

# How to avoid gender bias in research

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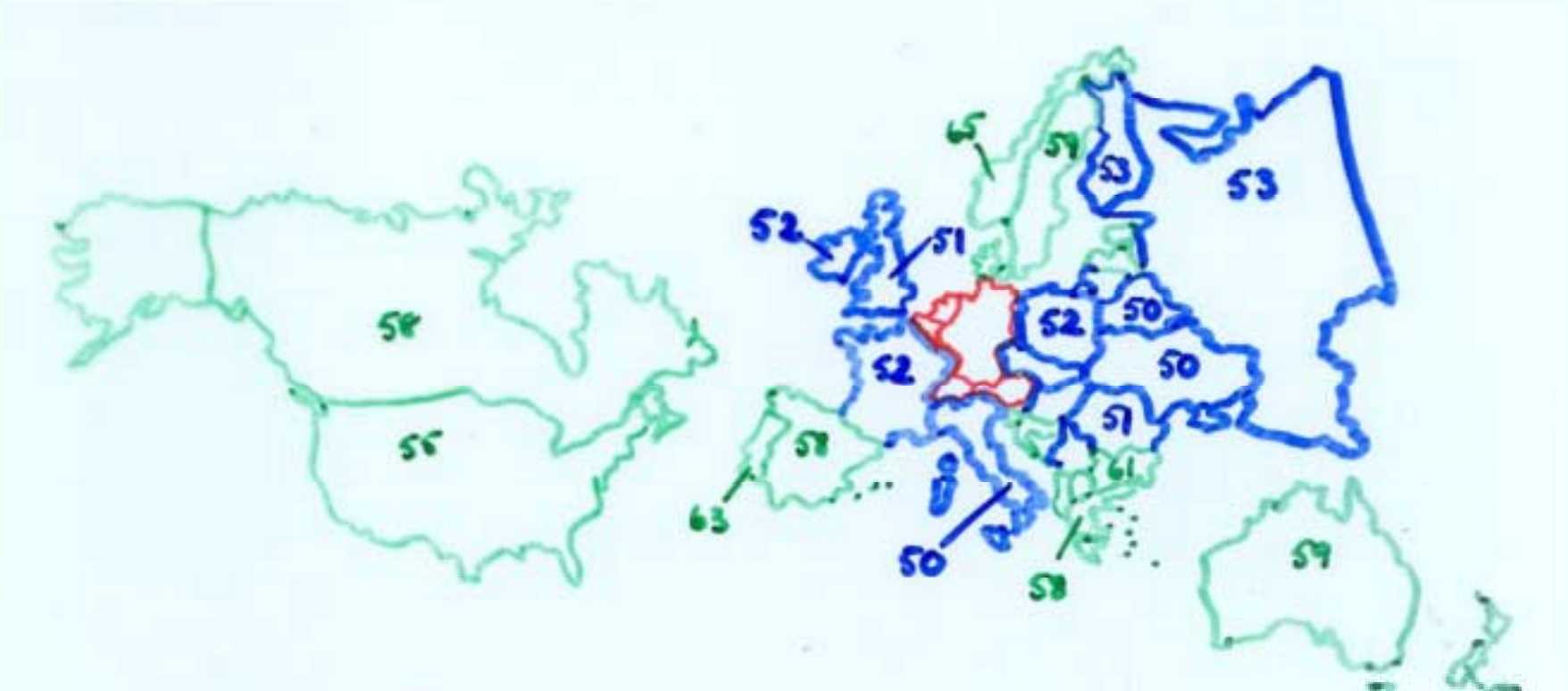
Göteborg

Sweden

# Waste of talent

- Women are world-wide more interested in academic studies compared to men
- Women have better grades compared to men
- However, women drop off at each stage in the university career at a greater rate than men.
- The drop out of women is unrelated to family and children – single women do not enjoy better careers than women with children

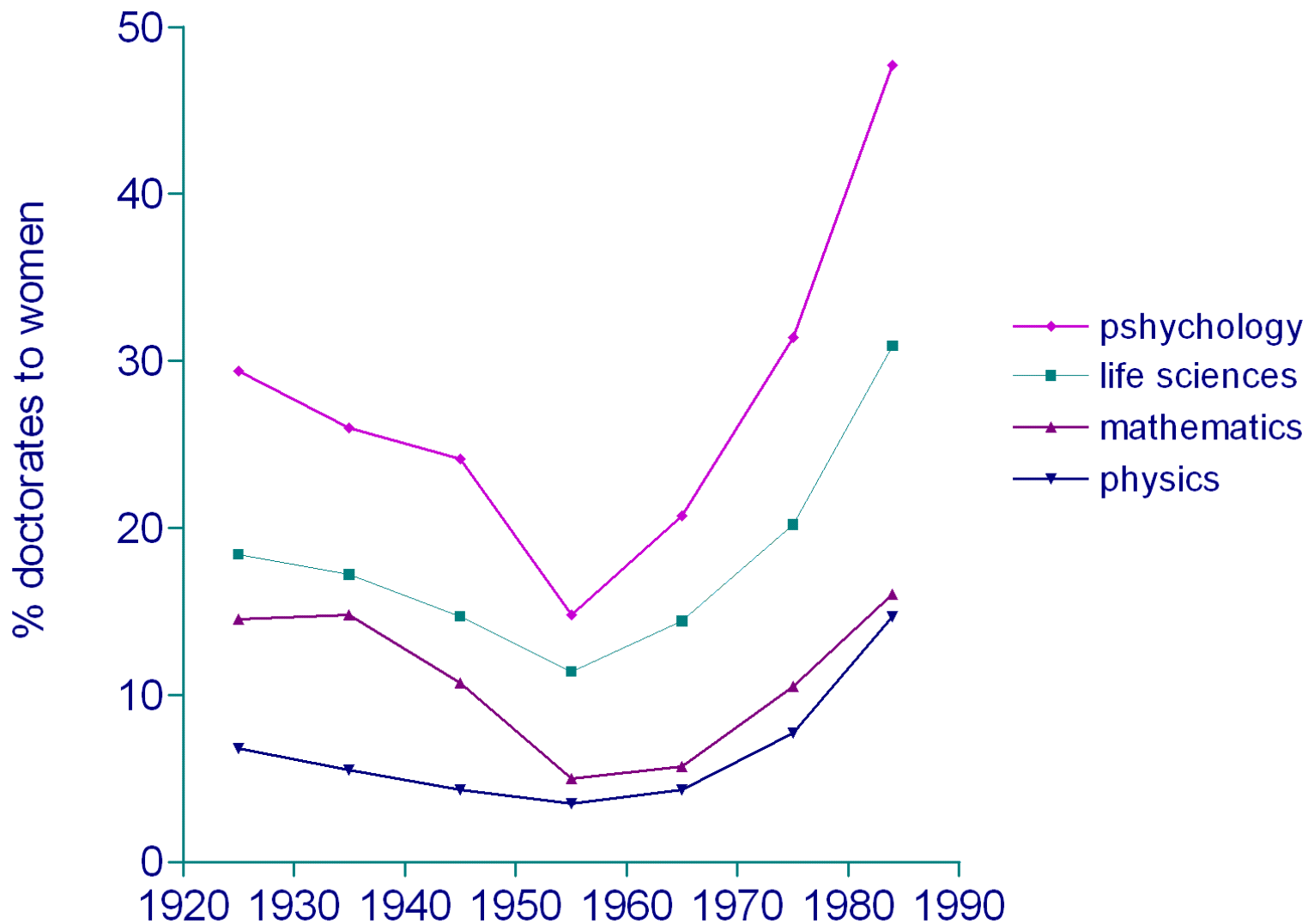
# Proportion of bachelor exams taken by women (1996/7)



