



Friedrich Miescher Institute
for Biomedical Research
Part of the Novartis Research Foundation



Bridging the gap : Women in Science and Academia

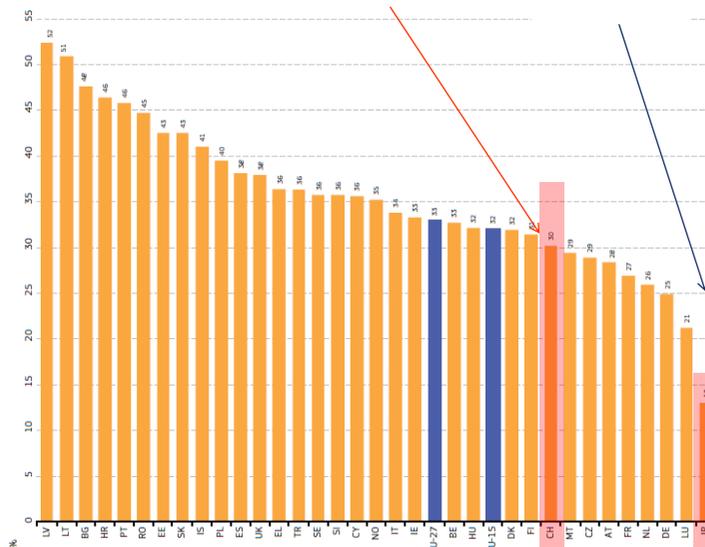
Susan M. Gasser

Director, Friedrich Miescher Institute for
Biomedical Research
and Professor, University of Basel
Basel, Switzerland

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Research creates knowledge.

Female scientists in Switzerland

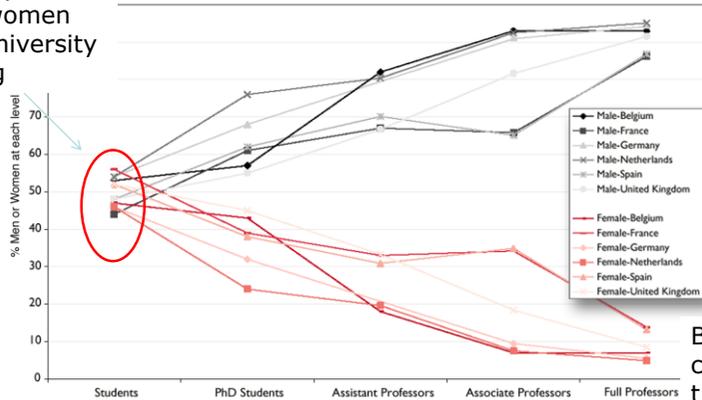


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The problem: The Scissors diagram for academic careers

As many or more women have university training



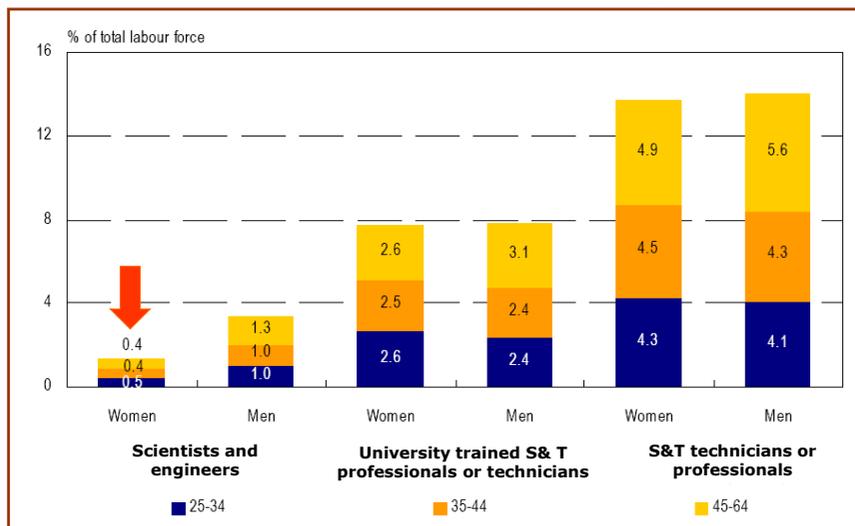
But few continue to the top

**Is this due to family obligations or to a "glass ceiling" for women?
Why do women stop after devoting years to higher education?
Are they inherently unfit for leadership roles?**

