Gender Equality Policy in EU Research & Innovation: focus on integrating sex and gender analysis, Politecnico di Milano, March 15, 2019
Ineke Klinge, Chair H2020 Advisory Group for Gender
Most research is done in males
Conclusion

• Women do not receive adequate care
• Problem for governments: all members of a society should receive equally good care
• Which comes down to ‘Making a difference’
• ‘Making a difference’ in basic and clinical research means taking account of the possible influence of sex and gender
3 objectives for the promotion of gender equality

- Gender balance in decision making
- Gender balance in research teams at all levels
- Gender dimension in R&I content
EU policy on sex and gender

- EU principle of Gender Equality
- For research policy: three objectives
- Term used in policy texts: “gender dimension”, meaning integration of sex and gender analysis
Sex and gender as determinants of health and disease

- Differences between women and men (known from epidemiological data)
- In need of explanation
- New paradigm: Every cell is sexed, every person is gendered
SEX and GENDER

• Sex: biological attributes of humans and animals, including physical features, chromosomes, gene expression, hormones and anatomy.

• Gender: socially constructed roles, behaviours, expressions and identities of girls, women, boys, men and gender diverse people.
Why sex and gender matter, summary

- End of the ‘One size fits all’
- Making research and innovation more responsible to the different needs of men and women
- Taking into account factors intersecting with sex and gender such as age, SES, ethnicity, sexual orientation et. al.

- [https://www.youtube.com/watch?v=s_fJ45JUzjg](https://www.youtube.com/watch?v=s_fJ45JUzjg)
Gendered Innovations project

• To provide researchers with tools to take account of the gender dimension
• Methods of sex and gender analysis
• Definition of terms
• Case studies
• Policy portal
• And more
Gendered Innovations project

1) developed state-of-the-art **Methods** of sex and gender analysis

2) provided **Case Studies** to illustrate how sex and gender analysis leads to discovery

http://ec.europa.eu/research/swafs/gendered-innovations/index_en.cfm?pg=home
Gendered Innovations

• Moving beyond ‘gender bias’
• Formulating a positive programme that inspires researchers
• Highlighting how sex and gender analysis sparks creativity and fosters new knowledge
Gendered Innovations
case studies

Animal Research: Designing Health & Biomedical Research

Osteoporotic Fracture Probability by Age and Sex
Risk shown for patients with T ≤ -2.5

- WOMEN
- MEN

Data from United Kingdoms
Adapted from Kanas et al., 2006b

Coronary Angiograms for Patients with Chest Pain
Women are more likely to have minor or no obstruction

Diffuse atherosclerosis
Most often seen in younger women with IHD

Obstructive atherosclerosis
Most often seen in older and older women

Pressure

Cumulative Life Course Risk Factors for Non-Communicable Disease (NCD)
Highlighting the influence of sex and gender-related factors

Colorectal Cancer: Analyzing How Sex and Gender Interact

Nanotechnology-Based Screening for HPV: Rethinking Research Priorities
Case studies

• Stem cells,
• Animal research
• (Clinical research)
• Non-communicable diseases
Magnified Muscle Fiber Developed from XX and XY Stem Cells
After two weeks’ development in mdx mice

XX STEM CELLS

XY STEM CELLS

These micrographs show muscle fibers produced from XX and XY MDSCs and demonstrate that XX MDSCs induce “more efficient skeletal muscle generation” than their XY counterparts based on the number of dystrophin-positive muscle fibers produced for a given number of donor cells. Muscles were harvested after two weeks of development in mdx mice. Dystrophin-containing muscle fibers are stained red, indicating that they arose from transplanted stem-cells, as mdx mice lack a functional dystrophin gene and develop a syndrome similar to muscular dystrophy in humans. Nuclei are stained blue. Reproduced with permission from Deasy et al., 2007.
Analyzing sex

- Case study: stem cells
- The method analysing sex: Six steps
NIH Developments: to balance sex in cell and animal studies

Animal research

• Case study: animal research
  http://genderedinnovations.stanford.edu/case-studies/animals.html
Environment in animal research

Integrating Sex & Gender into Animal Research

Social Dynamics
- Sex-segregated or male/female mix?
- Number and mix of animals in lab?

Caging
- Individual or group? Size?
- Complex environment vs. no enrichment?
- Microbially sterile?

genes
hormones
estrus cycle
age/reproductive phase
strain

Diet

Reseacher/Staff
- Sex of researcher/staff?
- Research/staff handling of male/female animals?

Room
- Temperature?
- Sound?
- Lighting (circadian)?
- Odor?
Sex and gender matter

Canadian Institute of Gender & Health

Link:  https://www.youtube.com/embed/fdftL6S94hs

Sex and gender and cardio-vascular disease
Heart disease in women

Coronary Angiograms for Patients with Chest Pain
Women are more likely to have minor or no obstruction

Diffuse atherosclerosis
Most often seen in younger women with IHD

Obstructive atherosclerosis
Most often seen in men and older women

Generalized narrowing

Generalized pressure drop

Pressure

Localized stenosis

Sudden pressure drop

Pressure

Adapted with permission from (K. Lance Gould, 1999).
Formulating research questions

- Case study heart disease

- To read more:
  Strategies and methods to study female-specific cardiovascular health and disease: a guide for clinical scientists
  Biology of Sex Differences 2016:19
Osteoporosis in men

Osteoporotic Fracture Probability by Age and Sex
Risk shown for patients with T ≤ -2.5

