

Swiss TPH



Swiss Tropical and Public Health Institute
Schweizerisches Tropen- und Public Health-Institut
Institut Tropical et de Santé Publique Suisse

Associated Institute of the University of Basel

Department of Medicine

Basel, 28 June 2018

Swiss TPH Summer Symposium

Clinical Research in Resource Limited Settings:
Mission Impossible or Role Model for Future Drug Development?

Introductory reflections



Housekeeping

What you need to know

- WiFi available
 - Instructions on first program on the bottom
- Coffee break from 10:45 – 11.15
- Lunch break from 12:45 – 14:00
- Coffee break from 15:00 – 15:30
- Please complete the survey sent to you at the end of the day

Health Centre Mushie



Bagamoyo Research & Training Units - IHI



....very different settings – but same goal....



Health Centre Kikongo Tanko





Setting the stage

We came a long way

- 25 year since first clinical trial conducted at Swiss TPH
 - SPf66 malaria vaccine – first trial launched in July 1992
 - Notably at Ifakara Center – still a partner institution
- Since then 96 clinical trials conducted and supported
 - 17 Phase I
 - 30 Phase II
 - 6 Phase II/III
 - 19 Phase III / 1 Phase IIIb
 - 19 Phase IV
 - Indications
 - Drugs 54, Vaccines 39, Diagnostics 3
 - Buruli, Ebola, HAT, Helminths (various), Hep A, Hep B, Malaria, Shigella, Schistosomiasis, TB