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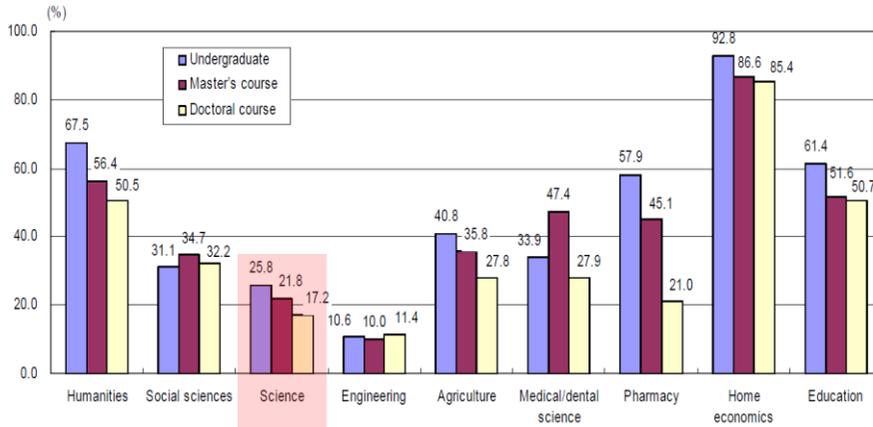
A total of 27% of the workforce in Europe are in science or engineering;
men and women are equal except at the higher levels



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Women drop out of *research science* especially!



From White paper on Gender Equality 2005 published by the UK Cabinet Office

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Proportion of female full professors/senior investigators by field of science and country

	NATURAL SCIENCES	ENGINEERING AND TECHNOLOGY	MEDICAL SCIENCES	AGRICULTURAL SCIENCES	SOCIAL SCIENCES	HUMANITIES
EU-25	11.3	5.8	15.6	14.9	16.6	23.9
Austria	4.4	3.7	8.9	5.6	9.6	19.1
Belgium	7.7	4.2	8.3	3.6	11.5	13.0
Cyprus	18.8	0.0	-	-	11.1	0.0
Czech Republic	9.2	4.5	14.2	9.1	13.0	14.5
Denmark	6.9	1.4	14.9	16.2	13.2	15.2
Finland	11.3	6.3	21.6	16.0	28.6	35.1
France	12.3	6.5	15.3	:	17.0	30.1
Germany	5.6	3.8	5.8	8.9	8.0	16.3
Italy	15.9	6.1	11.1	11.8	17.1	29.4
Latvia	0.0	:	38.5	:	39.3	36.4
Malta	0.0	0.0	8.3	0.0	0.0	0.0
Netherlands	5.3	3.1	6.3	11.0	11.5	16.3
Norway	9.9	4.9	16.8	14.0	18.3	24.6
Poland	16.0	8.7	28.2	24.3	20.6	22.5
Portugal	27.5	5.0	26.2	27.0	20.4	X
Slovakia	13.0	6.6	17.0	3.5	17.3	20.6
Slovenia	3.8	5.4	19.0	20.4	14.5	17.8
Sweden	11.7	7.1	15.3	18.2	19.7	25.8
United Kingdom	8.2	4.9	22.0	14.7	21.2	17.2
Switzerland	7.3	10.1	18.1	12.8	23.4	19.9
Turkey	25.7	15.6	34.5	13.6	24.3	20.3

The countries with the "best" rates of women in high positions have good state-run child care or strong family units (the "grandmother" effect). But, in some cases, science also has a lower status (e.g. low salary)

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Proportion of female full professors/senior investigators by field of science

