

# 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

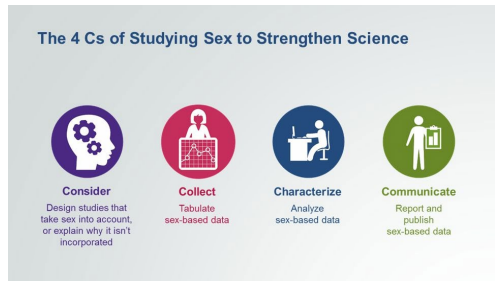
For ORWH to issue a FOA to fund investigator-initiated, interdisciplinary research awards that focus exclusively on the application of consideration of sex and gender and their interaction on health and disease



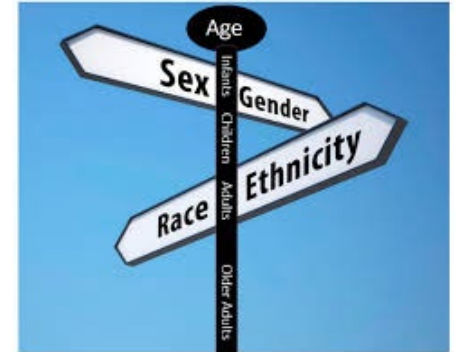
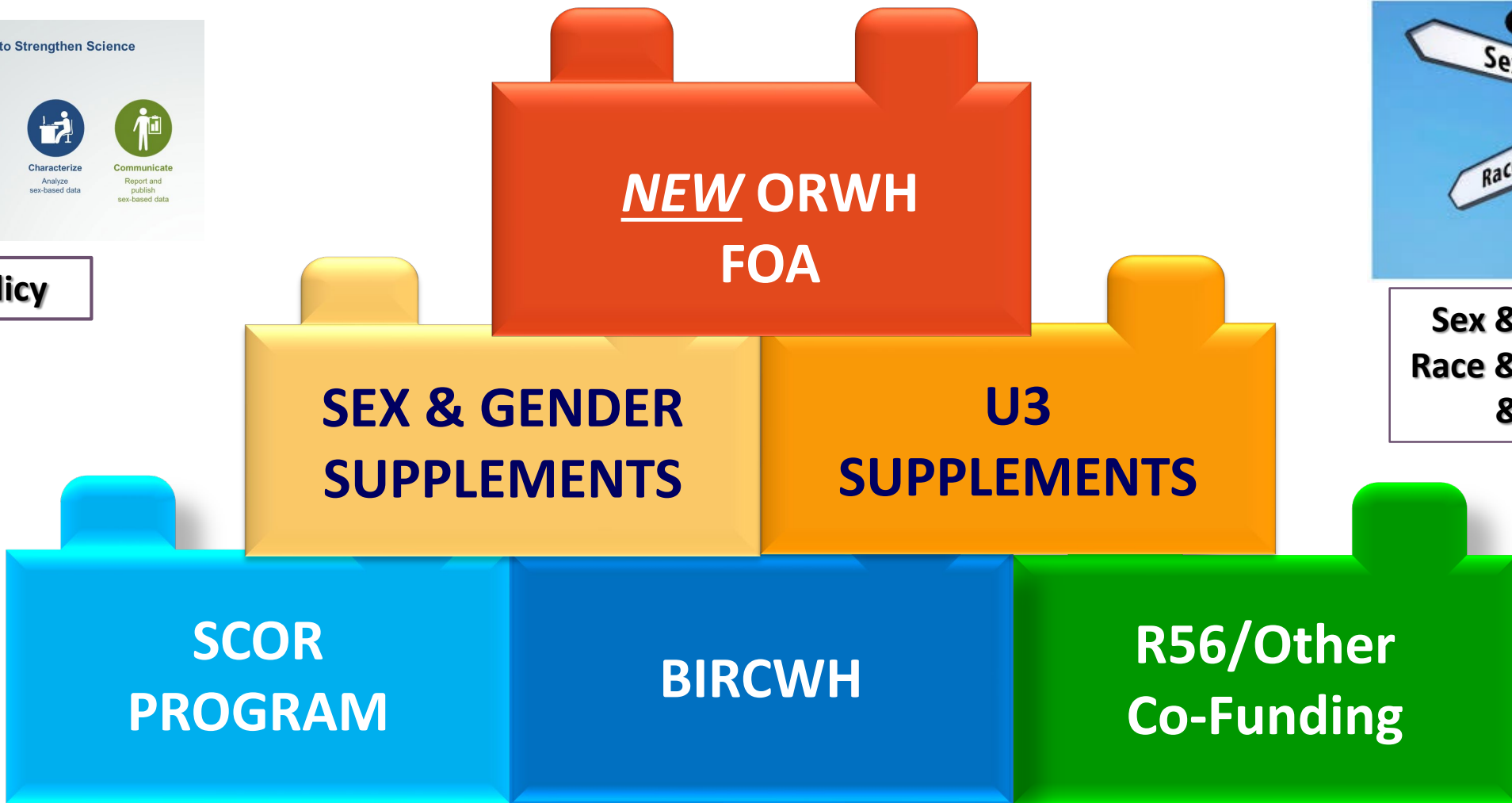
## Landmark developments pave the way for next steps