Setting the stage

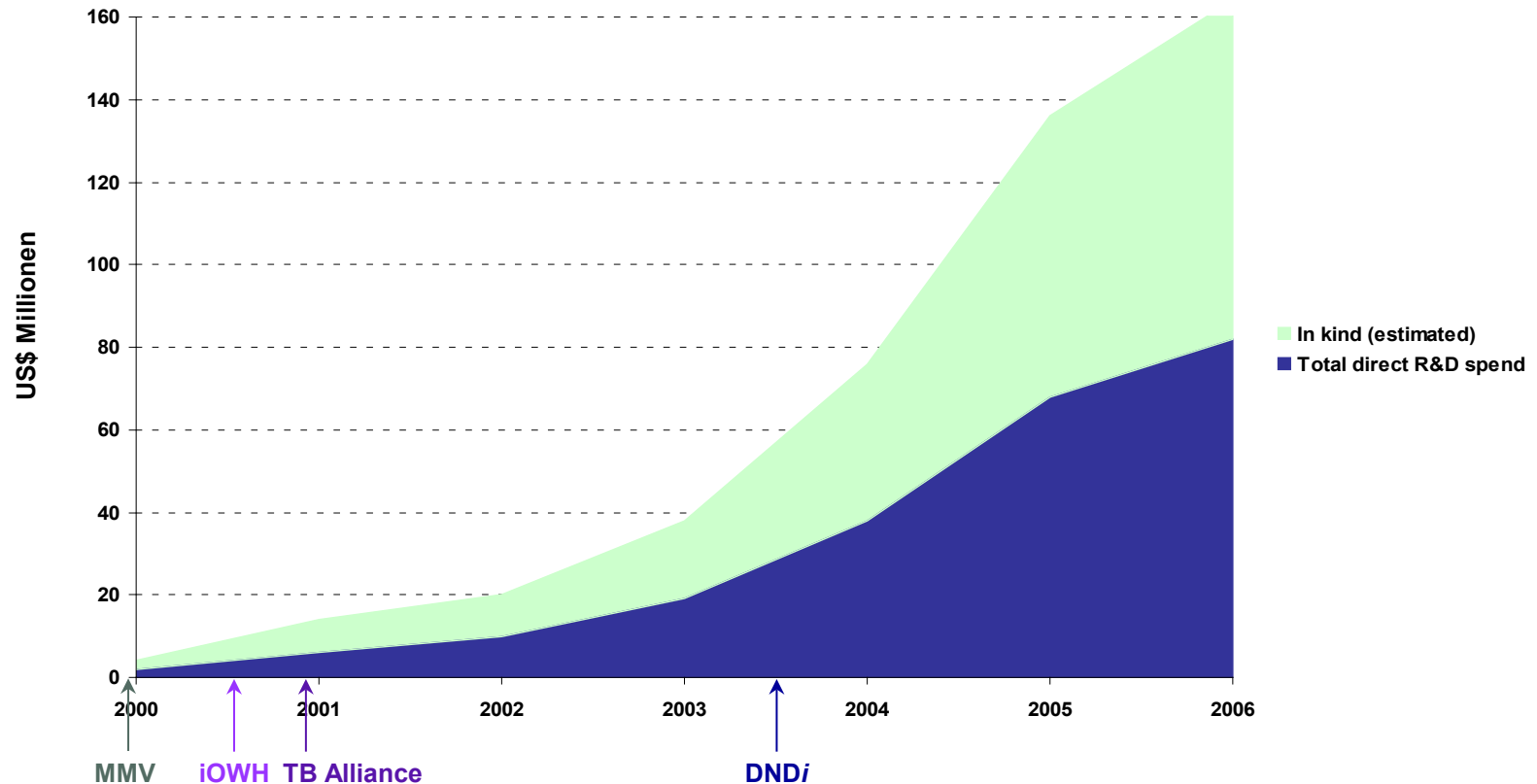
We came a very long way

- More than 20 years since official launch of ICH GCP – 1996
 - First own clinical trial started in 1997
 - Under very difficult conditions in war in Angola
 - Very limited team – excellent oversight and guidance by a Steering Board
 - “Risk-based monitoring” – selected data points only
 - Minimal documentation – decisions still traceable
 - 1 Million data points in non-validated Foxpro database
 - Each single data point was “known” – all SAEs, event discussed in a Board
 - Starting point for trials in very difficult areas – and policy making results
 - Do we emphasize, control and document the right things?

Setting the stage

We came a very long way

PPP direct R&D spend (including projections to 2006)