Data from United Kingdom
Adapted from Kanis et al., 2008b
Interactie sex and gender

• Case study on risk factors for non-communicable diseases (NCDs): http://genderedinnovations.stanford.edu/case-studies/nutri.html

• Video: http://genderedinnovations.stanford.edu/video_landing.html
Risk factors for NCD’s

Cumulative Life Course Risk Factors for Non-Communicable Disease (NCD)
Highlighting the influence of sex and gender-related factors

- Accumulated Risk of Developing Non-Communicable Diseases
- Gender-related social factors
- Sex-related biological factors

- Maternal nutrition
- Socioeconomic status
- Birth weight
- Growth rate
- Diseases
- Smoking
- Obese
- Physical inactivity

Adapted from Darton-Hill et al., 2004
Analyzing gender

- [http://genderedinnovations.stanford.edu/methods/gender.html](http://genderedinnovations.stanford.edu/methods/gender.html) emphasis on awareness, background assumptions, avoiding stereotypes etc
- Possibility to measure: Gender variables for Health Research (in development by Stanford group);
- See also IGH online module 2
Rationales of science funding bodies (the why)

- (EU) H 2020: Integrating gender/sex analysis in research and innovation (R&I) content helps improve the scientific quality and societal relevance of the produced knowledge, technology and/or innovation.

- CIHR (IGH): Integration SGBA+ is about improving the rigor, reproducibility and generalizability of science. It’s about excellence.

- NIH: The current overreliance on male subjects in preclinical research can obscure key findings related to sex that could guide the planning and development of clinical studies. This progressive approach has resulted in greater awareness of the need to study both sexes. As a part of the policy, scientists must justify the use of only one sex in their research. No part of this policy meant to be a punishment. The policy is meant to be a new standard to enhance reproducibility through rigor and transparency and increase the knowledge base.

- NL G&H: to reduce differences in health between women and men by addressing gaps in knowledge.
3 ONLINE TRAINING MODULES

① Biomedical Research

② Primary Data Collection with Human Participants

③ Secondary Data Analysis of Human Participants
IGH Tools for researchers to integrate sex and gender into research

- The following tools are available to help researchers:
  - Distinguish between and define sex and gender in health research;
  - Identify sex and gender differences in the mechanism, disease or treatment under study;
  - Identify methods for integrating sex and gender variables in health research contexts; and
  - Assess a research protocol or publication based on the integration or omission of sex and/or gender.
- [http://www.cihr-irsc.gc.ca/e/50836.html](http://www.cihr-irsc.gc.ca/e/50836.html) (most complete website with tools of different kinds (kind of research, checklists, how to assess the integration (for peer reviewers), et al.)
Peer review II

Full proposal: aspects considered:
1. Literature review
2. Research question
3. Study design and methods
4. Analysis and reporting
5. Knowledge translation plan (= implementation)
6. https://www.youtube.com/watch?v=Hlceez1Dx5E
Horizon 2020: The gender dimension in R & I content

- Work Programme
  Topics with explicit gender dimension

- Application Form
  "Where relevant describe how sex and/or gender analysis is taken into account in the project's content"

- Reporting
  If relevant as other parts of the project

- Grant Agreement

- Evaluation
  If relevant, as other parts of the proposal
Horizon 2020 Advisory Group for Gender (AGG) I

- **Mandate**: to provide advice to the Commission Services on integration of the gender dimension in research and innovation content.
- **Composition**: each Advisory Group (for all 19 parts of H2020) delegates a gender expert to the AGG; 2-3 meetings per year
- **Products**:
  - Guidance for the selection of experts with gender expertise (2014)
  - For a better integration of the GD in WP 2016-17 (2015)
  - Input into Strategic programming (June 2016)
  - Input into specific WP’s 2018-20 (December 2016) (report)
  - Activities to improve the weak points of WP 14-15 and 16-17
Summarizing:

- There has been growing recognition that appropriate attention to sex (biological factors) and gender (sociocultural factors) in the content, conduct and reporting of health research leads to scientific outputs that are more rigorous, inclusive, and applicable to all patients. Over the past decade, health research funding agencies in Canada, the United States, and the European Union have implemented different approaches for raising the quality of integration of sex and/or gender in health research applications and peer review assessments.

- The effectiveness and sustainability of these various policies hinges on structural modification to the grant application process combined with culture change within the health research ecosystem. Uptake, accountability for, and a critical appraisal of the effects of these policies will be crucial to achieve the delivery of personalized medicine for women, men and gender diverse persons internationally.
Thank you for your attention

Website Gendered Innovations project
http://ec.europa.eu/research/swafs/gendered-innovations/index_en.cfm?pg=home

Report How gender analysis contributes to research

http://budrich-journals.de/index.php/gender/article/view/19311

IGAR tools

CIRH/IGH Tools
http://www.cihr-irsc.gc.ca/e/50836.html
More Resources

**ORWH**

- FAQs about SABV policy:
  - https://nexus.od.nih.gov/all/tag/sabv/

- Videos on Methods and Techniques:

**IGH**

- Videos and Webinars:
  - http://www.cihr-irsc.gc.ca/e/49347.html

- Instructions for Peer Reviewers:
  - http://www.cihr-irsc.gc.ca/e/50837.html
  - https://www.youtube.com/watch?v=Hlceez1Dx5E&index=1&list=PL6hlpNDF2-NUIAX5AfUzs72esOD28bPQJ