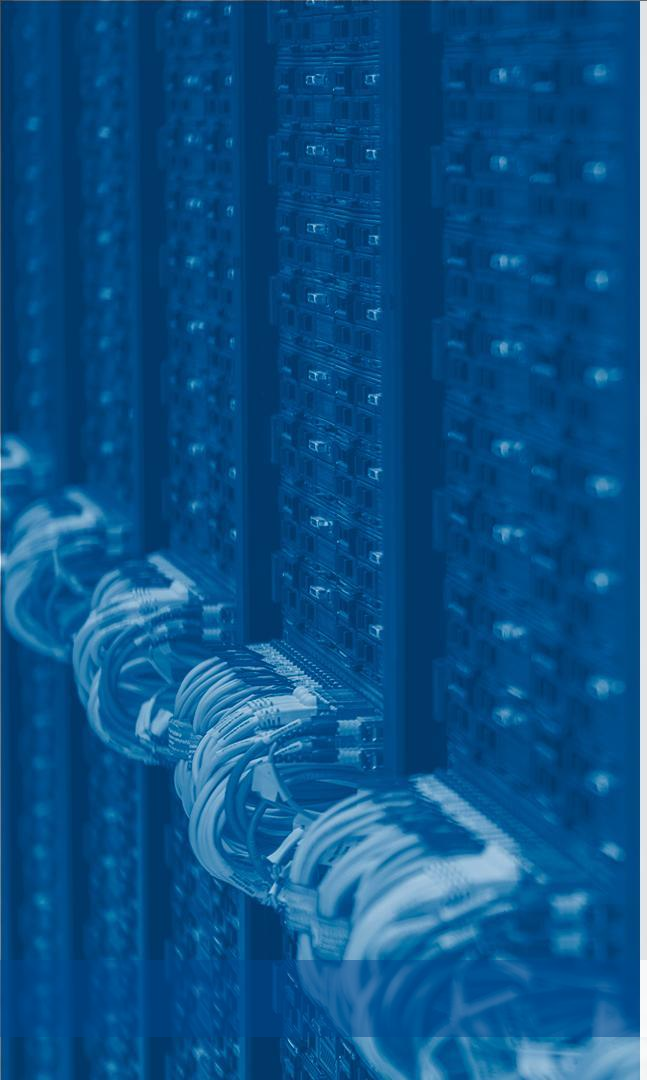


Barcelona Supercomputing Center
Centro Nacional de Supercomputación

EXCELENCIA SEVERO OCHOA

The Barcelona Supercomputing Center

Nataly Buslón, PhD.

Equity, Diversity Inclusion Officer | PostDoctoral Researcher

Gendered Innovations

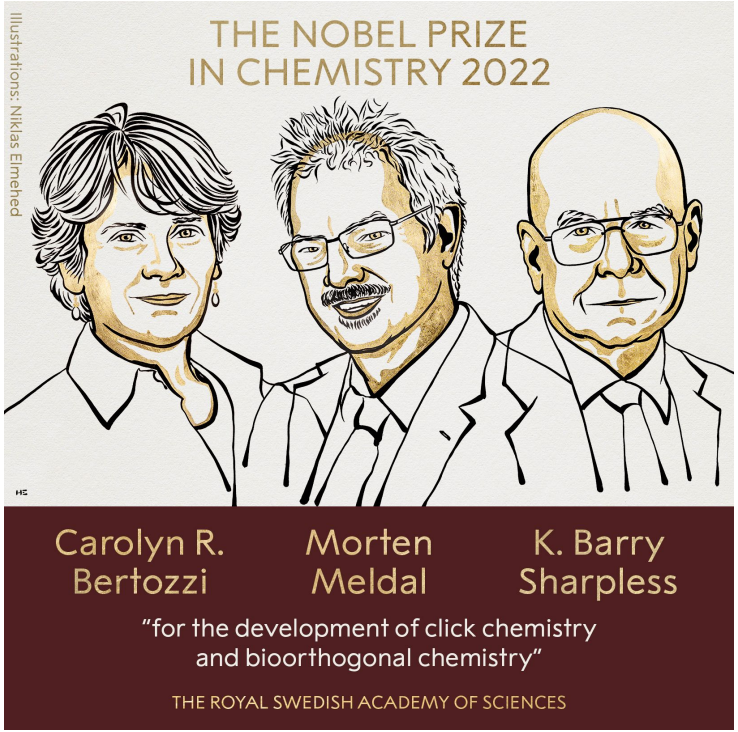
in Science, Health & Medicine, Engineering, and Environment

Carolyn Bertozzi

THE NOBEL PRIZE

Interview

AS: Of course people will focus on the fact that **you're only the eighth woman to have been awarded the chemistry prize.** How does that, sort of, sit with you?
CB: Well, that definitely adds a layer of **gravity to the occasion**. You know, I've been in environments where a woman wins a prize and she's the first woman to win a prize, or there's very few, and I can't help but **think about all the women who came before me, who did spectacularly important work, every bit as important as anything I've done, but didn't have the opportunity to be recognised. So I think it's… I love that the numbers tick up.** I wish that they ticked up more broadly. I think **the fact that they are ticking up is very positive.** (...) And **I'm sure there'll be many more in the future. I mean, there's so many amazing women scientists. And I think we'll see them coming up more and more. (...) I think things are looking so much better, and there are so many visible women now. I think there's just every reason to be optimistic.**



Stanford | News

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

https://www.nobelprize.org/prizes/chemistry/2022/bertozzi/interview/

Objectives BSC & Gendered Innovations

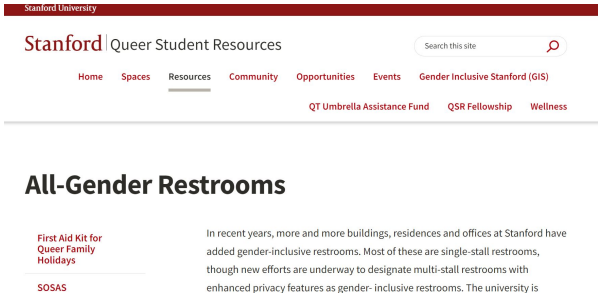
- Define a database of researchers in Spain working on Sex and gender perspectives: *Science, Health & Medicine, Engineering & Technology and the Environment*
- Analyze possible collaborations between BSC related to Generated Innovations Project: objectives, requirements, commitments, members, etc.
- Review content of the *BSC Ph.D. Course* based on Gender in Design Stanford Resources: http://genderindesign.com/resources/
- Improve the guidelines of the BSC: *Introduction of the sex and gender perspective in research*: a. EU and national project, b. Dataset information and c. Master, Ph.D.
- Analyze BSC case studies for the Gendered Innovations Project: Earth Sciences, Computer Sciences and Life Sciences. Examples:
  - Climate change and gender-based health disparities
  - QUSTom Quantitative Ultrasound Stochastic Tomography
  - XY-CANGEN: Deciphering the role of biological sex in cancer genetics
  - Gender differences: Apprenticeships and social mobility
  - Interpreting molecular similarity between patients as a determinant of disease comorbidity relationships https://pubmed.ncbi.nlm.nih.gov/32504002/

