



# Industry Development and Provision of Technologies to a Global Market

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# Topics

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- Describe technology life cycle
- What is a global health care market?
- Determinants of health and access to health care
- Partnerships in health
- Industry developments



# Choosing development targets



High

Medium

Low

Patient population

- hypertension
- g.i. (acid disorders)
- arthritis (NSAIDs)
- bacterial infection
- sedation
- analgesia
- angina
- lipid lowering

- asthma
- anxiety
- depression
- osteoporosis
- prostate hypertrophy
- diabetes type 2
- male pattern baldness
- acne
- influenza

- obesity
- dementia
- arthritis (disease modifying)
- atherosclerosis
- periph. vasc. disease
- oral peptide delivery
- AIDS vaccine
- urinary incontinence
- stroke/MI prophylaxis
- cancers

- allergies
- herpes
- haemophilia
- Chlamydia infection
- emesis

- epilepsy
- migraine
- diabetes type 1
- endometriosis
- thrombosis
- fungal infection

- heart failure
- chronic bronchitis
- schizophrenia
- Parkinson's
- psoriasis
- drug/alcohol abuse
- sexual dysfunction
- wound healing
- arrhythmias
- cirrhosis
- hepatitis

- Gaucher's

- irritable bowel syndrome
- Crohn's disease
- ulcerative colitis
- unstable angina

- AIDS
- multiple sclerosis
- emphysema
- cystic fibrosis
- transplant rejection
- septic shock

