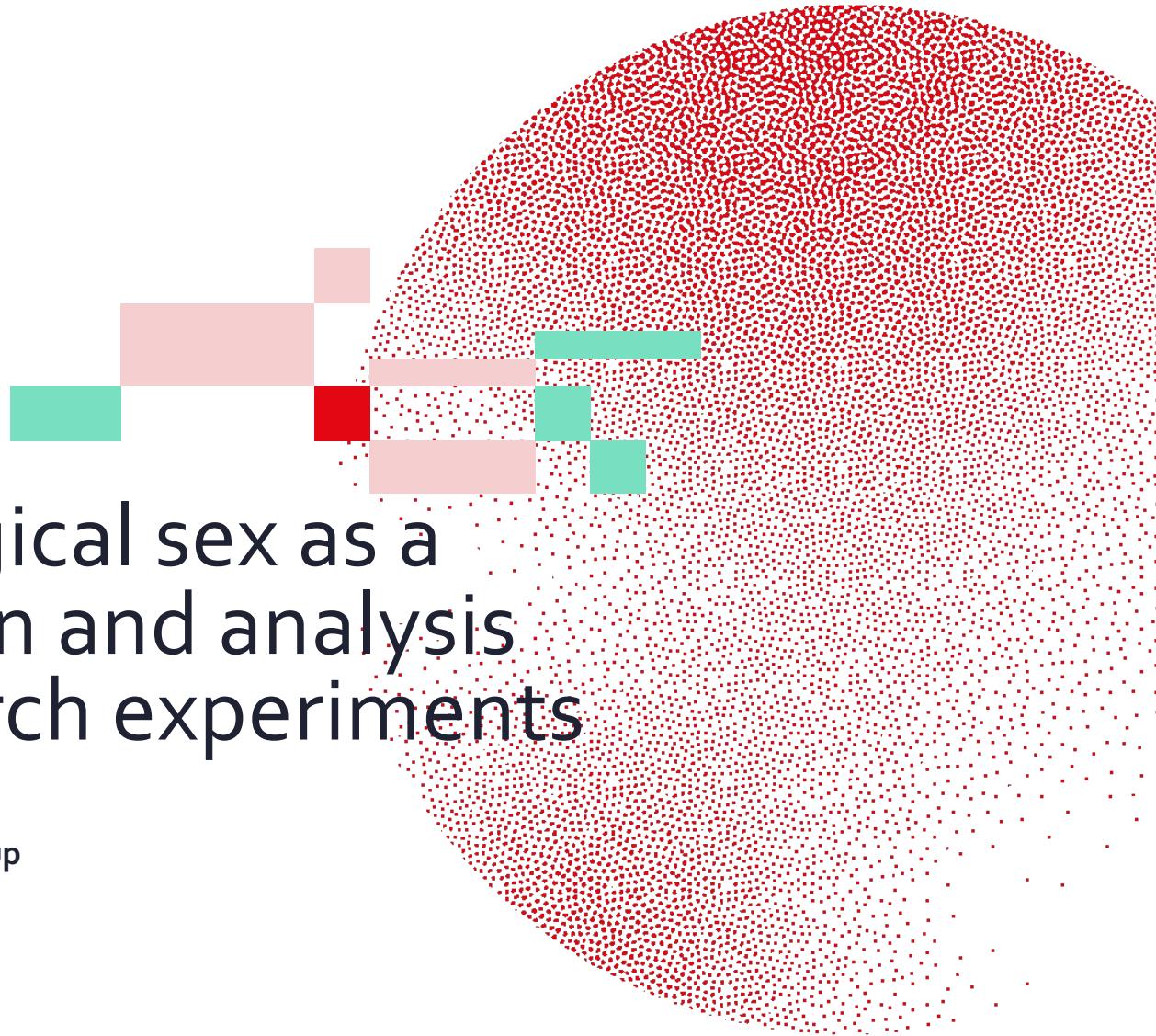




Swiss Institute of
Bioinformatics

SIB DAYS – 24 JUNE 2024 – BIEL

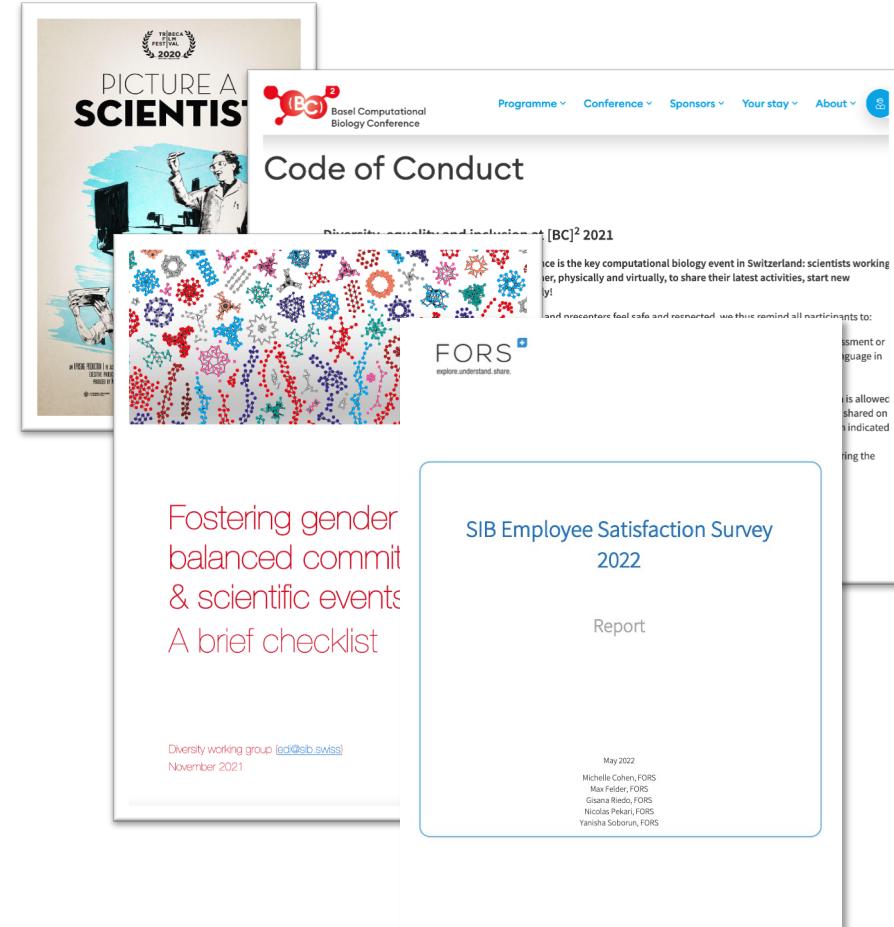
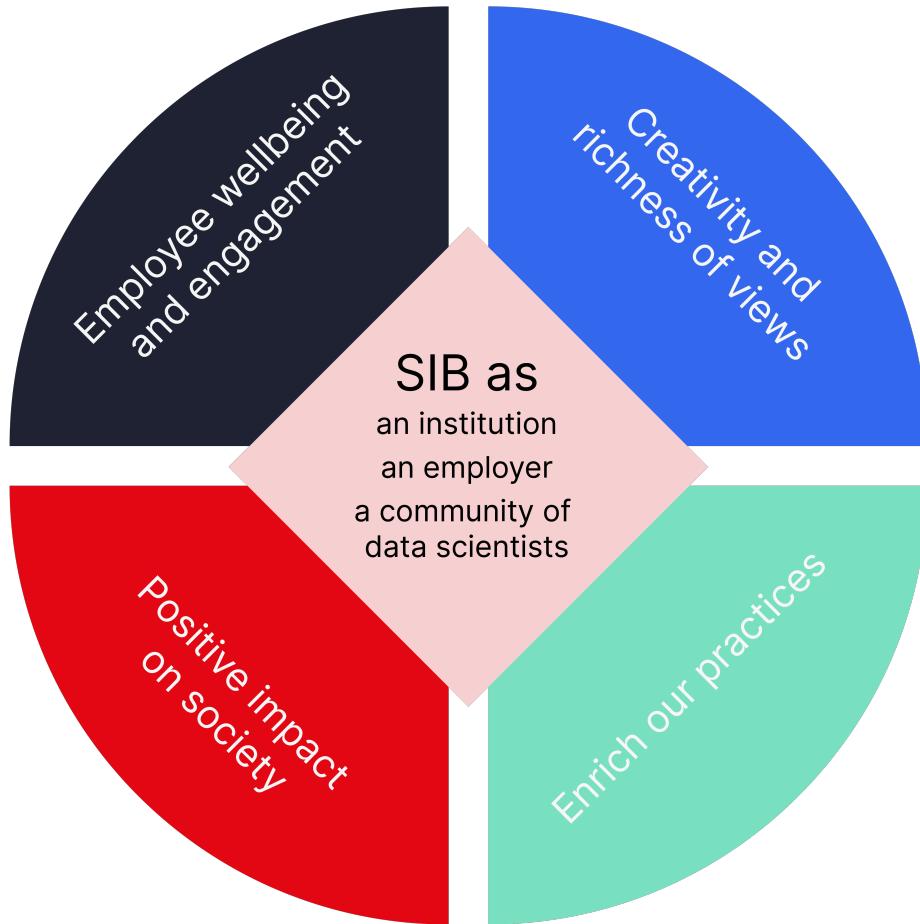


A workshop organised by the SIB Diversity focus group





A warm welcome by the SIB Diversity focus group



Want to contribute? Join us!