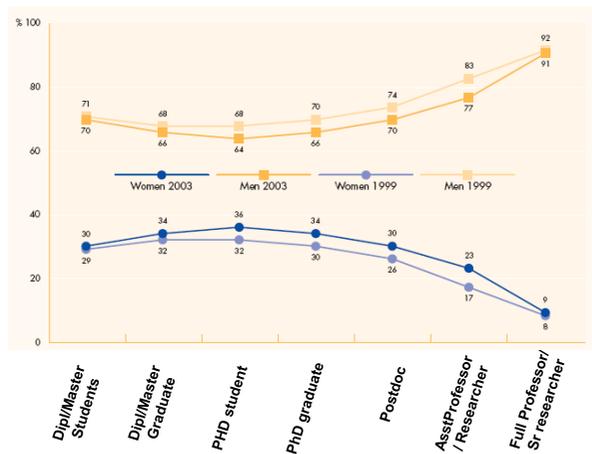
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The worst: countries in which science is internationally competitive but with little investment in public child care systems !

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Is there improvement ? Proportions of men and women in academic careers in science and engineering, students and academic staff, 1999 vs 2003



Slow improvement

Latest numbers in Switzerland ? Professors and SNSF Project Funding by Sex

Professors at Swiss universities/ETH and SNSF Project Funding 2013 by sex (numbers)

	full / associate professors		assistant professors		Total of proposals submitted (SNSF)		Total of proposals approved (SNSF)	
women	553	17%	184	29%	488	22%	227	18%
men	2798	83%	453	71%	1778	78%	990	82%
Total	3351		637		2266		1217	

Sources: Federal Program Equal Opportunity for Women and Men at Universities 2012-13

SNSF Annual Report 2013

Improved but far from balanced

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Europe's SHE Figures 2012

- Women make up 53% of university educated people
- Women in *research* remain a minority accounting only for 33%
- Average number of female PhD graduates **increased** at 3.7% per year, compared to 1.6% for male PhD graduates
- In all countries, female researchers were gaining in all fields of science, but are still underrepresented at EU level

Conclusion published by the EU in 2013

"Although the situation appears more favorable for the youngest generations of female academics in a subset of countries, the **gender gap is still disproportionately high** compared with the increase in the proportion of women students and thus **casts doubt on the hypothesis that women will automatically 'catch up'** to their male counterparts. **Proactive policies are thus essential to significantly reduce these gaps.**"

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From European Commission She Figures 2012.

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What are the causes behind the SHE numbers ?

- Active dissuasion
- Self-selection
 - Dislike of responsibility
 - Dislike of freedom
 - Life-style choice:
 - Laziness ? Why work so hard ?
 - Perceived incompatibility of family and career
 - Social pressure
- Subconscious (unintentional) dissuasion



Why should SNSF care ?

- 1) We train 1000's of women that we do not engage in long-term research !



Personnel in SNF research projects

In total, the SNSF supported approximately 8'900 collaborators in 2013: around 5'300 through project funding, 1'000 through career funding and 2'600 through programmes.

	Total	Women	Men
Scientists ¹	36%	44%	56%
Personnel at doctoral level	51%	43%	57%
Technicians, support staff	13%	65%	35%
Total	100%	46%	54%

¹ Senior researchers and postdocs

Are we throwing this money away ?

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We should care ..

- 1) We train 1000's of women that we do not engage in long-term research ! Many stop when career and family obligations collide
- 2) Scientific life is demanding: it requires talent, but also a lot of time and a compassion for one's work :
at times it seems incompatible with family life
- 3) Men may also wonder if families are the right thing – especially in marriages between two career scientists.....
Will a scientific career ⇒ sterility ?
- 4) Worst of all, extremely talented, motivated scientists are finding career progression too costly on a personal level. They drop it.

Can Europe afford to lose its brightest minds from scientific endeavor ?

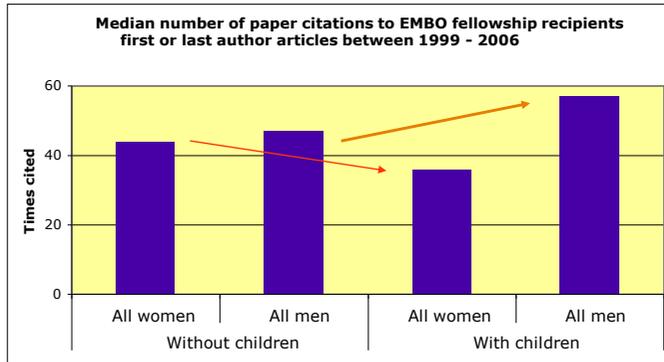
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Does having a family impact on your productivity?