? 55% women  
50-54% women  
<50 % women

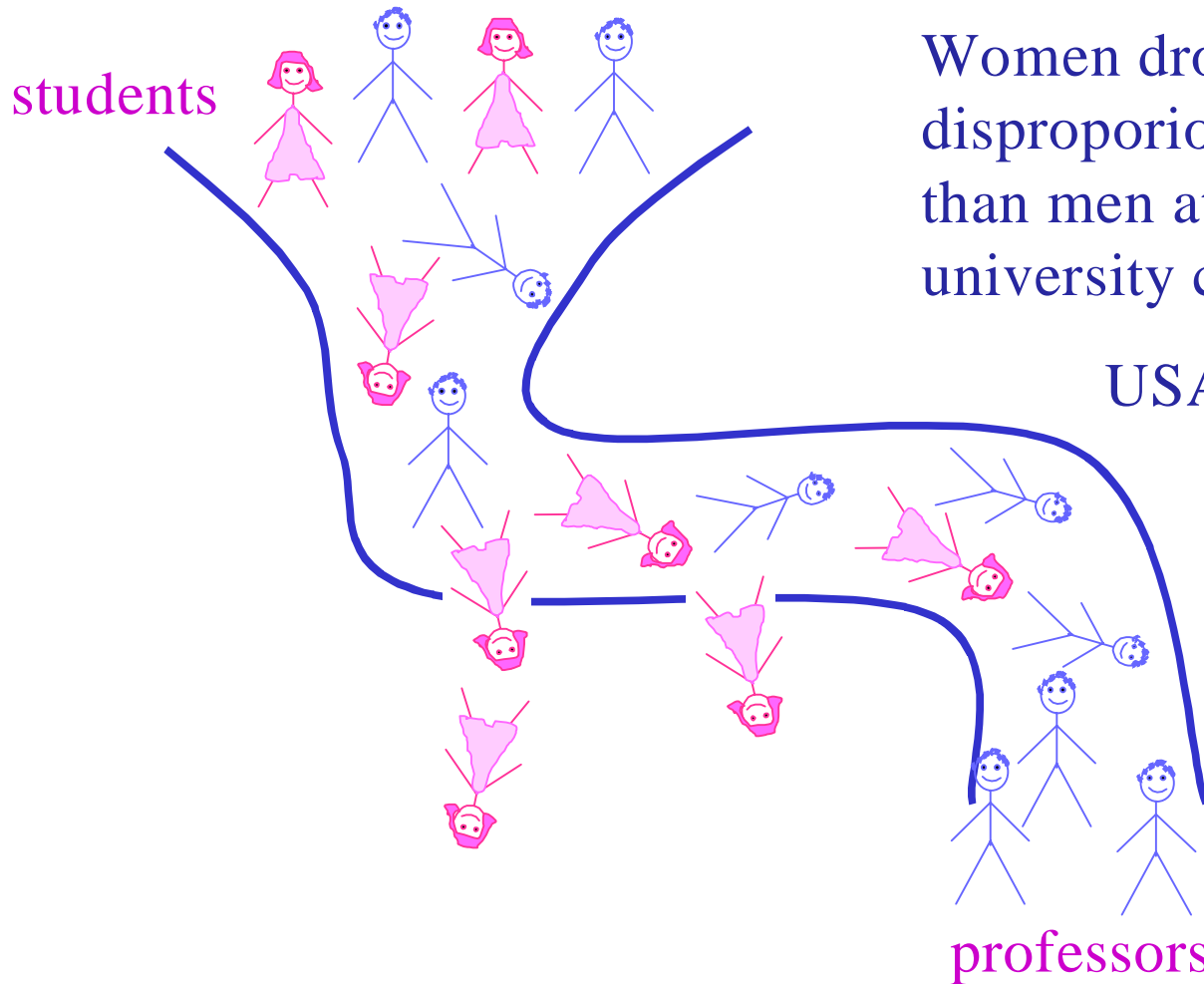
From the ETAN report  
"Women and Science"  
Brussels, 2000

# THE PROPORTION OF WOMEN AMONG UNIVERSITY STUDENTS AND PHDS INCREASED DRAMATICALLY AFTER THE 1960S



BUT 10 years later, women had not increased on higher university positions.

# "The leaky pipe-line"



Women drop off at a disproportionately higher rate than men at each stage of the university career

USA, 1970s

professors

All available studies show that the worse academic careers of women are NOT due to family and children

Single women drop out at an equal rate as married women with children

Married women with children are equally academically productive as single women

The female sex in itself is connected to poor academic career outcome

Astin & Bayer, 1979; Sonnert & Holton, 1995; Cole & Zuckerman, 1987; Kaplan *et al.*, 1993; Billard, 1994; Luukkkonen\_Gronow *et al.*, 1983; Kyvik *et al.*, 1988; Kaplan *et al.*, 1996; Carr *et al.*, 1998.

Some factor in the academic system  
itself enriches men

# The leaky pipe-line – Europe

No prospective studies have been done in Europe examining the fate of men and women with university degrees

Germany:

Women constitute 4% of the full professors (grade C4).