Objectives BSC & Stanford University

- Analyze possible collaborations between: *Women Data Science Stanford* and *Human-Center Artificial Intelligence Stanford*.

- Check the resources of the *Equity, Diversity & Inclusion Office*
- Analyze the *Sexual Harassment Support & Services* of Stanford
  - https://sustainability.stanford.edu/our-community/dei
  - https://www.gsb.stanford.edu/experience/diversity-equity-inclusion
  - https://vpge.stanford.edu/diversity-initiatives/overview
  - https://gender.stanford.edu/
  - https://equity.stanford.edu/sexual-harassment-support
  - https://stanford.app.box.com/s/mgjk3k4fwj81wsecmn9ufjr8zgzth0ii
  - https://vpge.stanford.edu/academic-guidance/advising-mentoring/mentoring-resources

Barcelona Supercomputing Center
Centro Nacional de Supercomputación



Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Stanford University

Gendered Innovations in Science, Health & Medicine, Engineering, and Environment

Gendered Innovations Project
Humanities Center

Stanford d.school
University Innovation

HAI Stanford University Human-Centered Artificial Intelligence

HAI Human-Centered
Artificial Intelligence

WOMEN IN DATA SCIENCE
STANFORD UNIVERSITY

Women in Data Science
WIDS Stanford

BSC Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Gendered Innovations in Science, Health & Medicine, Engineering, and Environment

Gendered Innovations Project
Humanities Center

Gendered Innovations

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

EXCELENCIA SEVERO OCHOA

Gendered Innovations Project Stanford University

Londa Schiebinger is the John L. Hinds Professor of History of Science in the History Department at Stanford University and **Director of the EU/US Gendered Innovations in Science, Health & Medicine, Engineering, and Environment Project.** From 2004-2010, Schiebinger served as the **Director of Stanford's Clayman Institute for Gender Research.**

Professor Schiebinger received her **Ph.D. from Harvard** University in 1984 and is a **leading international authority on gender and science**. Over the past thirty years, Schiebinger work has been devoted to teasing apart three analytically distinct but interlocking pieces of the **gender and science puzzle: the history of women's participation in science; gender in the structure of scientific institutions; and the gendering of human knowledge.**

NSF

STANFORD UNIVERSITY

Gendered Innovations in Science, Health & Medicine, Engineering, and Environment

European Commission

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

https://web.stanford.edu/dept/HPS/schiebinger.html

Gendered Innovations Project Stanford University

Three Strategic Approaches

1.Improve numbers

focuses on increasing women's and underrepresented groups' participation

2. Improve institutions

promotes inclusive equality in careers through structural change in research organizations

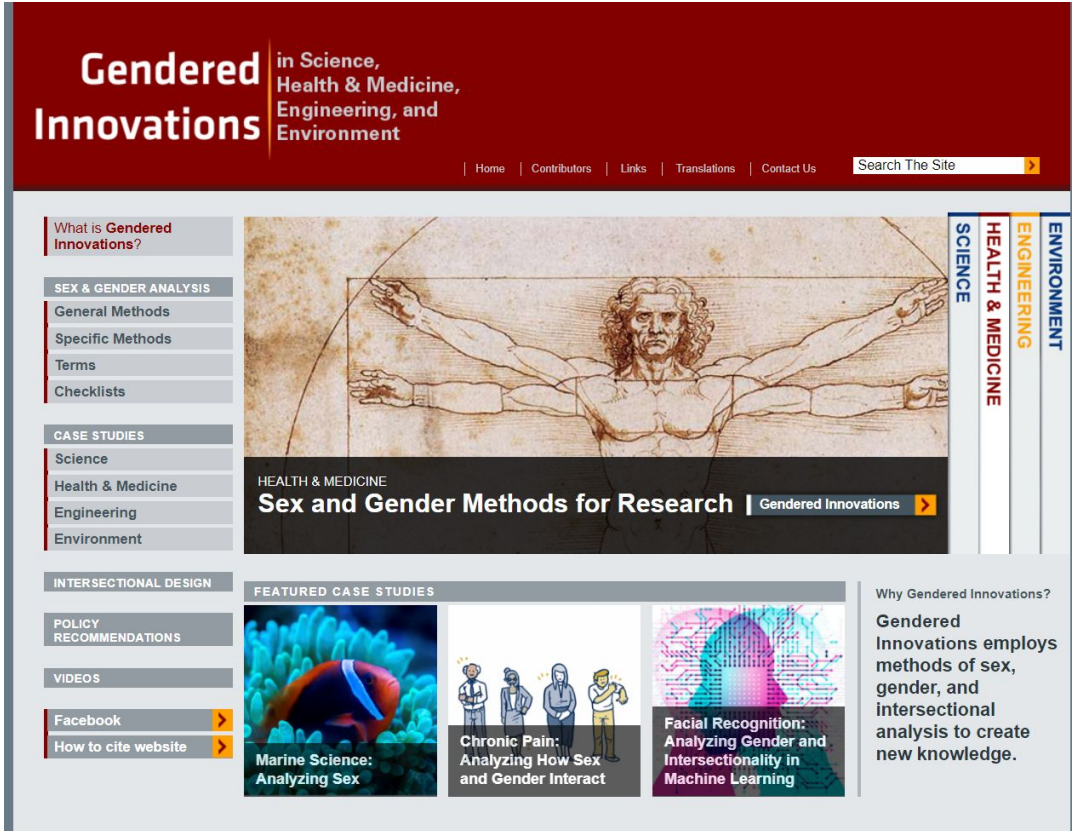
3. Improve knowledge or Gendered Innovations

stimulates excellence in science and technology by integrating sex, gender, and intersectional analysis into research.