Yes, children impact publication rates



Women spend more time taking care of children (and other family)

Children take time.



Family and Career:

We are not talking about women just having a job - we are talking about *scientific careers*: Ambition to succeed, to have an impact, the drive to excel. Women have the capacity for this – it is clear. Up to age 25 they are generally more successful academically than their male counterparts.

Women in Switzerland (Germany and elsewhere) seem to stop their career because they want to have a family. ⇒ Need it be so ?

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Do European women stop career because of male prejudice against having them in the field ?

Generally *NOT* !

Take EMBO fellowship committee or SNF as an example:

In 1999, the SNF did an in-depth analysis of whether grants from women or grants from men had different success rates: the differences were not significant in biology in medicine. However women consistently received less grant money – true both in the US and in CH..... **it seems that women ask for less money.**

Over the past 3 years the EMBO fellowship committee has made a very careful analysis of the success of men and women. Women were consistently 15-18% less frequently successful at obtaining fellowships. It did not correlate with numbers or quality of papers nor with age. **They did selection for 2 years “gender blind” and got the same result.**

Not clear why: the effect is small but real.

Science faculty's subtle gender biases favor male students

Corinne A. Moss-Racusin^{a,b}, John F. Dovidio^b, Victoria L. Brescoll^c, Mark J. Graham^{a,d}, and Jo Handelsman^{a,1}

^aDepartment of Molecular, Cellular and Developmental Biology, ^bDepartment of Psychology, ^cSchool of Management, and ^dDepartment of Psychiatry, Yale University, New Haven, CT 06520

It is noteworthy that female faculty members were just as likely as their male colleagues to favor the male student. The fact that faculty members' bias was independent of their gender, scientific discipline, age, and tenure status suggests that it is likely unintentional, generated from widespread cultural stereotypes rather than a conscious intention to harm women (17). Additionally, the fact that faculty participants reported liking the female more than the male student further underscores the point that our results likely do not reflect faculty members' overt hostility toward women. Instead, despite expressing warmth toward emerging female scientists, faculty members of both genders appear to be affected by enduring cultural stereotypes about women's lack of science competence that translate into biases in student evaluation and mentoring.

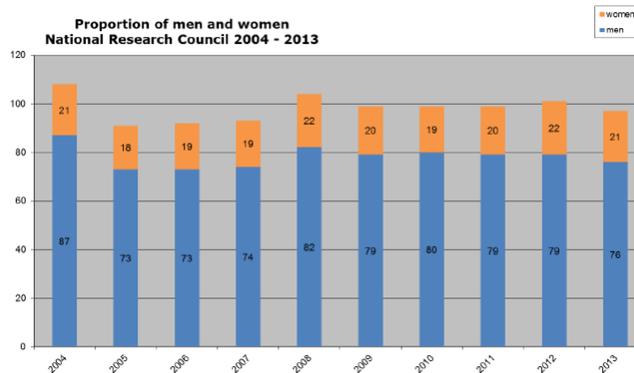
www.pnas.org/cgi/doi/10.1073/pnas.1211286109

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Women can be as socially biased (about women in science) as men

Members of the National Research Council 2004-2013 (numbers)



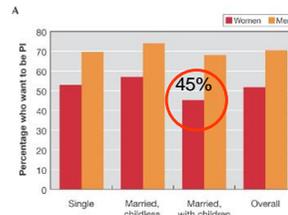
Should we increase the number of women in the SNF council ?

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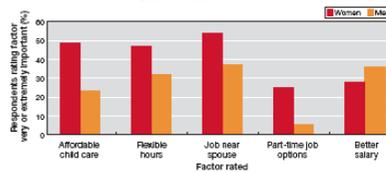
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The problem is at least partially self-imposed by women

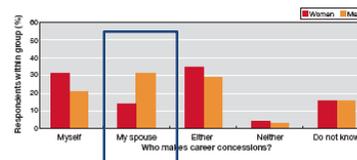
Fewer women with children (than men with children) want to pursue a principal investigator career track, even in the US.



