

Sex and Gender in Health and Disease: Opportunities for the Future

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National Institutes of Health
Office of Research on Women's Health

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Objective of FOA to focus on integrative sex and gender considerations

For ORWH to issue a FOA to fund investigator-initiated, interdisciplinary research awards that focus exclusively on the application of consideration of sex and gender and their interaction on health and disease



Landmark developments pave the way for next steps

- 2015- Workshop - *Improving the Health of Women in the United States* (<https://doi.org/10.17226/23441>)
- 2016 – SABV Policy went into effect (NOT-OD-15-102) part of the initiative to enhance Rigor and Reproducibility (NOT-OD-15-103)
- 2016 - 21st Century Cures Act
- 2018-2023 –Trans NIH Strategic Plan for Women’s Health Research
- Increased recognition and data on the importance of sex and gender and their interaction in health and disease

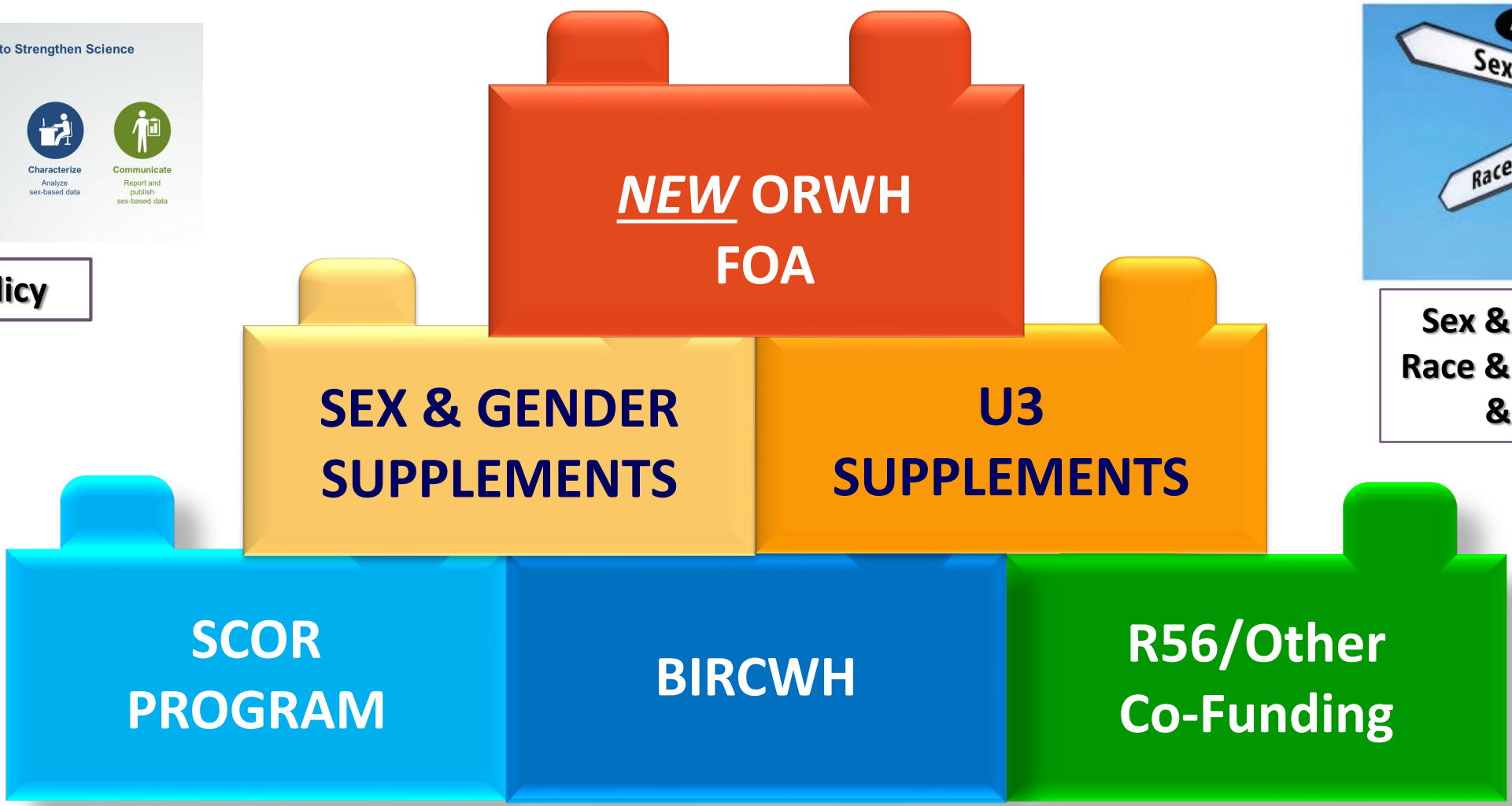


Building on current ORWH programs to advance the integration of sex and gender considerations

The 4 Cs of Studying Sex to Strengthen Science

- Consider**
Design studies that take sex into account, or explain why it isn't incorporated
- Collect**
Tabulate sex-based data
- Characterize**
Analyze sex-based data
- Communicate**
Report and publish sex-based data

SABV Policy



Sex & Gender, Race & Ethnicity, & Age

Early ORWH-led research grant FOA to advance novel science sets the stage

ORWH R21 (PAS-10-226)
Advancing Novel Science in
Women's Health
(ANSWHR)



Bryan N. Brown, Ph.D.

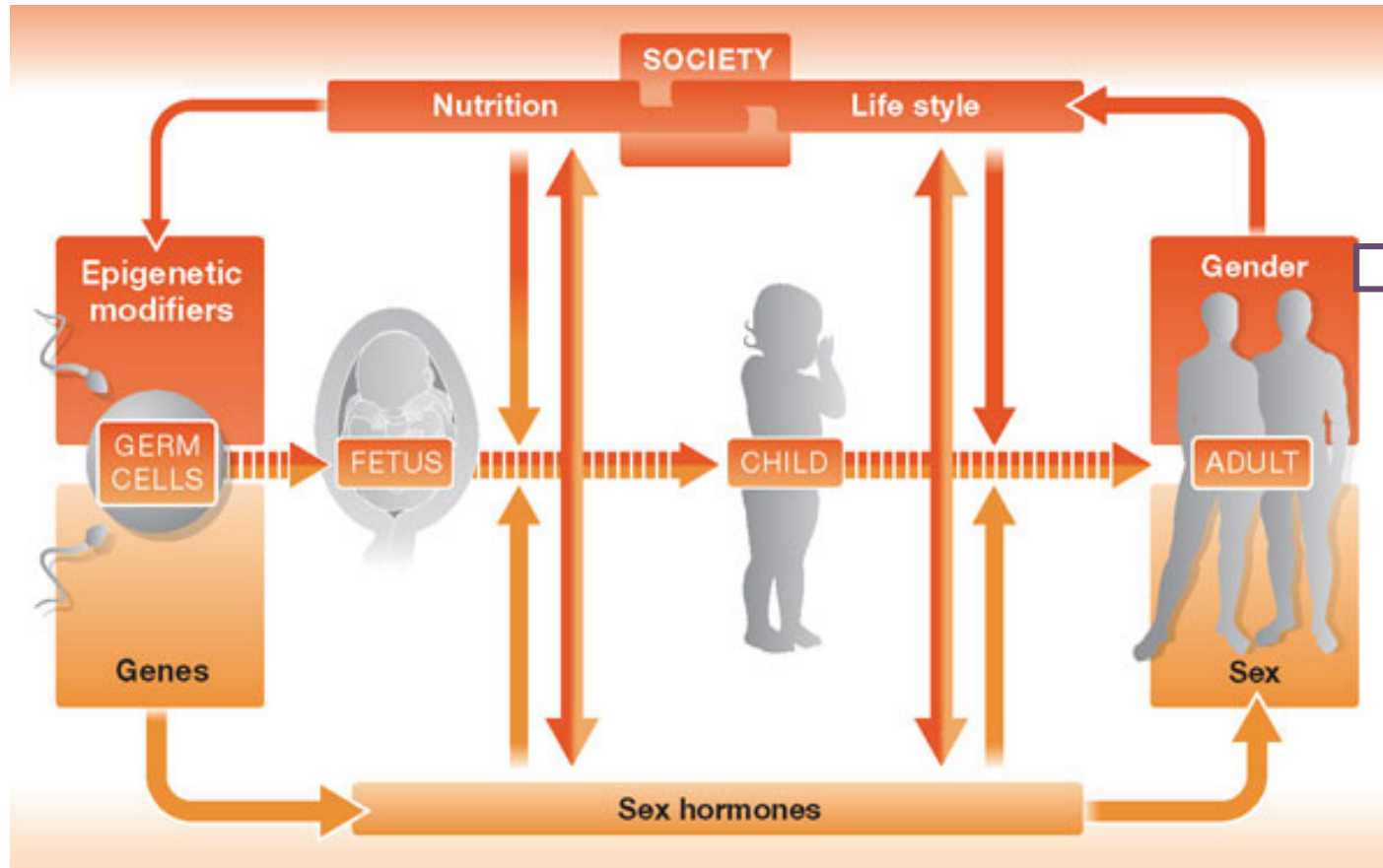
Well received by 24 ICs
FY11-FY14
88 Awards
Total Direct Cost > \$11M

