INNOVATION
The New Currency of Competition

REPUBLIC OF INNOVATION

Opening remarks
Medtech
«State of the Nation»

Dr. Benoit Dubuis

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MEDTECH
“State of the Nation”

- A changing environment
- Information leveraging technologies
- Our contribution

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Towards a NEW NORMAL !

“NEW NORMAL” ?

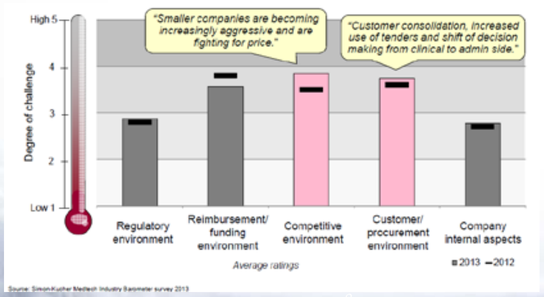
World economy returns to pre-crisis rate of growth

OR

Growth stays at a permanently lower rate (investment, employment, growth…)

Engaging diverse stakeholders…

…facing new risks from an increasing diverse range of sources



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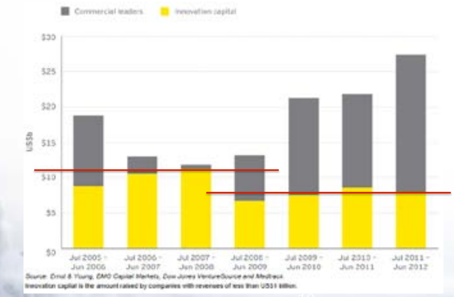
Innovation capital raised in US and Europe … still low!



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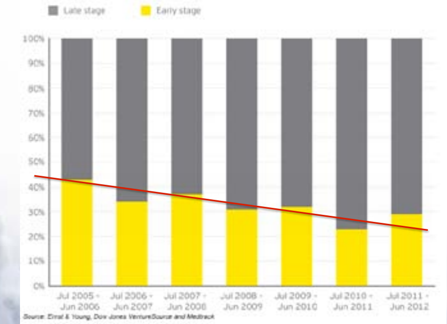
Venture investment by round … are favoring "de-risked" later-stage companies



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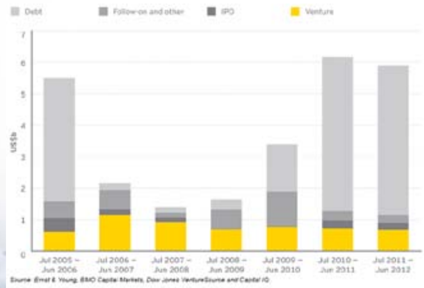
European medtech financing by year



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Top 10 European venture rounds, 2011–H1 2012

Company	Region	Product type (disease)	Gross raised (US$m)	Quarter	Round type
Agendia	Netherlands	Non-imaging diagnostics	65	Q2 2012	Late stage
InSightec	Israel	Therapeutic devices (oncology)	31	Q2 2012	Late stage
Oxford Immunotec	United Kingdom	Non-imaging diagnostics	28	Q1 2012	Late stage
Atlas Genetics	United Kingdom	Non-imaging diagnostics	27	Q3 2011	Late stage
Amplitude	France	Therapeutic devices (orthopedic)	24	Q1 2012	Late stage
Curetis	Germany	Non-imaging diagnostics	22	Q4 2011	Early stage
Tobii Technology	Sweden	Other	21	Q1 2012	Late stage
BrainsGate	Israel	Therapeutic devices (neurology)	20	Q3 2011	Late stage
MyoPowers Medical Technologies	Switzerland	Therapeutic devices (urology/pelvic)	18	Q3 2011	Early stage
Occlutech	Sweden	Therapeutic devices (cardiovascular)	18	Q3 2011	Early stage

Source: Ernst & Young, EMO Capital Markets, Dow Jones VentureSource and Medtrack

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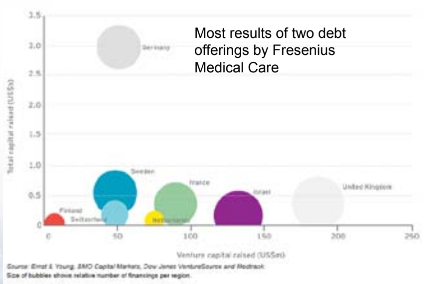
Capital raised by leading European countries, July 2011–June 2012



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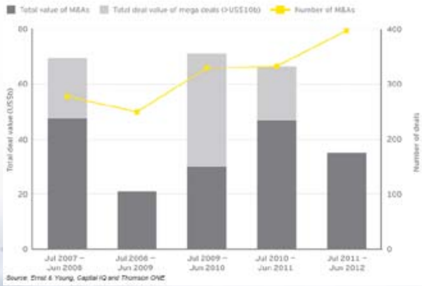
Innovation at Risk ?