Low

Medium

High

Unmet Medical need

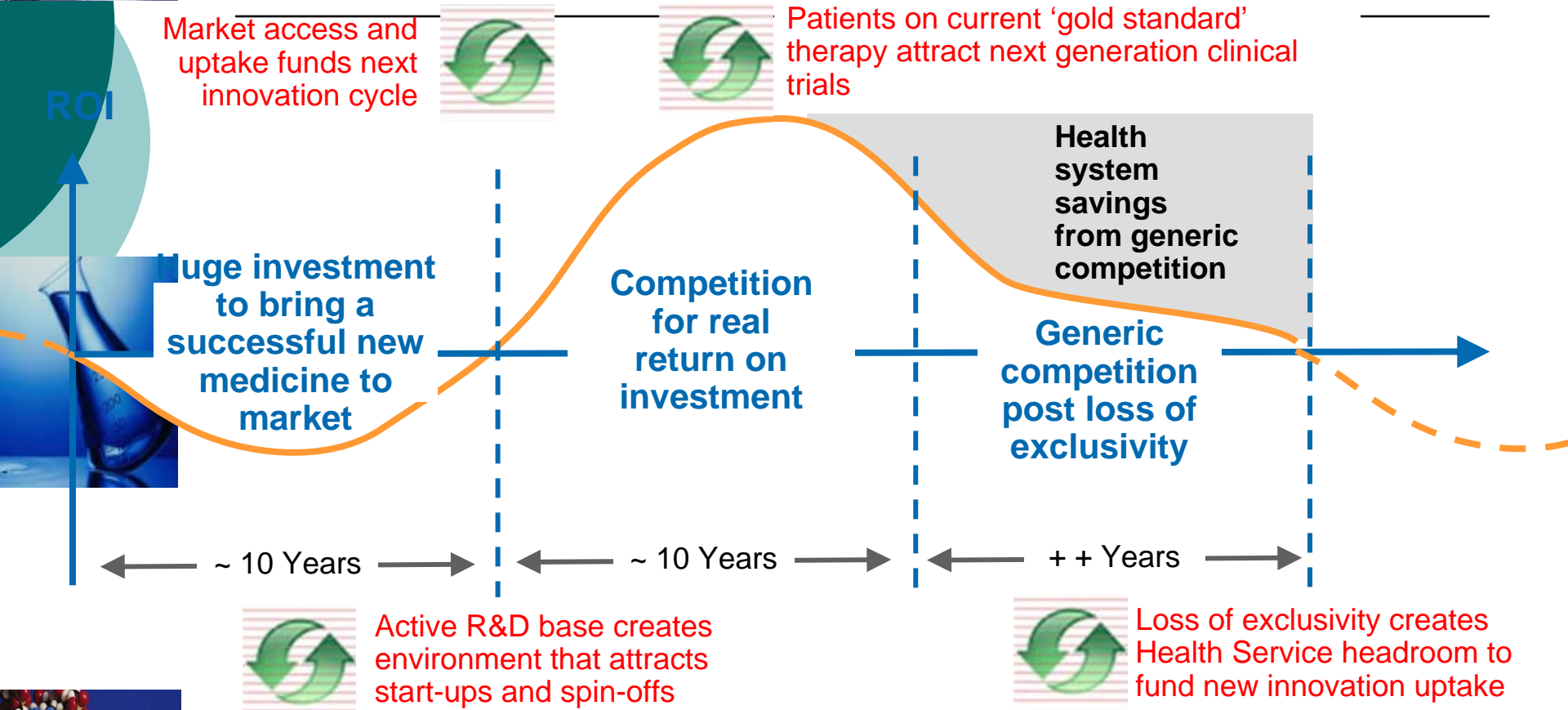
# Choosing a development candidate

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- Technical feasibility
- Time ,Cost ,Resource implications
- Probability of success in gaining a label claim
- Probability of gaining reimbursement
- Competing priorities across the portfolio



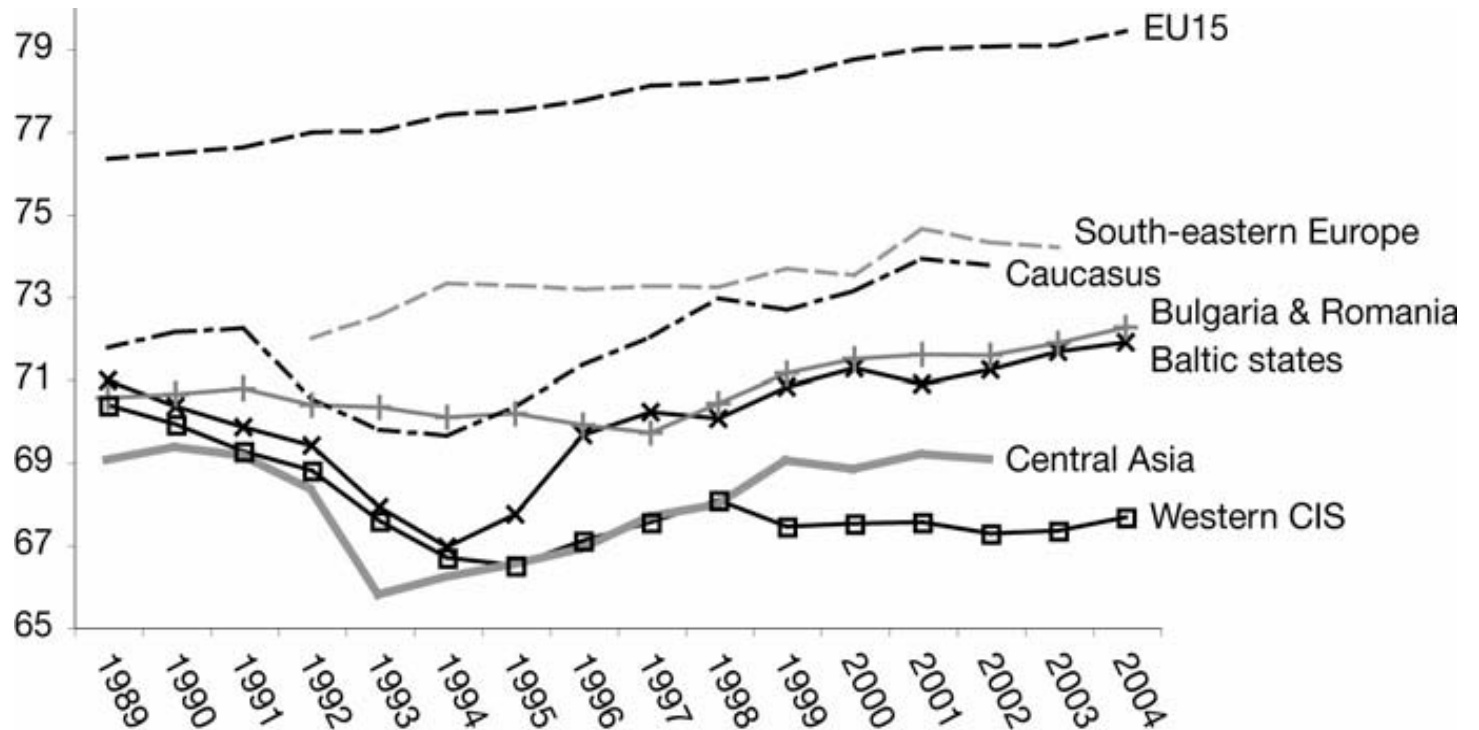
# The medicines lifecycle



**A framework for financially sustainable healthcare innovation – the medicines lifecycle**



# Global Health Status is Diverse



Life expectancy at birth 1989–2003 (in years) (Source: WHO Regional Office for Europe, 2006).



