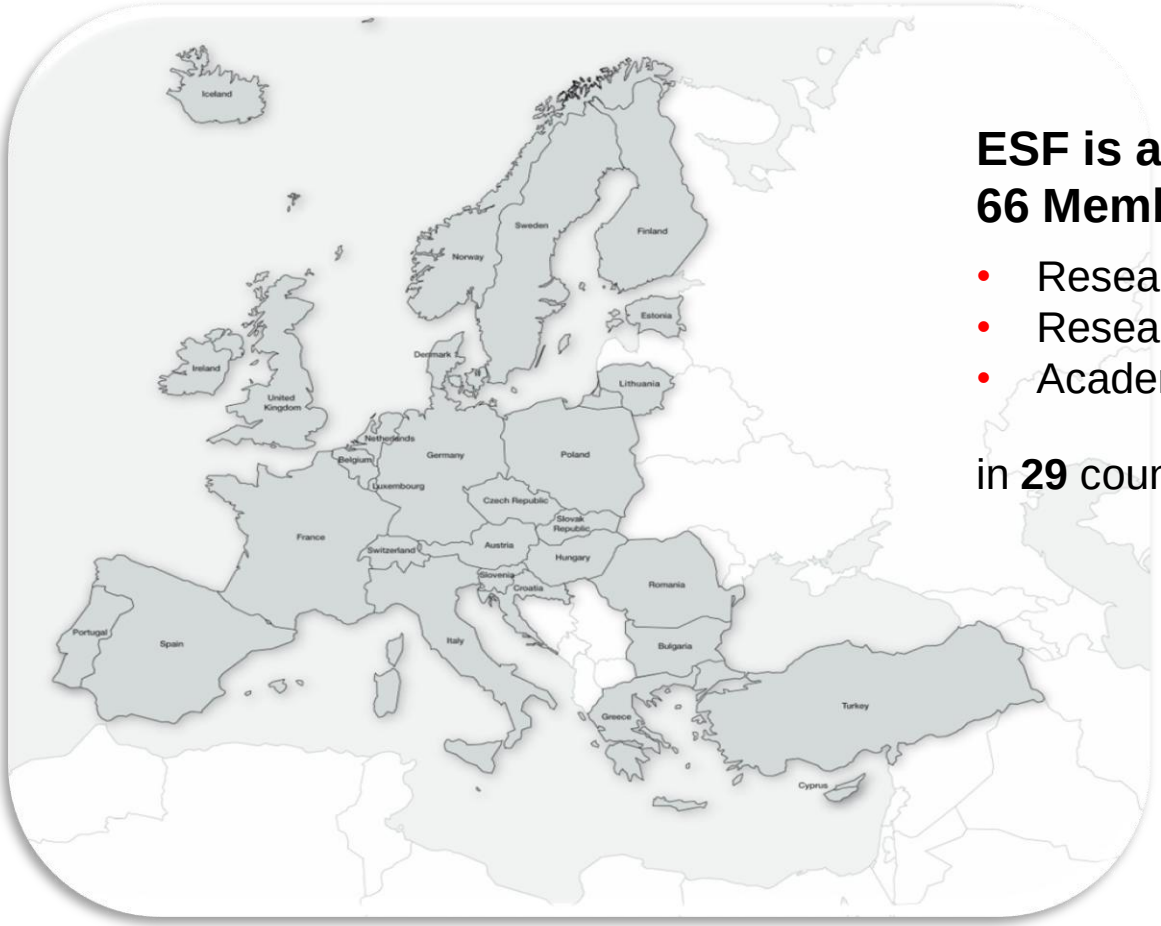
ESF Member Organisations



ESF is an independent association of 66 Member Organisations

- Research funding organisations
- Research performing organisations
- Academies and learned societies

in **29** countries

Scientific Review Group for the Biomedical Sciences (SRG-MED)

Chair: **Professor Stig Arild Slørdahl**
Research Council of Norway (RCN) / Dean, Medical School, Norwegian University of Science and Technology, Trondheim, Norway

Members:

Professor Roger Bouillon
Research Foundation Flanders (FWO) / Katholieke Universiteit Leuven, Belgium

Professor Giovanni Pacini
National Research Council (CNR), Padova, Italy

Professor Martin Röllinghoff
Deutsche Forschungsgemeinschaft (DFG) / Friedrich-Alexander-Universität, Erlangen-Nuremberg, Germany

Professor Josef Syka
Academy of Sciences of the Czech Republic (AVČR) / Czech Science Foundation (GAČR), Prague, Czech Republic

Professor Isabel Varela-Nieto
Consejo Superior de Investigaciones Cientificas (CSIC) / Universidad Autonoma, Madrid, Spain