https://web.stanford.edu/dept/HPS/schiebinger.html

Gendered Innovations Project Stanford Univesity

Gendered Innovations was initiated at Stanford University, July 2009. From 2011-2013, the European Commission funded an Expert Group, **"Innovation through Gender/Gendered Innovations" under their Framework Programme 7, aimed at developing the gender dimension in EU research and innovation.** The U.S. National Science Foundation joined the project January 2012. From 2018-2020, **the Horizon 2020 Expert Group, Gendered Innovations (G12), updated and expanded the Gendered Innovations methods and case studies.**



NSF

STANFORD UNIVERSITY

Gendered Innovations in Science, Health & Medicine, Engineering, and Environment

European Commission

BSC Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Gendered Innovations Project Stanford University

Editorials

nature

Accounting for sex and gender makes science better

The European Commission is set to insist on steps that will make research design more inclusive.

At the end of last month, the European Commission announced that its grant recipients will be required to incorporate sex and gender analyses into the design of research studies. The policy will affect researchers applying for grants that are part of the commission's seven-year, €85-billion (US$100-billion) Horizon Europe programme, which is due to begin next year.

The funding is still awaiting sign-off from the European Union's 27 member states. But if all goes to plan, the commission will be the largest funder to require sex and gender analyses – along with analyses of other aspects of inclu-

"Researchers have been highlighting the harms

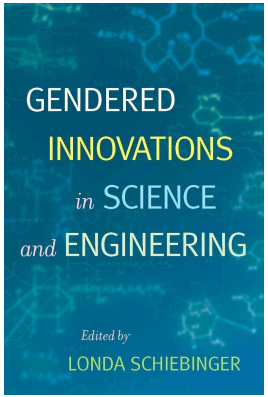
because women had not been properly represented among trial participants when the drugs were first evaluated.

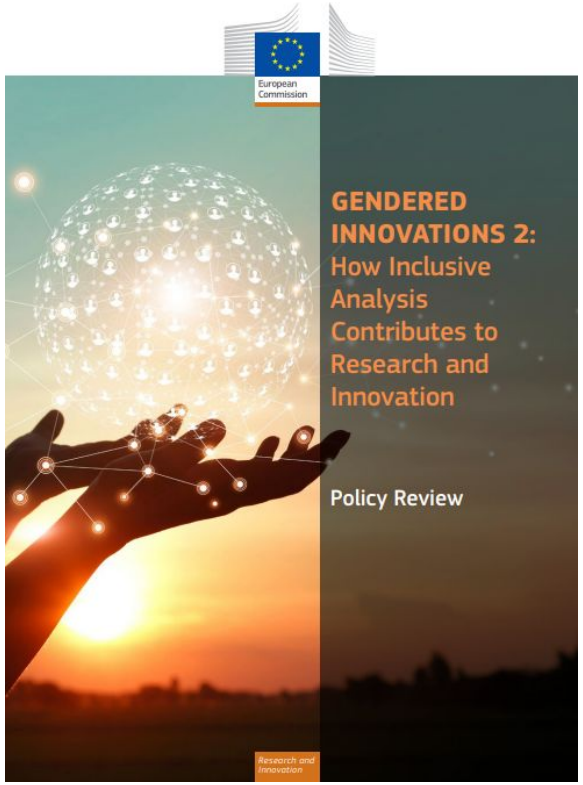
Although sex and gender analysis is improving in drugs trials, it remains a work in progress in many fields, Londa Schiebinger, a science historian at Stanford University in California, told *Nature* (see page 209). Researchers have been highlighting the harms caused by failing to account for sex and gender for decades, but it wasn't until after the turn of the millennium that funding bodies really started to address the problem. The Canadian Institutes of Health Research began to request that analyses of sex and gender be included in grant applications in 2010, and the US National Institutes of Health followed suit in 2016.

The European Commission began asking grant recipients to include sex and gender analysis in their research design in 2013, a request which, by 2020, covered around one-third of research fields. But according to later evaluation reports, fewer researchers than expected implemented this request.

An analysis of researchers funded by the Canadian Institutes of Health Research, published in 2014, revealed that some had pushed back when asked to consider sex and gender[1]. And both this analysis and the European Commission's evaluation highlighted that some grant recipients used sex (which refers to biological characteristics) interchangeably with gender (which is a social construct

Gendered Innovations in Science, Health & Medicine, Engineering, and Environment





Science

Science

BACK TO VOL. 377, NO. 6614

POLICY FORUM | DIVERSITY

A framework for sex, gender, and diversity analysis in research

Funding agencies have ample room to improve their policies

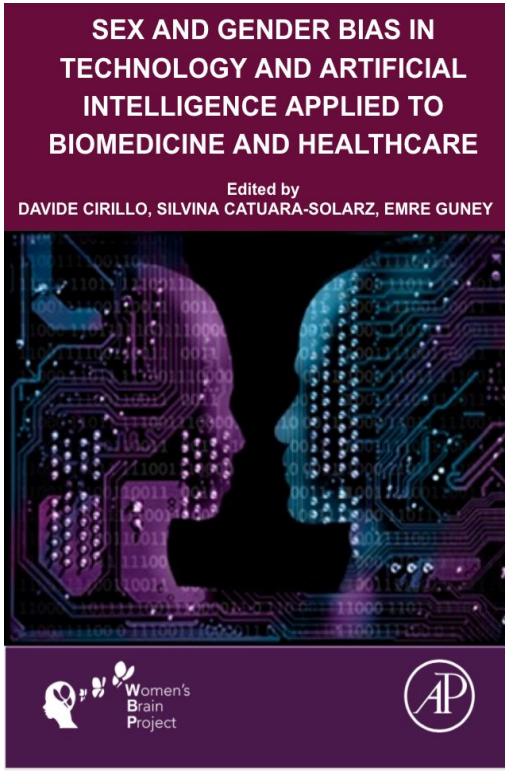
LILIAN HUNT, MATHIAS WULLUM NIELSEN, [...] LONDA SCHIEBINGER

