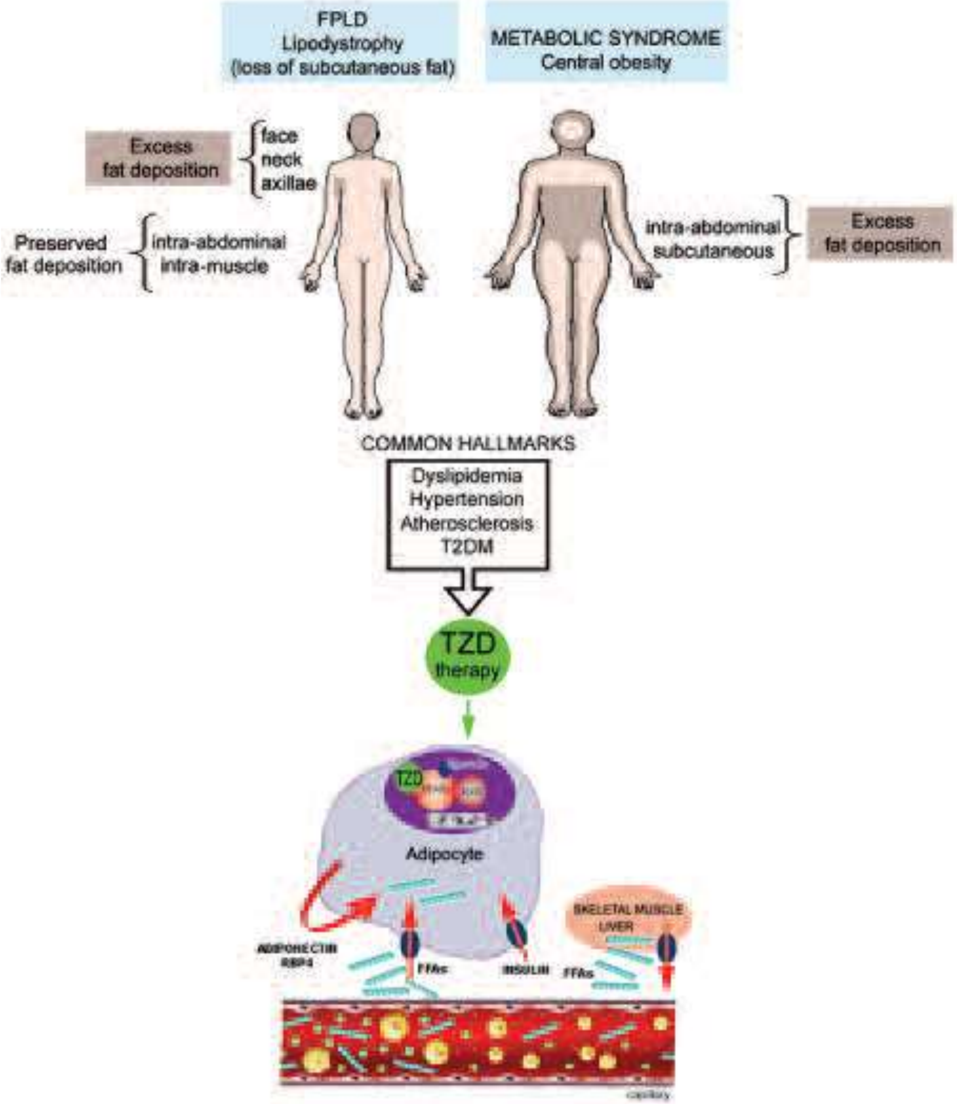
LECTURE

A pathogenic mechanism leading to partial lipodistrophy and prospects for pharmacological treatment of insulin resistance syndrome

Nadir M. Maraldi[1, 2], *Cristina Capanni*[3], *Elisabetta Mattioli*[3], *Marta Columbaro*[1], *Stefano Squarzoni*[3], *Weena K. Parnaik*[4], *Manfred Wehnert*[5], *Giovanna Lattanzi*[3]

[1] Department of Human Anatomy, University of Bologna, Italy, 2 Laboratory of Cell Biology, Istituti Ortopedici Rizzoli, Bologna, Italy, [3] ITOI, CNR, Unit of Bologna, c/o IOR, Bologna, Italy, [4] Centre for Cellular and molecular Biology, Hyderabad, India, [5] Institute of Human Genetics, University of Greifswald, Germany


A
B
C
SREBP1c/ADD1
Nuclear envelope
Nuclear lamina
pre-lamin A
SREBP1c/ADD1
ligands
PPARγ
RXR
Chromatin
PPRE
SREBP1c/ADD1
Nuclear envelope
Nuclear lamina
pre-lamin A accumulation
SREBP1c/ADD1
ligands
PPARγ
RXR
Chromatin rearrangement
PPRE
TZD
SREBP1c/ADD1
Nuclear envelope
Nuclear lamina
pre-lamin A accumulation
SREBP1c/ADD1
ligands
TZD
PPARγ
RXR
Chromatin rearrangement
PPRE
SREBP1c nuclear translocation:
PPARγ and ligands induction, gene expression, adipocytes differentiation, insulin sensitivity
SREBP1c nuclear lamina retention by pre-lamin A accumulation:
PPARγ and ligands decrease, altered adipogenesis, insulin resistance
TZD treatment rescues PPARγ activity:
adipocytes differentiation, insulin sensitivity


FPLD
Lipodystrophy
(loss of subcutaneous fat)
METABOLIC SYNDROME
Central obesity
Excess fat deposition
face
neck
axillae
Preserved fat deposition
intra-abdominal
intra-muscle
intra-abdominal
subcutaneous
Excess fat deposition
COMMON HALLMARKS
Dyslipidemia
Hypertension
Atherosclerosis
T2DM
TZD therapy
TZD
Adipocyte
ADIPONECTIN
RBP4
FFAs
INSULIN
FFAs
SKELETAL MUSCLE
LIVER
capillary

Tipos de Sindroma de Lipodistrofia Congénita: Berardinelli-Seip; Emery-Dreifuss; Hutchinson-Gilford; Werner, Kobberling-Dunnigan, Widemann-Rautenstrauch, etc.

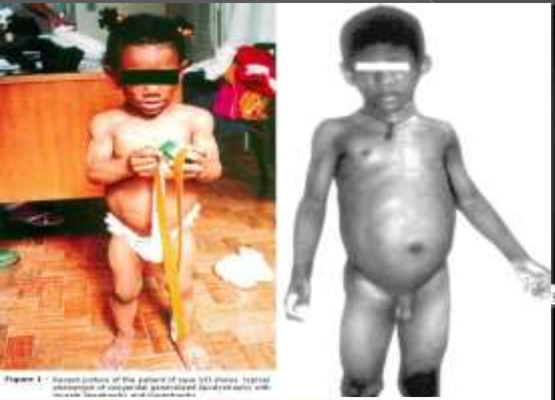


Figure 1 - [illegible]

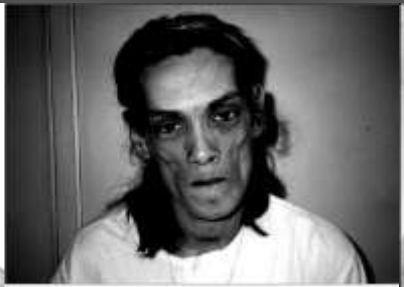
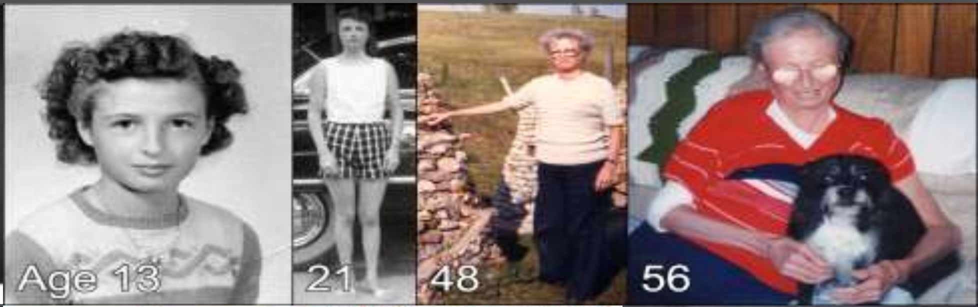


Fig. 1 - Phenotype in total generalized lipodystrophy



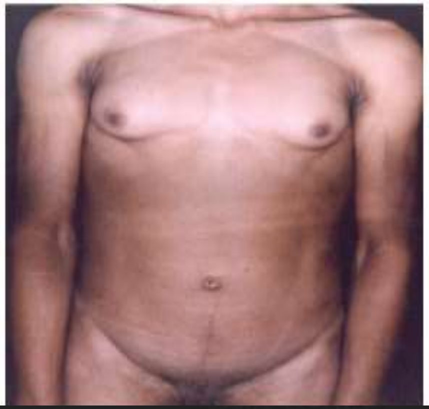


FIGURE 3: Muscle hypertrophy, scarcity of subcutaneous tissue, hypotrophic mammae, salient clitoris

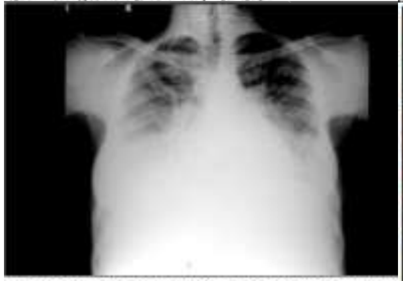
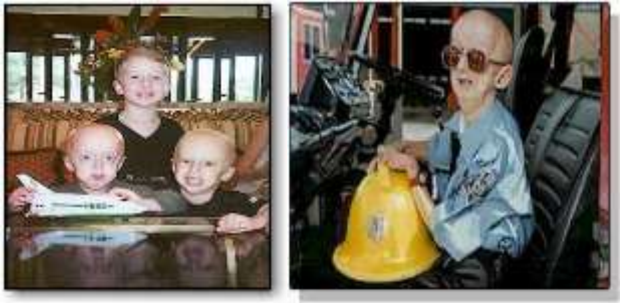
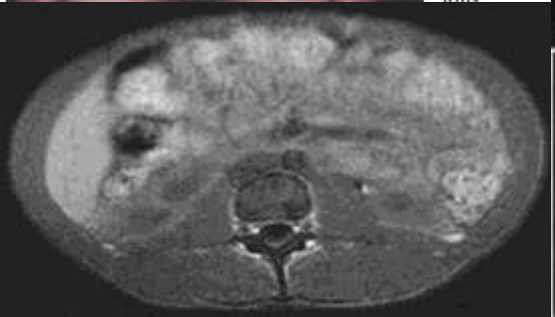
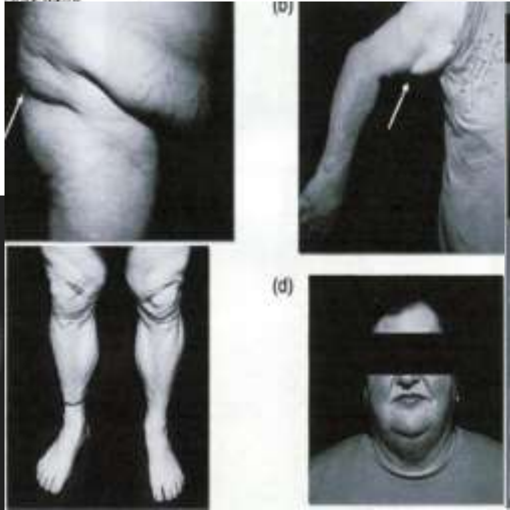
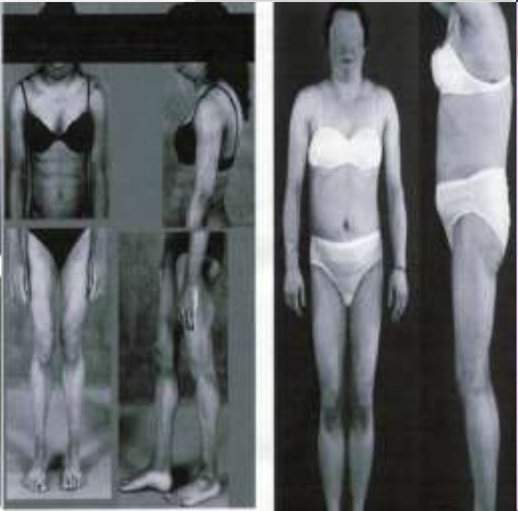


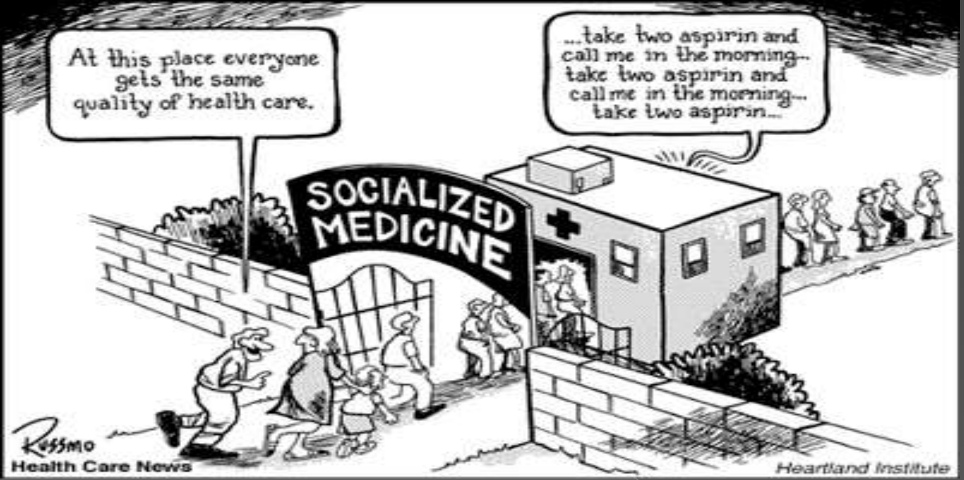
Fig. 2 - Chest X-Ray showing pulmonary congestion in the presence of normal size cardiac shadow