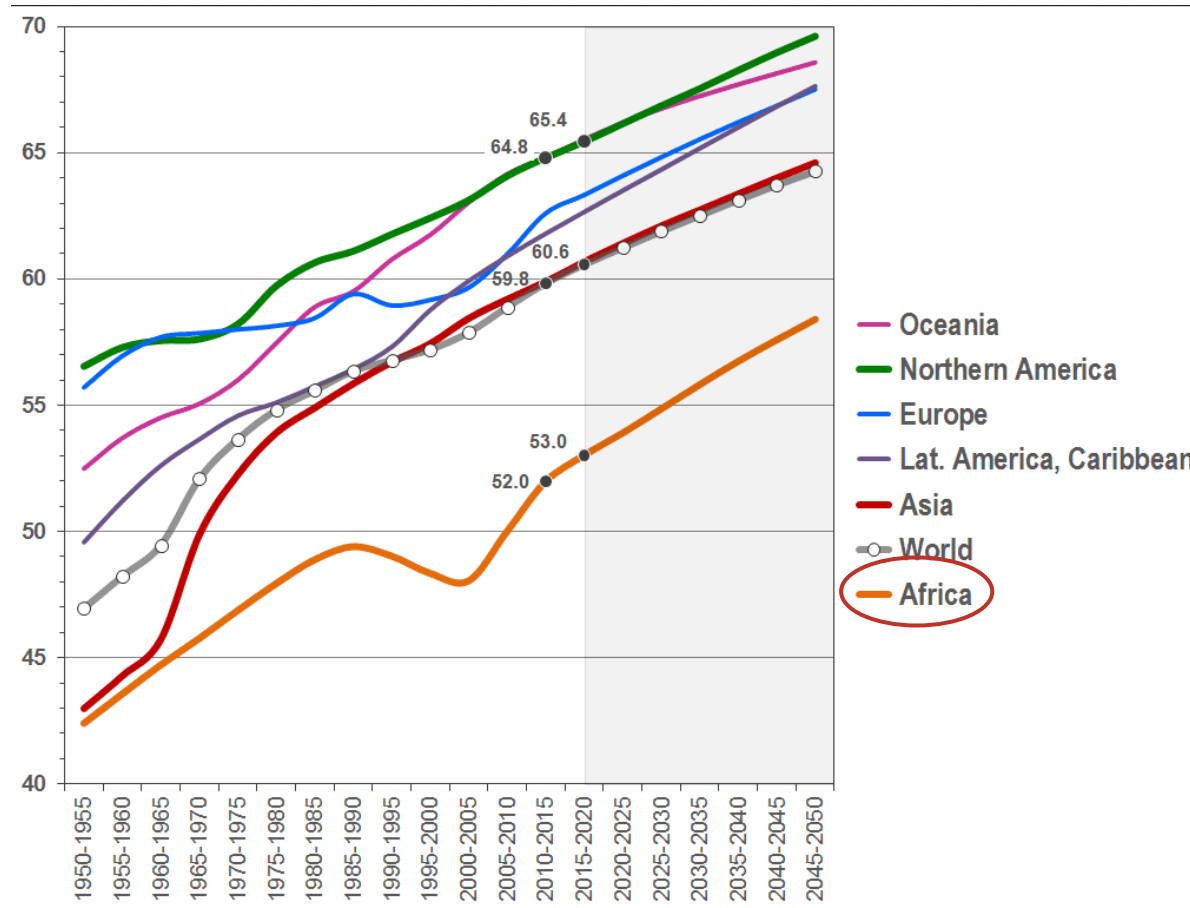


Setting the stage