# Determinants of Health and Access to Health care

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- Water, sanitation, War, Famine etc.
- Health care system
  - Facilities, trained staff, health priorities
- Distribution system
  - Utilisation and pharmacovigilance
- Health spending
  - Minimum spend per capita to provide basic NHS
  - Out of pocket spend, poverty traps and health
  - Investment in public health, health behaviours, screening prevention etc.
  - Relationship between health, productivity and wealth
- Education





# Health needs in diverse health care markets

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- EU15, US etc
  - More chronic disease
  - More end of life expenditure
  - Potential to undermine productivity effects of increased retirement age
- “Emerging”:
  - How to get the 20 – 30 years extra life already achieved elsewhere
  - Understanding the complex economic political and policy contexts



**Partnering to address the above**



# R&D examples in “Neglected Diseases”

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- New drug discovery:
- Tropical Diseases
  - WHO-funded postdoctoral scientists work in Pfizer labs and receive mentoring by Pfizer scientists
  - Prototype public-private partnership to accelerate neglected disease drug discovery (Hopkins, et al., Nature, 2007)
- New drugs sought for TB
- Better use of existing drugs:
- Work with the International Partnership for Microbicides to develop a microbicide to prevent sexual transmission of HIV/AIDS
  - Azithromycin/chloroquine Ph 3 program for malaria prevention in pregnant women and children in Africa
  - Combination showed >95% efficacy in Ph 2 trials



# Overcoming System Constraints



international  
**trachoma**  
initiative



- Goal to eliminate trachoma, the world's leading cause of preventable blindness
- Ongoing since 1998
- Program in place in 15 countries
  - Approaching disease elimination in Morocco
  - Prevalence reduction in Niger from 60% to 7% by summer 2007
- 69 million antibiotic treatments (single-dose oral Zithromax)
- More than 317,000 sight-saving surgeries

- Commitment since 2000
  - To donate Diflucan (fluconazole), without time limits, to treat AIDS-related fungal infections
  - To provide patient education
  - To train healthcare professionals
- 59 countries (1300+ facilities) in Africa, Asia Caribbean and Latin America
- \$570M in medicine provided to treat 150,000 patients with fungal opportunistic infections
- Provided training to more than 20,000 health professionals



# Capacity Building

## Global Health Partnerships

New innovative public health partnerships to improve cancer-related health outcomes and/or support cancer or tobacco control efforts

Grants totaling \$33 million over three years (2007-2009)

15 partner organizations in Asia, Africa, Latin America, Middle East, Europe, U.S.



## Mobilize Against Malaria

To help close critical gaps in malaria education, diagnosis and treatment

To reduce the rate of malaria morbidity and mortality particularly among women and children

\$15 million over five years (2007-2011) in 3 countries

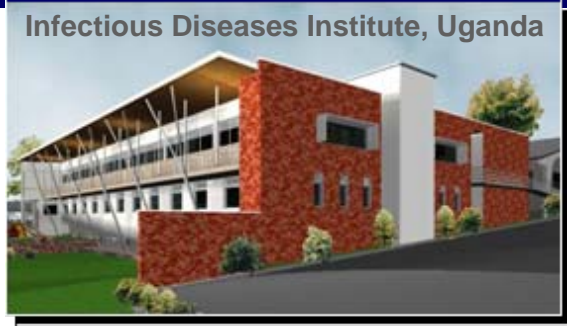
Ghana

Kenya

Senegal

Partners: London School of Hygiene and Tropical Medicine, governments, NGO's, local and international organizations

# Capacity Building



Training and treatment facility for HIV/AIDS and other infectious diseases at Makerere University in Kampala

20 million + staff support since 2001

Trained more than 1,400 health care providers from 26 African countries

Providing treatment to 10,000 patients

Partners: Makerere University, Mulago Hospital, San Francisco AIDS Foundation, The AIDS Support Organization and the Infectious Diseases Society of America



## Global Health Fellows

Interim overseas assignments (up to 6 months) for Pfizer employees to work for NGOs on HIV/AIDS, TB, malaria, and other devastating diseases in developing countries