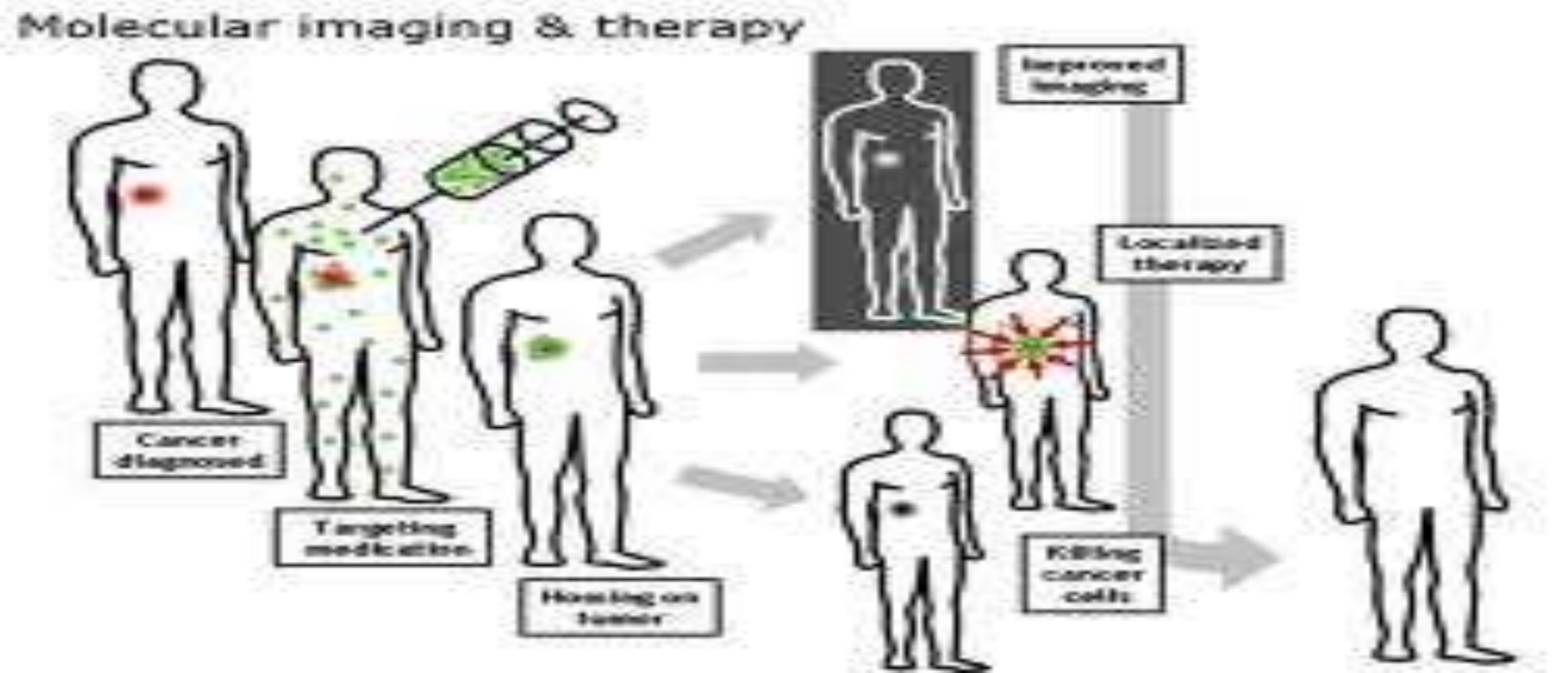







At this place everyone gets the same quality of health care.
...take two aspirin and call me in the morning... take two aspirin and call me in the morning... take two aspirin...
SOCIALIZED MEDICINE
Rossmo
Health Care News
Heartland Institute

CONCLUSÕES


Molecular imaging & therapy
Cancer diagnosed
Targeting medication
Homing on tumor
Improved imaging
Localized therapy
Killing cancer cells

PENSAMENTO

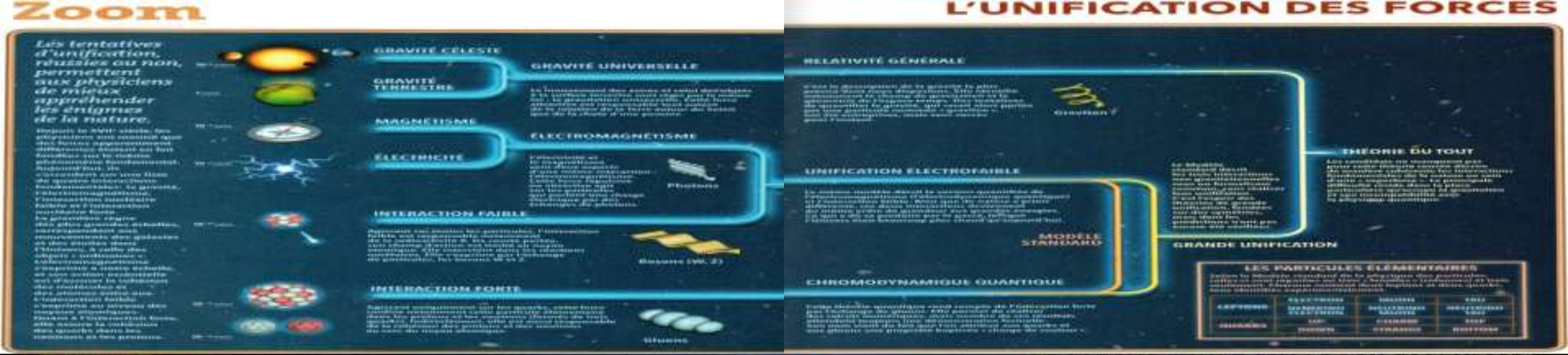
- *" ... só podemos ver o que está mais para a frente, olhando volta e meia para trás ..." (sic.)* *(John G. Evans, Clinical Futures: Aging, Book of the 50 th Anniversery of the NHS)*

NHS
FIFTIETH ANNIVERSARY
50
PENCE
NHS
NHS 50
NHS
NHS

Editorial

THE LANCET

The end of our National Health Service



Zoom

L'UNIFICATION DES FORCES

Les tentatives d'unification, réussies ou non, permettent aux physiciens de mieux appréhender les énigmes de la nature.

GRAVITÉ CÉLESTE

GRAVITÉ TERRESTRE

GRAVITÉ UNIVERSELLE

MAGNÉTISME

ÉLECTRICITÉ

ÉLECTROMAGNÉTISME

INTERACTION FAIBLE

INTERACTION FORTE

RELATIVITÉ GÉNÉRALE

UNIFICATION ÉLECTROFAIBLE

MODÈLE STANDARD

CHROMODYNAMIQUE QUANTIQUE

GRANDE UNIFICATION

THÉORIE DU TOUT

LES PARTICULES ÉLÉMENTAIRES

Photons
Bosons (W, Z)
Gluons
Graviton ?

LE BESOIN D'UNE CAUSE FONDAMENTALE

Six théories pour fonder la physique

La théorie des cordes domine les tentatives d'unification des particules et des forces fondamentales. Mais d'autres hypothèses voient le jour et proposent de nouvelles conceptions de l'Univers.

LES CORDES

LES TWISTERS

LA GÉOMÉTRIE NON COMMUTATIVE

PAS DE THÉORIE UNIFICATRICE

LES TRIANGULATIONS DYNAMIQUES CAUSALES

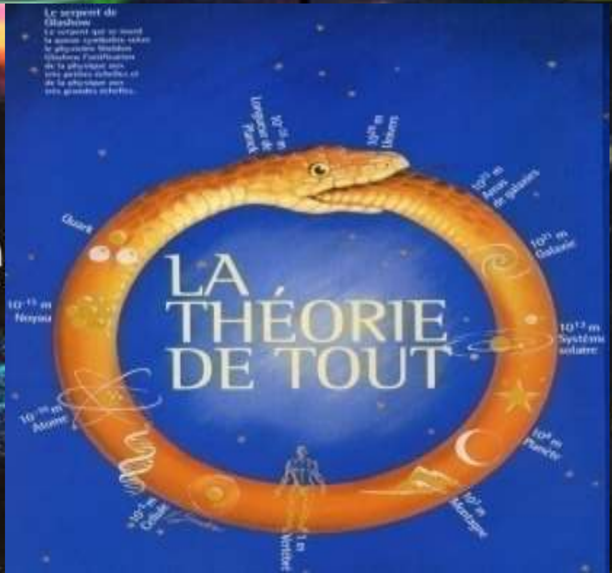
LA GRAVITÉ QUANTIQUE À BOUCLES

Les dossiers de

LA Recherche

La théorie du tout

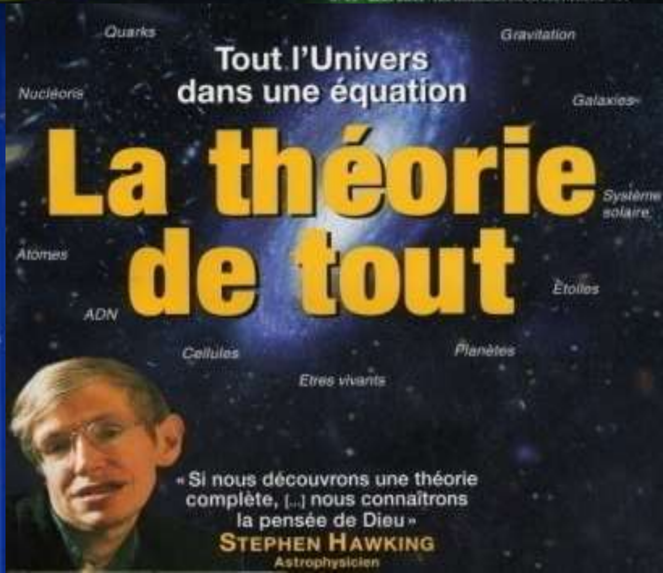
Comment la physique peut expliquer l'Univers



Le serpent de Glashow

LA THÉORIE DE TOUT

Quark
Longueur de Planck
Univers
Amas de galaxies
Galaxie
Système solaire
Planète
Montagne
Vertèbre
Cellule
Atome
Noyau



Tout l'Univers dans une équation

La théorie de tout

« Si nous découvrons une théorie complète, [...] nous connaîtrons la pensée de Dieu »

STEPHEN HAWKING

Astrophysicien

Quarks
Gravitation
Nucléons
Galaxies
Système solaire
Atomes
Étoiles
ADN
Planètes
Cellules
Etres vivants

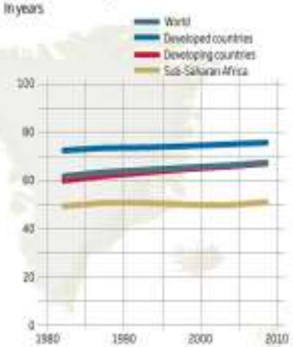
Is the world getting better or worse?

If you want to make the world a better place, it's a good idea to find out where you're starting from. When we did just that, the results came as something of a surprise. By most measures, living standards are improving across the world, and though hundreds of millions of people still live in desperate conditions, things are moving in the right direction. Less encouragingly, the environment is clearly in trouble and armed conflict remains a major problem

©NewScientist

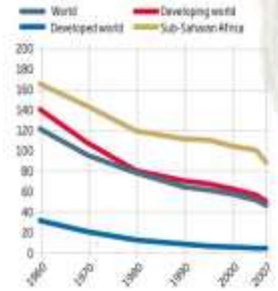
Life expectancy at birth 👍

In years



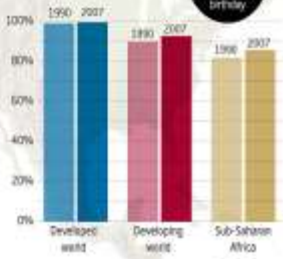
Infant mortality 👍

Deaths in first year per 1000 live births



Child survival 👍

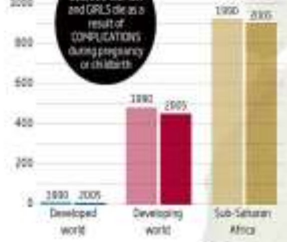
Beyond fifth birthday



In sub-Saharan Africa, 1 IN 7 CHILDREN DIE before their 5th birthday

Maternal mortality 👍

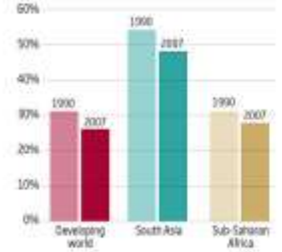
Deaths per 100,000 live births



EVERY YEAR, 536,000 WOMEN and GIRLS die as a result of COMPLICATIONS during pregnancy or childbirth

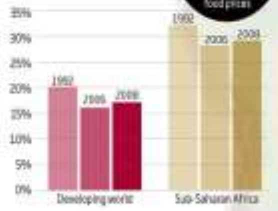
Hunger 👍

Percentage of children under 5 underweight



Malnutrition 👍

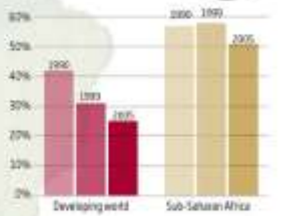
Percentage of population undermourished



The DECLINING TREND in undernourishment in developing countries was REVERSED in 2008, largely due to escalating food prices

Extreme poverty 👍

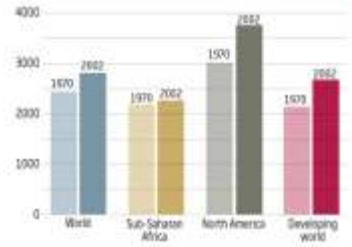
Percentage of people living on less than $1.25 a day



As many as 1 BILLION people are likely to still be in EXTREME POVERTY by 2015

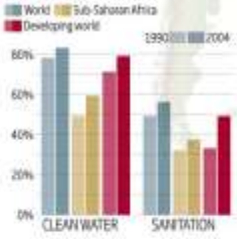
Food supply 👍

Kilocalories per day



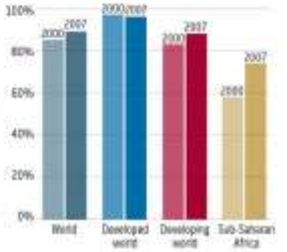
Water 👍

Percentage of population with access to clean water and sanitation



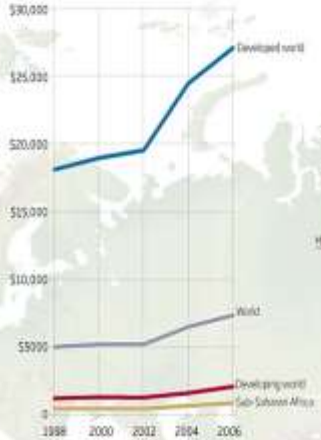
Education 👍

Percentage enrolment in primary education



GDP per capita 👍

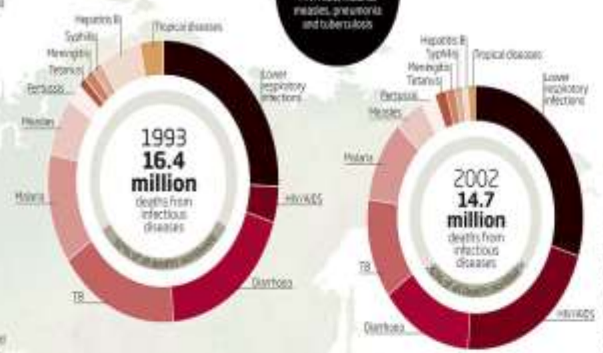
US$ per person



Infectious diseases 👍

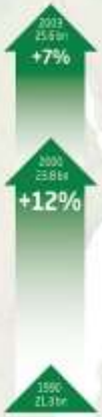
Worldwide deaths from infectious diseases

80% of DEATHS from INFECTIOUS DISEASES are caused by diarrhoea, HIV/AIDS, malaria, measles, pneumonia and tuberculosis



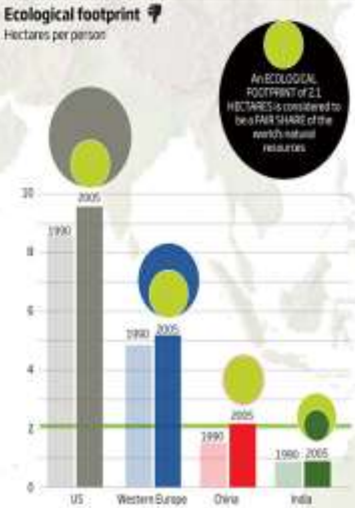
CO_2 emissions 👎

Increase in worldwide emissions (tonnes)



Ecological footprint 👎

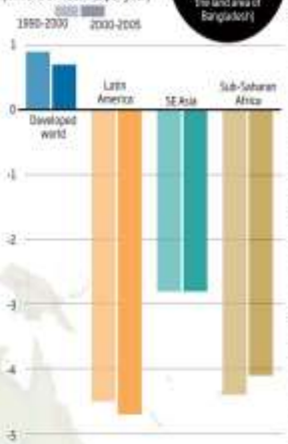
Hectares per person



An ECOLOGICAL FOOTPRINT of 2.1 HECTARES is considered to be a FAIR SHARE of the world's natural resources

Deforestation 👎

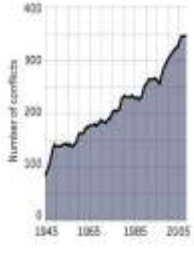
Annual net change in forest area (millions of hectares per year)