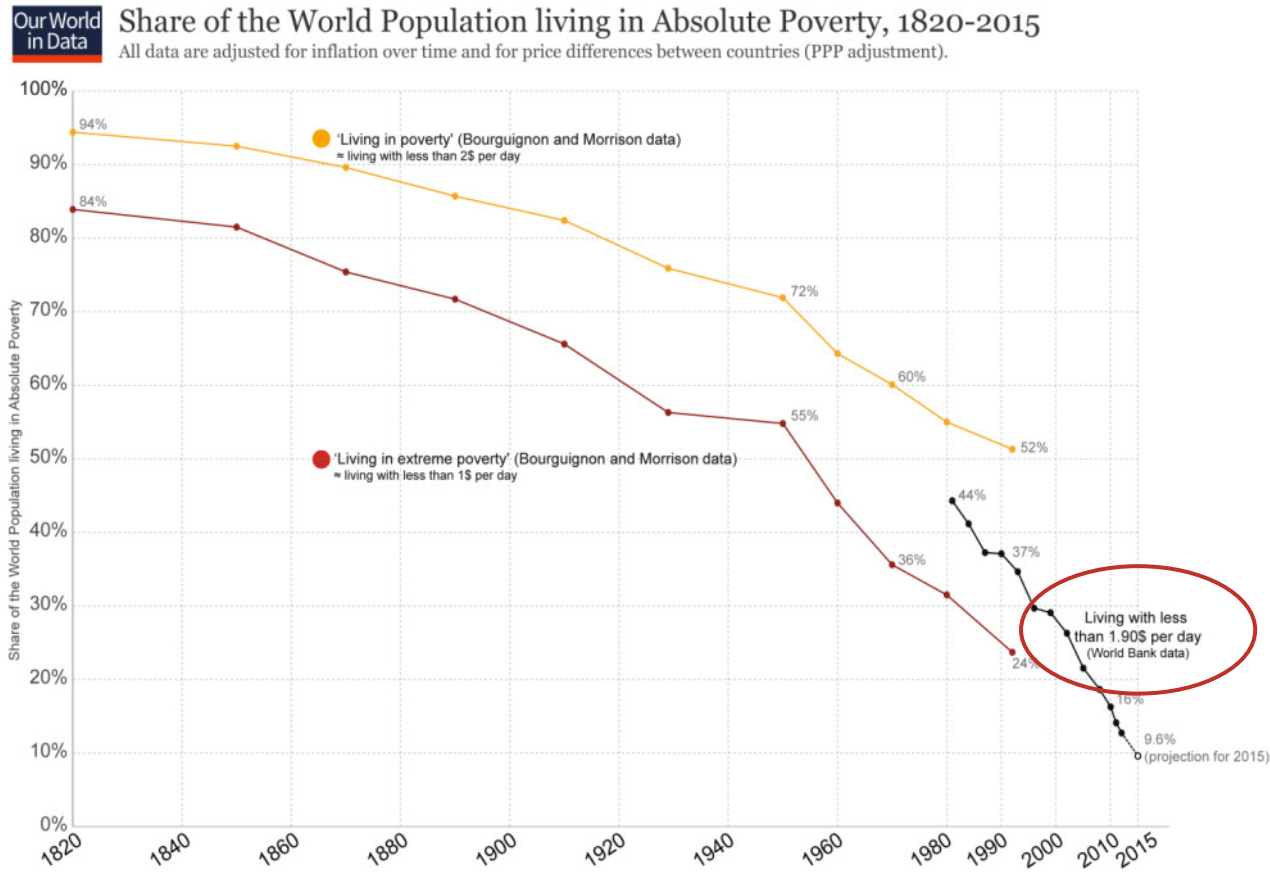
Availability of new therapeutic products