128 Global Health Fellows have been selected to work with 26 NGO's in 31 countries since 2003

Partners: AMREF, Africare, Earth Institute, American Jewish World Service, Health Volunteers Overseas; Elizabeth Glaser Pediatric AIDS Fdn, Institute for OneWorld Health, Int'l AIDS Vaccine Initiative, Project HOPE, ITI, IDI, ACS, USAID and others

# Nonprofit and Industry Partnership: Maternal and Child Health Programming



Mobile MNC Clinics  
Malaria/TB/HIV/AIDS  
Facility Renovation

Maternal and Child Health Education  
Community Health Worker Training  
Economic Development Initiatives





# Health care in Europe is diverse

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## ○ variation in:

- funding structure
- size of health/drugs budget
- practice patterns / resources
- unit costs

Scope for differences  
in cost effectiveness

- decision making system
- social value judgments
- health system priorities

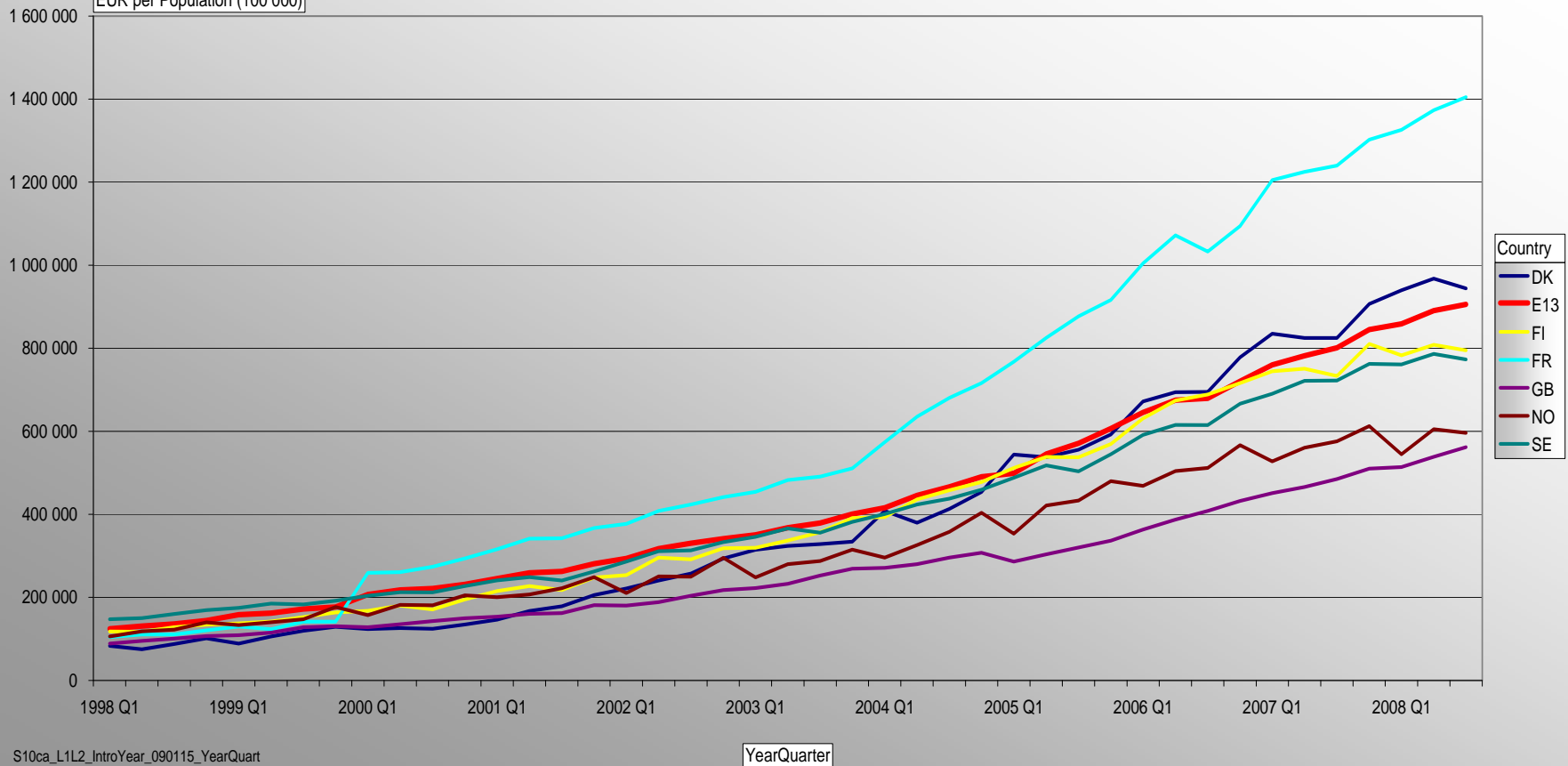
scope for a different  
decision



# Use of cancer drugs in Denmark, E13, Finland, France, Norway, Sweden and the UK (GB) 1998-2008.

ATC2code (Alla) SalesStart (Alla)