DEFORESTATION continues at the RATE of about 13 MILLION HECTARES per year (roughly equivalent to the land area of Bangladesh)

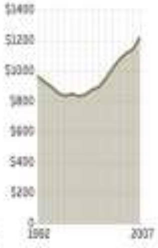
War 👎

Number of conflicts, 1945 to 2008



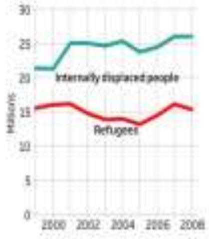
Military spending 👎

In billions of dollars



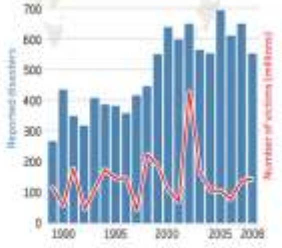
Displaced persons 👎

Displaced people and refugees

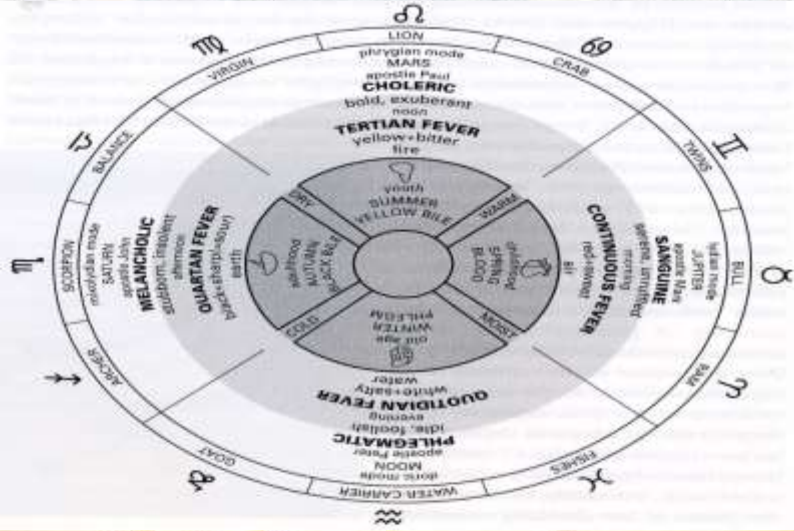


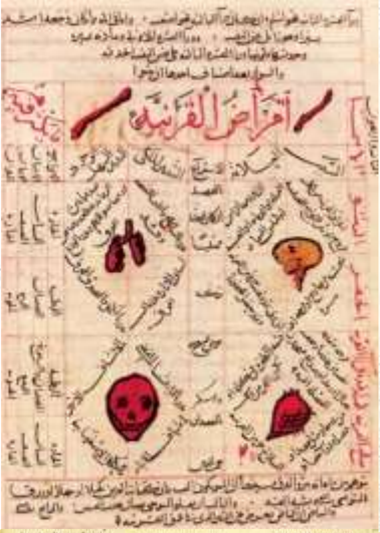
Natural disasters 👎

As natural disasters rise, the number of victims is stable

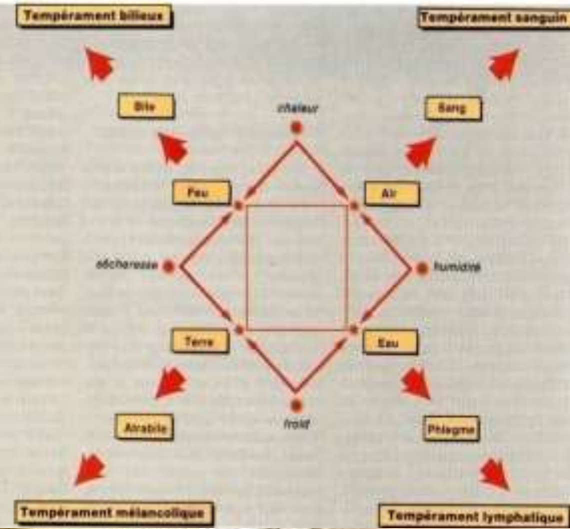


L'utopie du savoir total

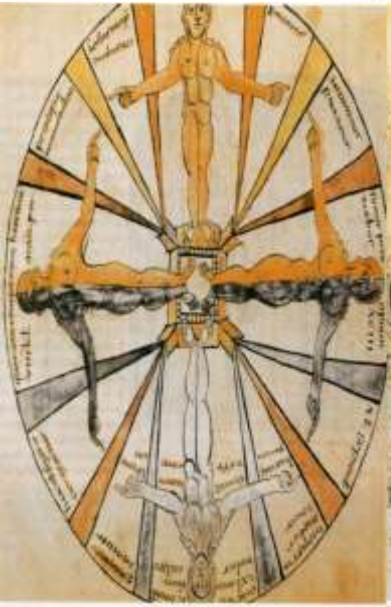

LION
phrygian mode
MARS
apostle Paul
CHOLERIC
bold, exuberant
noon
TERTIAN FEVER
yellow+bitter
fire
youth
SUMMER
YELLOW BILE
DRY
WARM
CRAB
TWINS
BULL
lydian mode
JUPITER
apostle Mark
SANGUINE
serene, unruffled
morning
CONTINUOUS FEVER
red+sweet
air
childhood
SPRING
BLOOD
MOIST
RAM
FISHES
WATER-CARRIER
GOAT
doric mode
MOON
apostle Peter
PHLEGMATIC
idle, foolish
evening
QUOTIDIAN FEVER
white+salty
water
old age
WINTER
PHLEGM
COLD
adulthood
AUTUMN
BLACK BILE
ARCHER
SCORPION
mixolydian mode
SATURN
apostle John
MELANCHOLIC
stubborn, insolent
afternoon
QUARTAN FEVER
black+sharp+sour
earth
BALANCE
VIRGIN

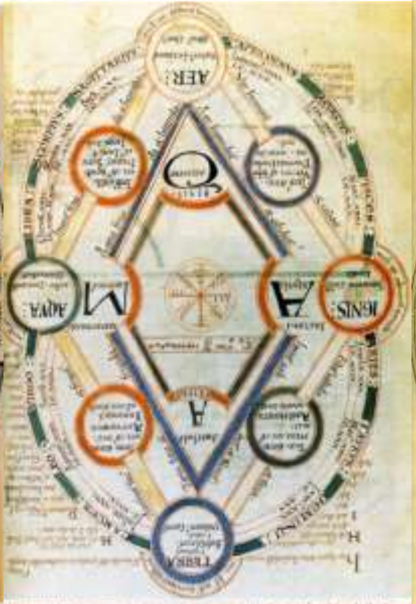

أمراض القرنية

La théorie humorale

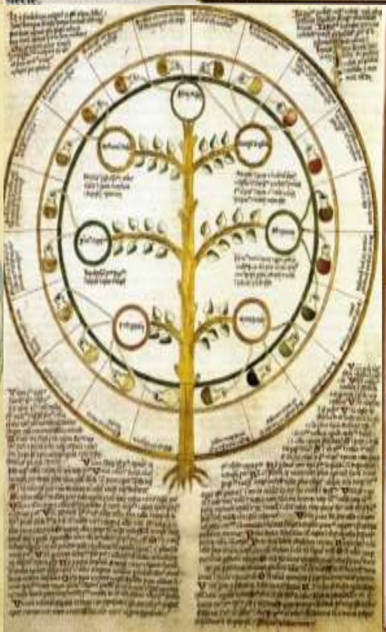

Tempérament bilieux
Tempérament sanguin
Bile
chaleur
Sang
Feu
Air
sécheresse
humidité
Terre
Eau
Atrabile
froid
Phlegme
Tempérament mélancolique
Tempérament lymphatique

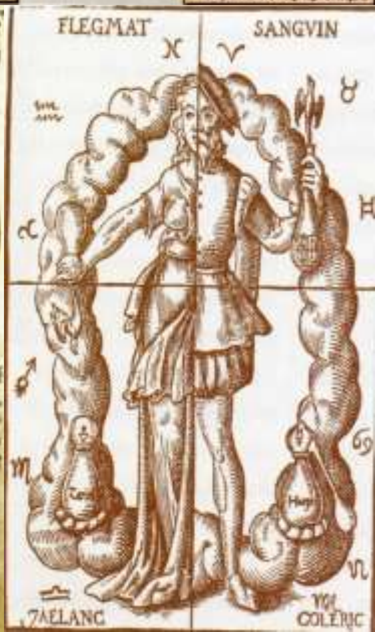
Ce schéma fait ressortir les états d'alliance ou de conflits régissant les quatre éléments des « humeurs » (liquides organiques) déterminant la santé ou la maladie (cf. p. 31 et 32). Cette théorie a une influence décisive sur la médecine jusqu'au XVIIIe siècle.




AER
IGNIS
AQUA
TERRA

Flegmatico
Melanconico



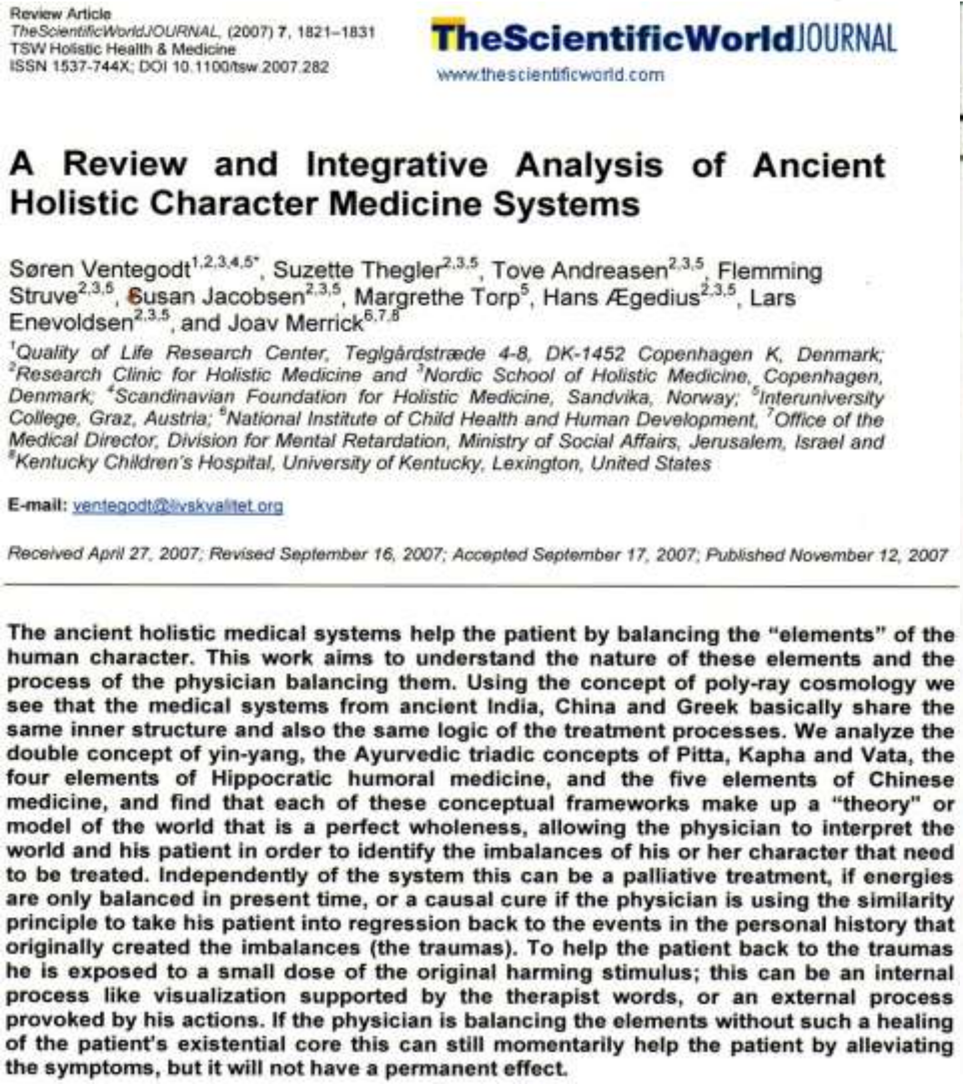

FLEGMAT
SANGVIN
MELANC
COLERIC

The roots of ancient medicine: an historical outline

B V SUBBARAYAPPA*

Visiting Professor, National Institute of Advanced Studies, Bangalore 560 012, India

(Email, phispc@bgl.vsnl.net.in)



Review Article
TheScientificWorldJOURNAL, (2007) 7, 1821–1831
TSW Holistic Health & Medicine
ISSN 1537-744X; DOI 10.1100/tsw.2007.282

TheScientificWorldJOURNAL
www.thescientificworld.com

A Review and Integrative Analysis of Ancient Holistic Character Medicine Systems

Søren Ventegodt[1,2,3,4,5*], Suzette Thegler[2,3,5], Tove Andreasen[2,3,5], Flemming Struve[2,3,5], Susan Jacobsen[2,3,5], Margrethe Torp[5], Hans Ægedius[2,3,5], Lars Enevoldsen[2,3,5], and Joav Merrick[6,7,8]

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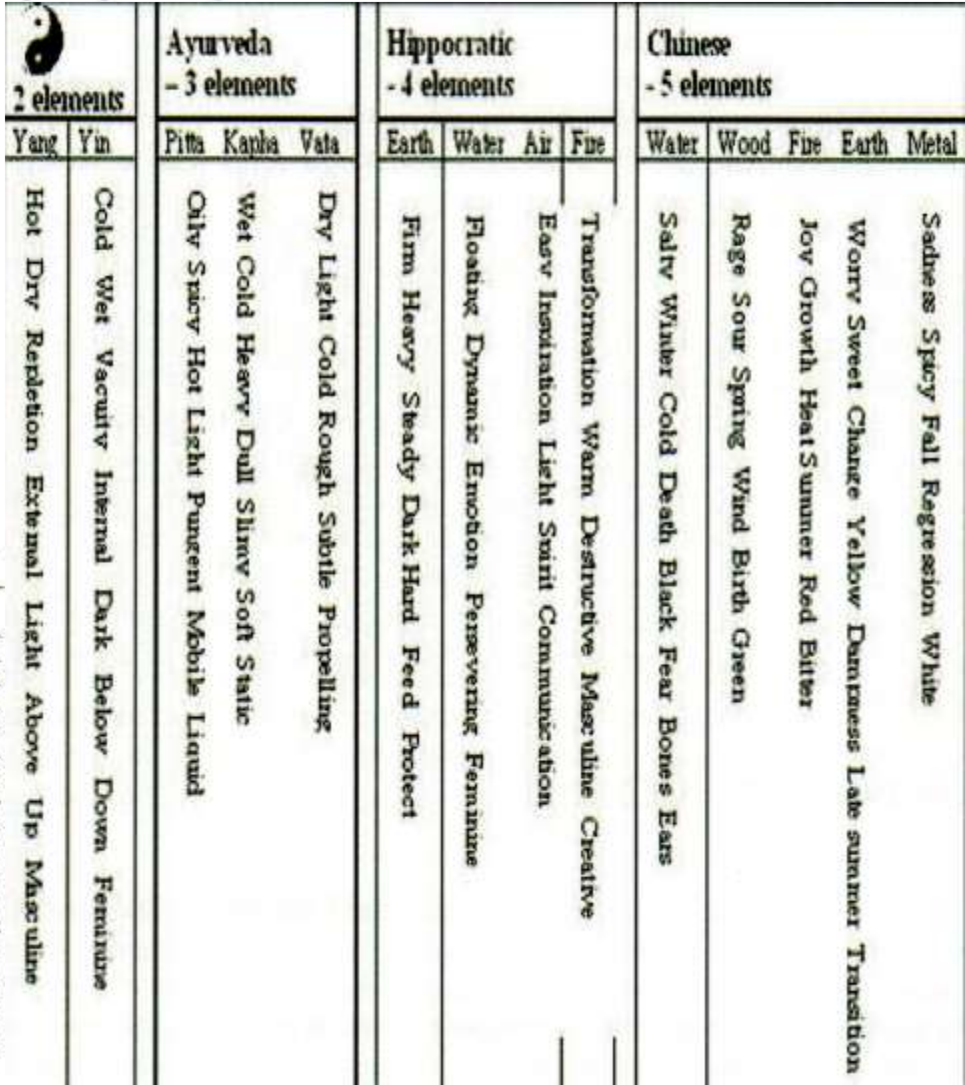
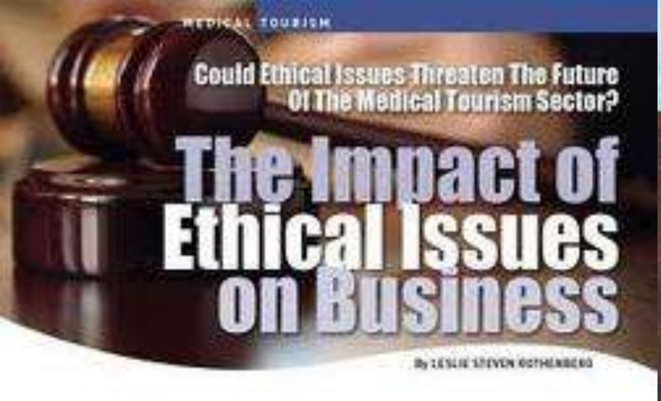
Received April 27, 2007; Revised September 16, 2007; Accepted September 17, 2007; Published November 12, 2007