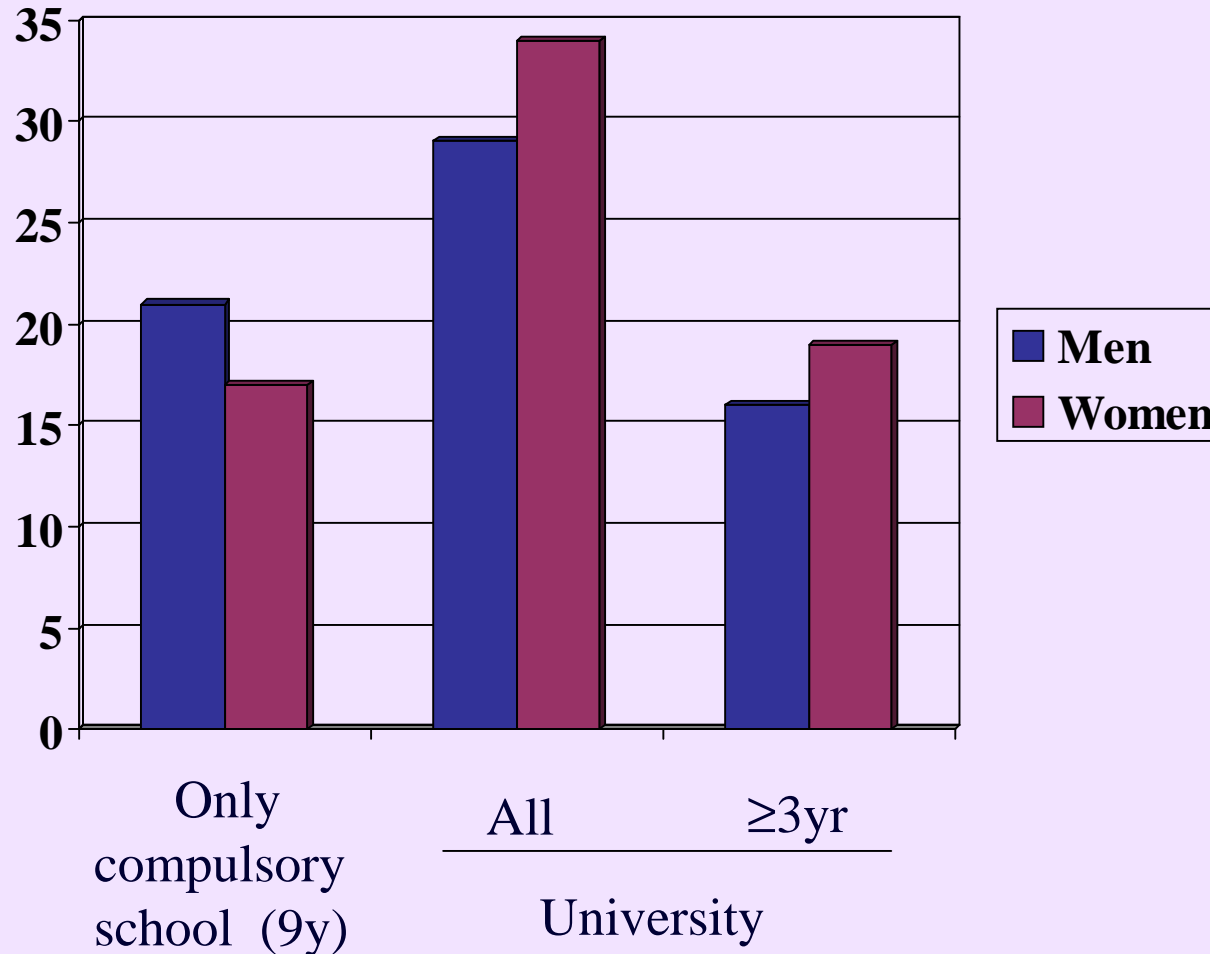
If women had followed the same career pathway after their basic academic studies as their male colleagues, women would have constituted 28% of the full professors.

Men are enriched 7 times from basic exam to professorship.

The proportion of women among full professors is lower in European countries compared to the U.S. and only increases by 0.5-1% unit per year

The ETAN report on women and science. Brussels, 2000.

## Education Swedish population 25-64 y



**BUT only 14% of the university professors are women!**

How many times are males enriched from basic academic exam to professorship in Sweden?

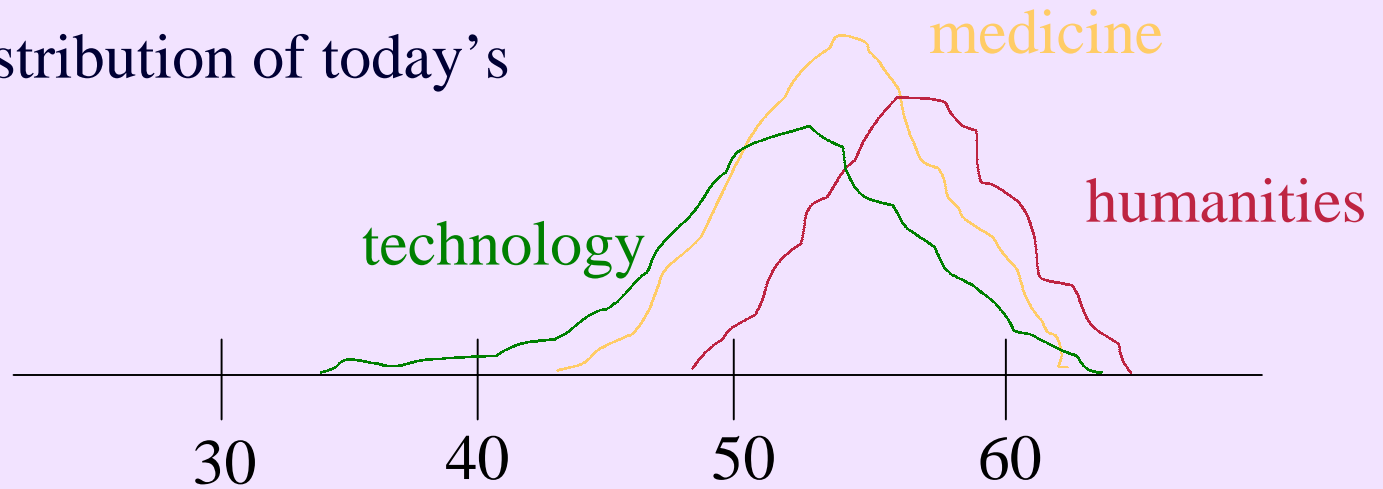
The fate of men and women obtaining university degrees is NOT monitored in Sweden

BUT the Swedish Bureau of Statistics assemble data on the academic degrees afforded to women and men in each subject each year.