M&As in the US and Europe (US$bn)

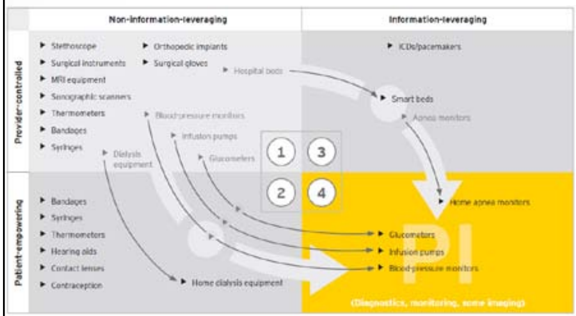


US and European M&As by segment

Segment	July 2007 - June 2011 Number of deals	Value (US$m)	% of total deal value	July 2011 - June 2012 Number of deals	Value (US$m)	% of total deal value
Therapeutic devices	344	$128,525	68%	126	$15,778	53%
Ophthalmic	33	$56,295	30%	10	$187	1%
Orthopedic	54	$27,670	15%	17	$370	1%
Cardiovascular	72	$17,120	9%	18	$4,708	16%
Respiratory	16	$5,987	3%	5	$59	0%
Non-disease specific	48	$2,178	1%	32	$1,512	5%
Multiple	11	$3,472	2%	11	$1,859	6%
Hematology/renal	13	$3,054	2%	5	$72	0%
Wound care	21	$2,891	2%	7	$6,495	22%
Oncology	10	$881	0%	2	$335	1%
All others	66	$8,977	5%	19	$182	1%
Research and other equipment	75	$38,409	20%	19	$1,069	4%
Non-imaging diagnostics	113	$13,140	7%	46	$10,881	36%
Other	43	$7,136	4%	21	$479	2%
Imaging	50	$2,571	1%	21	$1,671	6%

Source: Ernst & Youn, Capital IQ and Thomson ONE
Table only shows deals where values were publicly disclosed.
Figures may be inconsistent due to rounding.

The shift to patient-empowering, information-leveraging technologies



"PI" (patient-empowering and information-leveraging) technologies

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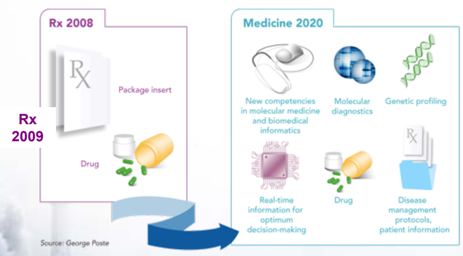
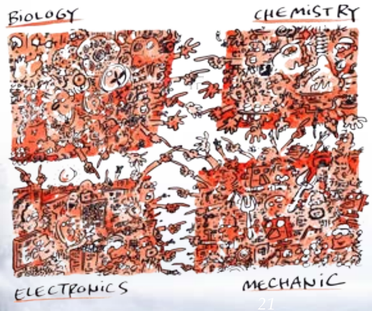
Towards an integrated health system

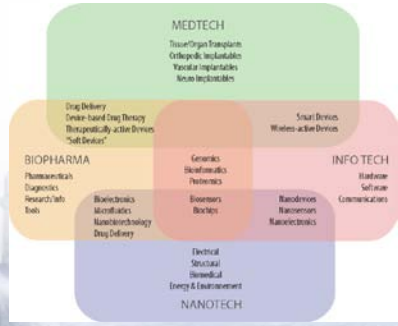


Evolution of Molecular Medicine and Information-Based Medicine:
Foundation for Rational Care and Personalized Medicine

Interdisciplinarity (science driven)



Interdisciplinarity (science driven)