+1 authors | Authors Info & Affiliations

SCIENCE • 29 Sep 2022 • Vol 377, Issue 6614 • pp. 1492-1495

DOI: 10.1126/science.abp9775

BSC **Barcelona Supercomputing Center**
Centro Nacional de Supercomputación



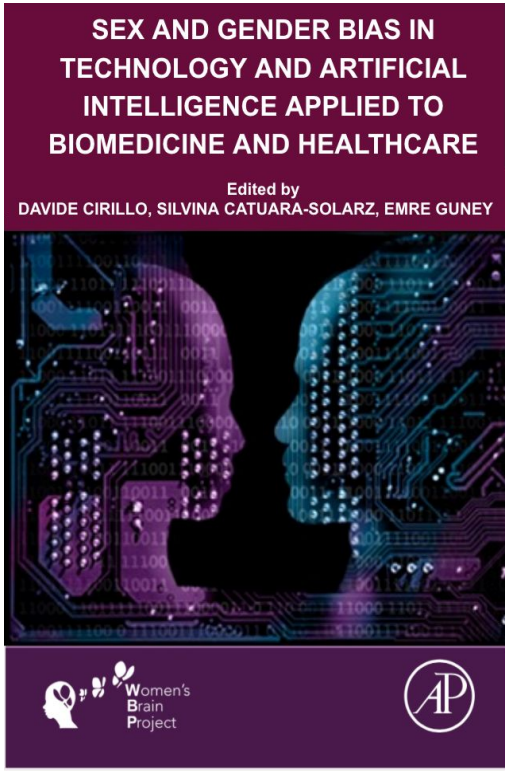
"It's a must read for anyone working in this area; the materials presented here should be integrated into medical school curricula."

Londa Schiebinger
John L. Hinds Professor of History of Science, Stanford University
Founding director, Gendered Innovations in Science, Health & Medicine, Engineering, and Environment

ISBN: 9780128213926

ELSEVIER

https://www.elsevier.com/books/sex-and-gender-bias-in-technology-and-artificial-intelligence/cirillo/978-0-12-821392-6



"It's a must read for anyone working in this area; the materials presented here should be integrated into medical school curricula."

Londa Schiebinger
John L. Hinds Professor of History of Science, Stanford University
Founding director, Gendered Innovations in Science, Health & Medicine, Engineering, and Environment

CHAPTER 2

Sex and gender inequality in precision medicine: Socioeconomic determinants of health

Nataly Buslón[a,b], Sandra Racionero-Plaza[c], and Atia Cortés[a,b]
[a]Barcelona Supercomputing Center (BSC), Barcelona, Spain
[b]Bioinfo4Women (B4W), Barcelona, Spain
[c]Universitat de Barcelona (UB), Barcelona, Spain

Abstract

Both Human Rights and United Nations' Sustainable Development Goals make clear that addressing the challenge of achieving an inclusive precision medicine, which does not leave women behind, is not a question of choice but a must. In this regard, the biomedical, artificial intelligence, and clinical research fields have a unique opportunity to make a difference. Yet, attaining those rights and goals implies acknowledging that not everyone has the same opportunities and outcomes in health. This has been well explored by the literature on social determinants of health, which points to differences in health status and outcomes as affected by socioeconomic factors, such as socioeconomic status, geographical location, and education. Sex and gender are the key factors, and current scientific liter-

CHAPTER 11

Societal and ethical impact of technologies for health and biomedicine

Atia Cortés[a,b,c], Nataly Buslón[a,b,c], and Liliana Arroyo[d]
[a]Life Sciences—Social Link Analytics Life Sciences Group, Barcelona, Spain
[b]Barcelona Supercomputing Center (BSC), Barcelona, Spain
[c]Bioinfo4Women (B4W), Barcelona, Spain
[d]Department of Society, Politics and Sustainability (ESADE). Ramón Llull University, Barcelona, Spain

Abstract

The healthcare sector has been an early adopter of new technologies such as artificial intelligence, nanotechnology, or genome sequencing. They are expected to improve healthcare systems and augment practitioners' skills. The deployment of wearable sensors and healthcare trackers are empowering individuals, making them self-aware of their wellbeing but also turning them into data donors. Personal data are essential to train machine learning models used to support healthcare professionals in decision making. However, it is extremely relevant to consider the power of the (mis-)represented population in

ELSEVIER

https://www.elsevier.com/books/sex-and-gender-bias-in-technology-and-artificial-intelligence/cirillo/978-0-12-821392-6