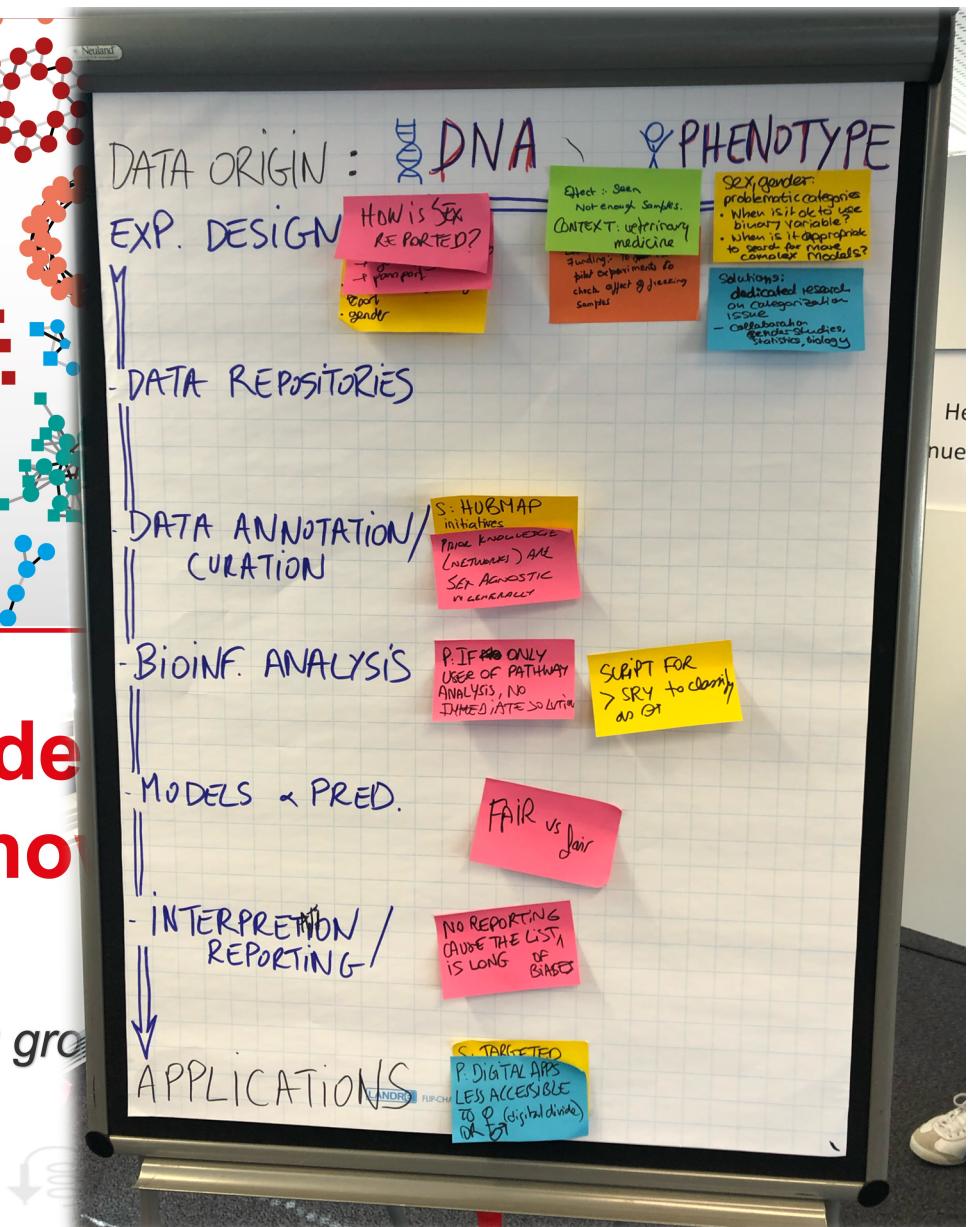




'In all fairness': sex and gender in data science and AI, and how to address it

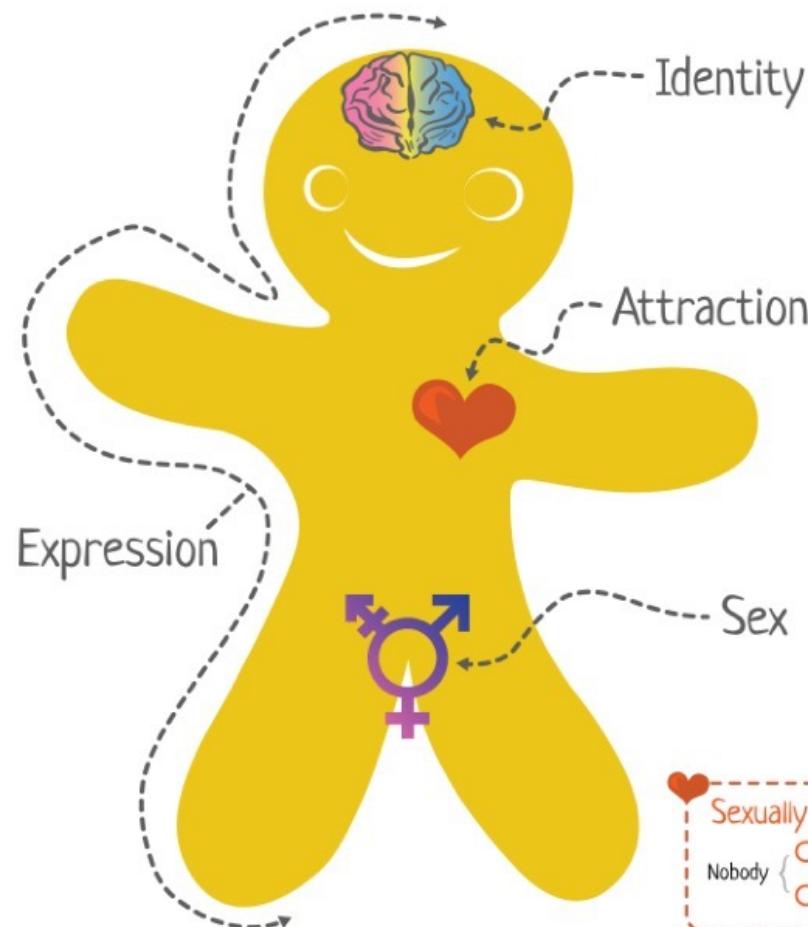
SIB Days – 15 June 2022 – Biel

A workshop organised by the SIB Diversity working group



The Genderbread Person v3.3

Gender is one of those things everyone thinks they understand, but most people don't. Like *Inception*. Gender isn't binary. It's not