EUROPEAN SCIENCE FOUNDATION

ESF EMRC

EMRC White Paper

Present Status and Future Strategy for Biomedical Research in Europe

Authors: Prof. Håkan Billig, SRC, Sweden, Prof. Colin Blakemore, MRC, U.K., Prof. Roger Bouillon, FWO, Belgium, Prof. Christian Bréchot, Inserm, France, Prof. Arturo Brunetti, CNR, Italy, Prof. Agnès Gruart, MEC, Spain, Prof. Liselotte Højgaard, Rigshospitalet, Denmark & EMRC, France, Dr. Carole Moquin-Pattey, EMRC, France, Dr. Tony Peatfield, MRC, London, Prof. Martin Röllinghoff, DFG, Germany, Prof. Jürgen Schölmerich, Regensburg Univ. & DFG, Germany, Dr. Michael Stolpe, Kiel Institute for the World Economy, Germany, Prof. Eero Vasar, EAS, Estonia.

Health Research Funding in Europe

- EMRC statement published in *Science Business* in November 2012: "EMRC statement on medical research in the EU: why we need a new strategy for health research in Europe. Quousque tandem…"

Signatories: EMRC Standing Committee members and Alliance for Biomedical Research in Europe (www.biomedeurope.org)

- EMRC statement updated in March 2013 by the SRG-MED, co-signed by Science Europe Medical Scientific Committee (SE MED) chaired by Professor Richard Frackowiak (Lausanne, CH)

Signatories: SRG-MED and SE MED members

ACTION: create a MASTER ACTION PLAN to cover the next 10 years.

- Organise a joint meeting with Science Europe to discuss setting up a working group.
- Contact European Commission to bring together different partners to create a strategic working group to look at what is needed.
- Contact EFPIA.

Biomedical and clinical research

Input - output:

comparative analysis: Europe & USA

Roger Bouillon

MD, PhD, FRCP

Clinic and Laboratory for Experimental Medicine and Endocrinology

Katholieke Universiteit Leuven, Belgium

SRG-MED

Health care expenditure pp per year (2009)

EMRC memorandum to MEPs nov 2012 – march 2013

	EU25	USA
€ per person / per year for global health care (purchase power equivalent in €)	2.730 pp Or 1.5 trillion €	6.400 pp
€ spend for alcohol and tobacco	~ 800	n/a

Health care and public research expenditure pp per year (2009)

EMRC memorandum to MEPs nov 2012 – march 2013

	EU	USA
€ per person / per year for global health care (purchase power equivalent in €)	2.730	6.400
€ spend for alcohol and tobacco	~ 800	n/a
2009 Public research expenditure pp pyr (€) all sources of public funding included --- data from EMRC- courtesy of M Stolpe (University of Kiel -Germany)	42	143

Health care and public research expenditure pp per year

(2009 and 2012)

	EU	USA
€ per person / per year for global health care (purchase power equivalent in €)	2.730	6.400
€ spend for alcohol and tobacco	~ 800	n/a
2009 Public research expenditure pp pyr (€) data from EMRC- courtesy of M Stolpe (University of Kiel -Germany)	42	143
Chakma et al NEJM 2014 (2012 – in $)	53 $	154 $
Moses et al JAMA 2015 (2011 in $)	52.3 $	155 $

Public input for (bio) medical research

Comparison 2012 (all in US $$ per capita) (Chakma et al NEJM 2014 Jan):

Australia	203
US	154
Canada	94
Japan	75
EU	53
China	1.5

Health care and public research expenditure pp per year

(2009 and 2012)

	EU	
EU Horizon 2020 € for health research (excl of ECR grants) (including industry support such as IMI, EIT..) 80 bn / 7 years à 10.5 %	~~2 € pp pyr	
EU cost for “translation”	~~ 2 € pp pyr	

Biomedical and clinical research
input - output:
comparative analysis
Europe & USA

1. **Comparison of all types of biomedical research**

2. Comparison of clinical research as published in

   - top 5 journals
   - top 18 journals

Medical research: comparative analysis of output Europe & USA and the World

Source of data:

Bibliometric data from

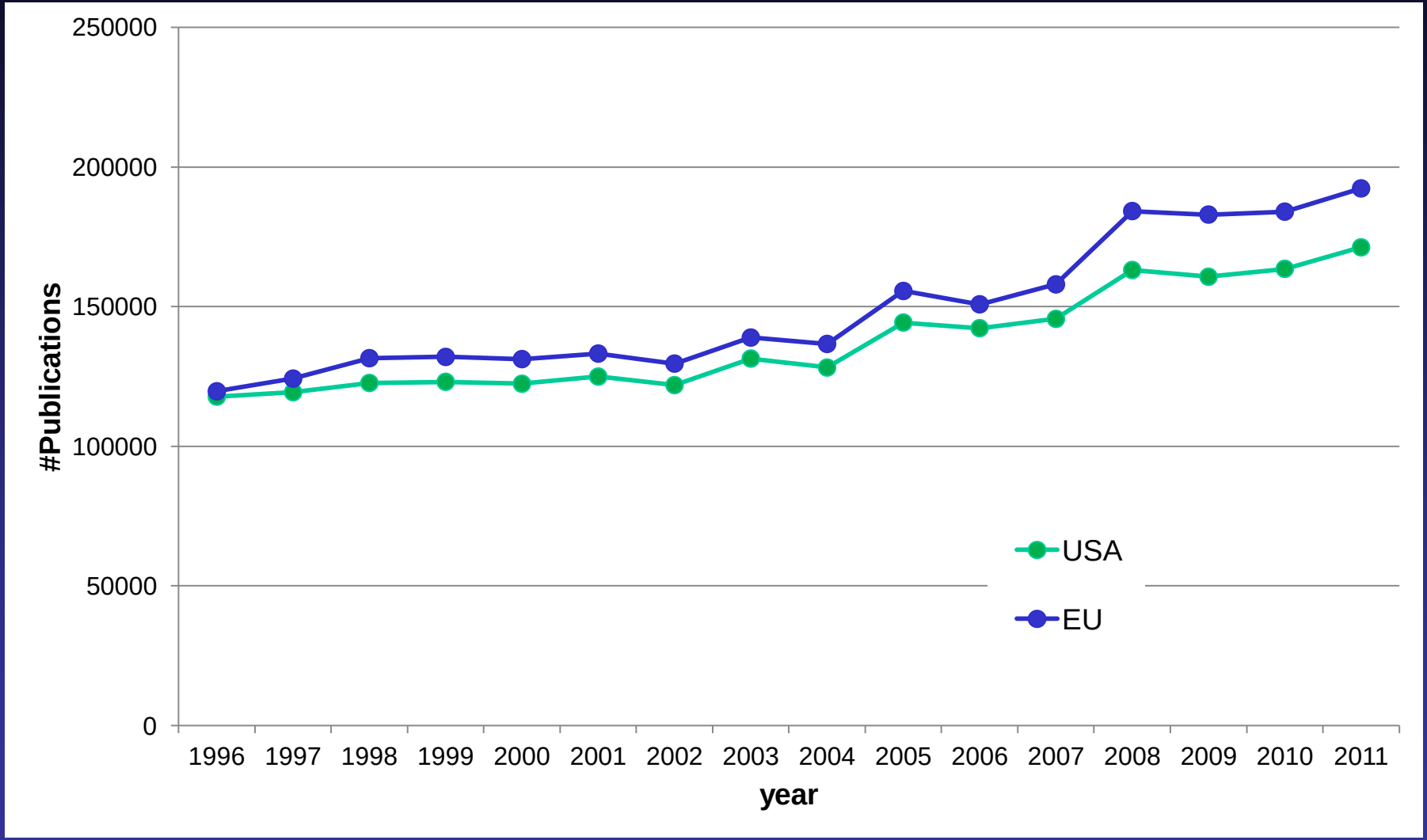
Wolfgang Glänzel, Bart Thijs and Koen Debackere
Centre for R&D Monitoring and Dept. MSI, KU Leuven (Belgium)

Data sourced from Thomson Reuters" Web of Science"
citations refer to 3 yr window after publication