Gendered Innovations Project Stanford University

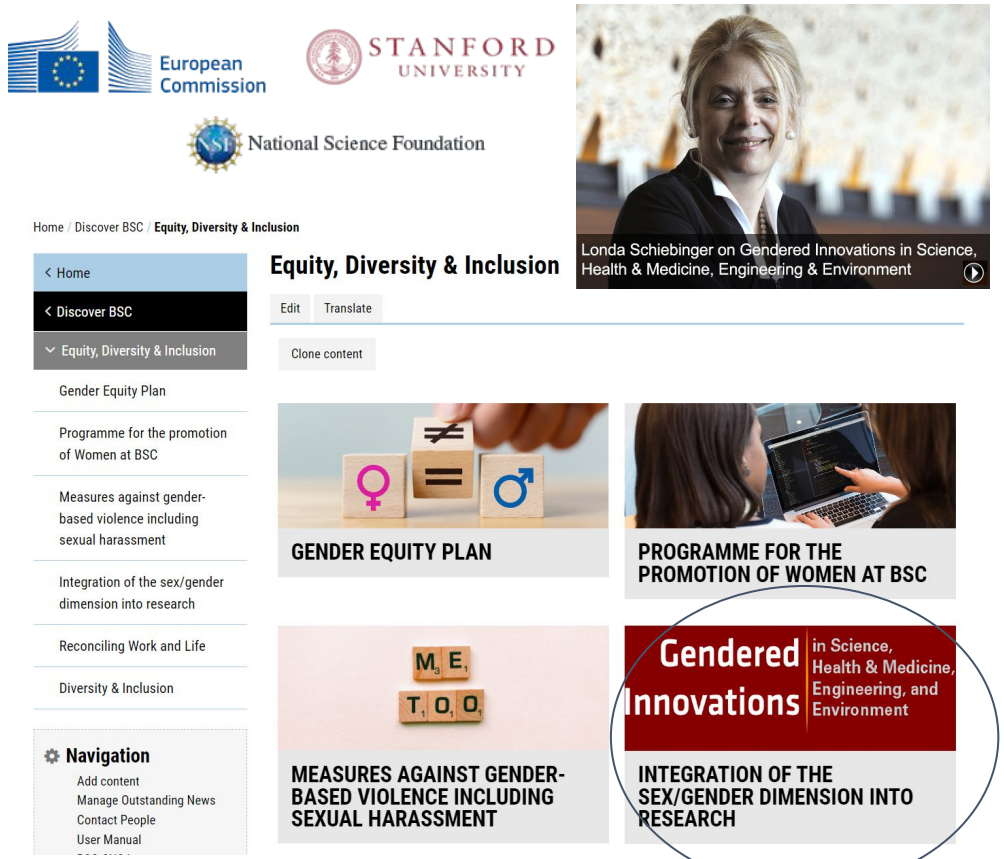
Agreement

The Barcelona Supercomputing Center is collaborating with Gendered Innovations at Stanford University, funded by the European Commission and the National Science Foundation. **The aim is to enhance sex, gender, and intersectional analysis (SG&IA) in research and stimulate gender-responsible science and technology, thereby enhancing the quality of life for women, men, and non-binary people worldwide**.

Mission

1) develops practical methods of sex, gender, and diversity analysis for scientists and engineers;

2) provides case studies and project examples as concrete illustrations of how sex, gender, and intersectional analysis lead to innovation and better science.



https://www.bsc.es/discover-bsc/equity-diversity-inclusion/integration-the-sexgender-dimension-research

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Gendered Innovations Project Stanford University

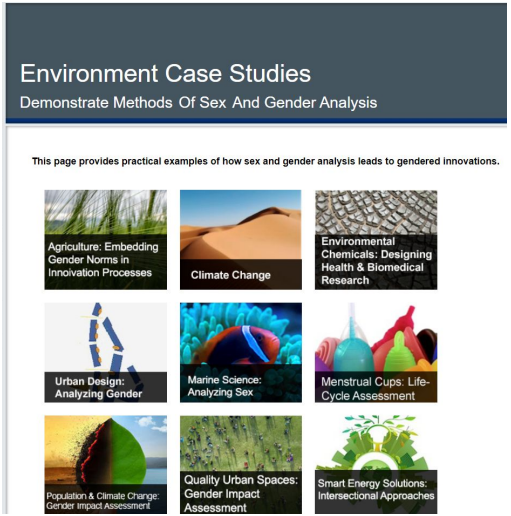
European Commission

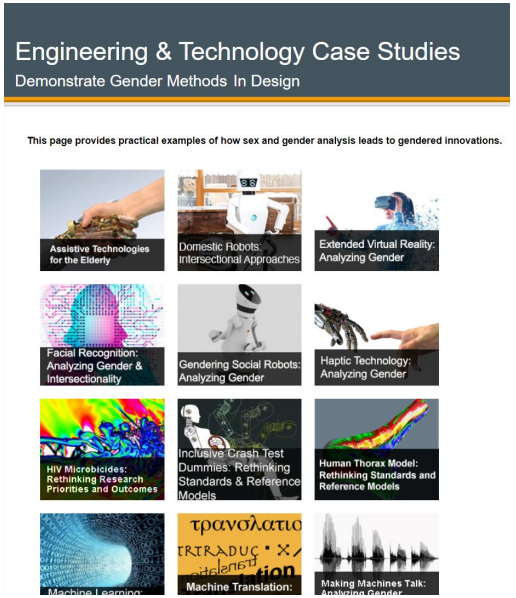
STANFORD UNIVERSITY

National Science Foundation

Actions

- SG&IA course for Ph.D. BSC students using the Gendered Innovations website or Intersectional Design Cards.
- Workshops for researchers focus on Principal investigators (PI) on how to avoid sex and gender bias in science and develop their project tools to introduce sex, gender, and intersectional analysis.
- Research groups in all the departments to share and define new resources based on Gendered Innovations methods and case studies.
- Scientific Seminars to present research being conducted within the BSC and also with invited researchers in the STEM field.
- Define indicators for projects on how to introduce SG&IA analysis for BSC research projects with recommendations from Gendered Innovations.





Barcelona Supercomputing Center
Centro Nacional de Supercomputación

http://genderedinnovations.stanford.edu/fix-the-knowledge.html

Gendered Innovations Project Stanford University

d. HASSO PLATTNER Institute of Design at Stanford

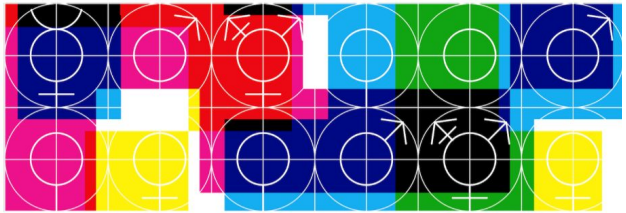
Beyond Pink & Blue: Gender in Tech
Spring Quarter, 2017

European Commission

STANFORD UNIVERSITY

National Science Foundation

EMPATHY FIELDGUIDE



Gender Checklist

1. Where have _____ processes been blind or biased with respect to sex and gender?
2. When differences between men/women considered, are they based on stereotypes?
3. What markets/business opportunities have been missed by failing to understand gender factors influencing a project?
4. How have designers and or technologists or business people been blind to potential differences of sex and gender (in your challenge context). How has this resulted in missed business opportunities? Have certain groups of people being left out? If so, who?
5. How has treating "women" and "men" as homogenous groups ignored differences among women and [illegible]?

Page 1 / 1

Intersectional Design

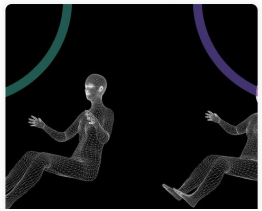
About Workshops Digital Experience Contact

Intersectional Design Cards

These cards are designed to help teams explore and develop intersectional design solutions.

WHY?