- 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



**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**  
**Women's Health**  
**(ANSWHR)**



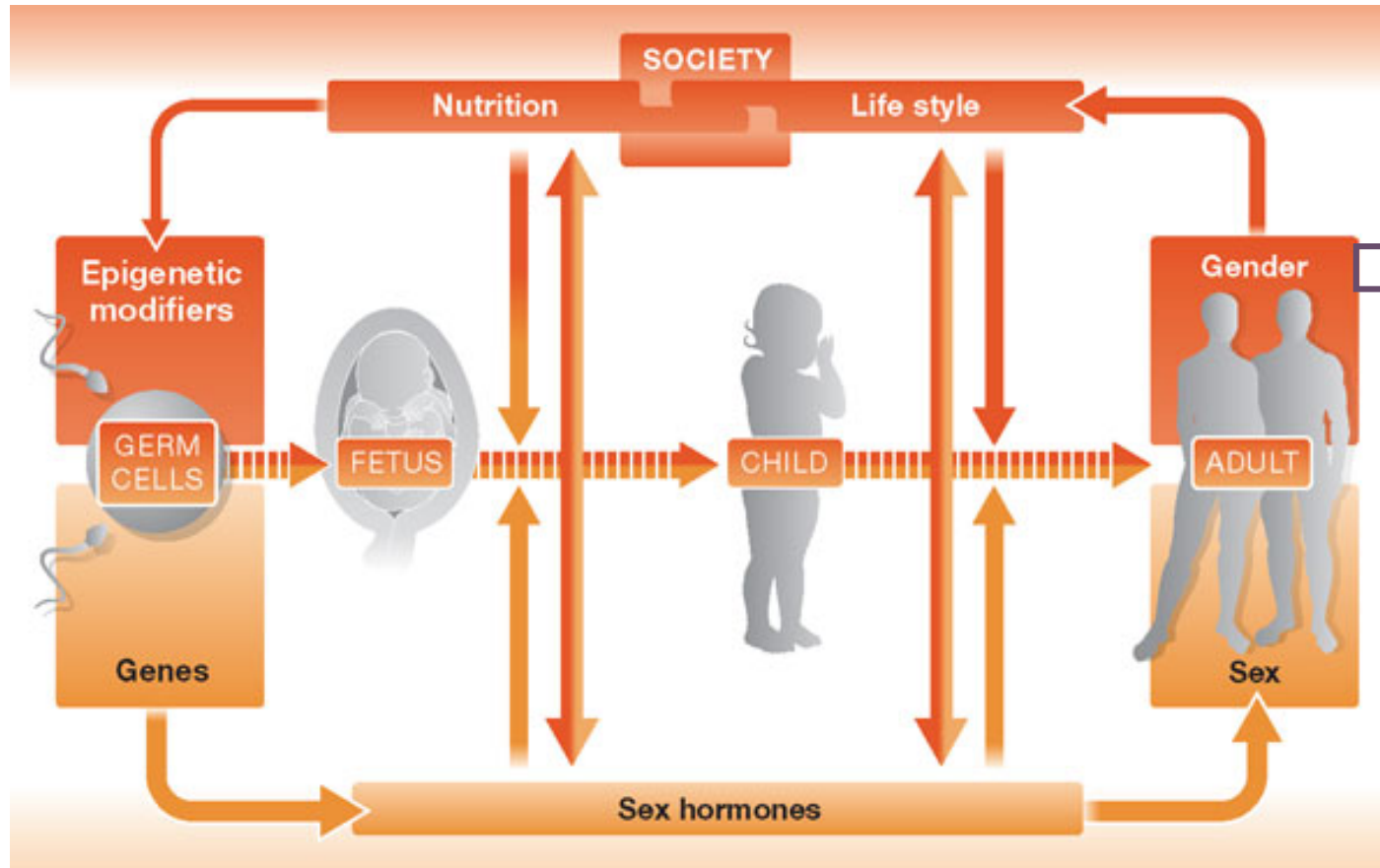
**Bryan N. Brown, Ph.D.**

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

## **ANSWHR EXAMPLES:**

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

# Sex interacts with gender to influence health and disease




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))



**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](https://doi.org/10.1038/s41586-018-0452-0)

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



## 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!