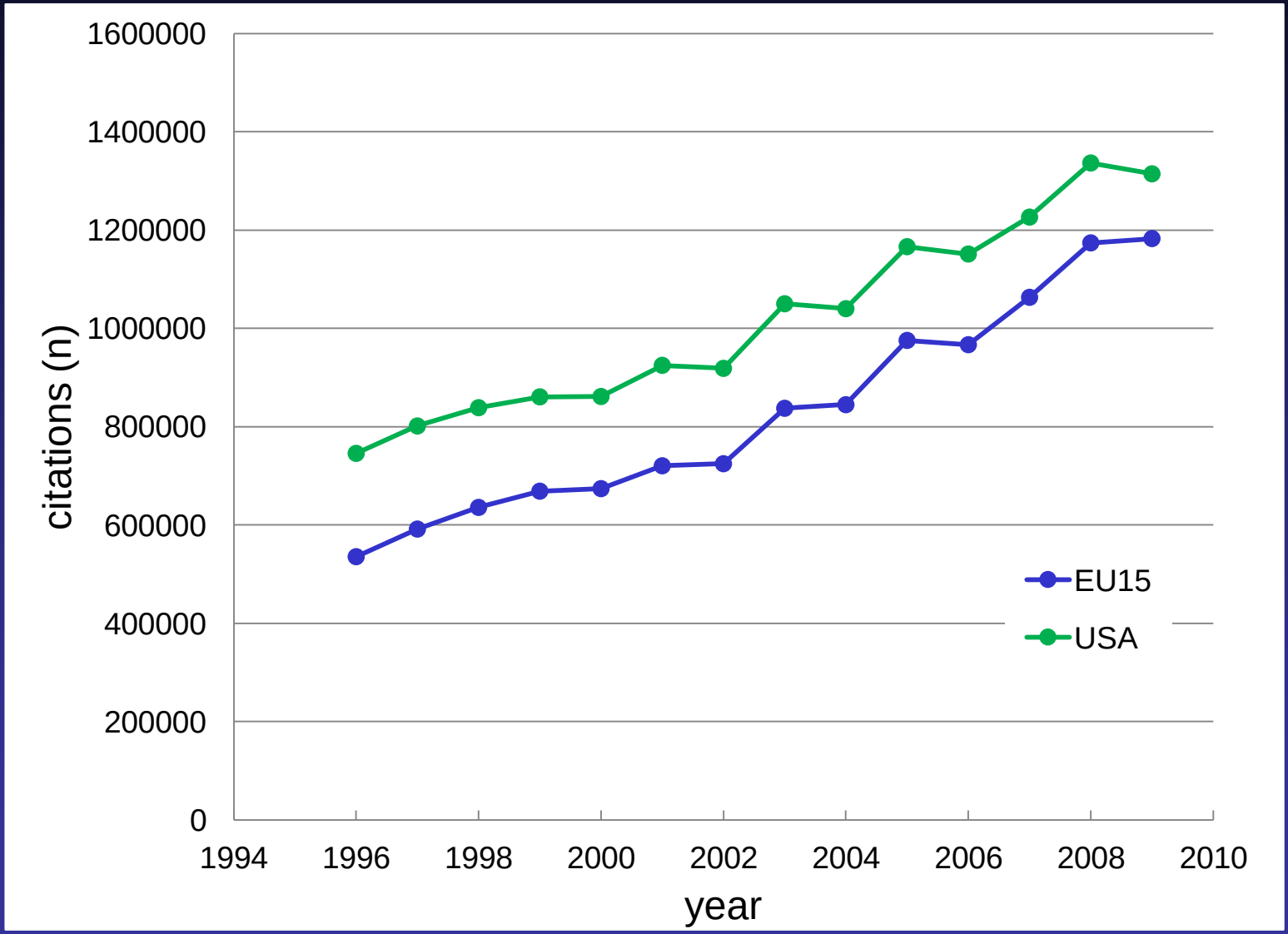
Ms with USA + EU co-authors = counted for both regions

EU = EU 25 data

Biomedical research outcome US-EU



Biomedical research outcome US-EU: citations



Biomedical research outcome US-EU: citations

citations per capita x 10^6

	1996	2005	2009
USA	2483	3883	4380
EU	1528	1950	2365

Biomedical and clinical research output: comparative analysis Europe & USA

1. Comparison of all types of biomedical research

2. **Comparison of clinical research as published in**

   - top 5 journals
   - **top 18 journals**

18 top clinical journals

1. NEJM
2. Lancet
3. JAMA
4. Ann Intern Med
5. Nature Medicine
6. Circulation
7. European heart journal &
8. J am coll cardiology
9. Gastroenterology
10. Am j resp crit care
11. Archives of internal medicine
12. Leukemia
13. Blood
14. Ann rheum dis
15. Diabetes
16. Journal of clinical endocrinology and metabolism
17. J am soc nephrology
18. Cancer research

Clinical Publications counts 2003-2012 in 18 top journals

publications per capita x 10^6

	2003-06	2007-12
USA	86	78
EU	43	39

Clinical Publications counts 2003-2012 in 18 top journals

citations per capita x 10^6

	2003-06	2007-12
USA	1587	1640
EU	733	819

Biomedical and clinical research input - output

EU versus US
General conclusions:

1. USA: higher spending (per capita)for research and especially biomedical research than EU (x 3)

2. USA generates a higher output* per capita than EU:

for all types of biomedical research :
USA = 1.5- 2 x EU for

for clinical research in top 5 or top 28 journals:
USA = 2 x EU

*Publication and citation output pp

Biomedical and clinical research output

Questions

do we want to improve biomedical and clinical research in the EU ?