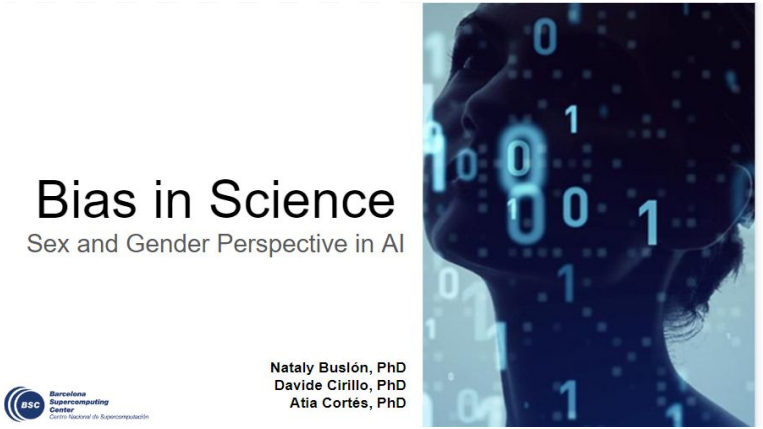
- Navigate assumptions and biases
- Integrate intersectional thinking into your product
- Course correct
- Identify new markets and



https://intersectionaldesign.com/

BSC Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Gendered Innovations Project Stanford University



- SG&IA course for Ph.D. BSC students using the Gendered Innovations website or Intersectional Design Cards.
- Workshops for researchers focus on Principal investigators (PI) on how to avoid sex and gender bias in science and develop their project tools to introduce sex, gender, and intersectional analysis.

Intersectional Design Cards

A Design Activity to Create Radically Inclusive Products, Processes, and Paradigms

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Gendered Innovations Project Stanford University

- **Research groups** in all the departments to share and define **new resources** based on **Gendered Innovations methods and case studies.**
- **Scientific Seminars** to present research being conducted within the BSC and also with invited researchers in the STEM field.

GENDER EQUITY PLAN

PROGRAMME FOR THE PROMOTION OF WOMEN AT BSC

MEASURES AGAINST GENDER-BASED VIOLENCE INCLUDING SEXUAL HARASSMENT

INTEGRATION OF THE SEX/GENDER DIMENSION INTO RESEARCH

BSC Projects

EARTH SCIENCES

Climate change and gender-based health disparities

HARMONIZE: Harmonizing multi-scale spatiotemporal data for health in climate change hotspots

CASE

QUSTom Quantitative Ultrasound Stochastic Tomography

Gender differences: Apprenticeships and social mobility

LIFE SCIENCES

XY-CANGEN: Deciphering the role of biological sex in cancer genetics

Interpreting molecular similarity between patients as a determinant of disease comorbidity relationships https://pubmed.ncbi.nlm.nih.gov/32504002/

Dealing with gender bias and stereotyping in the "MULtilingual Transfer learning for the Inclusion of vulnerable social groups (MULTI)" project

BSC Seminar Series: "An inclusive future for science: Taking action on equity & diversity"

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Gendered Innovations Project & GENDER_NET Plus

- Define i**ndicators for projects on how to introduce SG&IA** for BSC research projects with recommendations from Gendered Innovations.

MINISTERIO DE CIENCIA E INNOVACIÓN

Gendered Innovations in Science, Health & Medicine, Engineering, and Environment

nº	Category	Indicators
1	Project Management	Composition of the consortium gender and diversity(no./type/country of partners involved)
2	Project Management	Training on IGAR (no./%women,men, other)
3	Project Management	Training on gender equality in the research team (no./%women, men, other)
4	Project Management	Equity, Diversity and Inclusion Committee consortium (no.%women, men, other)
5	Gender Equality	Gender balance in the whole consortium (no./% women/men/other)
6	Gender Equality	Presence of women as lead resarchers/Pis in the project (no./%women, men, other)
7	IGAR - Integration of gender a	Data collection tools capture information relevant to sex/gender
8	IGAR - Integration of gender a	The variables used hightlight the relationship between the SDGs issues studied and gender factors
9	IGAR - Integration of gender a	The project brings out differences/inequalities between women and med in the field (if any)
10	Dissemination and communic	Presentions in conferences/workshops vs. Other conferences/workshops (no.)
11	Dissemination and communic	Training conducted in the framework of the project (no./% women, men, other attendees,)
12	Dissemination and communic	Co-organized conferences linked to the project (no./% women, men, other attendees)
13	Dissemination and communic	Quality of the dissemination activities (gender perpective, inclusive language, innovative approach...)
14	Research outputs	Presence of women as first authors in academic papers (no. /% women, men, other)
15	Research outputs	Positive impact of the project on gender equality/scientific evidence on gender in the field
16	Research outputs	Academic papers in gender vs. Other journals (no).
17	Socio-Economic impact	Research jobs created as a results of the project (no.)
18	Socio-Economic impact	Presence of young researchers (no. <35, /% women, men, other)
19	Socio-Economic impact	Contribution to the achievement of UN Sustainable Development Goals (SDGs)
20	Socio-Economic impact	Impact on governance, involvement of policy makers/civil society

GENDER-NET Plus @GENDER_NET_Plus · Nov 21, 2022

A warm thank you to all the participants & guest speakers who attended the @GENDER_NET_Plus Workshop "Integrating Gender Analysis into Research" on Nov 16-17 in Paris & online ! 👏

Recordings of the sessions & slides from the presentations will soon be available on our website!

https://gender-net-plus.eu/

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Paper: BSC Proposals SG&IA definition EU

Stanford University Seminars

Nataly Buslón, PhD @BuslonNataly · Oct 19, 2022

Happy to participate in-person today in the powerful presentation and inspiring speech of @ruha9 Prof. Ruha Benjamin about Viral Justice Book. Thank you @HumanAtStanford for this excellent event! ✨We need a new poetics of living ✨#buildalternatives #justice #diversity

Ruha Benjamin @ruha9 · Oct 19, 2022

Replying to @BuslonNataly and @HumanAtStanford

Thank you so much for coming, Nataly!