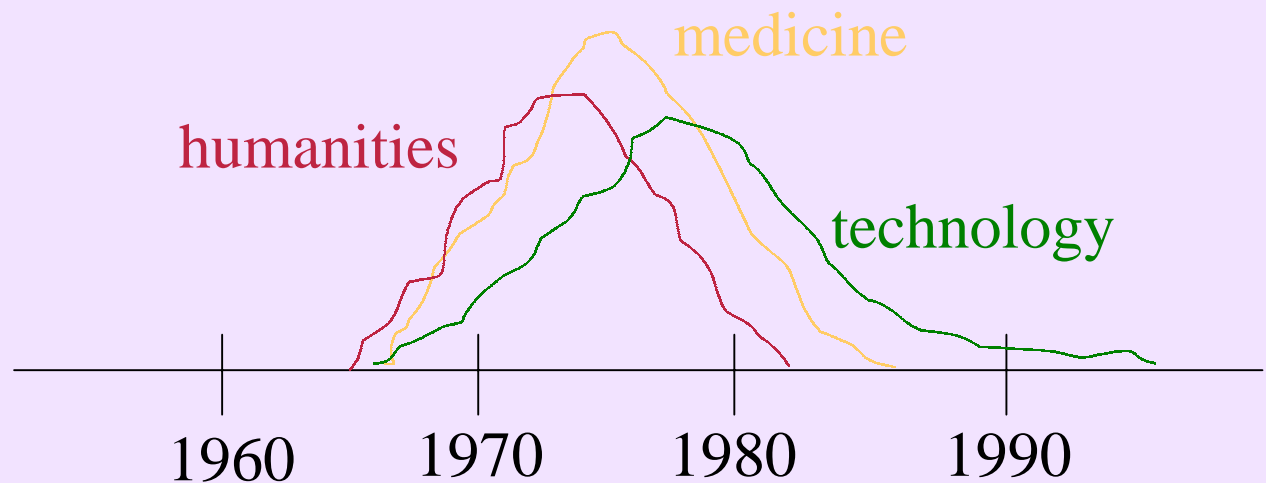
There is also information about the number and age of full professors in each subject area.

These data could be used to calculate the leakage of women and the accumulation of men in Swedish academia

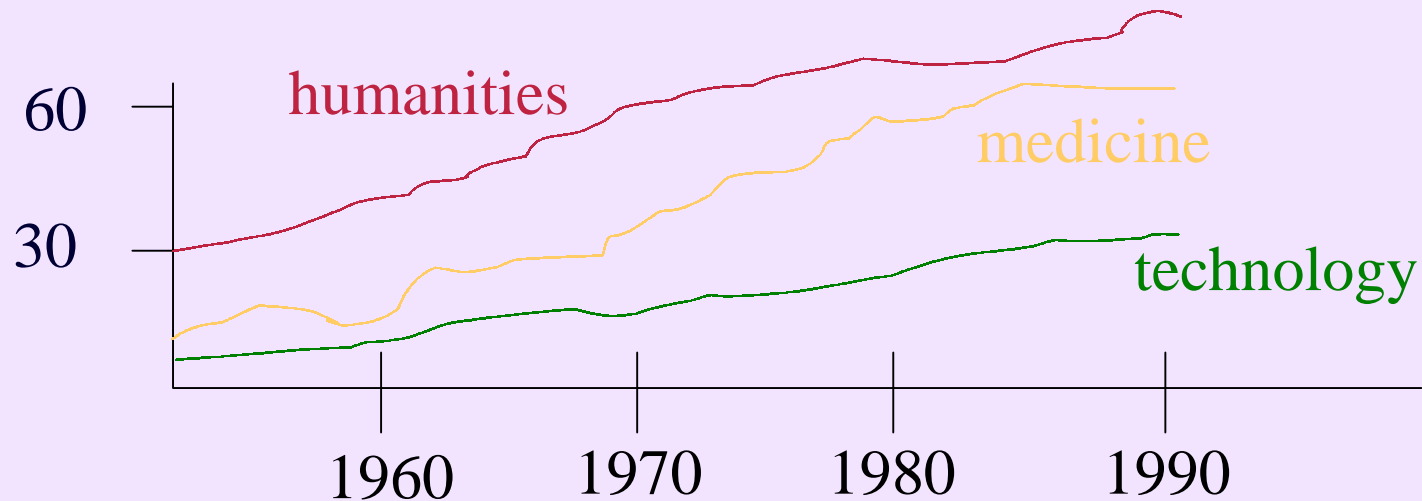
The age distribution of today's professors



When did they take their exam  
(if they were 25 at that time)?



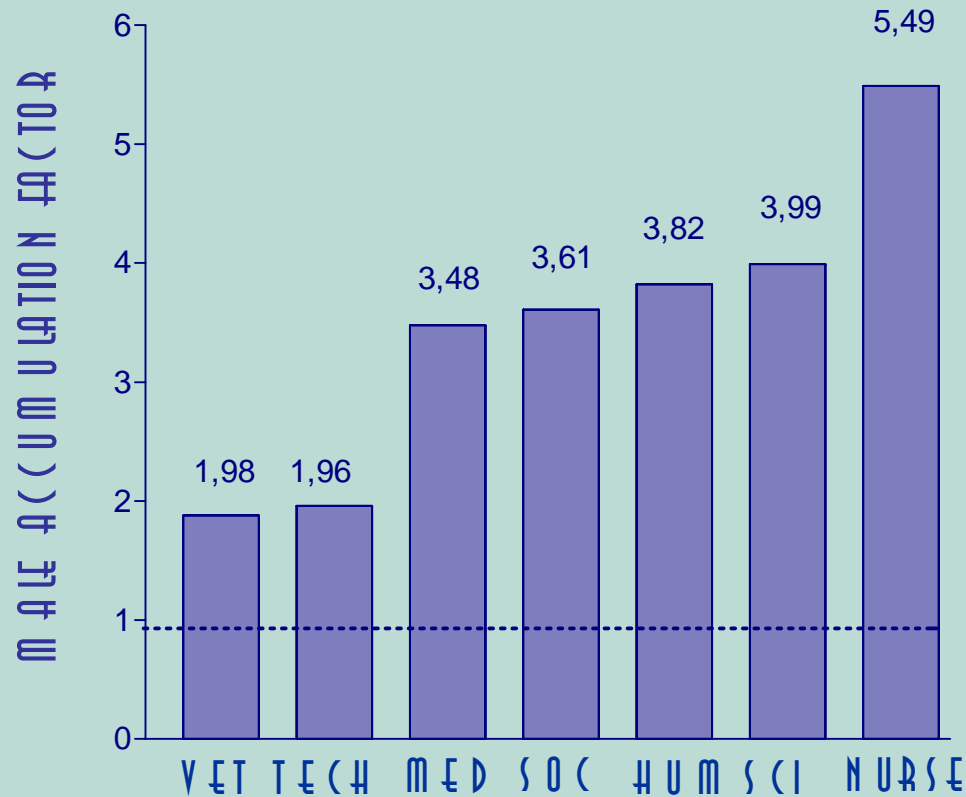
How many % of those who took exams were women?