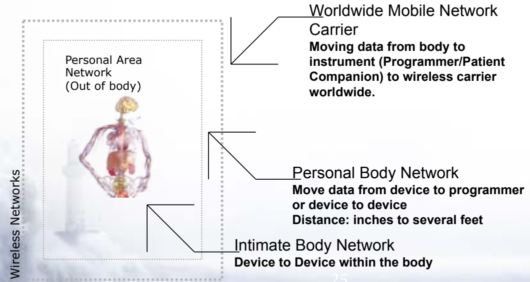


Confluence of Technology / tools / Knowledge

Healthcare is becoming…digitized

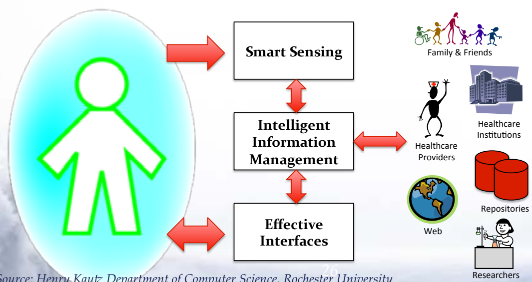
- Smart cards with electronic health records & sequenced DNA
- Consumer driven personal health planning
  - PHR
    - Microsoft -HealthVault™
    - Google Health
    - WebMD
    - Revolution Health
    - WalMart/Dell/eclinicalWorks
  - Note: Europe / Asia may be faster, more integrated than US & Europe

Remote Patient Monitoring



Personalized Medicine

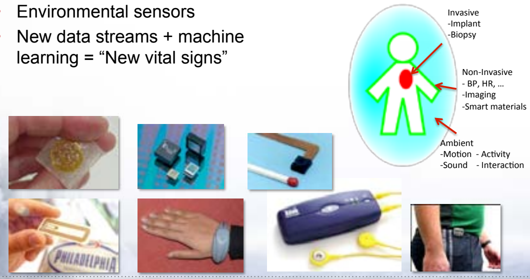
Putting the patient at the center of their health system



Source: Henry Kautz Department of Computer Science, Rochester University

Smart Sensing

- Non-invasive wearable sensors
- Personal biosensors
- Environmental sensors
- New data streams + machine learning = "New vital signs"



Intelligent Information Management

- Longitudinal data
  - Personal baseline
  - Detect trends & deviations from norm
- Personal health records
  - Privacy
  - Sharing
  - Anonymous aggregation
- Patient-centered decision support

Source: Henry Kautz Department of Computer Science, Rochester University

Effective Interfaces

- Multimodal
  - GUI, touch, gesture, speech, …
- Mobile
  - Portable, networked, wearable
- Intuitive
  - Easy to learn, use, maintain
- Adaptive
- Proactive

Source: Henry Kautz Department of Computer Science, Rochester University

Smart-Phone Makers Call the Doctor

Rapid Secure Communication with Doctors

- Relay health (McKesson)
- Minute clinic
- FitNet

Source: Burrill

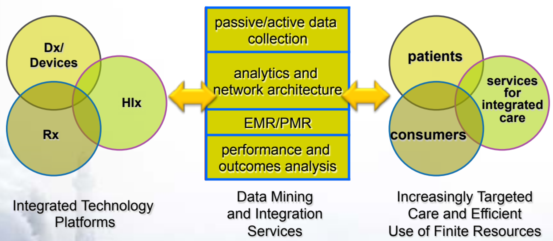
Ten Targets for Wireless Medicine

Disease	No. Affected	Wireless Solutions
Alzheimer's	5M	Vital signs, location, activity, balance
Asthma	23M	RR, FEV1, Air quality, oximetry, pollen
count		
Breast Cancer	3M	Ultrasound self-exam → Web
COPD*	10M	RR, FEV1, Air quality, oximetry
Depression	21M	Med Compliance, Activity, Communication
Diabetes	24M	Glucose, Hemoglobin A1C
Heart Failure	5M	Cardiac pressures, weight, BP, fluid status
Hypertension	74M	Continuous BP, Med compliance
Obesity Activity	80M	Smart scales, Glucose, Caloric in/out,
Sleep Disorders	40M	Sleep phases, quality, apnea, vital signs

* Chronic obstructive pulmonary disease

Source: Burrill

A New Healthcare Ecosystem Arising From Technology and Market Convergence



Diagnostics (*Dx*), imaging (*Ix*), therapeutics (*Rx*), devices and healthcare information (*HIx*)
Molecular diagnostics (*MDx*)
(EMR) Electronic Medical Record (PMR) Private Medical Record

Source: Burrill

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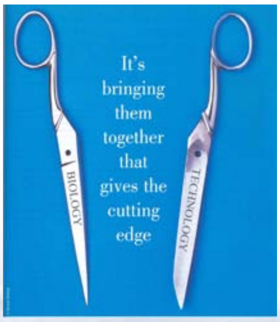
Interdisciplinarity (science driven)