The ancient holistic medical systems help the patient by balancing the "elements" of the human character. This work aims to understand the nature of these elements and the process of the physician balancing them. Using the concept of poly-ray cosmology we see that the medical systems from ancient India, China and Greek basically share the same inner structure and also the same logic of the treatment processes. We analyze the double concept of yin-yang, the Ayurvedic triadic concepts of Pitta, Kapha and Vata, the four elements of Hippocratic humoral medicine, and the five elements of Chinese medicine, and find that each of these conceptual frameworks make up a "theory" or model of the world that is a perfect wholeness, allowing the physician to interpret the world and his patient in order to identify the imbalances of his or her character that need to be treated. Independently of the system this can be a palliative treatment, if energies are only balanced in present time, or a causal cure if the physician is using the similarity principle to take his patient into regression back to the events in the personal history that originally created the imbalances (the traumas). To help the patient back to the traumas he is exposed to a small dose of the original harming stimulus; this can be an internal process like visualization supported by the therapist words, or an external process provoked by his actions. If the physician is balancing the elements without such a healing of the patient's existential core this can still momentarily help the patient by alleviating the symptoms, but it will not have a permanent effect.



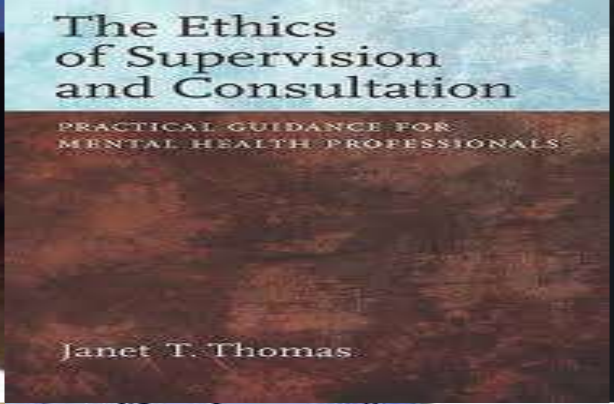
2 elements		Ayurveda - 3 elements			Hippocratic - 4 elements				Chinese - 5 elements				
Yang	Yin	Pitta	Kapha	Vata	Earth	Water	Air	Fire	Water	Wood	Fire	Earth	Metal
Hot Dry Repletion External Light Above Up Masculine	Cold Wet Vacuity Internal Dark Below Down Feminine	Oily Spicy Hot Light Pungent Mobile Liquid	Wet Cold Heavy Dull Slimy Soft Static	Dry Light Cold Rough Subtle Propelling	Firm Heavy Steady Dark Hard Feed Protect	Floating Dynamic Emotion Persevering Feminine	Easy Inspiration Light Spirit Communication	Transformation Warm Destructive Masculine Creative	Salty Winter Cold Death Black Fear Bones Ears	Rage Sour Spring Wind Birth Green	Joy Growth Heat Summer Red Bitter	Worry Sweet Change Yellow Dampness Late summer Transition	Sadness Spicy Fall Regression White


MEDICAL TOURISM

Could Ethical Issues Threaten The Future Of The Medical Tourism Sector?

The Impact of Ethical Issues on Business

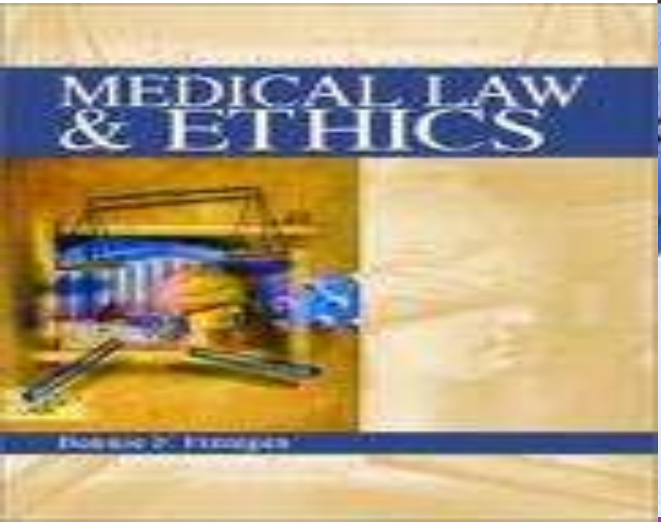
By LESLIE STEVEN ROTHENBERG


The Ethics of Supervision and Consultation

PRACTICAL GUIDANCE FOR MENTAL HEALTH PROFESSIONALS

Janet T. Thomas

ETHICS


MEDICAL LAW & ETHICS

Bonnie F. Fremgen

ood v Ba
Doing the Right Thing
Ethics
ards
Values
Fairness
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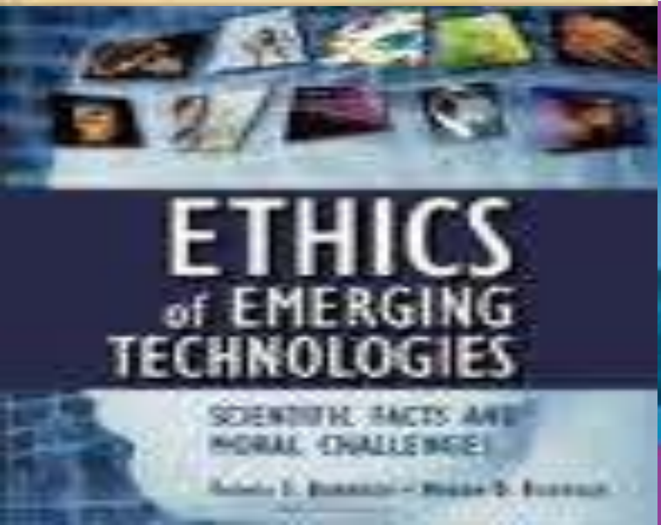
Genetics Ethics.Net

Issue14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Second Edition

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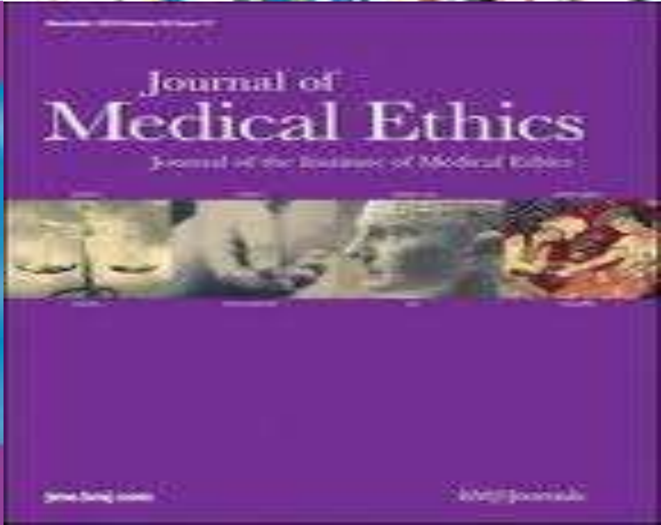
For Imaging Professionals

Doreen M. Towsley-Cook

Terese A. Young

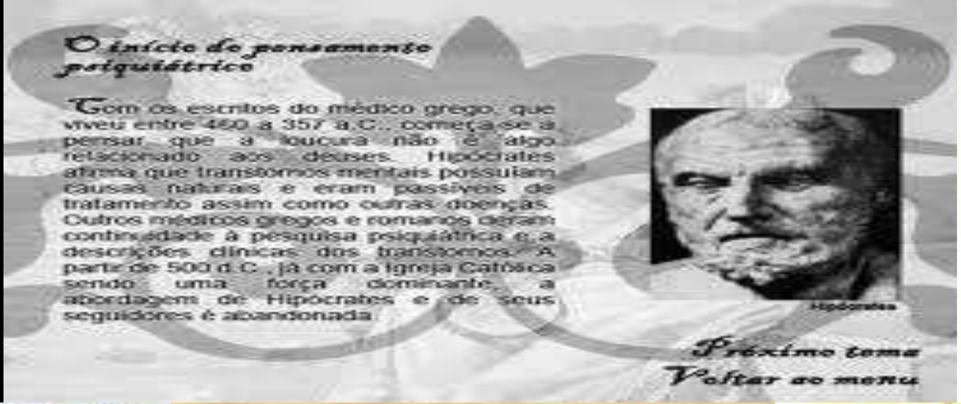
MOSBY


Journal of Medical Ethics

Journal of the Institute of Medical Ethics

jme.bmj.com

HIPPOCRATES
468-377



O início do pensamento psiquiátrico

Com os escritos do médico grego, que viveu entre 460 a 357 a.C., começa-se a pensar que a loucura não é algo relacionado aos deuses. Hipócrates afirma que transtornos mentais possuíam causas naturais e eram passíveis de tratamento assim como outras doenças. Outros médicos gregos e romanos deram continuidade à pesquisa psiquiátrica e a descrições clínicas dos transtornos. A partir de 500 d.C., já com a Igreja Católica sendo uma força dominante, a abordagem de Hipócrates e de seus seguidores é abandonada.

Hipócrates
Próximo tema
Voltar ao menu

TEXTO ORIGINAL EM GREGO

El Juramento de Hipócrates

THE OATH

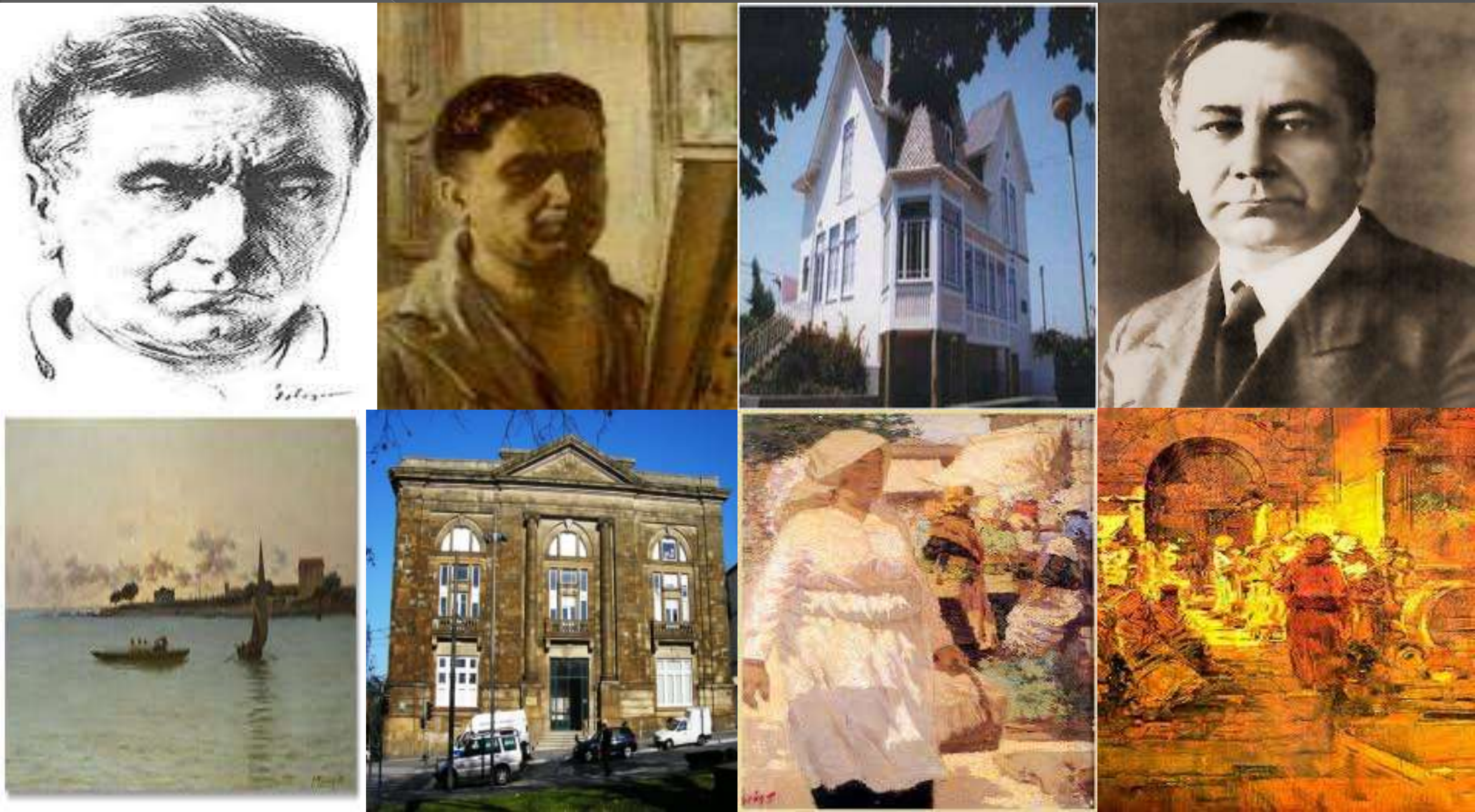
I SWEAR

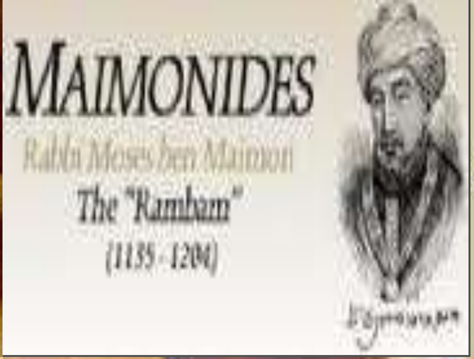
ALGUMAS IDEIAS de HIPOCRATES

(in History of Medicine: Our Hipocratic Heritage", Geroge Daikos, International Journal of Antimicrobial Agents, 2007, 29, 617 – 620)

- " … a Prática da Arte Médica tem por base três pilares fundamentais: A Doença, o Doente e o Médico. Este último, é como um Servo dessa mesma Arte; o Paciente deve pois cooperar com ele no combate à Doença … " (sic.)
- " … existem alguns Médicos e Filósofos que afirmam que ninguém pode entender o âmago da Ciência Médica sem o prévio conhecimento da verdadeira Natureza Humana. Ninguém que se proponha iniciar-se na Arte de Cuidar e Tratar um Doente deve esquecer-se desse princípio fundamental …" (sic.)