From these data we can calculate how many % of the professors would be women if the women had had the same chances to become professors as the men taking basic academic degrees the same year

How many times greater chance has a man had compared to a woman to become professor?

# How many times are males enriched from basic academic exam to professorship?



Chrapkowska/Wold-04

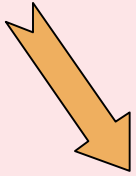
Data obtained from the Swedish National Bureau of Statistics. Processed by Chrapkowska & Wold, 2004

A tremendous waste of female academic talent takes place in European countries usually viewed as civilized and advanced

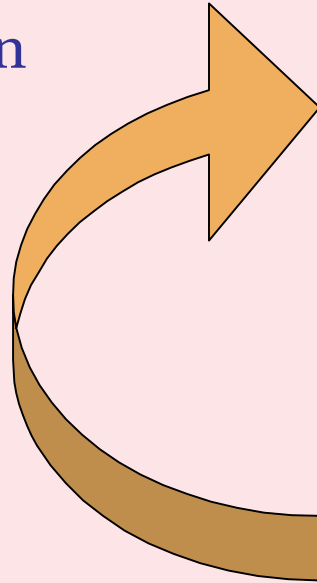
The economic waste in terms of lost competitiveness has not (yet) been calculated

Europe must take action against the waste of female academic talent

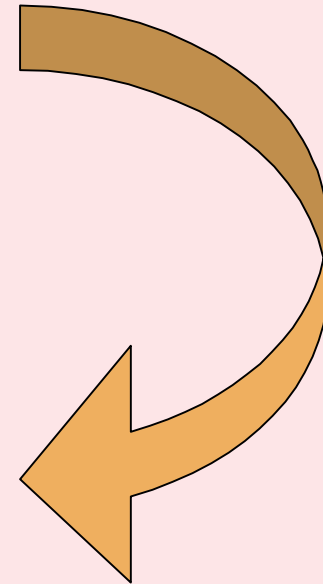
Prejudice



Evaluation  
process

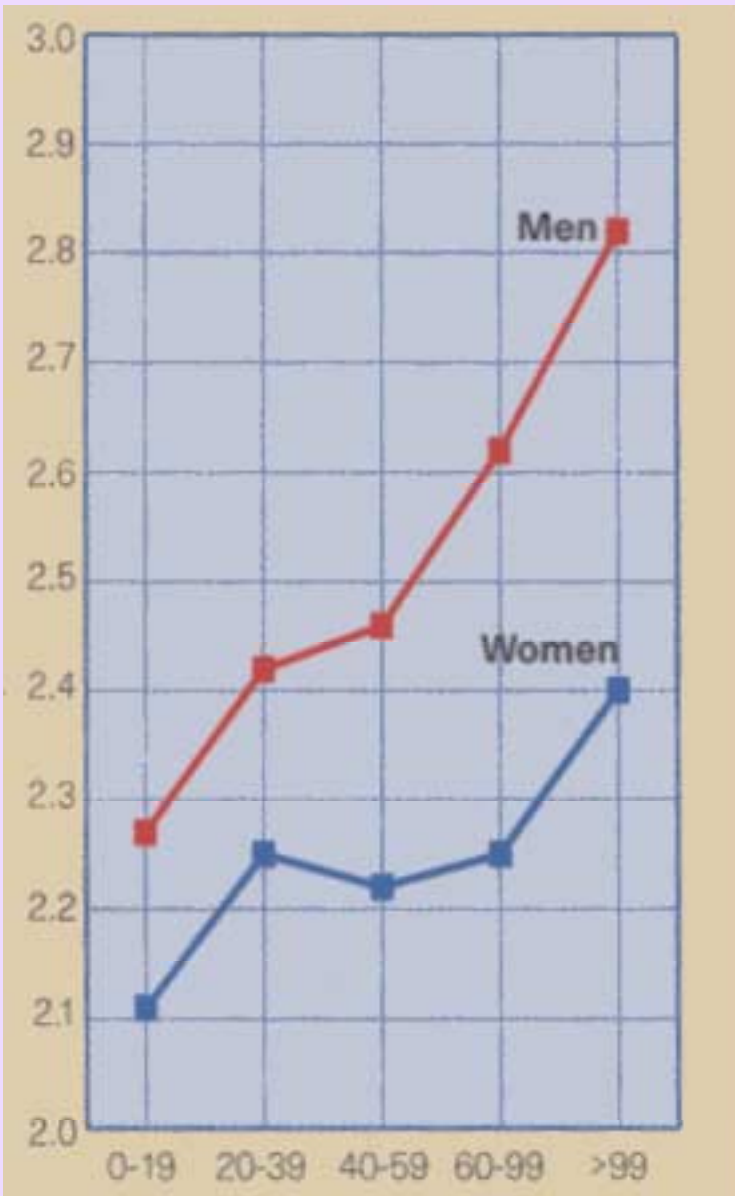


Grants  
Position



Research  
results

competence score



Male and female applicants for post-doctoral positions at the Swedish Medical Research Council 1995

Female applicants had to be 2,6 times more academically productive as male applicants to obtain the same scores for "scientific competence" as a male applicant

*Wennerås & Wold: Nepotism and sexism in peer-review. Nature, 1997*

productivity (impact points)

# Waste of female research talent.

⇒ suboptimal utilisation of tax resources

⇒ reduced competitiveness

⇒ needs of women may not be focused by researchers

To minimize waste of talent

## GENDER WATCH

- ensure that male and female applicants are treated equally
- statistics
- more women evaluators

# The content of the research

Research supported by the European commission must respond to the needs of both sexes