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A unique hub for Medtech/Biotech R&D in Europe

Bio-cluster

Micro / nanotech cluster

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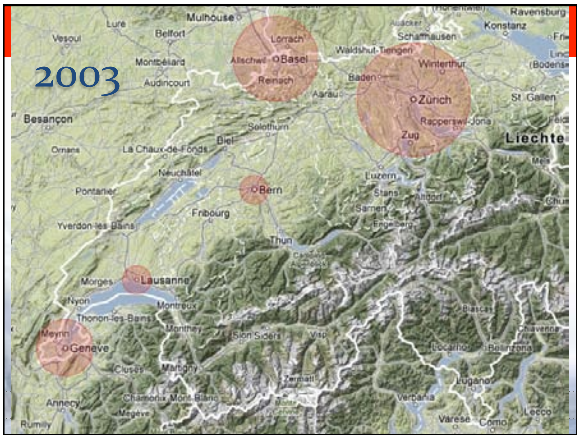
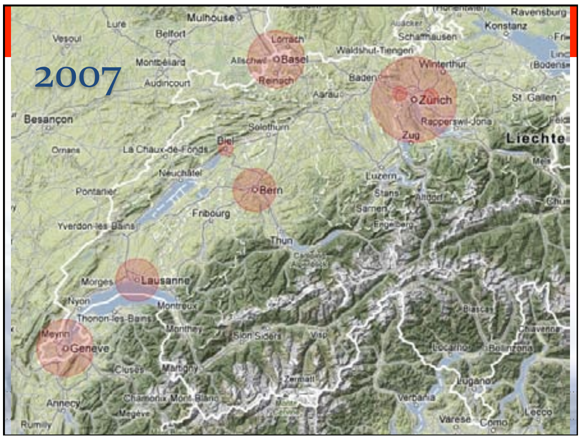
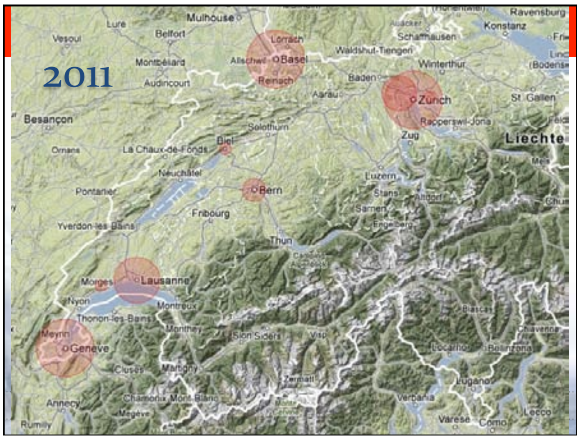
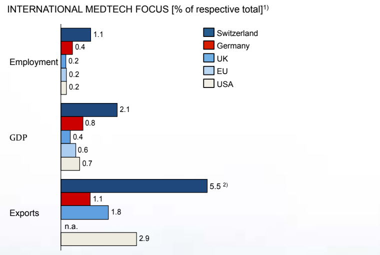






Confluence of Technology / tools / Knowledge

Switzerland is a global hotspot for medtech



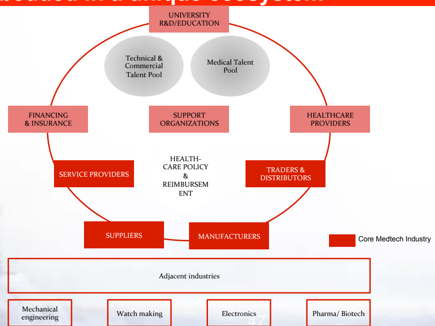
1) Data from 2011 whenever possible, elsewhere Data from 2010
2) Only finished products, figure does not include medtech components and specialized machines used for medtech production. Including all products related to the medtech industry it can be assumed that the relative share of Swiss medtech exports is roughly 8%
Source: Destatis, Eucomed, Eurostat, UK National Statistics, Spectaris, IMF, Bundesamt für Statistik, US Bureau of statistics