either/or. In many cases it's both/and. A bit of this, a dash of that. This tasty little guide is meant to be an appetizer for gender understanding. It's okay if you're hungry for more. In fact, that's the idea.

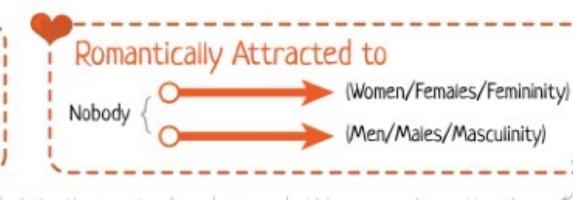
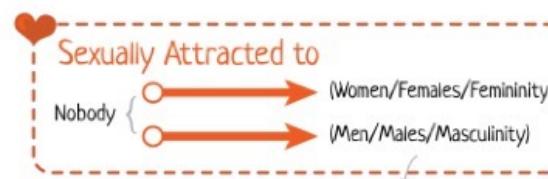
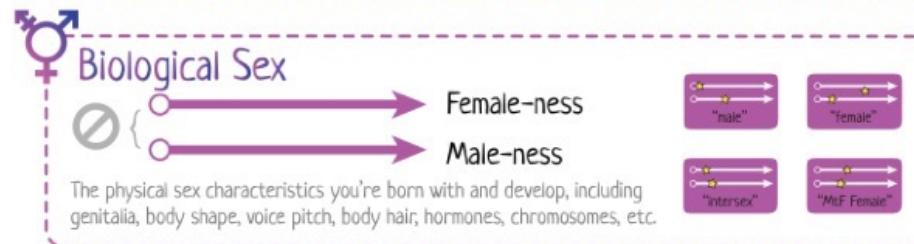
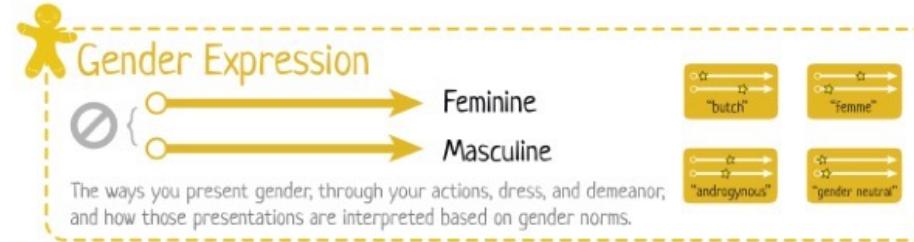
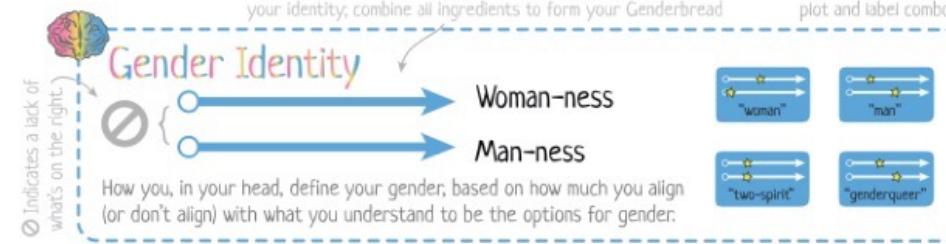