"... o Médico que só sabe Medicina, nem de Medicina sabe ... " (sic.) *(Abel Salazar)*

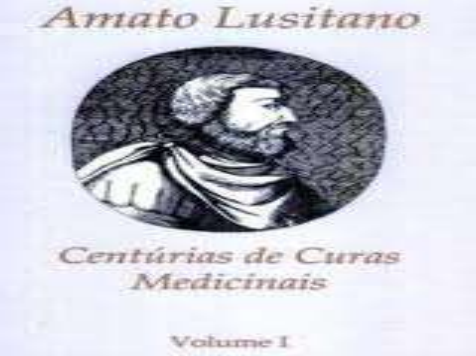



MAIMONIDES
Rabbi Moses ben Maimon
The "Rambam"
(1135 - 1204)

Maimonides Prayer For The Physician

Maimonides
Prayer Physician

O
BENEVOLENT
GOD
O
COMPASSIONATE
GOD

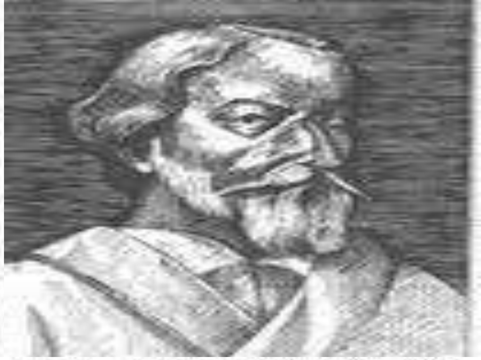

Amato Lusitano

Centúrias de Curas Medicinais

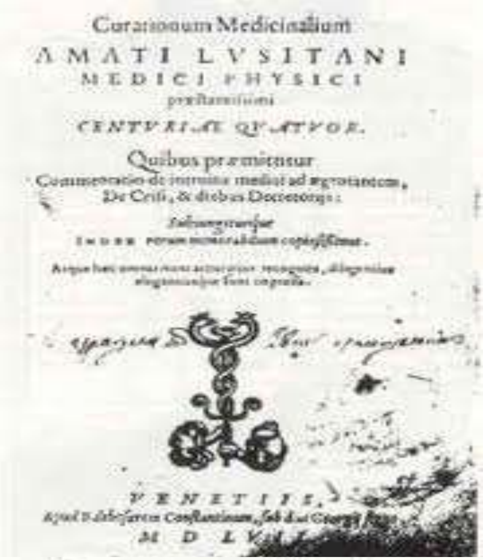
Volume I

DIALOGO

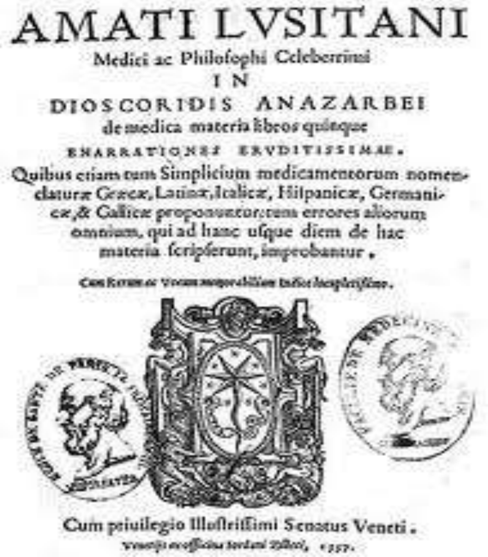
DIALOGO



LIBRI VARII MAIORIS FORMÆ

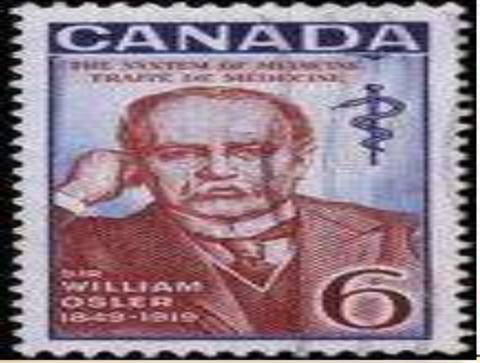

Curationum Medicinalium
AMATI LVSITANI
MEDICI PHYSICI
præstantissimi
CENTVRIAE QVATVOR.
Quibus præmittitur
Commentatio de introitu medici ad ægrotantem,
De Crisi, & diebus Decretorijs:
Subsequentur
INDEX rerum memorabilium copiosissimus.
Atque hæc omnia nunc accuratius recognita, diligentius
elegantiusque sunt impressa.

VENETIIS,
Apud Balthasarem Constantinum, sub diui Georgij Signo.
M D L V I I.


AMATI LVSITANI
Medici ac Philosophi Celeberrimi
IN
DIOSCORIDIS ANAZARBEI
de medica materia libros quinque
ENARRATIONES ERVDITISSIMAE.
Quibus etiam tum Simplicium medicamentorum nomenclaturæ Græcæ, Latinæ, Italicæ, Hispanicæ, Germanicæ, & Gallicæ proponuntur: tum errores aliorum omnium, qui ad hanc usque diem de hac materia scripserunt, improbantur.
Cum Rerum ac Vocum memorabilium Indice locupletissimo.

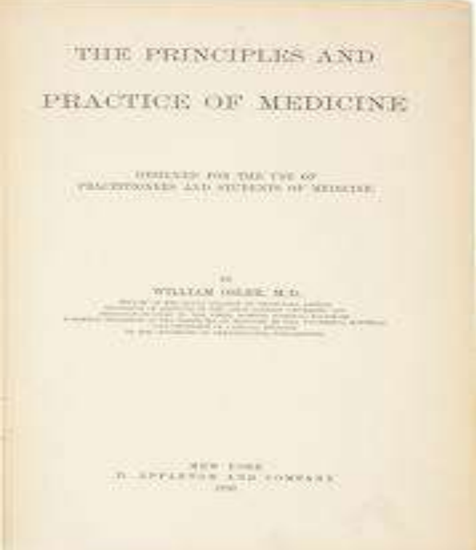
Cum priuilegio Illustrissimi Senatus Veneti.
Venetijs ex officina Iordani Ziletti, 1557.

תפילת הרופא


CANADA
THE SYSTEM OF MEDICINE
TRAITE DE MEDECINE
SIR WILLIAM OSLER 1849-1919
6

"One of the first duites of the physician is to educate the masses not to take medicines"

sir william osler

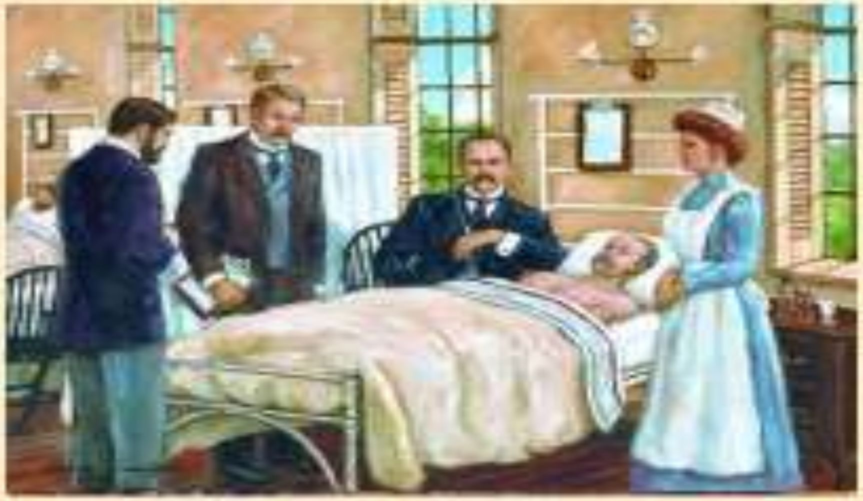


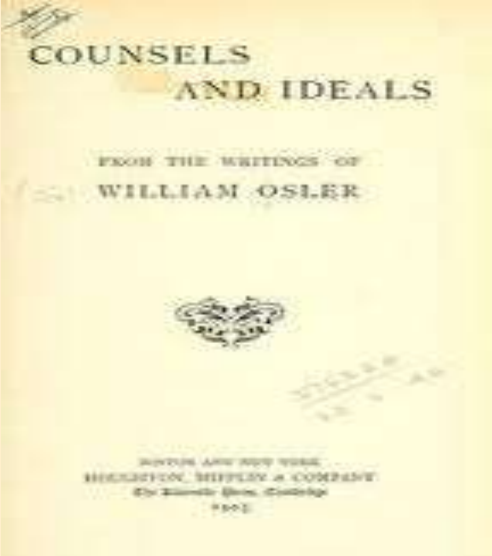
THE PRINCIPLES AND
PRACTICE OF MEDICINE

DESIGNED FOR THE USE OF
PRACTITIONERS AND STUDENTS OF MEDICINE

BY
WILLIAM OSLER, M.D.

NEW YORK
D. APPLETON AND COMPANY





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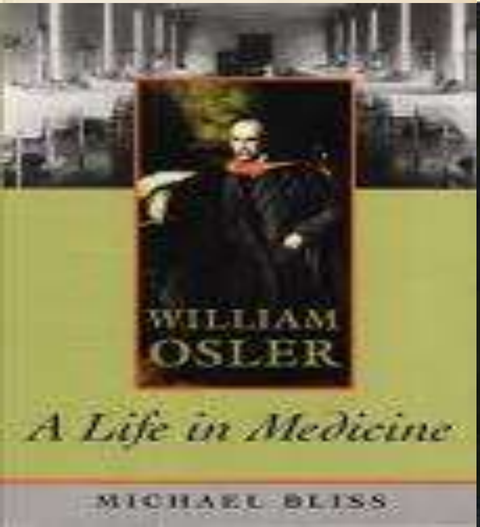
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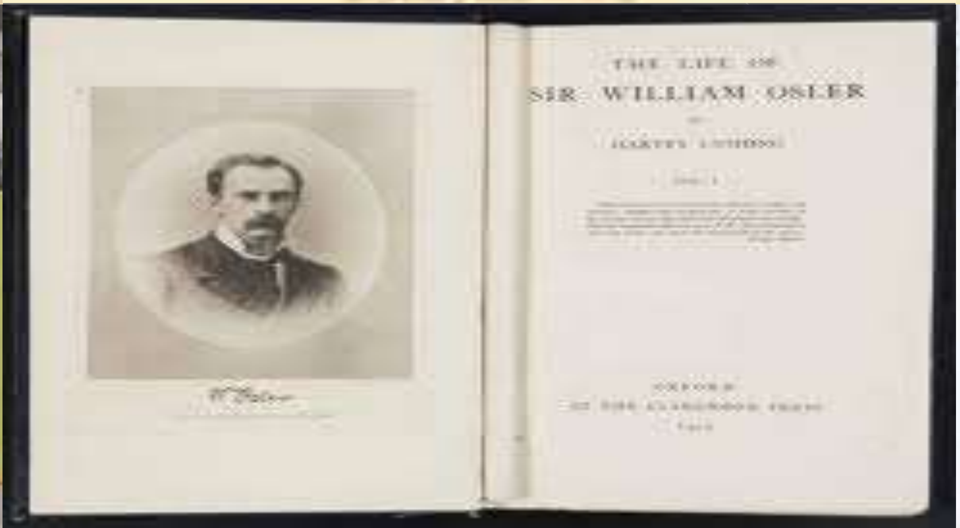

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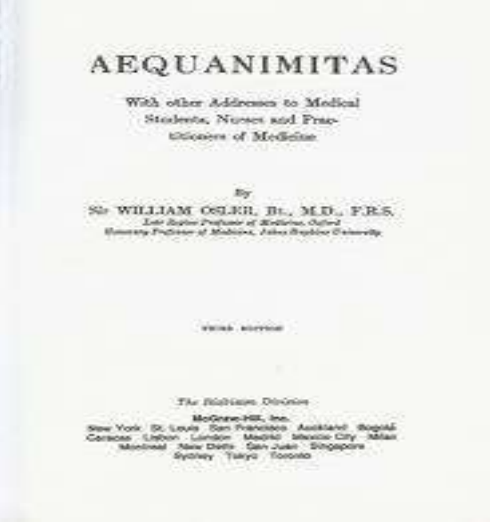

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With other Addresses to Medical
Students, Nurses and Prac-
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By
Sir WILLIAM OSLER, Bt., M.D., F.R.S.
Late Regius Professor of Medicine, Oxford
Sometime Professor of Medicine, Johns Hopkins University

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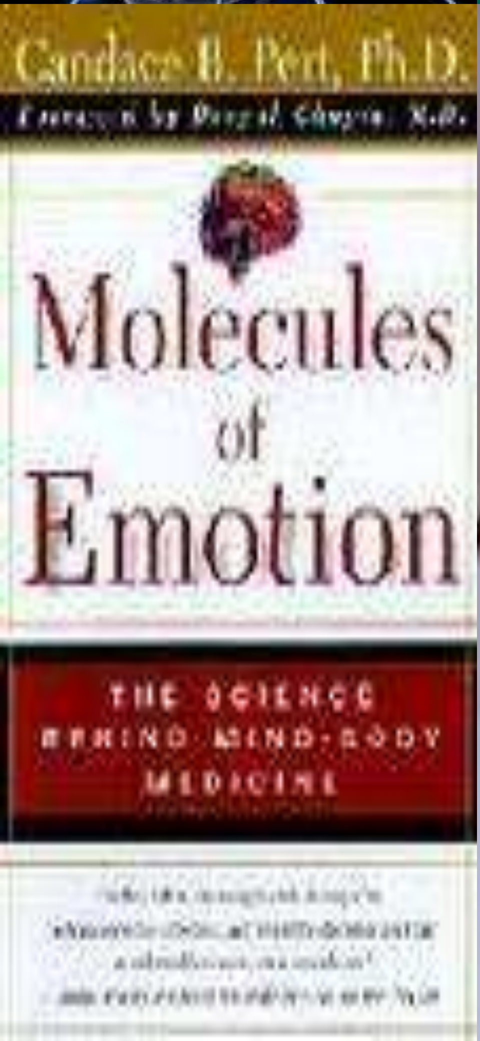
ALGUNS PENSAMENTOS do PAI da MEDICINA INTERNA

(“William Osler: Na overview of a life”, JAMA, 1999, 282, 23, 2252 – 2258; “What is the Oslerian tradition?”, Charles Bryan, AIM, 1994, 120, 8, 682 – 687); “Osler lagacy: The centinnial of the Princiles and Pactice of Medicine”, Richard Golden, AIM, 1992, 116, 3, 255 – 260; “A legacy of Osler: Teaching clinical ethics at the bedside”, Mark Siegler, JAMA, 1978, 239, 10, 951 – 956)

- “ … o método natural do verdadeiro ensino médico aos estudantes de medicina, começa com o doente, continua com o doente, e termina com o doente, utilizando os livros e os artigos apenas como meros auxiliares … “ (sic.)
- “ … estudar o fenómeno das doenças, prescindindo dos ensinamentos dos livros, é como marear sem coordenadas, enquanto que estudar esses mesmos livros sem ouvir os pacientes, é como nem sequer iniciar a viagem … “ (sic.)