Source: Medical Cluster, Medtech Switzerland, IMS Consulting Group, CTI

Switzerland shows a high trade balance surplus for finished medtech products

Source: Medical Cluster, Medtech Switzerland, IMS Consulting Group, CTI

The Swiss medtech industry is embedded in a unique ecosystem



Source: Medical Cluster, Medtech Switzerland, IMS Consulting Group, CTI

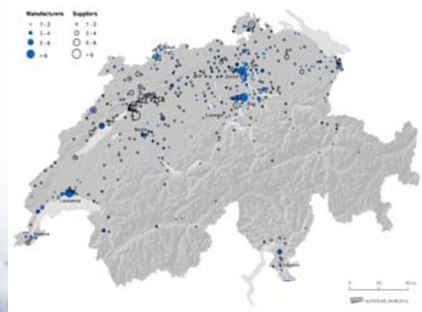
Switzerland is an attractive manufacturing site

No.	Company[2)]	Sub-section of market	Head-quarters	Employees in Switzerland	Global sales [CHF m]	1 year global sales growth [%]	R&D expenses [CHF m]	R&D/sales [%]
1	J&J Medical	Orthopedics, neurosurgery, cardiology, surgery	USA	4,500	25,570	2	1,751	6.8
2	Roche Diagnostics	In-vitro diagnostics	CH	2,110	9,700	6	900	9.2
3	Medtronic	Implants to treat cardiac rhythm, cardiovascular and neurological diseases; treatments for spinal disorder[3)]	USA	1,200	15,787	4	1,400	9
4	Sonova	Hearing systems	CH	1,200	1,620	0.2	116	7.2
5	Zimmer	Orthopedics	USA	950	4,370	5	218	5
6	B. Braun	Orthopedics, hospital aids and medical devices	DE	940	5,530	4	216	4
7	Ypsomed	Injection systems	CH	800	249	-5	25	10
8	Straumann	Dental implants	CH	830	694	6	39	6
9	Stryker	Orthopedics	USA	650	7,200	0	385	6
				∑ 13,180		Ø 2.5		Ø 7

1) Approximately, manufacturers only, figures for reporting year 2011/12, exchange rates used: 0.9693 USD/CHF
2) The authors believe that among the 10 biggest medtech employers Hamilton Medical should also be listed. However, Hamilton Medical is not willing to communicate any company data
3) Swiss made devices only

Source: Annual company reports and press offices

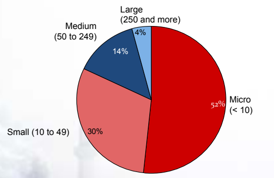
Switzerland has one of the highest densities of medtech companies



Source: Medical Cluster, Medtech Switzerland, IMS Consulting Group, CTI

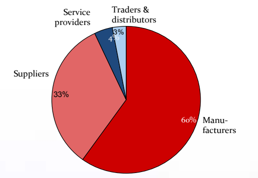
SMEs form the backbone of the Swiss medtech industry

DISTRIBUTION OF COMPANIES BY NO. OF EMPLOYEES



n = 265

DISTRIBUTION OF EMPLOYEES BY CATEGORY

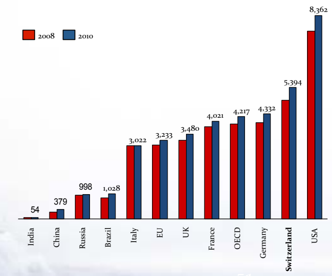


n = 265

- The SMTI is largely composed of SMEs (<250 employees)
- Compared with the whole industrial sector in Switzerland the SMTI has significantly fewer micro-companies: 52% versus 79%
- Most medtech employees are working for manufacturing companies
- Service providers and suppliers are mainly small and micro companies

The SMTI has a strong home market

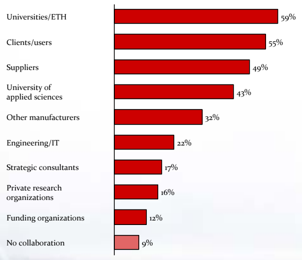
HEALTHCARE EXPENDITURE PER CAPITA [current USD]



Source: Medical Cluster, Medtech Switzerland, IMS Consulting Group, CTI

SMTI manufacturers heavily collaborate with multiple stakeholders

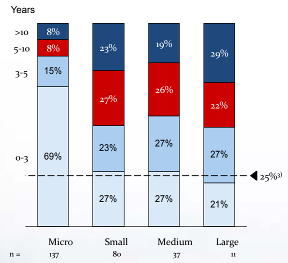
COLLABORATION PARTNER OF MANUFACTURERS



n = 69, multiple answers possible

SMTI firms have a robust young product portfolio

AGE OF PRODUCT PORTFOLIO BY COMPANY SIZE[1,2]