- 1975 – 1999
 - 1'393 new chemical entities developed
 - 1.1% for tropical diseases and TB
- 2000 – 2011
 - 664 new products (NCEs, entities developed
 - 5.0 % for tropical diseases (incl malaria, TB, AIDS)
- Recent time
 - 10 new antimalarials since 2007, first malaria vaccine positive opinion 2018
 - 2 TB drugs on WHO EML in 2015
 - Number of treatments for Hepatitis C approved since 2013
 - HAT – one breakthrough in 2009, on product under EMA review
 - HIV – three new products approved by US FDA in 2017

Setting the stage ...and it works!



Setting the stage ...and it works



Data sources: 1820-1992 Bourguignon and Morrison (2002) - Inequality among World Citizens, In The American Economic Review; 1981-2015 World Bank (PovcalNet)
The interactive data visualisation is available at OurWorldinData.org. There you find the raw data and more visualisations on this topic. Licensed under CC-BY-SA by the author Max Roser.

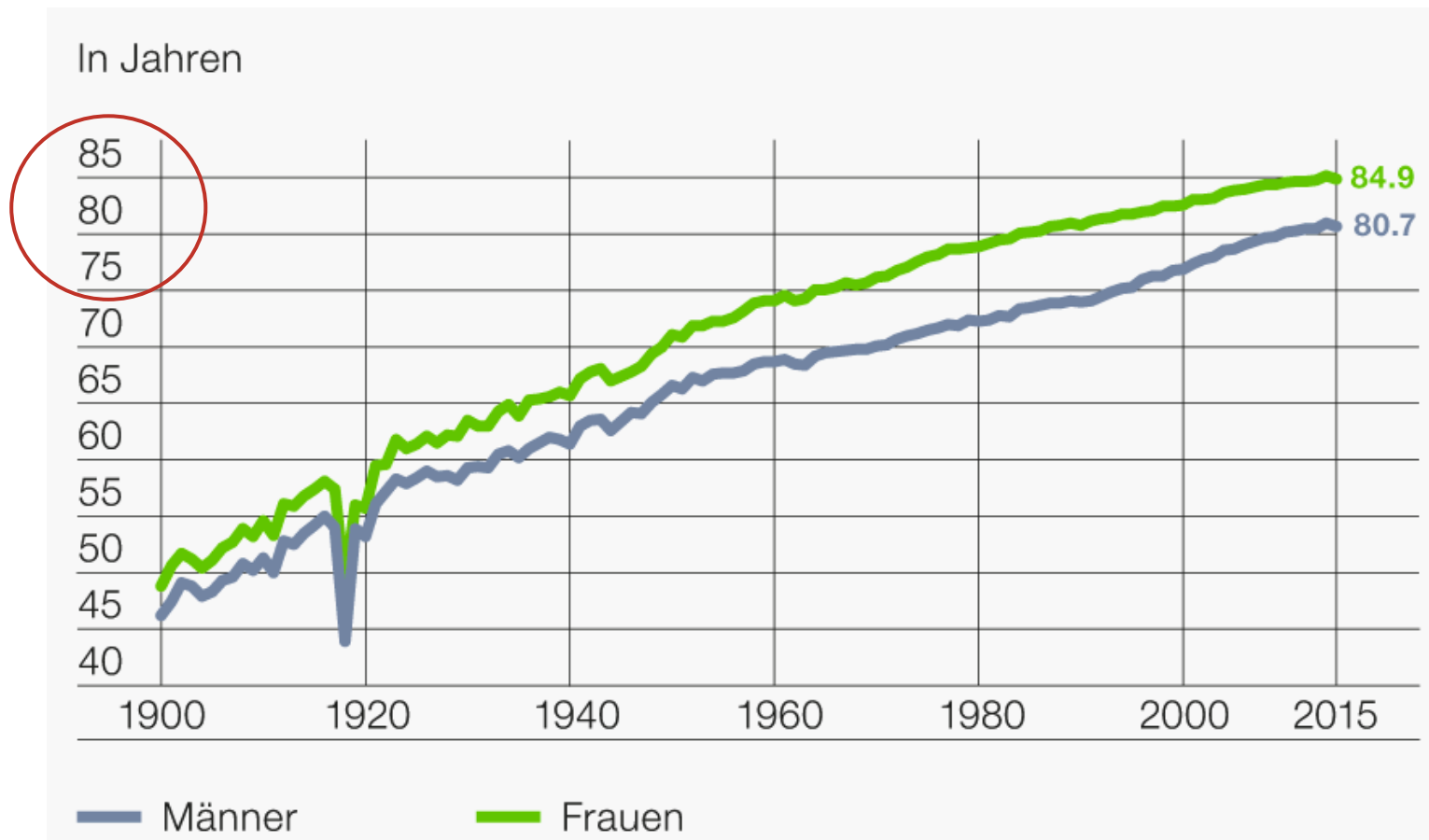
Success in PDP models

PDP estimated trial costs

Archetype		Cost estimates per phase (\$, Millions)							
		Preclinical		Phase 1		Phase 2		Phase 3	
		Lower bound, Upper bound	Point estimate	Lower bound, Upper bound	Point estimate	Lower bound, Upper bound	Point estimate	Lower bound, Upper bound	Point estimate
Vaccine	Simple	3.3, 10.0	6.7	1.8, 2.7	2.2	7.4, 19.0	13.2	56.6, 165.6	111.1
	Complex	8.3, 24.9	16.6	1.9, 3.0	2.5	7.8, 20.0	13.9	67.9, 198.7	133.3
New Chemical Entity (NCE)	Simple	2.5, 7.5	5.0	1.8, 2.7	2.2	3.7, 7.9	5.8	11.5, 54.1	32.8
	Innovative	5.0, 10.0	7.5	4.4, 5.3	4.8	3.9, 8.3	6.1	12.1, 55.4	34.5
	Complex	7.5, 12.5	10.0	6.9, 7.9	7.4	4.1, 8.7	6.4	12.6, 59.6	36.1
Repurposed Drug	Simple	N/A	N/A	N/A	N/A	3.7, 7.9	5.8	10.0, 25.2	17.6
	Complex	2.5, 7.5	5.0	1.7, 2.7	2.2	3.7, 7.9	5.8	10.0, 25.2	17.6
Biologic	Simple	5.4, 16.2	10.8	1.9, 3.0	2.4	4.5, 10.5	7.5	27.7, 80.5	54.1
	Complex	16.2, 27.0	21.6	7.0, 8.3	7.6	5.0, 11.6	8.3	30.5, 88.5	59.5