For a bigger bite, read more at <http://bit.ly/genderbread>

by its pronounced METROsexual.com

Plot a point on both continua in each category to represent your identity; combine all ingredients to form your Genderbread

4 (of infinite) possible plot and label combos

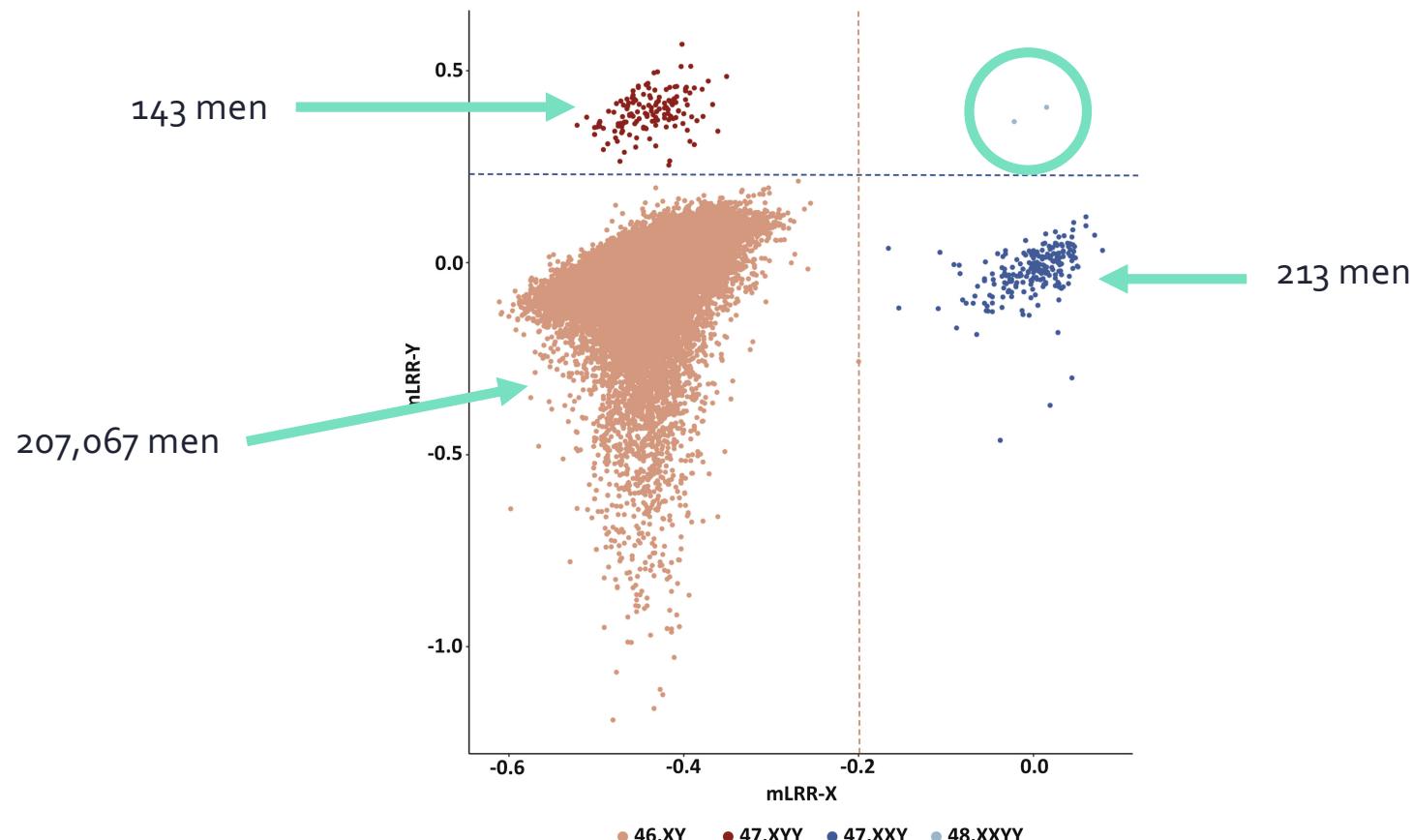


In each grouping, circle all that apply to you and plot a point, depicting the aspects of gender toward which you experience attraction.





Male sex chromosome abnormalities in the UK Biobank



<https://www.sciencedirect.com/science/article/pii/S1098360022007778>





Quite topical!

nature

in x f



Sex and gender in science

How to navigate a challenging area
of research to the benefit of all

11 June 2024

March 2024: Landmark Cell focus issue centers the voices of sex and gender minorities



SCIENCE FORUM

Best practices to promote rigor and reproducibility in the era of sex-inclusive research

Abstract To enhance inclusivity and rigor, many funding agencies now require inclusion of females as well as males in biomedical studies. These mandates provide unprecedented opportunities to discover sex differences. Educational and professional subgroup category has lagged behind, however, resulting in a problem of sex bias in study designs, and interpretations of results are often flawed. Here, we outline best practices for inclusive mandates, both for studies in which sex differences are a primary focus and for those in which they are not. Our recommendations are organized within the “4 Cs of Study Design: Collection, Characterization and Communication,” a framework developed by the National Institutes of Health in the United States. Follow these best practices to include females and males in their studies while at the same time upholding rigor and reproducibility.