1

Stanford d.school
University Innovation

Stanford d.school

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

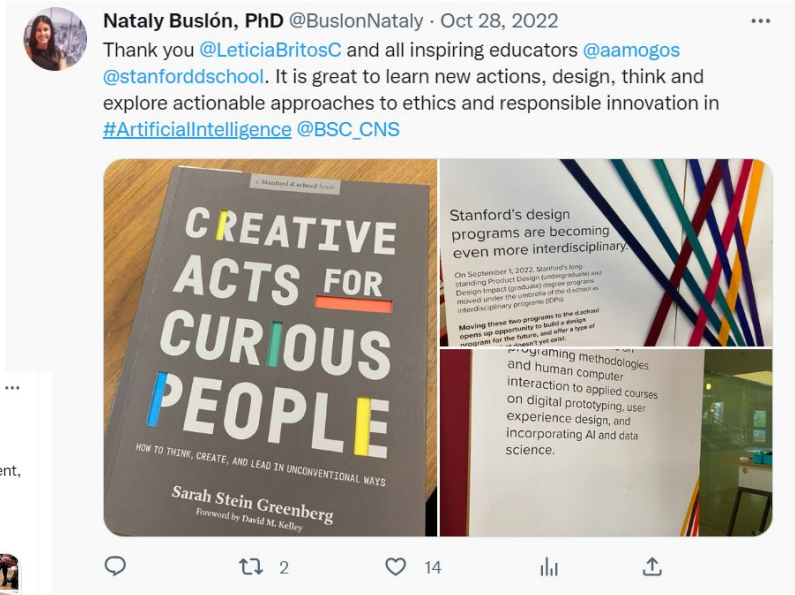
EXCELENCIA SEVERO OCHOA

Stanford d.school

Leticia Britos Cavagnaro, Ph.D., is co-Director of the **University Innovation Fellows**, a program of the Hasso Plattner **Institute of Design (d.school)**

UyRedes

Everyone has the capacity to be creative. At the /d.school, people use design to develop their creative potential and apply it to the world.

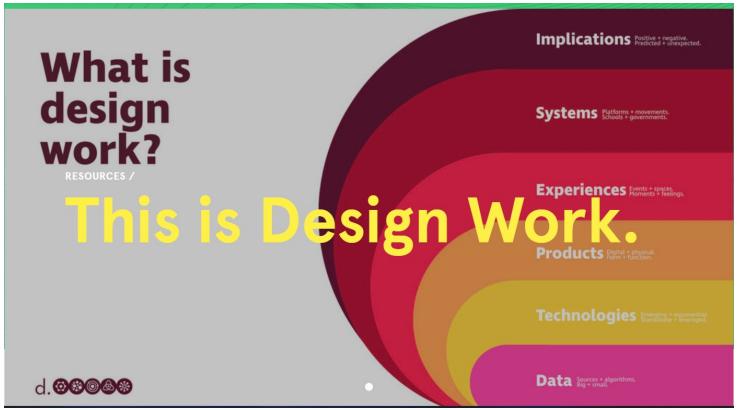


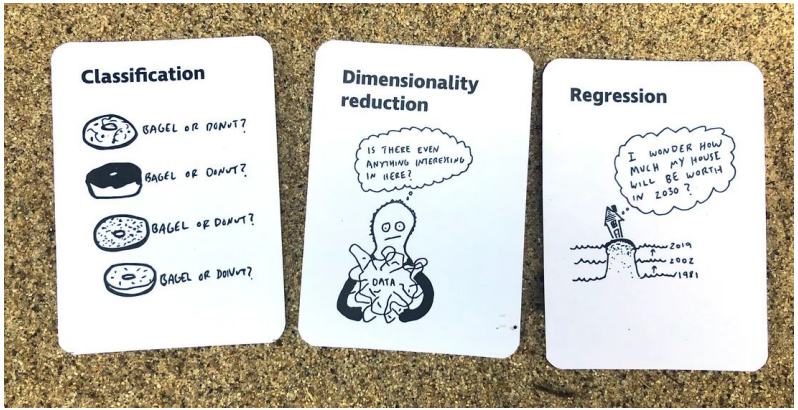
Mariya Gabriel is **European Commissioner for Innovation, Research, Culture, Education and Youth.**

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Stanford d.school

HASSO PLATTNER
Institute of Design at Stanford





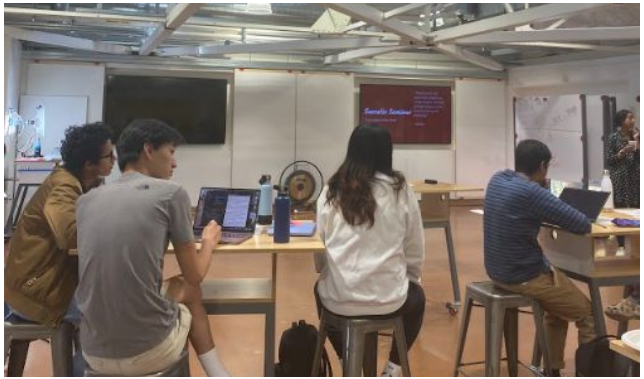
Barcelona Supercomputing Center
Centro Nacional de Supercomputación

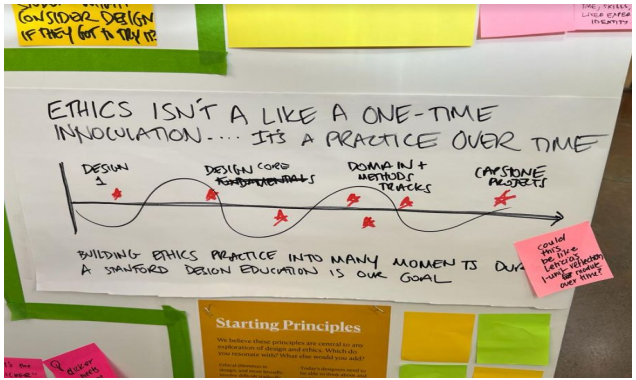
https://dschool.stanford.edu/

Stanford d.school

d. HASSO PLATTNER
Institute of Design at Stanford

Gendered Innovations in Science, Health & Medicine, Engineering, and Environment



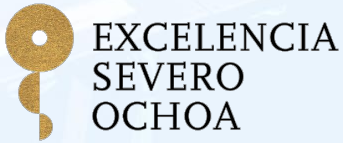


Barcelona Supercomputing Center
Centro Nacional de Supercomputación

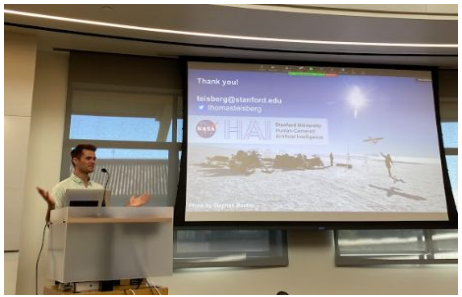
BSC Seminar Series & Training Courses

HAI Human-Centered
Artificial Intelligence

HAI Human-Centered AI



HAI Human-Centered Artificial Intelligence



Londa Schiebinger
John L. Hinds Professor of the History of Science, Stanford University