ANSWHR EXAMPLES:

AI101275-01	Mechanisms underlying sex differences in the pathogenesis of inflammatory bowel disease
AI096058-02	The gender specific prevalence of multiple strain genital HSV-2 infection
AR061690-02	Sex-specific movement differences in young adults with and without hip pain
GM107882-02	Macrophage Phenotype as a Determinant of Outcome in Pelvic Organ Prolapse Repair
HD069962-01	Tailored Outcomes for Female Urinary Incontinence
HL093631-01A1	Sex Differences in Molecular Heterogeneity of Cardiac Repolarization
HL109527-01	Cardiovascular Disease Biomarkers and Mediation of Hormone Therapy Effects
MH098006-02	Sex Specific Neuroanatomical Markers of Vulnerability in Animal Model Of PTSD



Sex interacts with gender to influence health and disease



Sex and Gender influences in many clinical entities .

- Cardiology
- Rheumatology
- Immunology
- Neurology
- Oncology
- Endocrinology
- Hematology



Nature, 2018

Bayer, E.A. and Hobert, O.; “Past experience shapes sexually dimorphic neuronal wiring through monoaminergic signaling”, August 27, 2018, *Nature*; DOI: 10.1038/s41586-018-0452-0

Regitz-Zagrosek,V. (2012). Sex and gender differences in health, *EMBO Reports*, 13, Issue: 7, 596-603. DOI: ([10.1038/embor.2012.87](https://doi.org/10.1038/embor.2012.87))



Examples of broad areas for sex & gender integration in the context of disease-specific hypotheses

- Discover basic biological differences, structural and functional, between females and males.
- Investigate the influence of sex and gender and their interactions on disease prevention, presentation, management, and outcomes.
- Identify the immediate, mid-, and long-term effects of exposures on health and disease outcomes.
- Promote research that explores the influence of sex and gender on the connection between the mind and body and its impact on health and disease.
- Expand research on female-specific conditions and diseases, including reproductive stages, and maternal and gynecologic health.



Discussion & Comments

Concept:

ORWH FOA to fund investigator-initiated, interdisciplinary research awards that focus exclusively on the application of consideration of sex and gender and their interaction on health and disease





We seek your input and comments!

Thank you!