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THE SCIENCE BEHIND MIND-BODY MEDICINE

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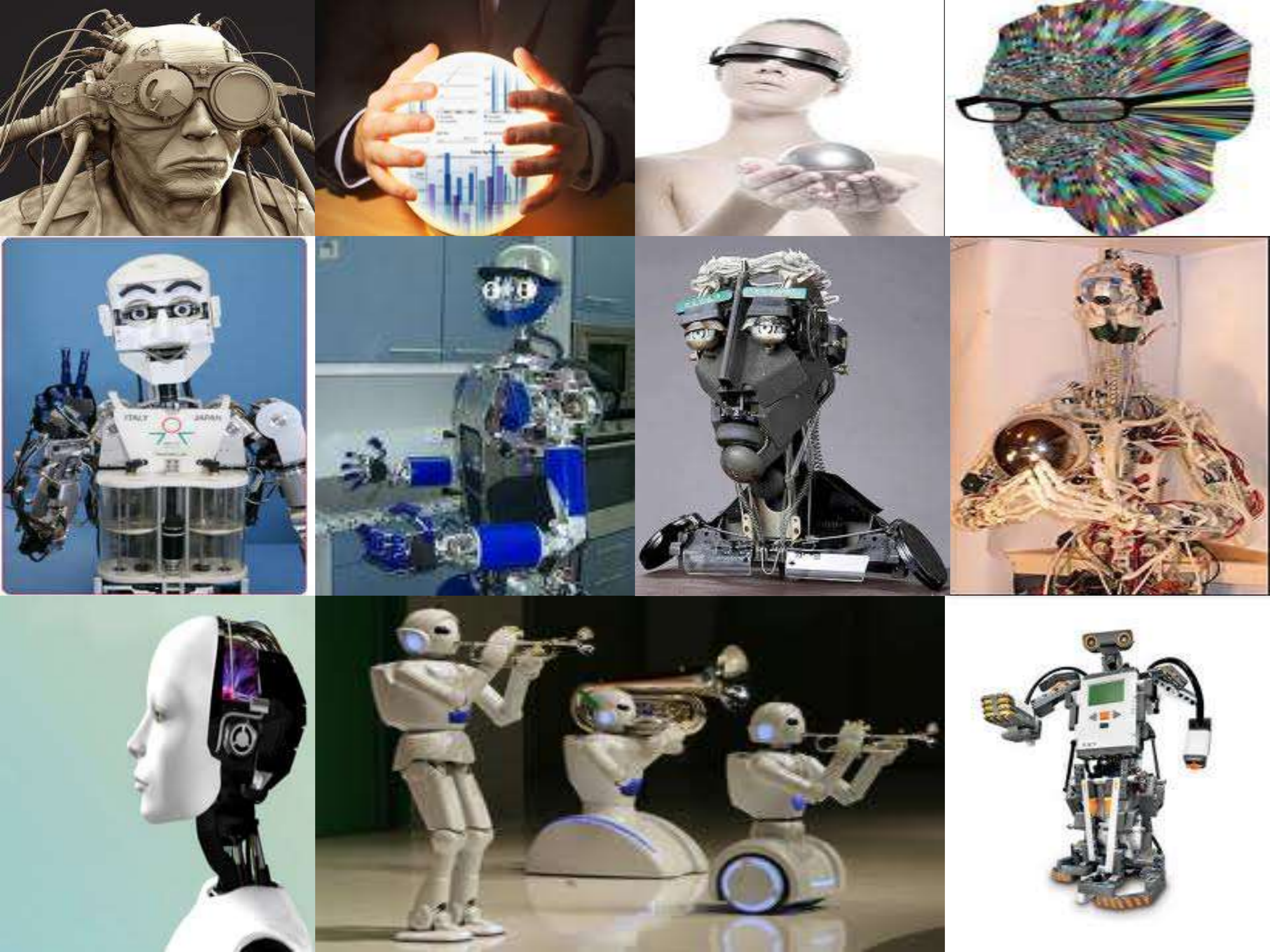
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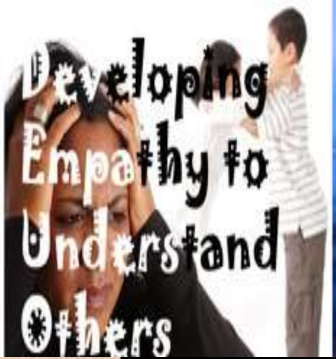
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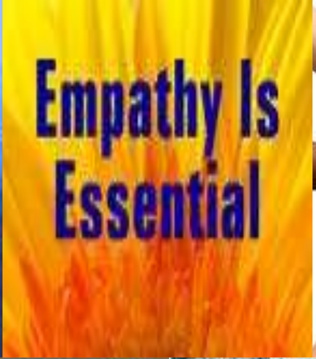
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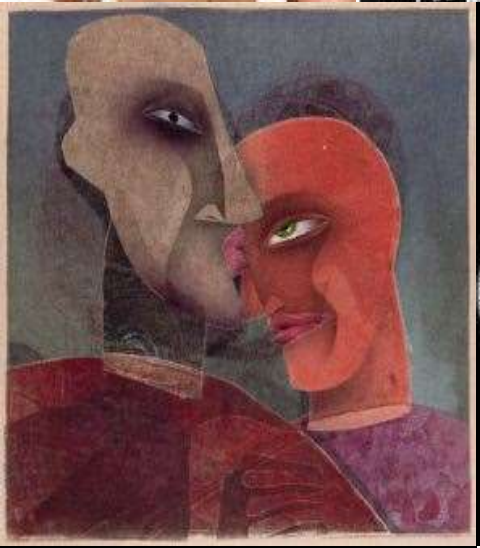

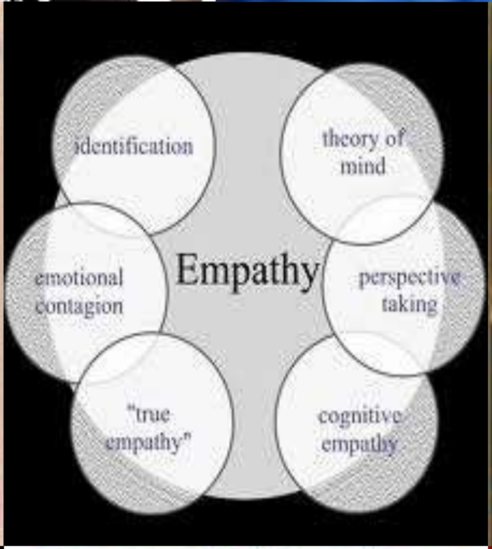
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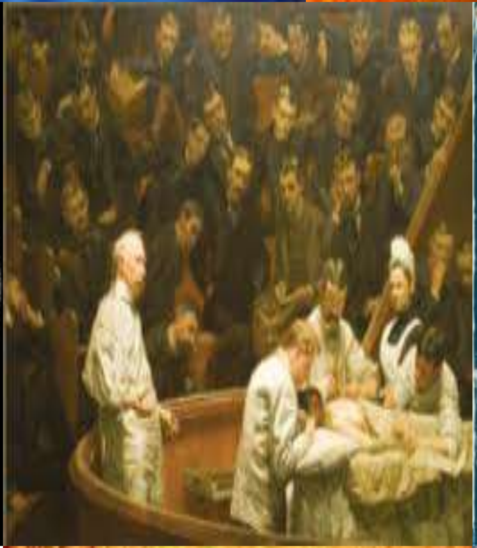
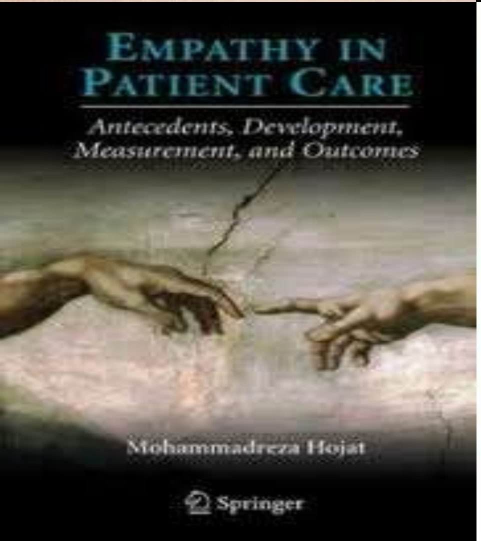
emotional contagion
Empathy
perspective taking
"true empathy"
cognitive empathy

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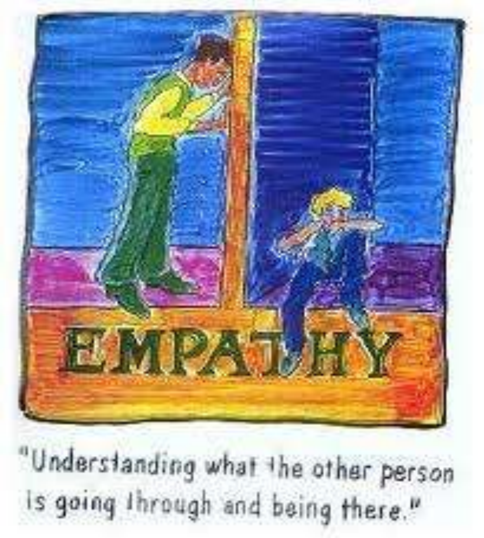
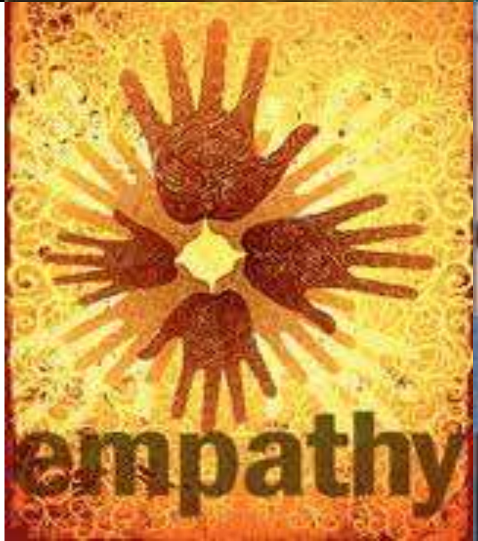

EMPATHY
"Understanding what the other person is going through and being there."



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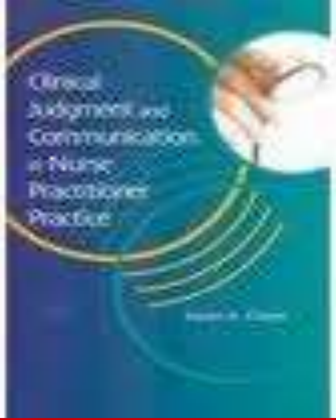
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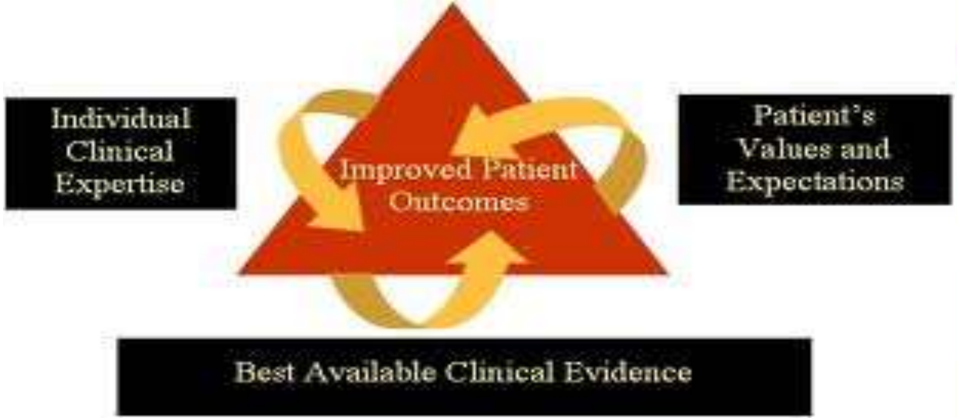
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Improved Patient Outcomes

Patient's Values and Expectations

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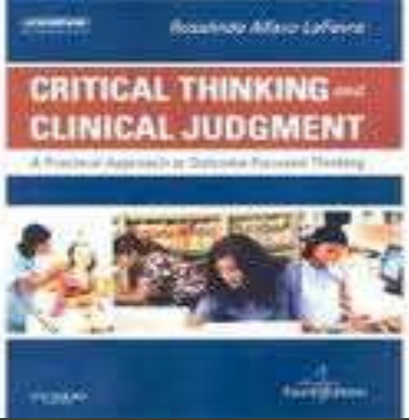
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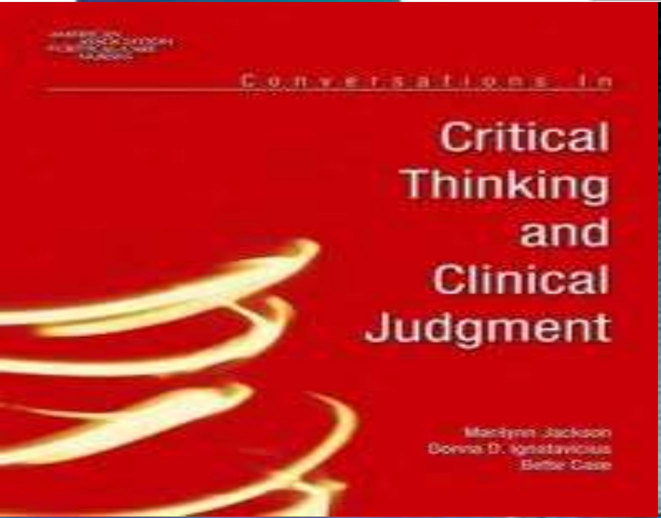
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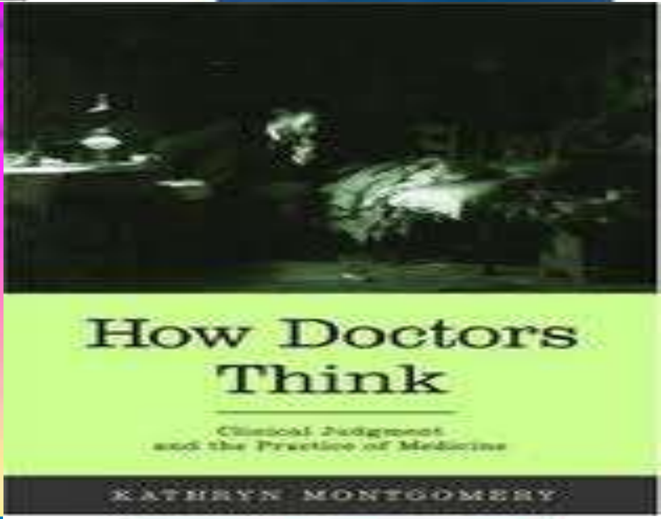
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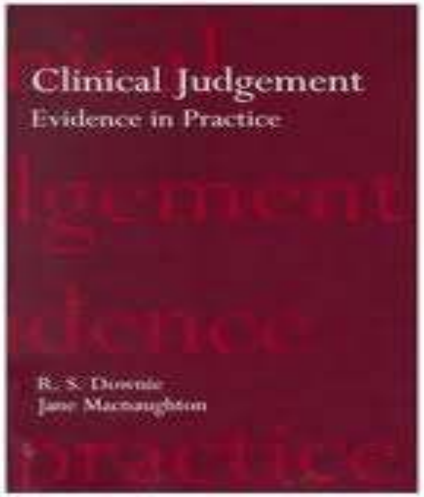
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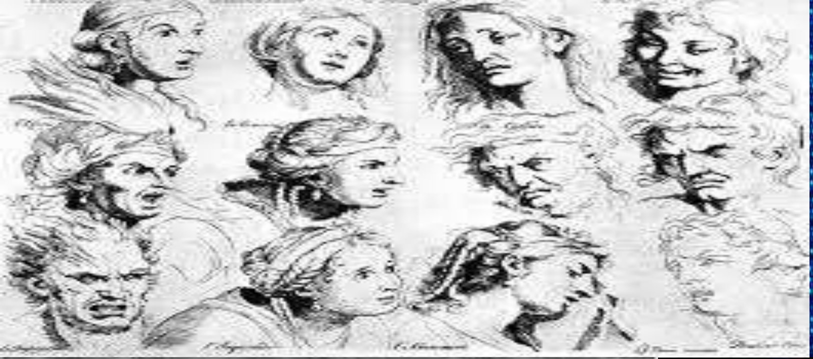