Women see affordable and convenient childcare as important criteria for job choice: **but only men** are more likely to ask for more salary !



Women are generally the ones who give into the spouses need of moving for career, etc



Susan Gasser

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Self imposed and subconscious attrition:

Having a family and spending time with it, is more important to women than to men.

- Twice as many women consider it a challenge to their family life to work long hours of overtime.
- Women do not demand the compensation necessary to cover expensive (good) child-care.
- Women are more likely to compromise their careers for their husbands (and there are ever more dual career marriages)

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The facts

People do tend to be biased

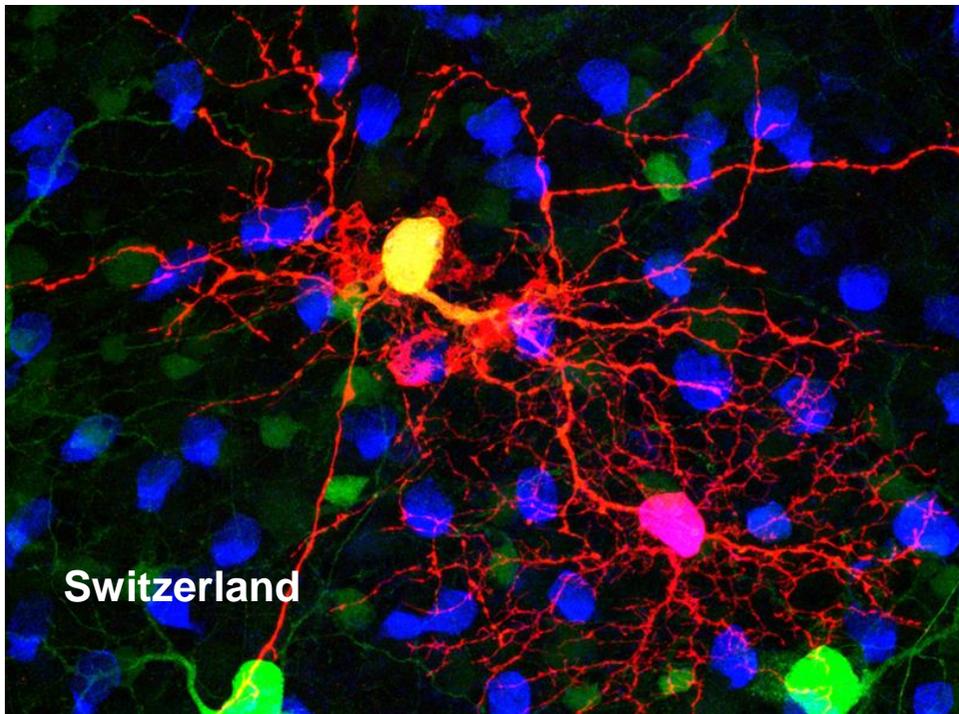
- people view science as more male than female
- people hold biases about competency based on irrelevant attributes
- motherhood confers a disadvantage but fatherhood an advantage in research
- gender bias formed at an early age and through cultural transmission
- **Women tend to make choices – men just go ahead**

We need to **conquer gender assumptions** at all levels

- Expand gender-blind review processes
- Make conscious effort to offer women support
 - Trumpet achievements
 - Ensure equal salary
- Women should be aware and overcome their own biases that work against their career
- Consider new strategies on how to change and promote women in science:
the new SNF Gender Committee

From *Most of us are biased* by Jennifer Raymond, *Nature*, 495:21-44.
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Gender equality in SNSF funding schemes

Gender equality measures have been gradually introduced in all SNSF funding schemes:

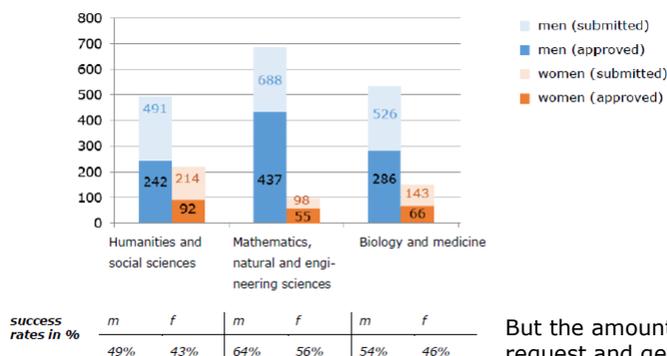
- Introduction of an **academic instead of a biological age** limit, recently replaced by a **flexible indicative value**
- **Family situation** taken into account in the evaluation of proposals (quality instead of quantity of publications, limited mobility) **Mobility schemes more flexible** to make family and research more compatible (mobility already during the PhD; postdoc fellowships with possibility to make several shorter stays abroad; return grant; family allowance; paternity leave)
- **120% support grant** allowing part-time work for postdocs with young children including a compensation (hiring of a support person and/or contribution to child care costs)
- **Equality grant** for female PhD students and postdocs (support for mentoring, networking and career-promotion activities)

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SNSF Proposals (submitted/approved) success rates

Number of proposals and success rates



But the amounts women request and get are lower
REVERSE THIS

Past solutions? Marie Heim-Vögtlin* Fellowships

Started in 1991 to support biologists, physicians, scientists, engineers and mathematicians **to return to her scientific career after a full or part-time family break.**

- 5 Million Swiss Francs/ year
- 37% success rate
- Salary for two years
- Most important support: **allowance for child care and part-time work**
- Since 2009 : MVH Prize to increase profile of women

Success status

Between 1991 and 2012, 457 women were supported
86% of the supported women stayed in the work process, 64% in academia
High number of applicants
Europe's "Best practice" for substantial and successful promotion of women scientists
BUT....There is a stigma to MHV: it was not trying to fund the best & brightest

**) Marie Heim-Vögtlin (1845-1916) was the first Swiss woman doctor.*

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Rethinking MHV

- Is a **women-specific scheme** still needed?
- Are the participation requirements (delay in career) and evaluation criteria (academic career) compatible?
- **Does MHV contribute to fix the leaky pipeline?**
- **Would other measures be more efficient?**

How do we ensure that the most talented young women make the choice to pursue research careers?

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PRIMA Promoting women in academia

How?

- With a highly competitive instrument for women researchers on the advanced postdoctoral level in all disciplines
- Give the most talented women researchers at the late postdoctoral stage a particular advantage
- Enrich the pool of female candidates for Swiss university positions
- Create strong network for these women with established women and men leaders in scientific research
- Strong funding and **MENTORING** (active, engaged career promotion)

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Outline of the **PRIMA** scheme

For (the best) female researchers in all disciplines

Requirements:

- Within 3-4 years of the PhD award date (but...rules should be somewhat flexible)
- Proven scientific record according to academic age and research field
- Suitability for a high-level career in academic/clinical research
- Swiss host institution (no CH citizenship required)

Duration maximum of 60 months (5 years)

Budget maximum of CHF 1.25 million for 60 months (salaries and research)

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Role models and mentoring



Talking about the problems of careers in research !



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The SNSF needs to show that it
VISIBLY promotes women's careers in science

We need to promote the *VISION* of a
successful female scientist career

We need to make women *feel welcome* in the
academic and research workplace



- *The Japan Times* Saturday November 2, 2013
- Japan's gender gap **has gotten even worse**, according to this year's report by the World Economic Forum released last month. Japan fell to **105th out of 136 countries** — down from 101st last year — **to the lowest rank ever**. The government's goal of increasing the percentage of women in leadership positions in every sector of society to 30 % by 2020 seems farther away than ever.
- **Economic advice...**
- Several research organizations recently found that companies with more women on their boards **earn a better return on investments** than companies with few women. Catalyst, a nonprofit organization aiming to create more inclusive workplaces, found that companies with a higher percentage of women **earned up to 26 percent more**. A study by McKinsey and Co. found that international companies with more women board members **outperformed the rest by up to 56 percent**.
- **It is not just a matter of promoting women; that's basic. It is also a matter of transforming deeply held beliefs. Women should be welcomed into the workplace.....** *i.e. into the academic world*