JANET W RICH-EDWARDS, DONNA L MANEY*

“When researchers incorporate these sex-related variables into research designs, rigorous analytical methods are needed to allow strongly supported conclusions”

Perspective

Sex contextualism in laboratory research: Enhancing rigor and precision in the study of sex-related variables

Madeleine Pape,^{1,*} Miriam Miyagi,² Stacey A. Ritz,³ Marion Boulicault,⁴ Sarah S. Richardson,^{5,6} and Donna L. Maney^{7,8}

¹Institute of Social Sciences, University of Lausanne, Lausanne, Switzerland

²Center for Computational Molecular Biology, Brown University, Providence, RI, USA

³Department of Pathology & Molecular Medicine, Faculty of Health Sciences, McMaster University, Hamilton, ON, Canada

⁴Department of Philosophy, University of Edinburgh, Edinburgh, Scotland

⁵Department of the History of Science, Harvard University, Cambridge, MA, USA

⁶Committee on Degrees in Studies of Women, Gender, and Sexuality, Harvard University, Cambridge, MA, USA

⁷Department of Psychology, Emory University, Atlanta, GA, USA

Sex contextualism requires rigorous and precise approaches to study sex differences. First, it recognizes that sex is not in and of itself a causal mechanism, but rather a set of categories, usually assigned according to a range of criteria. Second, sex contextualism emphasizes the importance of classification to working with concrete and measurable variables. Third, sex contextualism highlights how these sex-related variables matter—and do so in context-specific ways. Second, when researchers incorporate sex-related variables into research designs, rigorous analytical methods are needed to ensure that sex differences are detected. Finally, the presentation and reporting of sex-related variation require attention to the implications for health equity for all.



Today's menu

Time	Activity
09:30 – 10:45	Introduction to the complexity of biological sex (Talk+demo by Davide Cirillo)
10:45 – 11:15	Coffee break
11:15 – 12:00	Biological sex in experimental design (Talk+hands-on by Frédéric Schütz)
12:00 – 12:30	Introduction to the practical hands-on session (by Davide Cirillo)
12:30 – 13:30	Lunch break
13:30 – 14:45	Hands-on session in subgroups
14:45 – 15:15	Coffee break
15:15 - 16:30	Group presentations, wrap-up, outlook

 <https://sibdays.sib.swiss/tutorials-and-workshops#workshops>



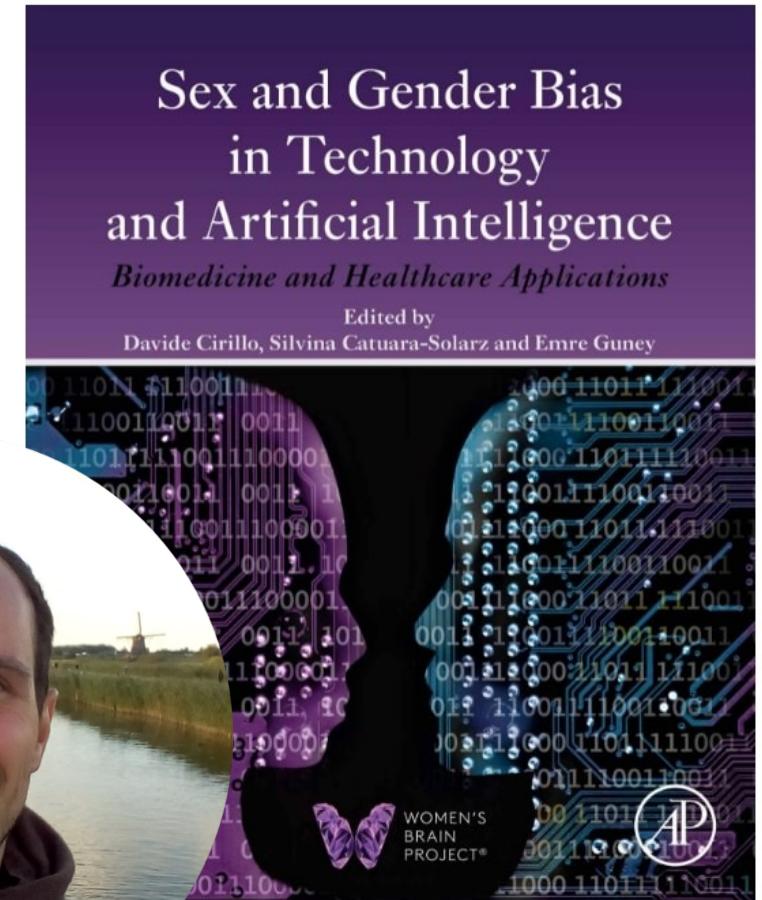
Welcome to our guest speakers!

Davide Cirillo

Head of the Machine Learning for Biomedical Research Unit

Life Sciences Department

Barcelona Supercomputing Center (BSC)





Welcome to our guest speakers!