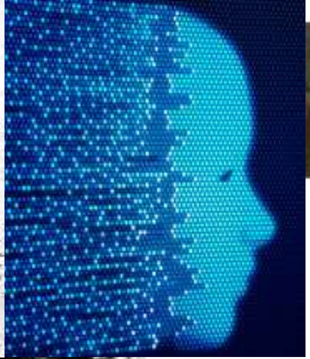

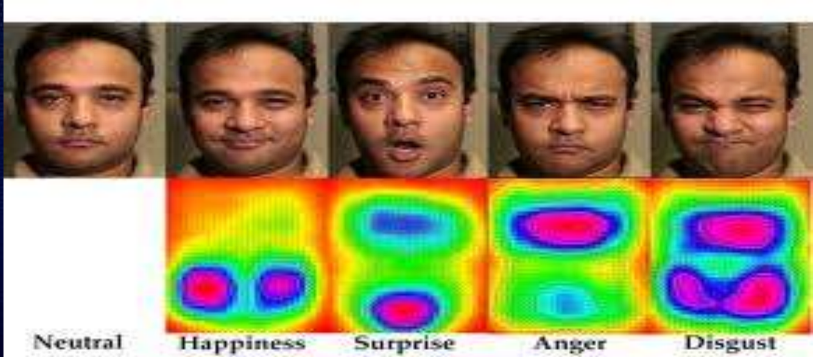
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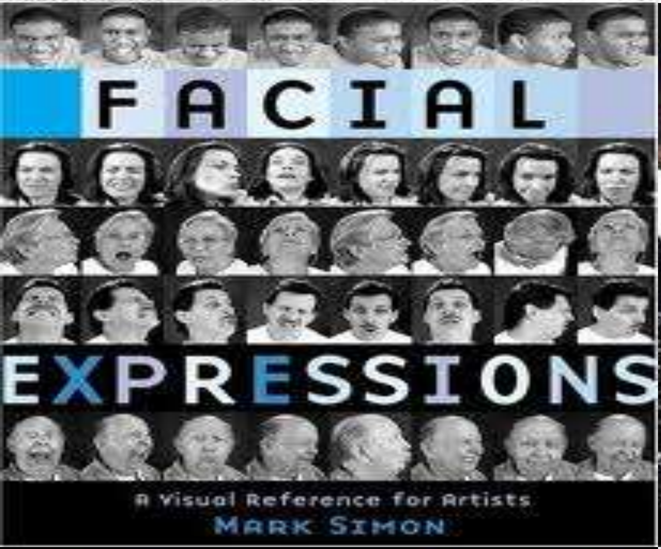
Surprise
Anger
Disgust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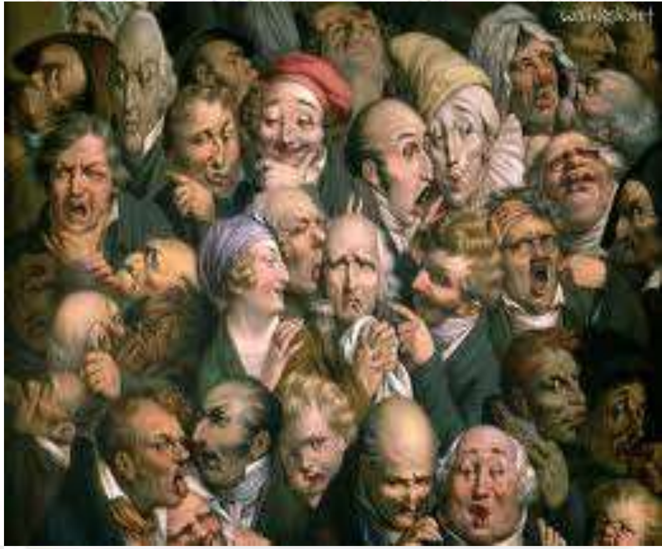

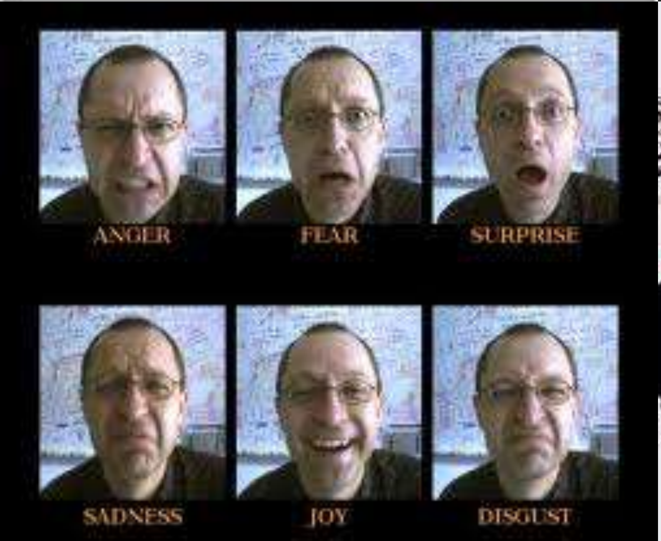
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FEAR
SURPRISE
SADNESS
JOY
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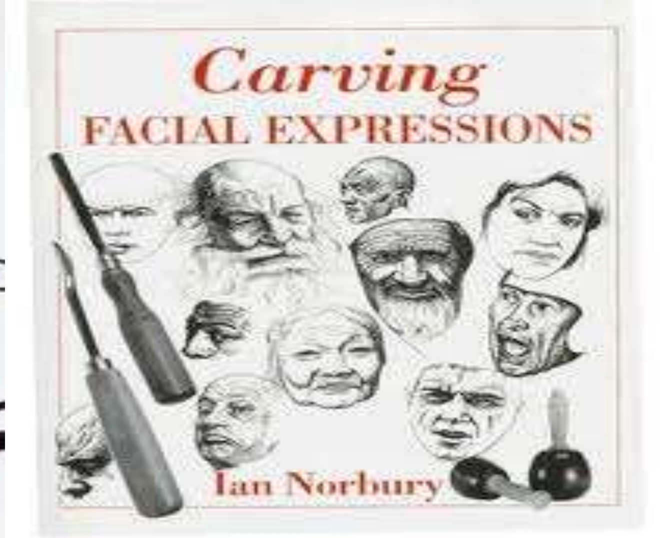
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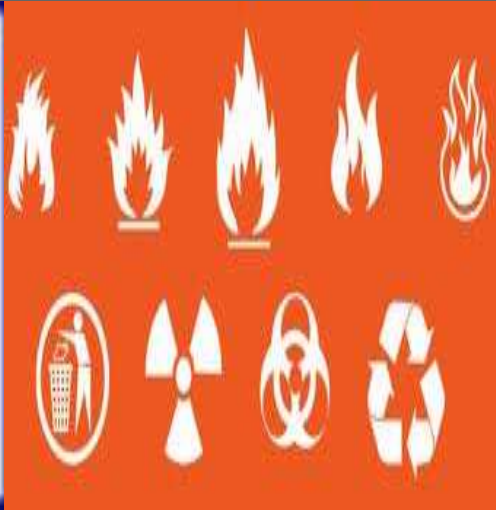
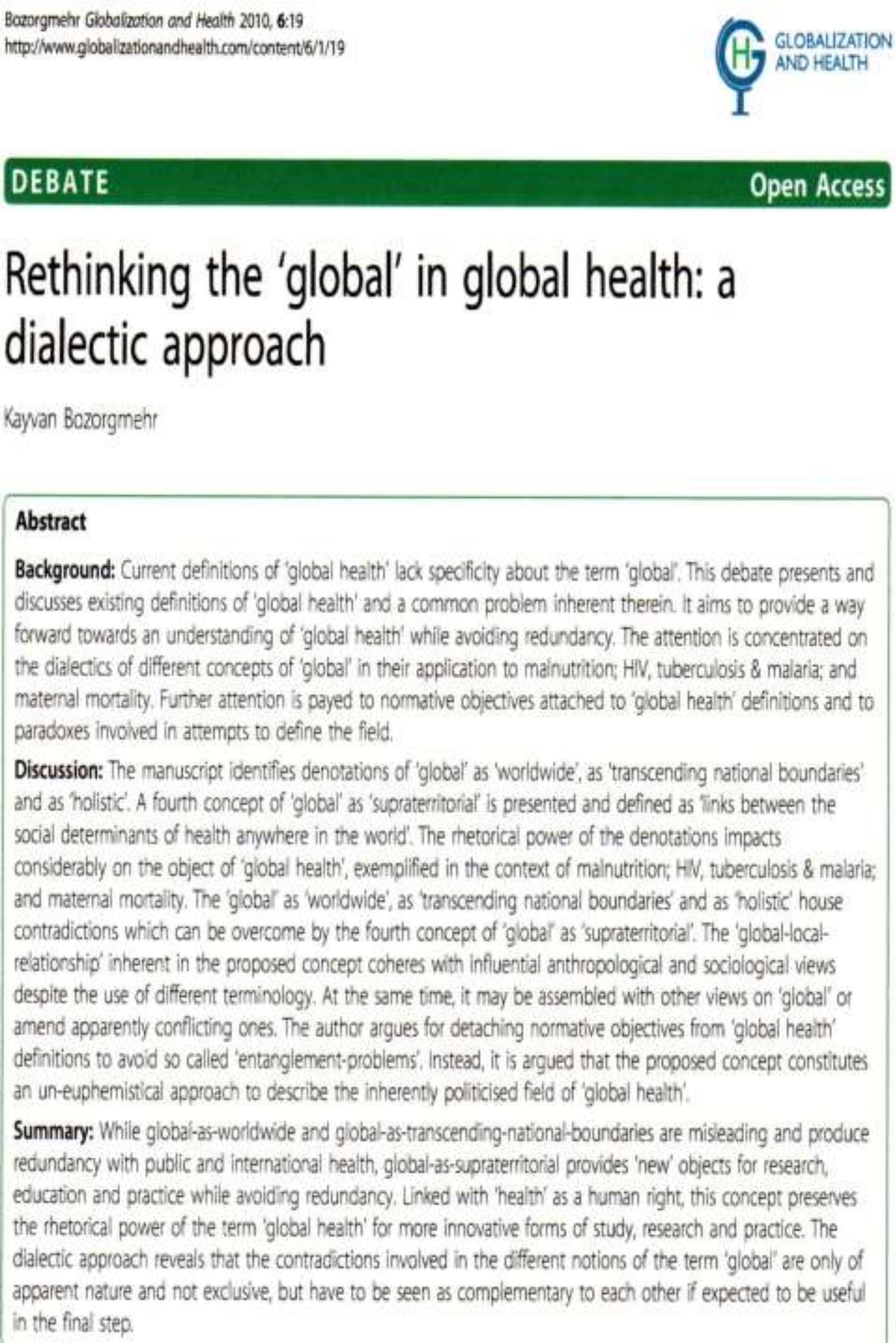


AINDA MAIS DOIS PENSAMENTOS …

(“Medicine as a dependent tradition: Historical and Etical reflections”, Richard Vance, Perspective in Biology and Medicine, 1985, 28, 2, 282 – 302; “Is simulation based medicine training the future of clinical medicine?”, J. Murphy, et al, European Review for Medical and Pharmacological Sciences, 2007, 11, 1 – 8)

- “ … a prática médica está presentemente numa posição algo vulnerável e indefinida, dado que é concebível que a própria Medicina se esteja a transformar em algo substancialmente diferente daquilo por que sempre clamou dever ser a sua verdadeira índole, ou seja, a missão de se dedicar essencialmente ao tratamento do Ser Humano enquanto Doente … sendo por isso que acredito profundamente que o nosso maior desafio de natureza ética na situação presente é o do retorno a essa veneranda tradição … “ (sic.)
- “ … o desenvolvimento das qualidades humanísticas e a compaixão pelos doentes por parte dos estudantes e dos jovens internos, constituem pilares básicos fundamentais para o exercício do nosso mister, o qual irá sempre requerer um acompanhamento permanente baseado no exemplo por parte dos respectivos professores e tutores, para os quais nunca será suficientemente apenas disponibilizarem meios tecnológicos, por mais sofisticados que possam ser … “ (sic.)



Bozorgmehr *Globalization and Health* 2010, **6**:19
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GLOBALIZATION AND HEALTH

DEBATE **Open Access**

Rethinking the 'global' in global health: a dialectic approach

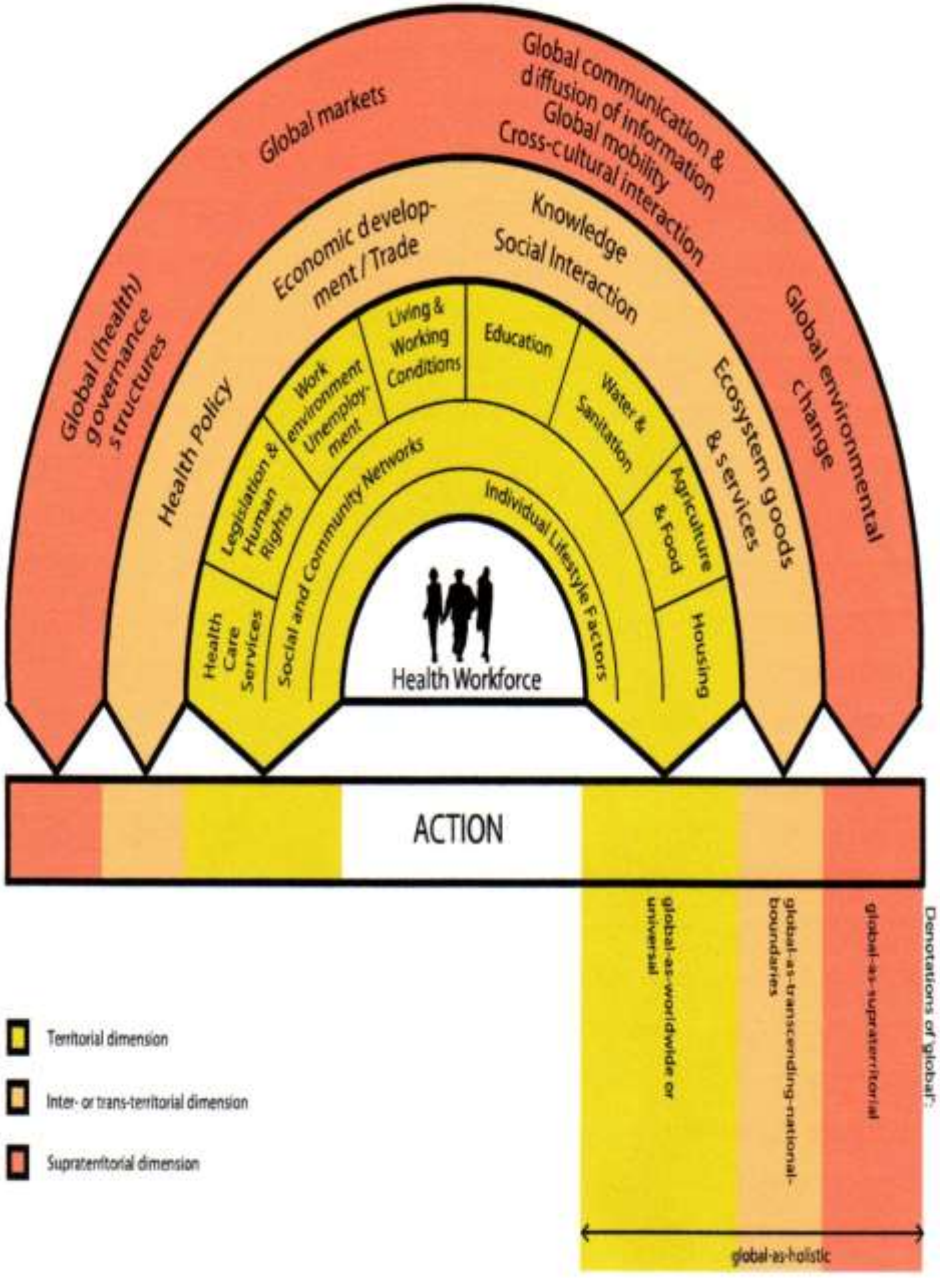
Kayvan Bozorgmehr

Abstract

Background: Current definitions of 'global health' lack specificity about the term 'global'. This debate presents and discusses existing definitions of 'global health' and a common problem inherent therein. It aims to provide a way forward towards an understanding of 'global health' while avoiding redundancy. The attention is concentrated on the dialectics of different concepts of 'global' in their application to malnutrition; HIV, tuberculosis & malaria; and maternal mortality. Further attention is payed to normative objectives attached to 'global health' definitions and to paradoxes involved in attempts to define the field.