Ting-An Lin
HAI-EIS Fellow

Diana Acosta Navas
HAI-EIS Embedded EthiCS Fellow

Faye-Marie Vassel
STEM Education, Equity, and Inclusion Postdoctoral Fellow

Benji Xie
HAI-EIS Embedded EthiCS Fellow

BSC **Barcelona Supercomputing Center**
Centro Nacional de Supercomputación

BSC Seminar Series & UPC EthiCS Programme

Women in Data Science

WOMEN IN DATA SCIENCE
STANFORD UNIVERSITY

Women in Data Science
WIDS Stanford

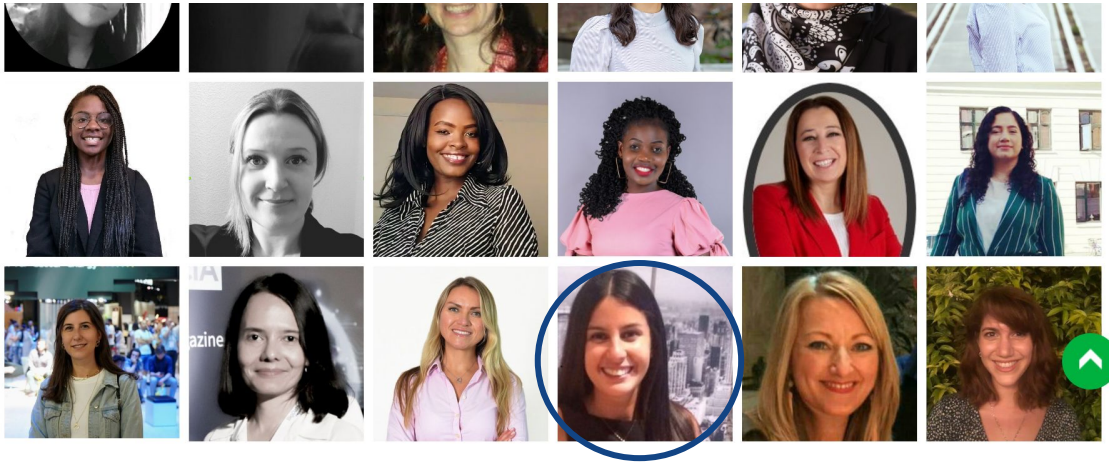
Barcelona Supercomputing Center
Centro Nacional de Supercomputación

EXCELENCIA SEVERO OCHOA

Women in Data Science
WIDS Stanford

WOMEN IN DATA SCIENCE
STANFORD UNIVERSITY

WiDS Ambassadors in Europe, the Middle East, and Africa (EMEA)



New BSC events and travels protocol

https://www.widsconference.org/ambassadors-2023.html#apac

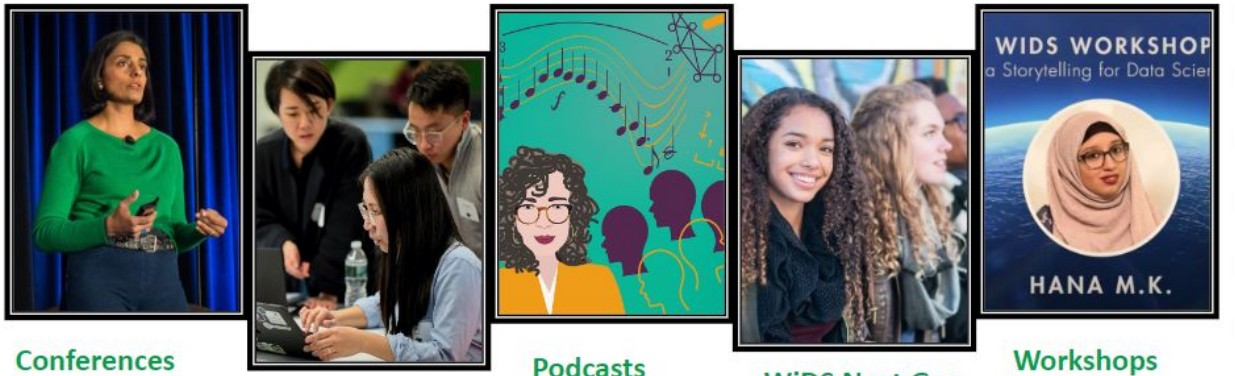
Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Women in Data Science
WIDS Stanford

WOMEN IN DATA SCIENCE
STANFORD UNIVERSITY

WiDS Elevates Women in Data Science Globally

WiDS celebrates, inspires, educates and supports through extensive programming



Conferences
Central @Stanford
~200 regional events
120K participants

Datathon
Annual, global
4000+ participants

Podcasts
English & Spanish
Listened to in
170 countries

WiDS Next Gen
Educational
Outreach
In many countries

Workshops
Monthly, virtual
Taken by thousands

https://www.widsconference.org/ambassadors-2023.html#apac

Women in Data Science
WIDS Stanford BSC

WOMEN IN DATA SCIENCE
STANFORD UNIVERSITY

WiDS Ambassador

WiDS 2023 Ambassador. Nataly Buslón Valdez, Equity, Diversity & Inclusion Officer at Barcelona Supercomputing Center. She is planning a internal seminar series with researchers from Life Sciences, Earth Sciences, CASE and Computer Sciences departments.

esade

UPC

ISGlobal Barcelona Institute for Global Health

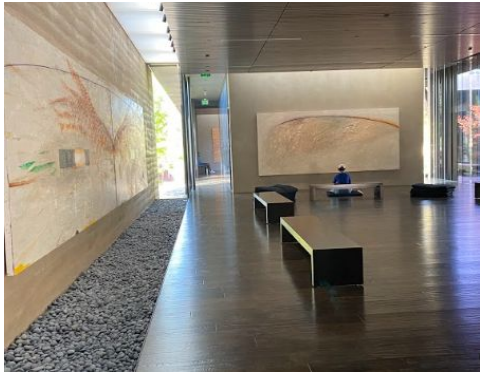
Aula Magna Business School

BSC Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Internal Conference Seminar #WomenInBSC

Stanford Campus Life

Stanford Campus Life



Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Thank you for this great opportunity and all the support!

EXCELENCIA SEVERO OCHOA

#WomenInBSC #EquityInBSC

Equity, Diversity Inclusion Officer | PostDoctoral Researcher