Setting the stage

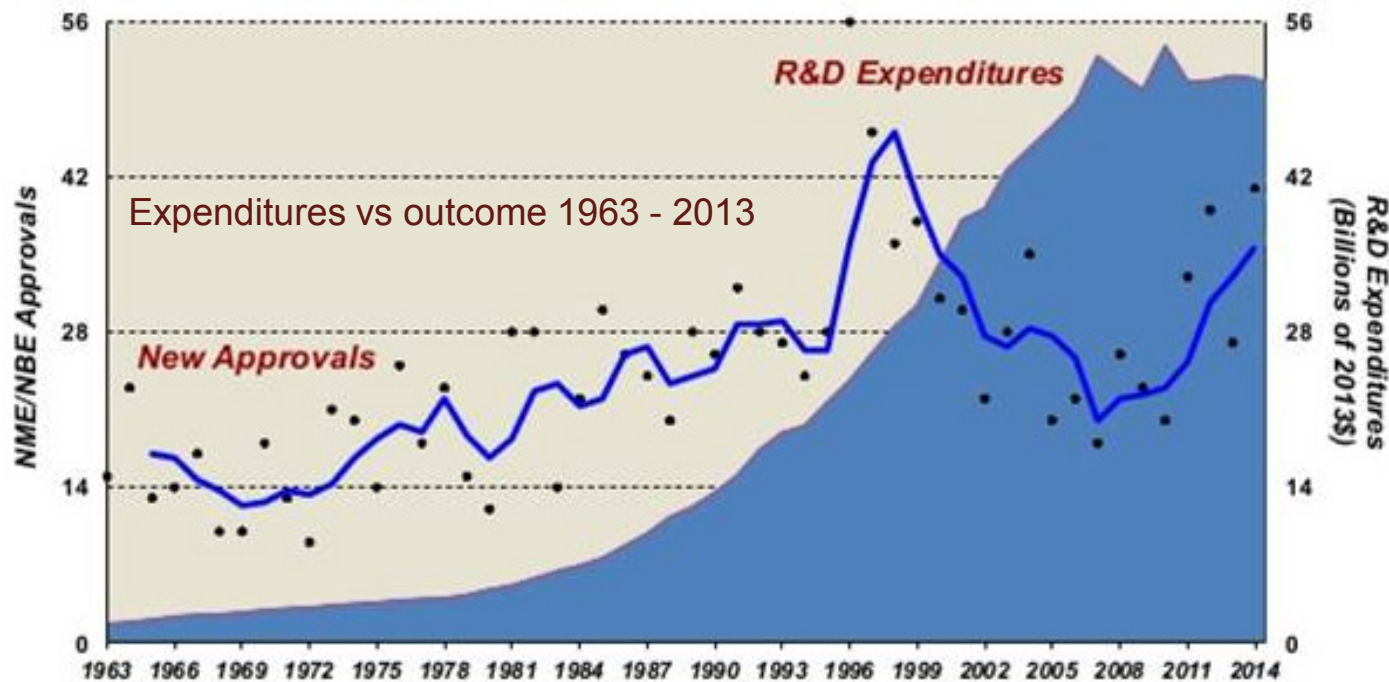
...and in the North it works, too, but...