Company size: micro companies = 0-10 employees, small = 11-50, medium = 51-250, large = >250
1) Only manufacturers
2) In proportion of their product portfolio
3) Necessary treshold for juveniling portfolio with true innovation (see SMTI 2010)

All SMTI's firms suffer from a tougher market environment

RANKING OF CHALLENGES [in %][1]

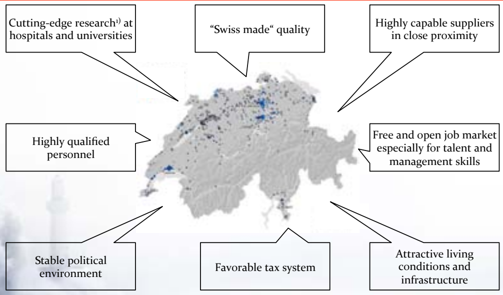
n range = 202 - 309; multiple answers possible
1) Challenge is of "high relevance" or "average relevance" to SMTI companies
2) Price pressure, intensified competition, and lack of resources/management capacities

PRINCIPLES FOR FUTURE SUCCESS

Innovate in new ways

- Improve the efficacy of the innovation process to keep a competitive advantage
- Adapt to the needs of new and emerging stakeholders
- Provide data evidence that your solution is better than current, existing products
- Hire regulatory experts to navigate into an increasingly demanding regulatory frameworks
- Drive actively the consolidation process in the industry by joining forces with other medtech companies

Eight clear assets unique to Switzerland



1) Highest density of patent applications in the medtech sector within Europe (European Patent Office 2011)
Source: SMTI 2011, 35 C-level interviews with leading medtech firms
Source: Medical Cluster, Medtech Switzerland, IMS Consulting Group, CTI

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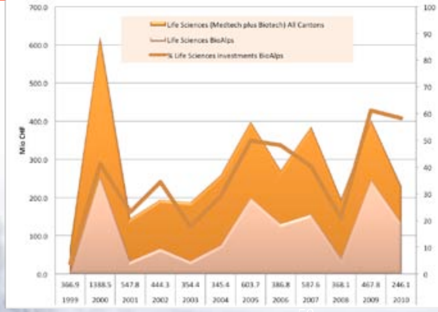
Life Sciences VC Investments in the Health Valley



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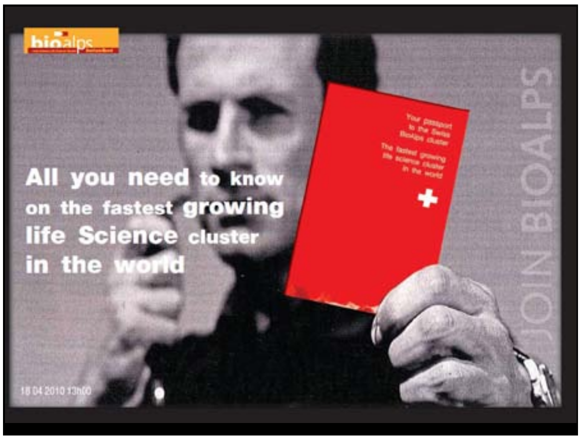

Stop thinking alone
Think INARTIS!

NETWORK inartis

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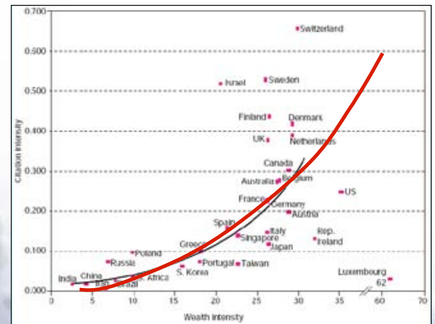
Country competitivness



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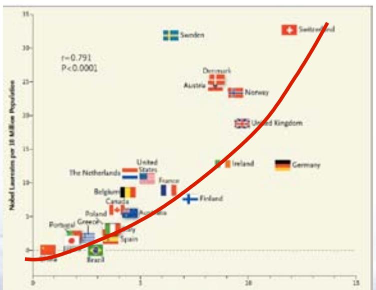

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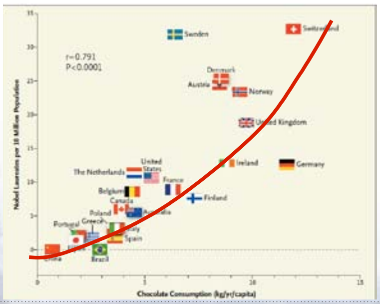
Chocolate Consumption, Cognitive Function, and Nobel Laureates



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