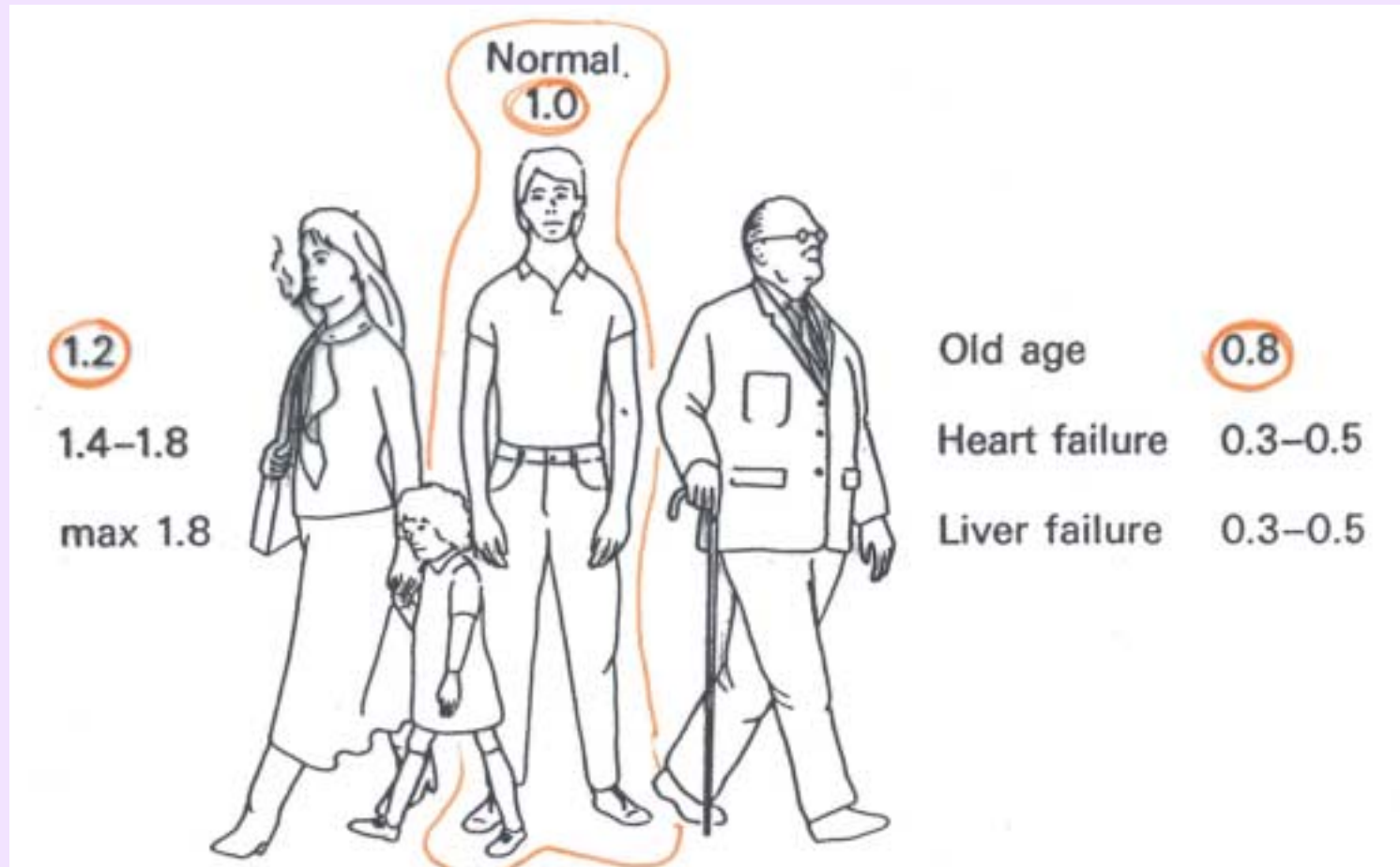
## EU SUPPORTED SCIENCE SHOULD NOT:

1. Assume that the man is the norm
2. Assume that women are less complex human beings than men
3. Provide pseudoscientific arguments to maintain inequality between the sexes

# Medicine

An example of gendered-biased science

# THE YOUNG, WHITE MALE IS THE HUMAN NORM



How to dose the drug teophyllin

*In: Mygind, N. Essential Allergy. Blackwell Sci. Publ. Oxford, 1986*

# 1. The "human = male" notion

- ⇒ Failure to investigate women's physiology and diseases
  - ⇒ Insufficient knowledge about the female body in health and disease
- ⇒ Failure to include women in treatment trials and drug testing
  - ⇒ Drugs used in women may not have been tested in women

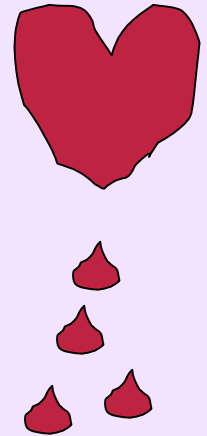
## The economic discrimination of women

⇒ Cheaper drugs used for women. Less invasive investigations, less aggressive treatment

→ Health care not optimal for women

# Women's hearts

Diseases of the heart and blood vessels are the major cause of death for both men and women, but the disease presents on average 10 years later in women



Most cardiac research has been done on **males only**

- We do not know well the risk factors for women
- Women get less aggressive treatment than men
- Women get older and cheaper drugs than men
- Women suffer from poorer prognosis than men

⇒ A significant loss of health and lives of women has been caused by gender biased medical research & discrimination of women

# The man is STILL the norm in cardiac research

European Society for Cardiology will shortly put forward a programme on preventive measures to the European Parliament  
The gender dimension is not mentioned.

Exploring sex differences in case fatality in acute myocardial infarction or coronary death events in the northern Sweden MONICA project. *Lundberg et al., J. Internal Medicine, 2002.*

”... men with AMI (acute myocardial infarction = heart attack) significantly more often had chest pain typical for AMI compared with women ( $p < 0.0001$ ) and ECG changes typical for AMI ( $p < 0.0001$ )...”

”women did not have, as often as men, typical AMI changes”

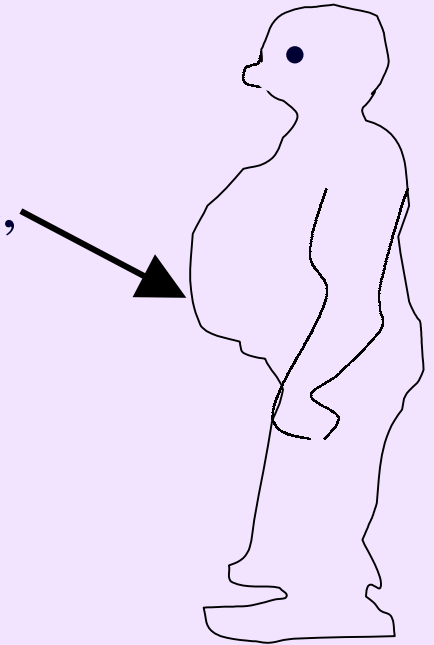
”Typical for AMI” = Typical for men’s AMI

# The metabolic syndrome

Overweight, type 2 diabetes, high blood pressure,  
increased risk for heart disease...