Frédéric Schütz

Biostatistics platform

Center for Integrative Genomics

University of Lausanne

SIB group leader

Chair of the Training Advisory Committee



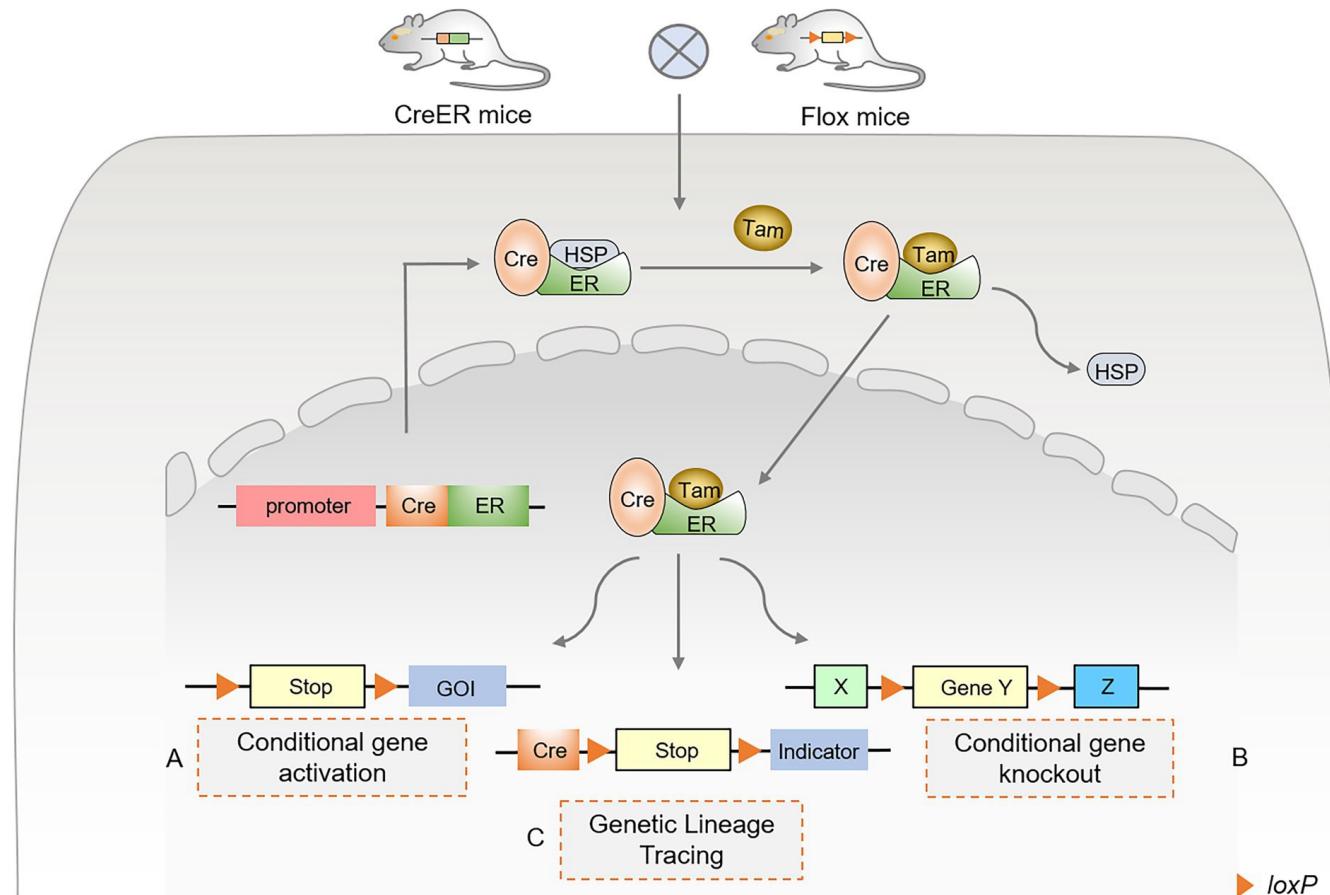


Who are you?

Quick round table

- Name
- SIB group / role
- Research line
- Why did you registered
- Involved in design experiment / analyzing data?