Discussion: The manuscript identifies denotations of 'global' as 'worldwide', as 'transcending national boundaries' and as 'holistic'. A fourth concept of 'global' as 'supraterritorial' is presented and defined as 'links between the social determinants of health anywhere in the world'. The rhetorical power of the denotations impacts considerably on the object of 'global health', exemplified in the context of malnutrition; HIV, tuberculosis & malaria; and maternal mortality. The 'global' as 'worldwide', as 'transcending national boundaries' and as 'holistic' house contradictions which can be overcome by the fourth concept of 'global' as 'supraterritorial'. The 'global-local-relationship' inherent in the proposed concept coheres with influential anthropological and sociological views despite the use of different terminology. At the same time, it may be assembled with other views on 'global' or amend apparently conflicting ones. The author argues for detaching normative objectives from 'global health' definitions to avoid so called 'entanglement-problems'. Instead, it is argued that the proposed concept constitutes an un-euphemistical approach to describe the inherently politicised field of 'global health'.

Summary: While global-as-worldwide and global-as-transcending-national-boundaries are misleading and produce redundancy with public and international health, global-as-supraterritorial provides 'new' objects for research, education and practice while avoiding redundancy. Linked with 'health' as a human right, this concept preserves the rhetorical power of the term 'global health' for more innovative forms of study, research and practice. The dialectic approach reveals that the contradictions involved in the different notions of the term 'global' are only of apparent nature and not exclusive, but have to be seen as complementary to each other if expected to be useful in the final step.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Global communication & diffusion of information
Global mobility
Cross-cultural interaction
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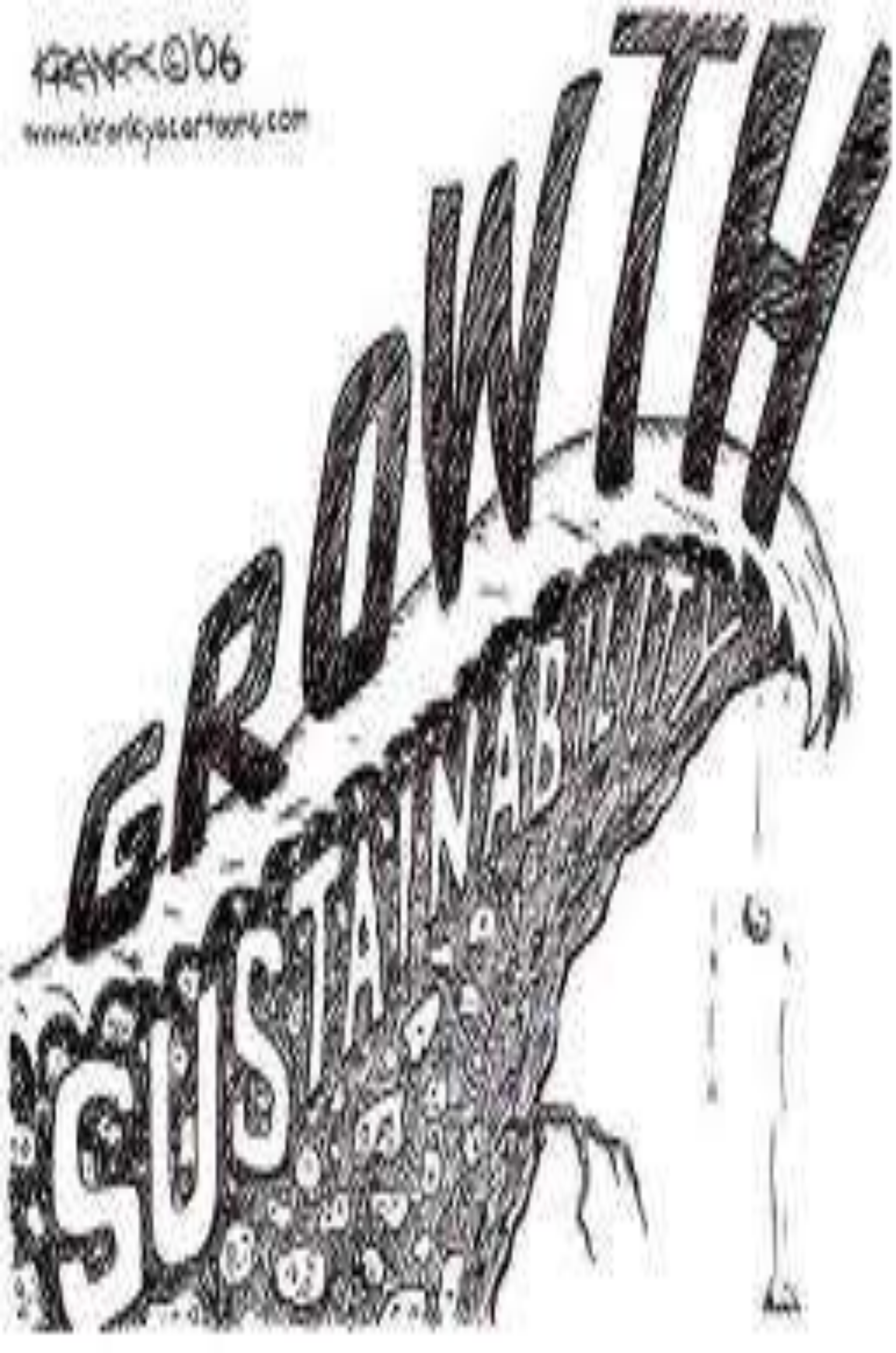
Social Interaction
Ecosystem goods & services
Legislation & Human Rights
Work environment Unemployment
Living & Working Conditions
Education
Water & Sanitation
Agriculture & Food
Health Care Services
Social and Community Networks
Individual Lifestyle Factors
Housing
Health Workforce
ACTION
Territorial dimension
Inter- or trans-territorial dimension
Supraterritorial dimension
global-as-worldwide or universal
global-as-transcending-national-boundaries
global-as-supraterritorial
Denotations of 'global':
global-as-holistic

Figure 1 Concept of global health. Territorial dimension: includes for example determinants on territorial units such as community upto state or national units; Inter- or trans-territorial dimension: includes for example determinants which link and/or transcend territorial units, e.g. national borders; Supraterritorial dimension: includes social, political, economic and cultural links between determinants of health anywhere in the world regardless of territory in terms of geography.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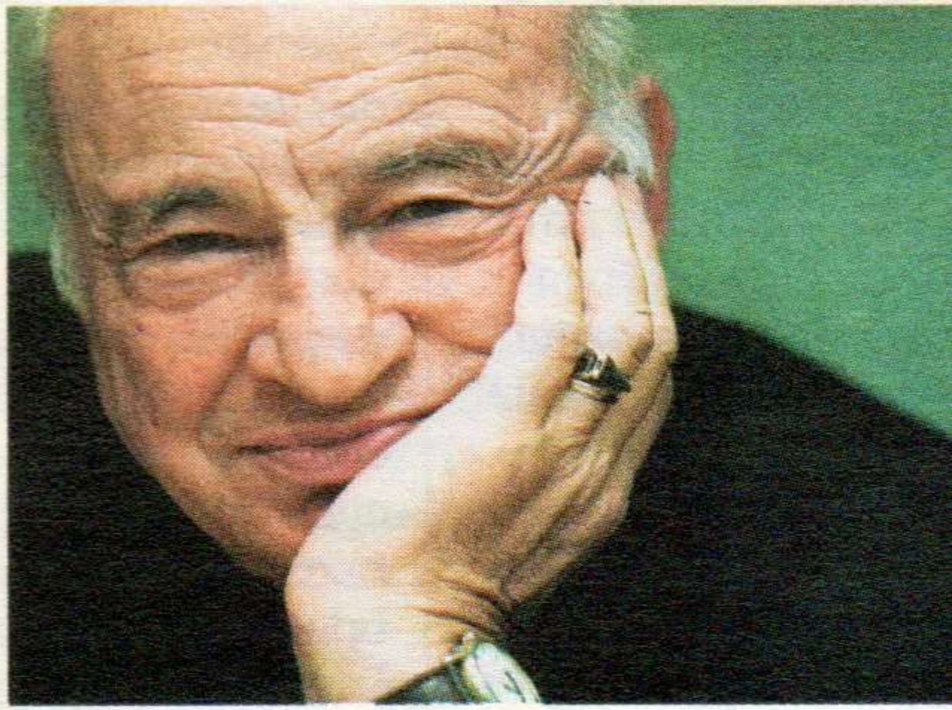

Edgar Morin

> “
>
> **A ideia fixa do crescimento contínuo e interminável não pode continuar**

Response to population pressures

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" … parece que nos habituamos a pensar nos problemas de saúde tal como o fazemos relativamente a todos os outros de natureza diversa, em que a ciência e a tecnologia nos há-de salvar, embora na realidade a resposta deva antes ser encontrada sobretudo no ser humano e na sua capacidade relacional …" (sic.) *(James Curran)*

Human Relations

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AT THE CENTER OF EVERY SOCIAL ISSUE IS A HUMAN ASPECT
exploring
solutions to problems
to create a more
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& tolerant
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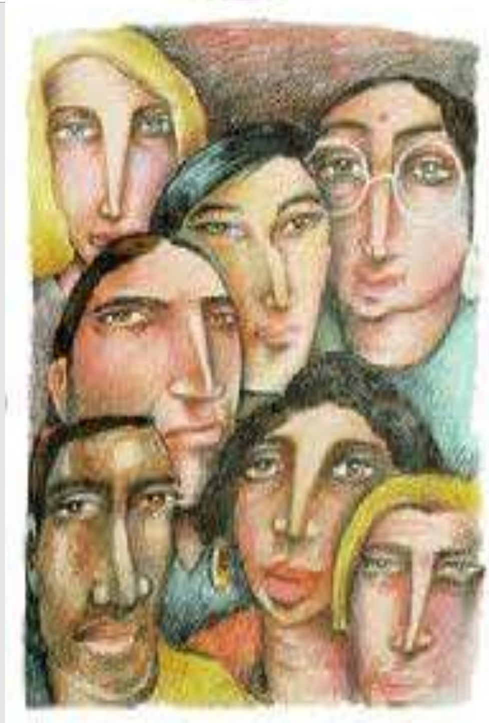

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LIVE FOR TODAY,
HOPE FOR TOMORROW."
ALBERT EINSTEIN
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Escrito na pedra

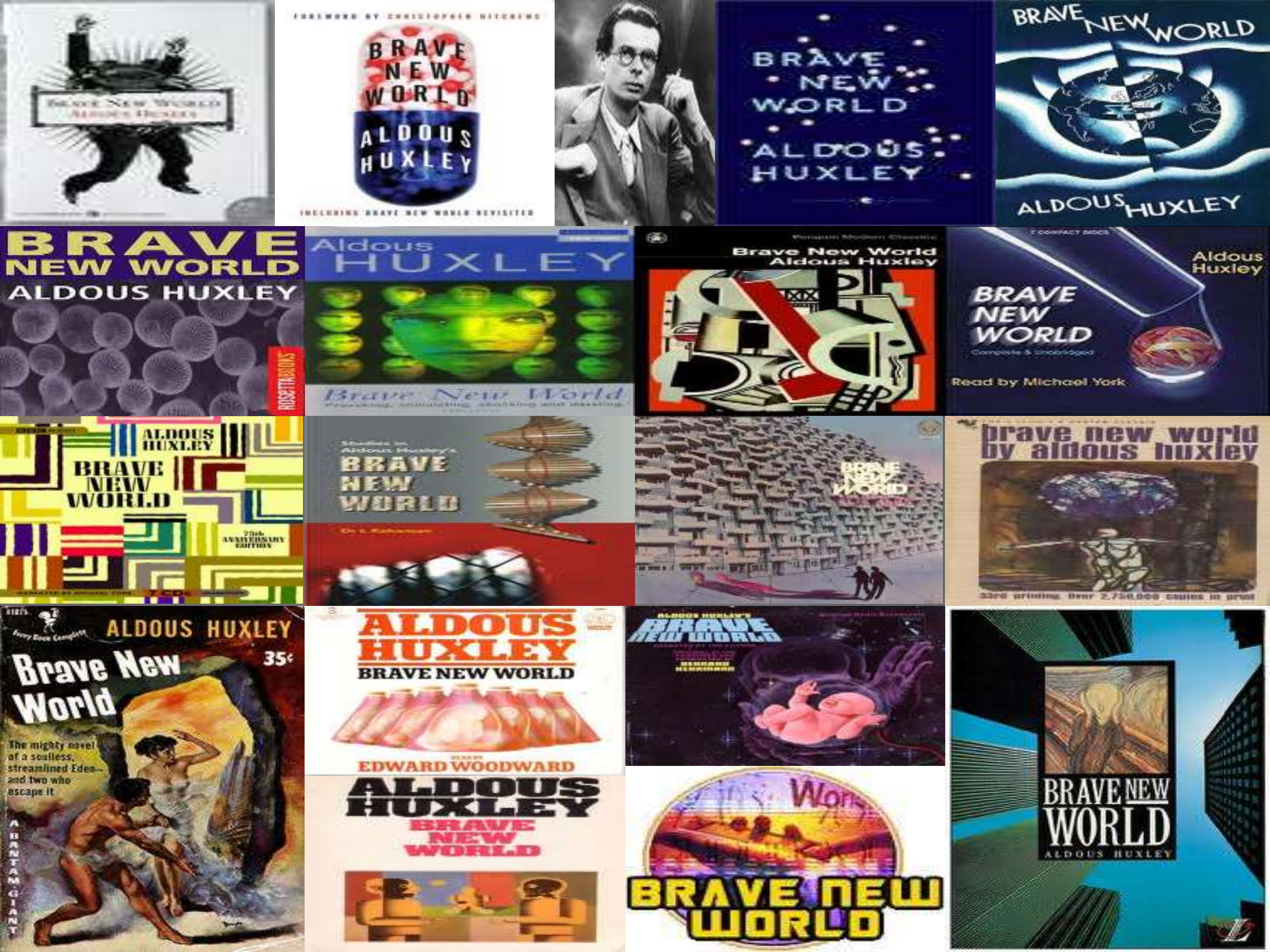
O que mais desespera, não é o impossível. Mas o possível não alcançado.

Robert Mallet (1915-2002), escritor francês

HOPE
Hope is a wonderful thing,
something to be cherished and nurtured,
and something that will refresh us in return.
And it can be found in each of us,
and it can bring light into the darkest of places.

YOUR
EXISTENCE
GIVES ME
HOPE

In America
No One
Should Go
Without
HEALTH
CARE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