Common in Western societies, increasing in  
developing countries

Research almost exclusively done on men!



”Intra-abdominal obesity and metabolic risk factors: **a study of young adults**” von Eyben et al., 2003.

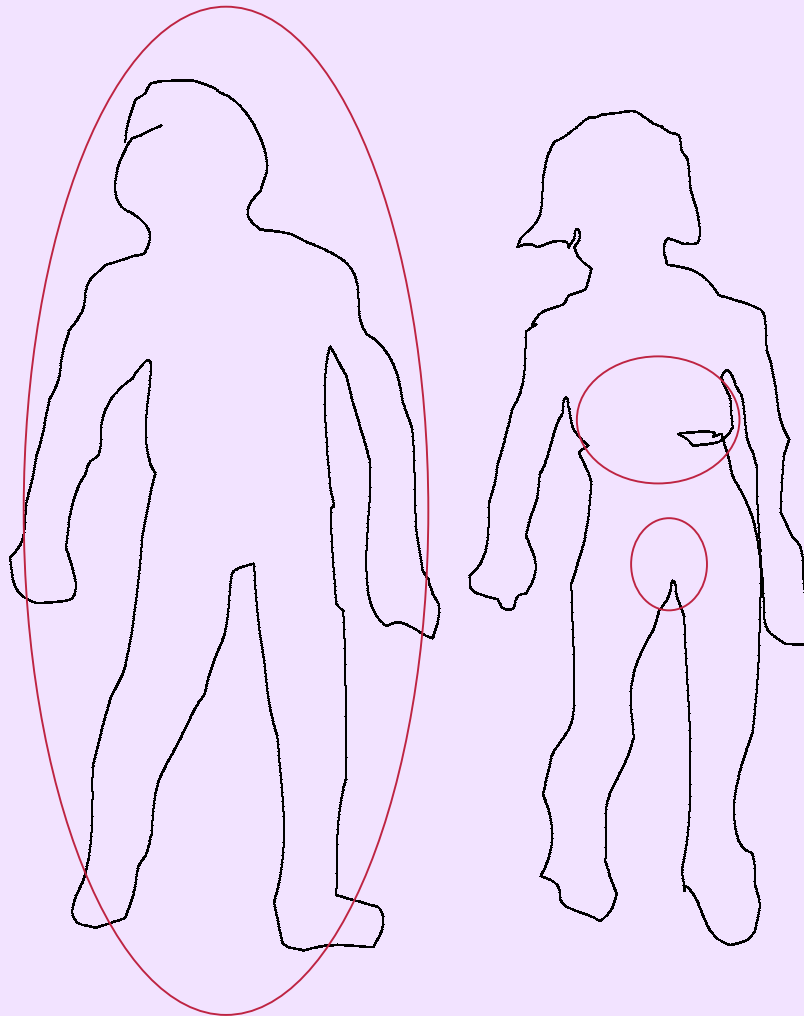
SUBJECTS: A total of 46 Danish Caucasian subjects (40 men and 6 women)

CONCLUSION: **For young individuals**, intra-abdominal fat is ...important ... for six ... metabolic risk factors.

BUT – this has only been shown for males!

No medical research should be funded that does not include both women and men (provided the disease/condition occurs in both men and women)

## 2. While the male is seen as the human, the female is seen principally as a sexual being



Obsession with e.g. female sex hormones

E.g. prescription of estrogens to healthy women in menopause not based on solid science and ignoring health hazards

Estimated >20 000 women in Great Britain have got breast cancer last decade due to prescription of hormones in menopause.

Reductionist view on women should not be allowed in research funded by EU

Tip:

The proposal should not sound strange if the word "Woman" is changed to "Man"

### 3. Pseudoscientific support of politics opposing women's equality

E.g. "blame the mother"

for psychiatric problems in the young  
(e.g. anorexia)

for allergies in children

1900: Mothers were blamed for children's infections.  
Should clean more!

2000: Mothers are blamed for children's allergies  
Should clean and breast-feed more!

Not supported by any scientific data

## GENDER AWARENESS BUT NOT OBSESSION BY SEX

- Research must include both men and women
- The two sexes should NEITHER be assumed to be/react similar(ly)  
NOR should they be presumed to be different
- Research should not be used to promote stereotypes on sex, class, ethnicity
- Research should not be used to excuse inequality between the sexes

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Ensure that

both sexes are represented

research not based on stereotypes

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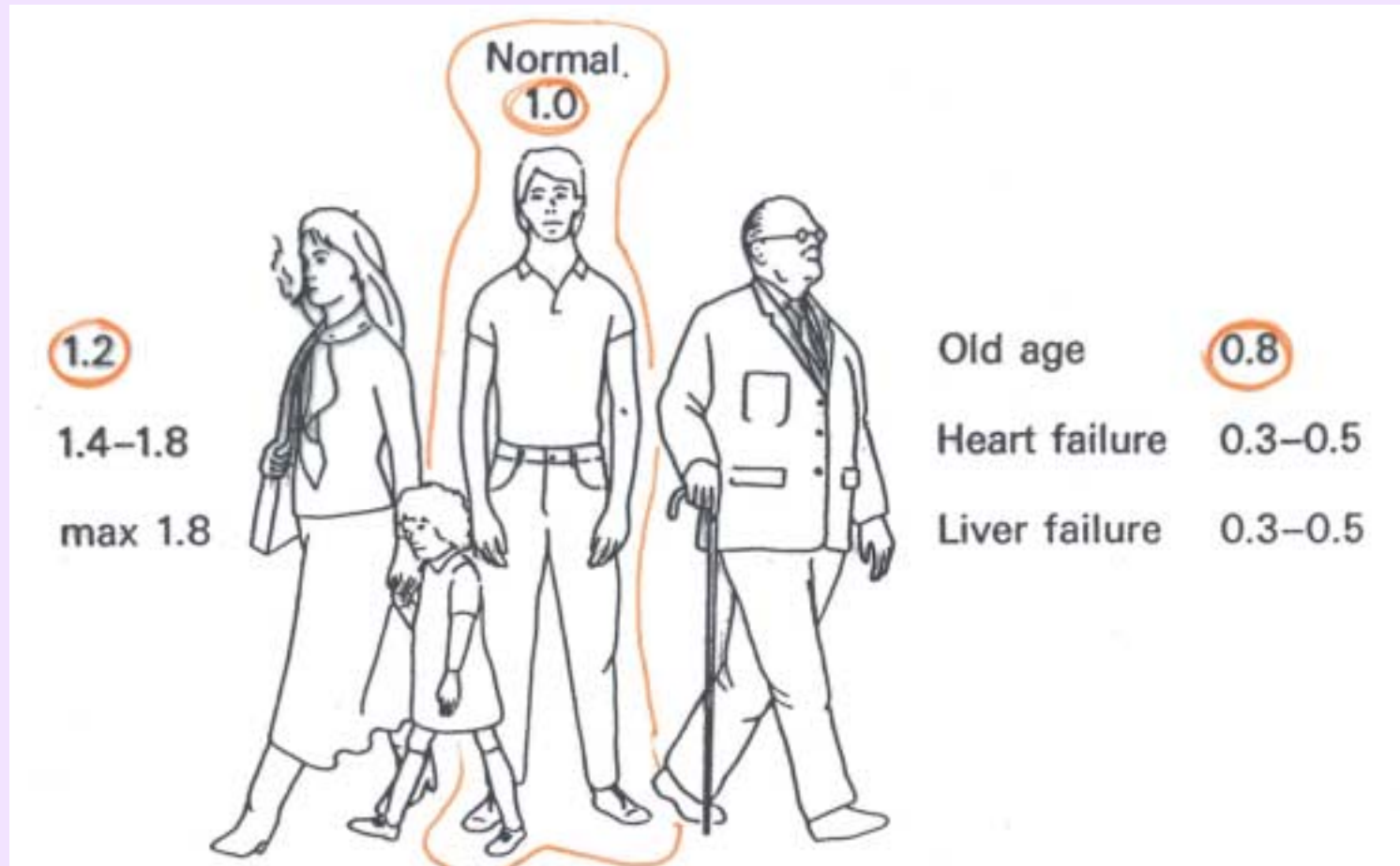
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Researchers, doctors and politicians have thought that research can be done on men only and then applied on women.