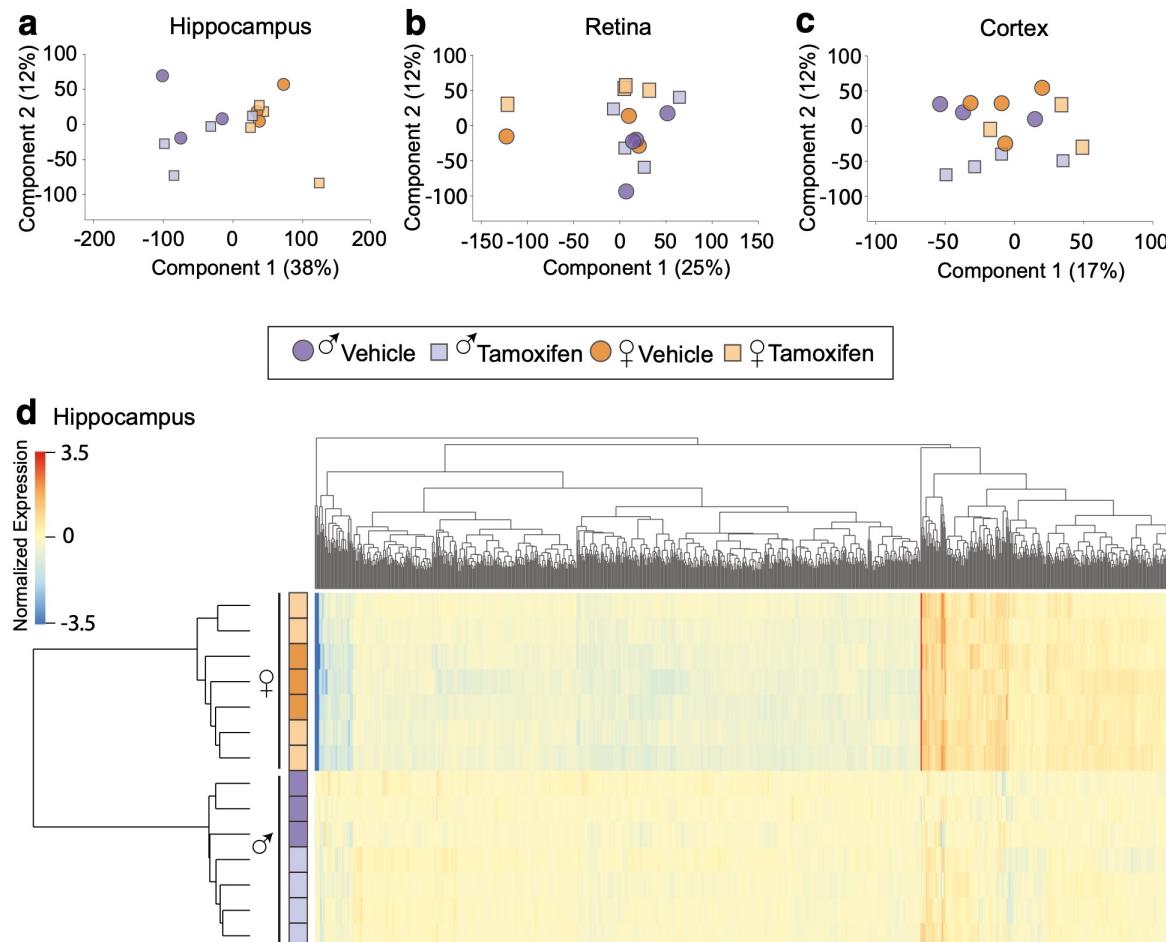
Hands-on



<https://www.frontiersin.org/articles/10.3389/fcvm.2023.1085629/full>



Hands-on



<https://link.springer.com/article/10.1007/s11357-019-00090-2>



Hands-on

 https://github.com/julien-roux/SIB_days_2024_workshop_EDI

Screenshot of the GitHub repository [SIB_days_2024_workshop_EDI](https://github.com/julien-roux/SIB_days_2024_workshop_EDI).

The repository is public and contains 30 commits from the user [julien-roux](#). The latest commit was pushed 1 hour ago.

Commits:

File	Message	Pushed At
docs	Pushing a few additional documents	1 hour ago
DESeqDataSet.rds	Add DGEList and DESeqDataSet objects	3 days ago
DGEList.rds	Add DGEList and DESeqDataSet objects	3 days ago
Incorporating the effects of biological sex in ...	Pushing a few additional documents	1 hour ago
README.md	Update README.md	4 days ago
SIB_DAYS_PLAN_Tutorials.pdf	Pushing a few additional documents	1 hour ago
SIB_Days_hands_on_DESeq2.ipynb	Adding python notebook from Davide	1 hour ago
Screenshot 2024-06-17 at 14.55.37.png	Adding session info, png file, etc	3 days ago
_quarto.yml	Trying to fix missing buttons on web page	2 days ago
colData.rds	Adding colData and rowData for limma	3 days ago
elemental-tip.png	Adding session info, png file, etc	3 days ago
hands_on_DESeq2.html	Updating all HTMLs from qmd files	3 days ago

About: Workshop "Incorporating biological sex as a variable in the design and analysis of biomedical research experiments"

Releases: No releases published. [Create a new release](#)

Packages: No packages published. [Publish your first package](#)