If so: what is best strategy?

How to bring this on the policy agenda?
at the national or EU level?

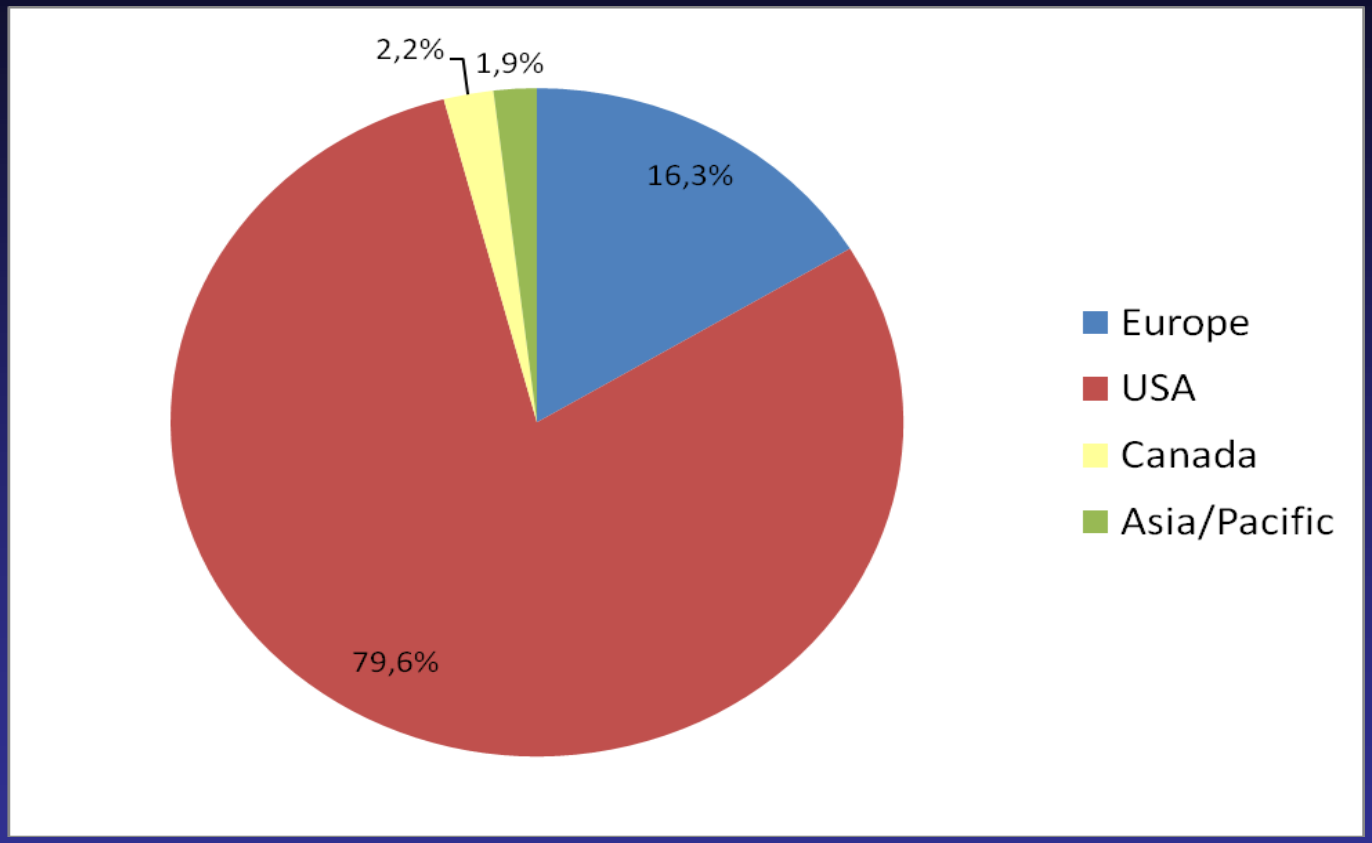
Biomedical and clinical research

1. Public investments in biomedical and clinical research are low in comparison with health care expenditure

2. USA is outperforming EU in global biomedical and clinical research investments and output

3. This has implications
    1. for scientists and clinicians-scientists
    2. for progress in knowledge
    3. For optimal health care
    4. For optimal spending of health care $/€
    5. For private investments in health (pharma/biotech companies/medical devices

Share of global biotechnology R&D expenses, public companies (2008)



Data source: EFPIA report, 2010 Edition. Source: Ernst & Young, 'Beyond Borders, Global Biotechnology Report 2009' (data relate only to publicly traded companies