This is not correct.

This view has led to significant medical failures in giving women optimal diagnosis and treatment

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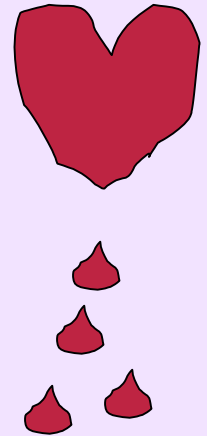
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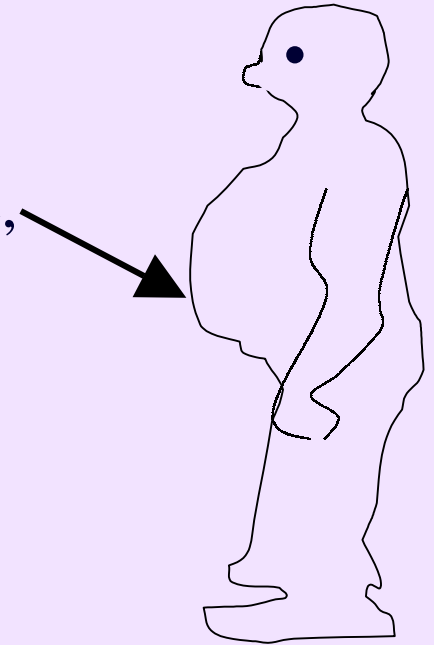
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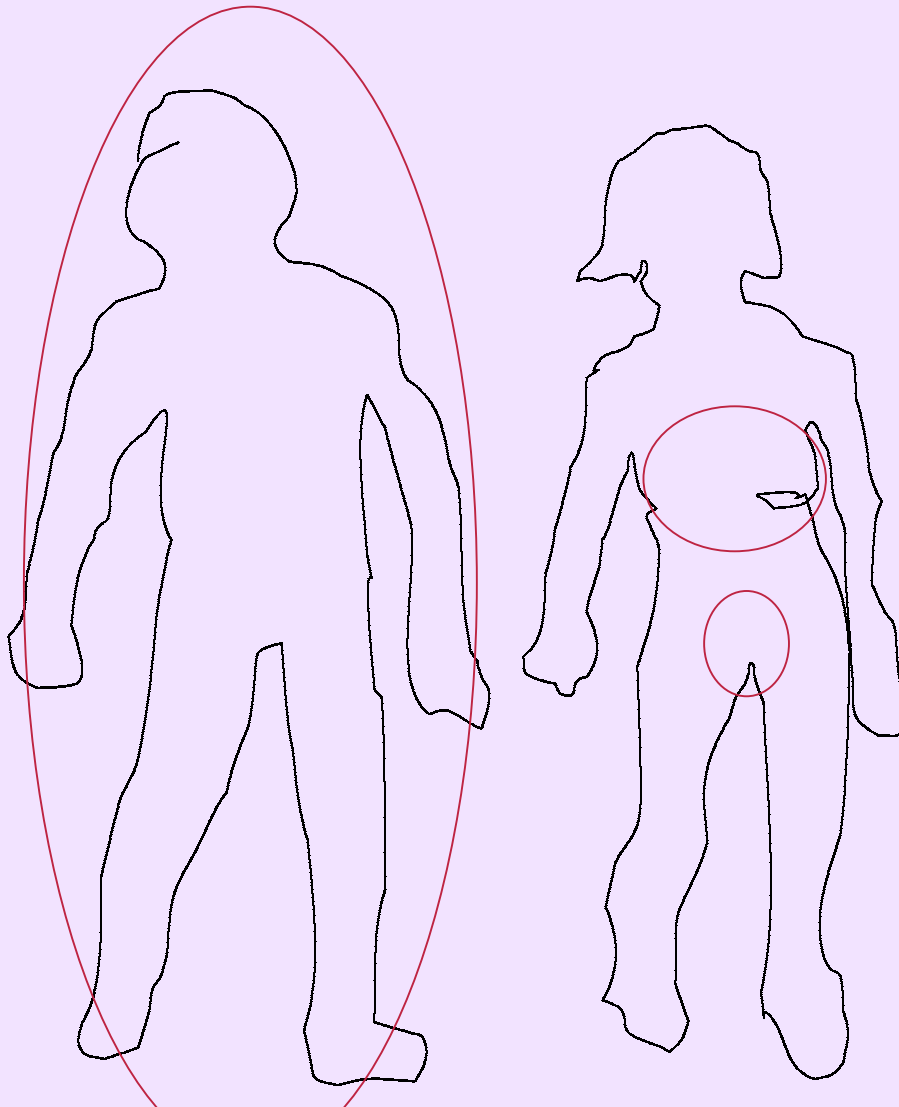
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