Deployments: 9. [github-pages](#) 1 hour ago



sex-related variables

methods designs patterns

interpretation to—will needed

beyond varying approaches

Third set first rather

illness Understanding

usually rigorous variation sex care

according mechanism revealing traits

range causal

precise ways

ways

classification health

Second

system research requiring

comprising equity

measurable

difference

recognize

working

basic precision

analytical

underlying

allow

Moving

assigned

context-specific

ensure

contribute

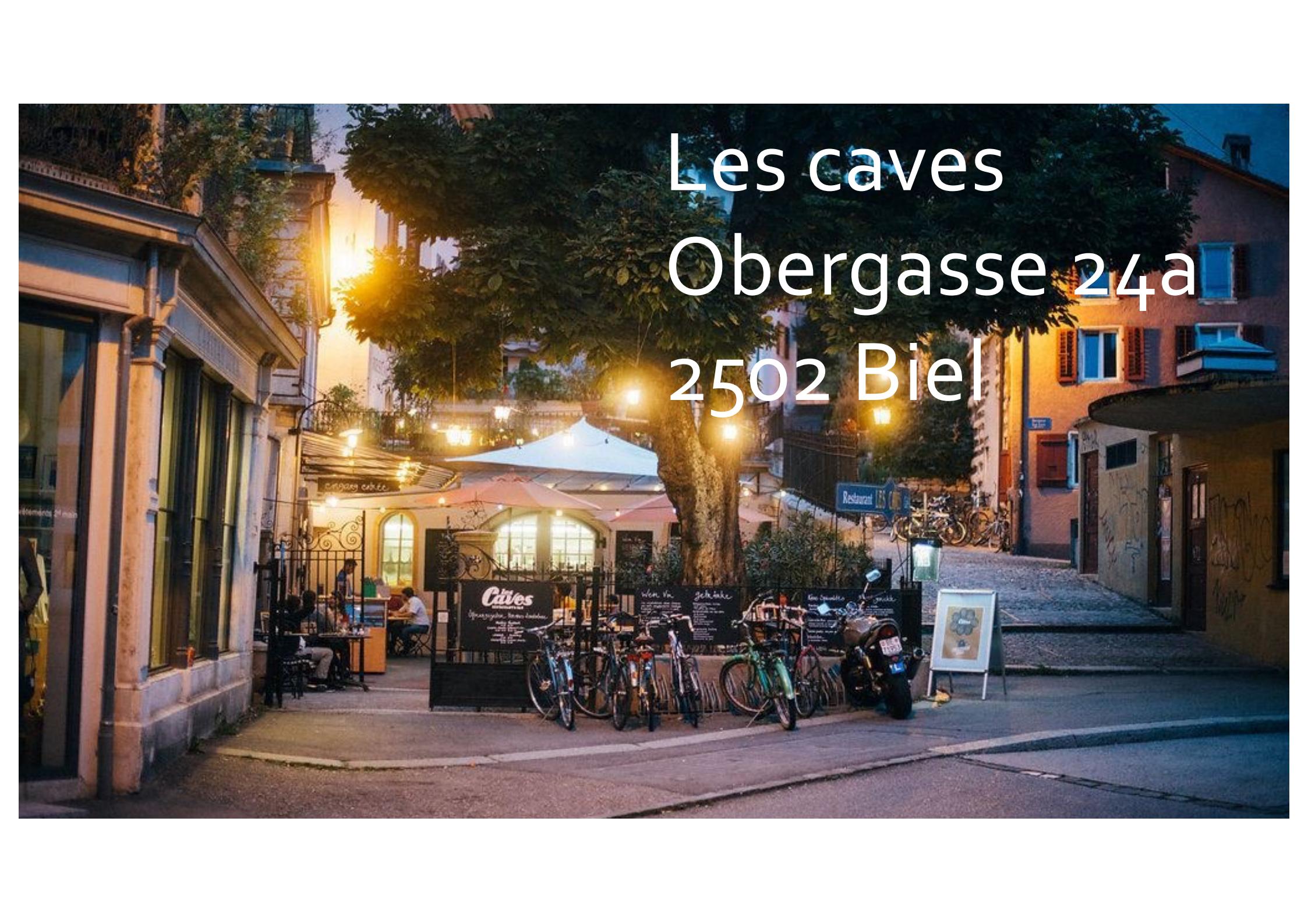
conclusions

researchers

matter—and

reporting strongly

preclinical



Les caves Obergasse 24a 2502 Biel



Guidelines

- » **The Sex and Gender Perspective in Research Toolkit**
https://aquas.gencat.cat/web/.content/minisite/aquas/publicacions/2022/toolkit_perspective_sex_gender_research_aquas2022.pdf
- » **Gendered innovations** (Stanford) <http://genderedinnovations.stanford.edu/index.html>
- » **MRC Policy on Sex in Experimental Design** https://nc3rs.org.uk/sites/default/files/2022-08/MRC%20sex%20in%20experimental%20design%20-%20Dr%20Stella%20Child%20UKRI%20-MRC%29_o.pdf
- » **Working Group on Sex in Experimental Design of Animal Research.** Meeting Report:
<https://www.ukri.org/wp-content/uploads/2022/03/MRC-090322-SexInExperimentalDesign-SummaryReport.pdf>
- » **Experimental design assistant** <https://eda.nc3rs.org.uk/experimental-design-animal-characteristics#sex>
- » **Bias in Conducting Research: Guidelines for Young Researchers Regarding Gender Differences** <https://blog.efpsa.org/2013/11/30/bias-in-conducting-research-guidelines-for-young-researchers-regarding-gender-differences/>

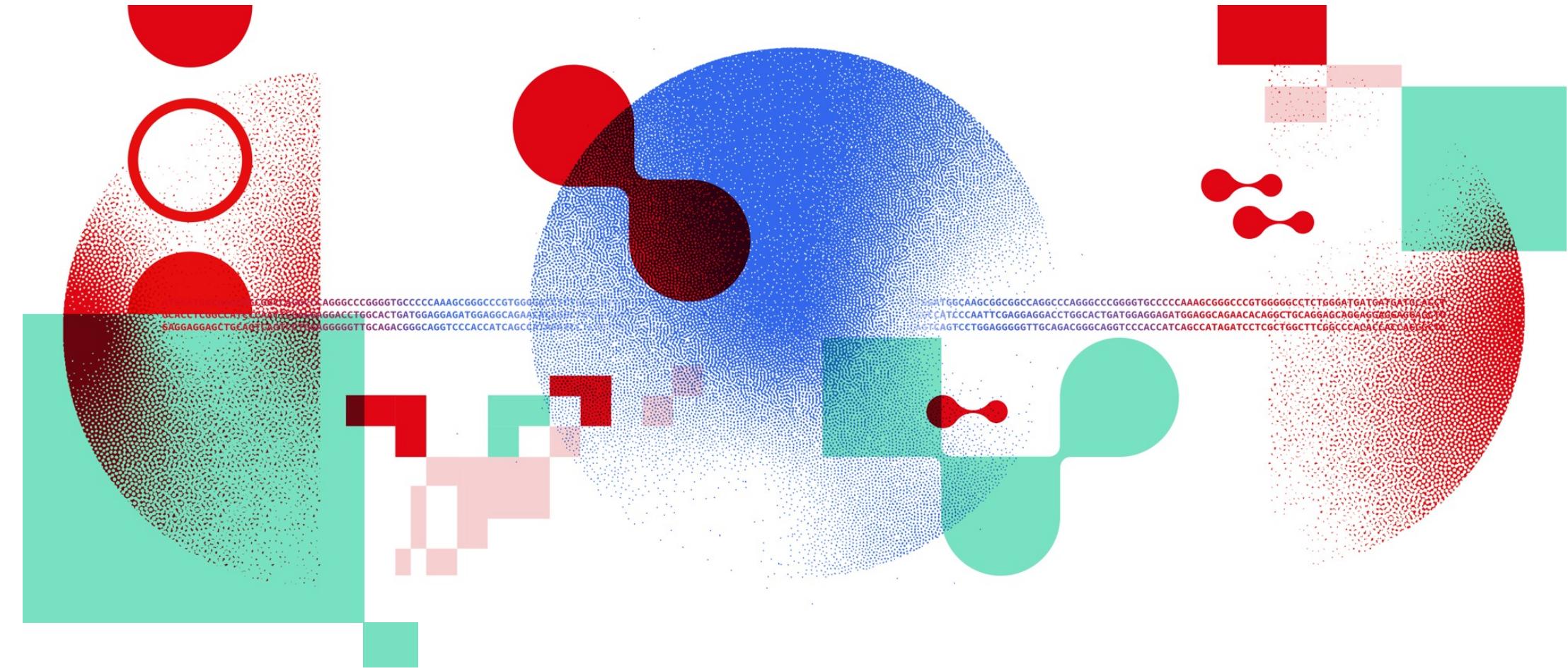


Wrap up

- » Any key learnings today?
Recommendations?
- » We'll share with you the hands-on material, key messages and learnings, literature references, etc
- » Don't hesitate to get in touch with us if you have ideas, suggestions or wish to contribute actively to the SIB Diversity focus group (edi@sib.swiss)

DANKE !
THANK YOU !
MERCI !
GRAZIE !
GRACIAS !
DANK JE WEL !





Thank you

DATA SCIENTISTS FOR LIFE

sib.swiss