Setting the stage

Pharma costs of development

- Massive increase of R&D expenditure
- Only partial translation into success and new products



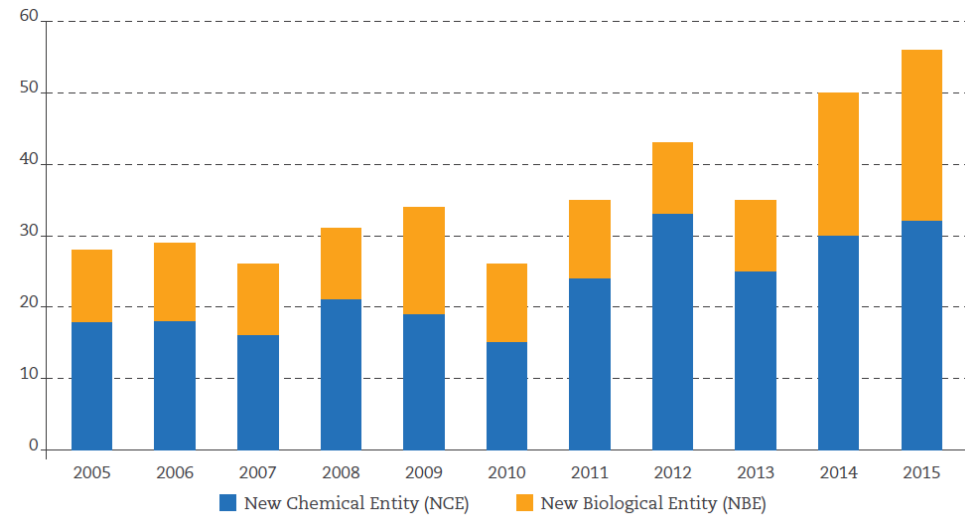
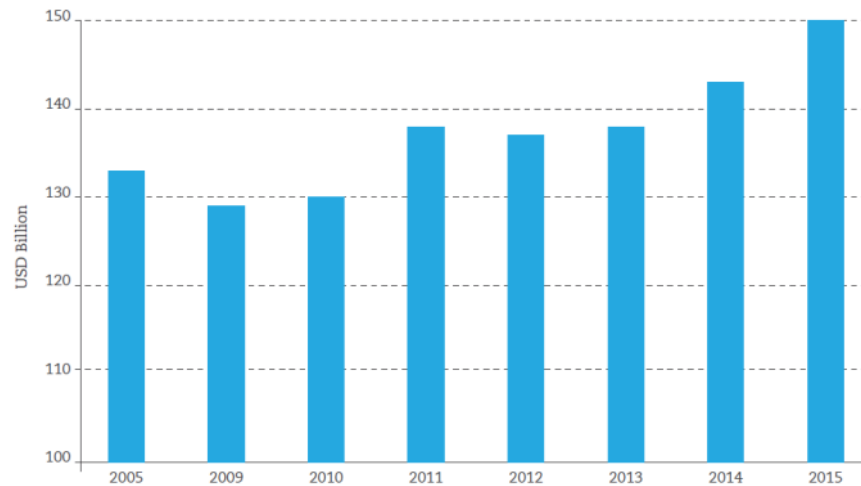
* Trend line is 3-year moving average; R&D expenditure adjusted for inflation



Setting the stage

Expenditures vs outcome 2005 - 2015

- Overall average costs per new drug: US \$2'558 million
- 145% increased since 2003 = annual growth rate of 8.5%
 - Productivity caught up again



Setting the stage

Sustainable Development Goals

- Sustainable Development Goals (SDGs) state
 - By 2030 “end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases”
 - End preventable deaths of newborns and children under 5 years of age
 - Reduce global maternal mortality ratio to under 70 per 100,000 live births

Question of the day

Looking at goals and costs, the questions of the day is...

...not exclusively, are we doing the right thing, but
are we doing things right

Inspiration

We can learn from each other



<https://www.swisstph.ch>