EUR per Population (100 000)





# Three steps towards a solution

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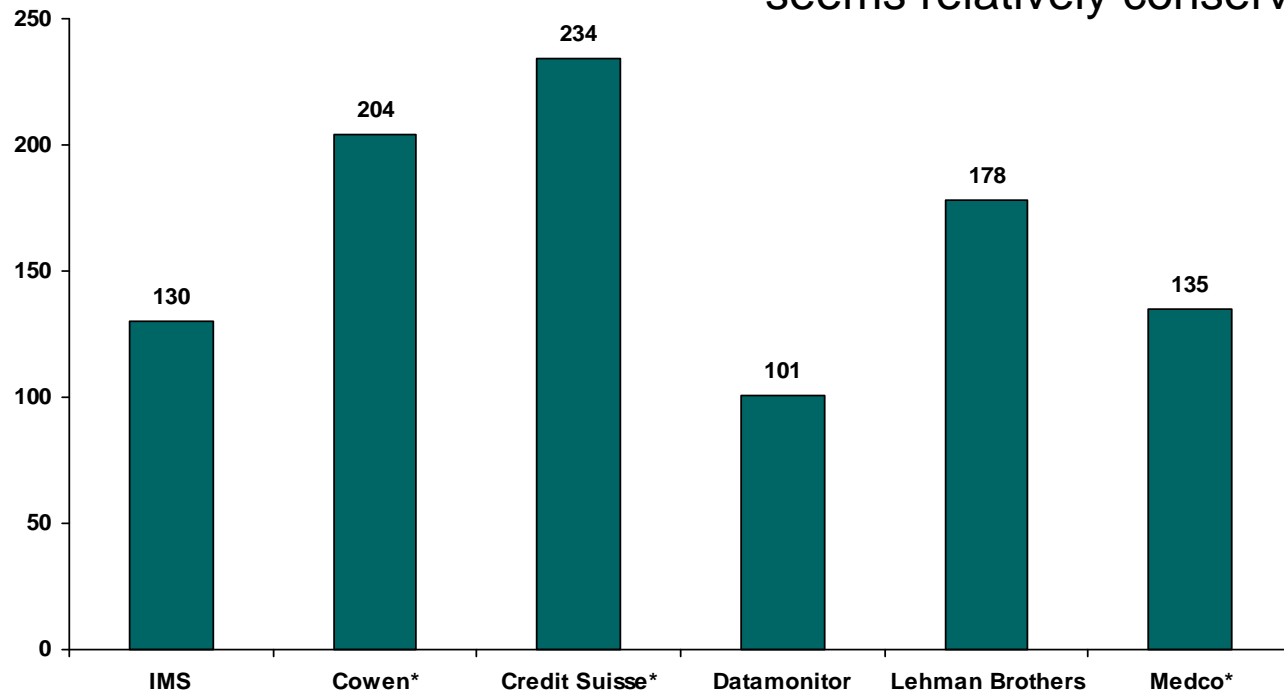
- ▶ **Variations must be documented, published and debated**
  - to reduce variations
  - for policies to address the problem of remaining variations
  
- ▶ **Outcome of new treatments must be documented at the population level**
  - Joint responsibility for health care systems and industry
  - Registers and follow up data
    - An instrument for early access
    - A management instrument for payers
  
- ▶ **Variations in access that have economic determinants could be addressed through**
  - Differential pricing between countries with different incomes
  - Transfer of resources from high to low income countries



# Potential Global Value of Patent Expiries

Estimates of Global Value of Products with Patents Expiring 2008-2012

A global estimate of \$100 billion seems relatively conservative



\* Estimate for US only are scaled up to global value using assumption that US is 40% of global market, Pro rata estimate based on different time frames

Notes:



# Implications for Industry

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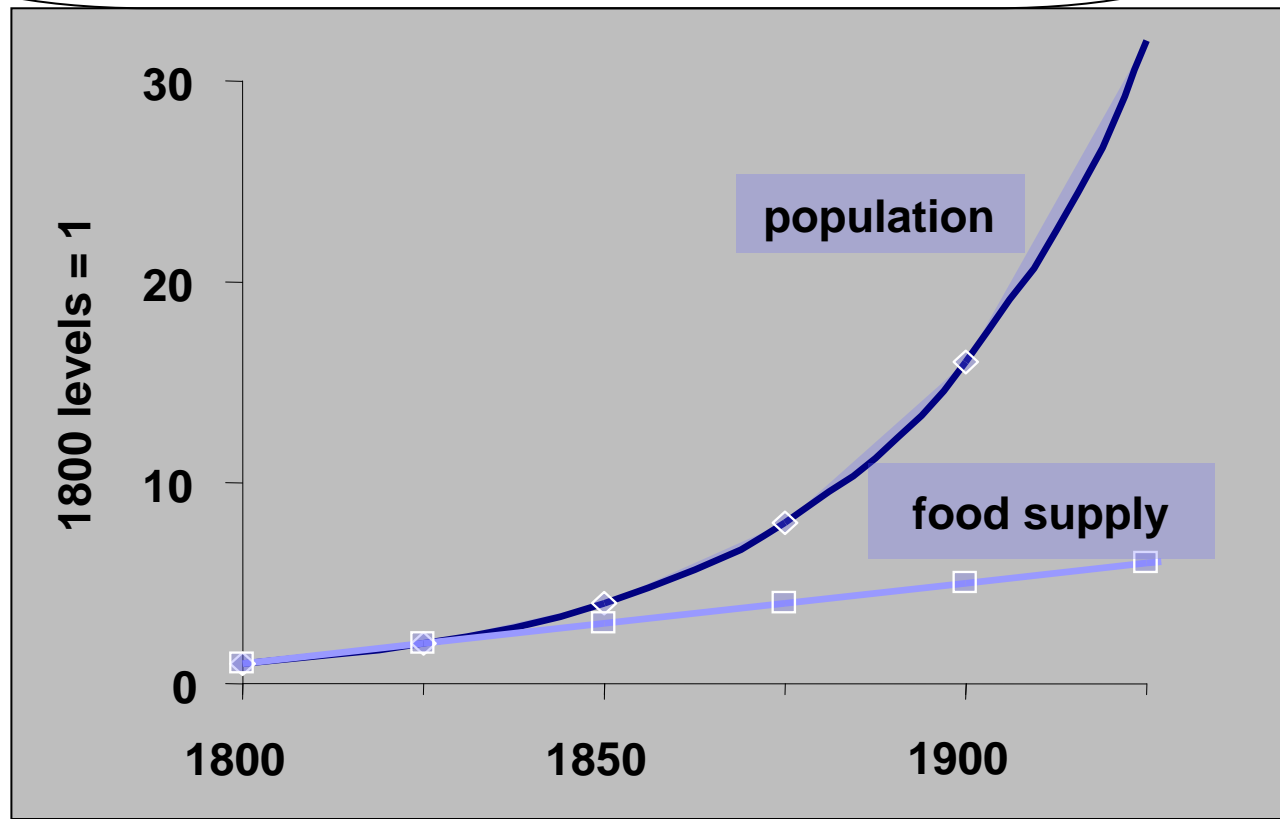
- “Manufacturing” Industry:
  - Manufacturing excellence
    - E.g. health implications of ARVs on unknown bioequivalence
    - biosimilars
  - Generic Policies
    - Are Governments and patients realising the benefit?
- R&D industry:
  - Can we contract fast enough?
  - R&D productivity
    - Can we anticipate needs that will be paid for and incorporate these in development decision making?
    - Streamline processes e.g. through use of biomarkers?
    - Can we still attract enough research investment?



# T. Robert Malthus, 1778



Exponential population growth and linear farm output will eventually result in famines and misery.





# Malthus grossly underestimated capacity of technology to solve supply problem

- We produce more food, of higher quality, at lower cost, with dramatically fewer resources



Country	1913	2000
France	41%	< 6%
Japan	60%	< 6%
USA	43%	< 6%



**We need to generate the same outcomes in health care innovation – through wisely deploying technology that improves quality while reducing costs**



Thank you for your attention!

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# Solutions to health innovation requires the active participation of all stakeholders

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