ORWH Sex/Gender Administrative Supplement Program: Evaluation and Concept Clearance

ORWH SAGE Team
Rajeev K. Agarwal, Ph.D.
Adam Apostoli, Ph.D.
Charles Hampp
Chyren Hunter, Ph.D.
Email: agarwalraj@mail.nih.gov

ACRWH: April 14, 2021
Agenda

- Brief overview of ORWH Sex/Gender Administrative Supplement (SAGE Admin. Supp.) program
- SAGE Admin. Supp. Evaluation data
- Impact of the SAGE Admin. Supp. Program
Did the program accomplish its intended objectives?

• To support research highlighting the impact of sex/gender influences in human health and illness, including basic, preclinical, clinical, translational, and behavioral studies?
  - Add the Opposite Sex/Gender
  - Increase Sample Size (N)
  - Analyze Existing Data

• To stimulate the investigators to addresses*:
  - Goal 1: Increase sex differences research in basic science studies
  - Goal 2: Incorporate findings of sex/gender in the design and development of new technologies, medical devices, and therapeutic drugs
  - Goal 3: Actualize personalized prevention, diagnostics, and therapeutics for girls and women

*NIH Strategic Plan for Women's Health Research, Moving into the Future with New Dimensions and Strategies for Women's Health Research: A Vision for 2020 for Women's Health Research
Assessment Parameters

Multi-factorial approaches to assess the success of the program:

- Demographic Information (Personally Identifiable Information, PII) of the Applicants and Awardees
- Bibliometric data of supplement awardees
- Survey of the supplement awardees
- Subsequent grant applications
- Workshop of supported investigators
Administrative Supplements for Research on Sex/Gender Influences (Admin Supp)

- In FY 2013, ORWH initiated a trans-NIH program to catalyze exploratory research on sex/gender* differences by providing “Administrative Supplements (Admin. Supp.)” to ongoing peer-reviewed NIH-funded grants.

- The Admin. Supp. program supported following types of Research Approaches:
  - Add the Opposite Sex/Gender
  - Increase Sample Size (N)
  - Analyze Existing Data

- The proposed research must address at least one of the objectives from Goals 1 through 3 of the NIH Strategic Plan for Women's Health Research.


*Sex-based studies: Sex is the classification of living things, generally as male or female.

*Gender-based studies: Gender refers to a person's self-representation as male or female, or how that person is responded to by social institutions based on the individual's gender presentation.

ORWH funded 22 ICOs, except 6 (CC, CIT, CSR, FIC, NCATS, and NLM)

**Sex of Applicants**

- **Males**: 62% Total Applicants, 18% Funded Applicants
- **Females**: 38% Total Applicants, 11% Funded Applicants
- **Unknown**: 0% Total Applicants, 0% Funded Applicants

**Academic Degree of Applicants**

- **PhD**: 68% Total Applicants, 20% Funded Applicants
- **MD**: 18% Total Applicants, 5% Funded Applicants
- **MD, PhD**: 14% Total Applicants, 4% Funded Applicants
- **Other**: 0% Total Applicants, 0% Funded Applicants

**Disclaimer:** The demographic information (Personally Identifiable Information, PII) was provided in a report (#1314-20) by the Division of Statistical Analysis and Reporting (DSAR), NIH. The PII data presentation was cleared by the OER on Tuesday, February 23, 2021.

Race of Applicants

- **White**: 73%
- **African American**: 23%
- **Asian**: 18%
- **Am. Indian or Alaska Native**: 3%
- **Native Hawaiian**: 0%
- **> 1 Race**: 0%
- **Unknown**: 2%
- **Withheld**: 1%

Ethnicity of Applicants

- **Hispanic**: 89%
- **Non-Hispanic**: 26%
- **Unknown**: 0%
- **Withheld**: 4%

Disclaimer: The demographic information (Personally Identifiable Information, PII) was provided in a report (#1314-20) by the Division of Statistical Analysis and Reporting (DSAR), NIH. The PII data presentation was cleared by the OER on Tuesday, February 23, 2021.

**Disability Status of Applicants**

<table>
<thead>
<tr>
<th>Category</th>
<th>Total Applicants</th>
<th>Funded Applicants</th>
</tr>
</thead>
<tbody>
<tr>
<td>N (No)</td>
<td>93%</td>
<td>28%</td>
</tr>
<tr>
<td>Y (Yes)</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Unknown</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Withheld</td>
<td>4%</td>
<td>1%</td>
</tr>
</tbody>
</table>

**Disclaimer:** The demographic information (Personally Identifiable Information, PII) was provided in a report (#1314-20) by the Division of Statistical Analysis and Reporting (DSAR), NIH. The PII data presentation was cleared by the OER on Tuesday, February 23, 2021.
SAGE Admin. Supp. Total Applications* Received (FY 2013 – 2021)

ORWH Investment (2013 – 2020) = $38.87 Million
Received = 1,356 apps, Awarded = 383 investigators
Overall Success = 28.24%

NIH issued SABV policy (NOT-OD-15-102) in June 2015

*Based on the QVR/IMPACII data
Incorporation of Sex/Gender in funded Admin. Supp. (Combined data of 6 yrs., FY 2013-2018)

<table>
<thead>
<tr>
<th>Study Type (%</th>
<th>Preclinical</th>
<th>Clinical</th>
<th>Both (Preclinical &amp; Clinical)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>58%</td>
<td>36%</td>
<td>6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scientific Approach (%)</th>
<th>Add New Sex</th>
<th>Increase Subjects (N)</th>
<th>Analyze Existing Data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>35%</td>
<td>20%</td>
<td>45%</td>
</tr>
</tbody>
</table>

**Preclinical Research** includes - Cell line, Animal, Xenograft, or Non-human primates

**Clinical Research** includes - Human subjects or Human biospecimens

**Both Preclinical and Clinical Research** includes – as above, Patients derived xenografts

[Graph showing incorporation of sex/gender in funded Admin. Supp.]
Preclinical Research includes - Cell line, Animal, Xenograft, or Non-human primates
Clinical Research includes - Human subjects or Human biospecimens
Both Preclinical and Clinical Research includes – as above, Patients derived xenografts

NIH issued SABV policy (NOT-OD-15-102) in June 2015

Scientific Approach

- Add New Sex
- Increase Subjects (N)
- Analyze Existing Data

NIH issued SABV policy (NOT-OD-15-102) in June 2015
Q: What terminal degrees were held by SAGE recipients at time of award?

Q: How many years after your terminal degree did you become a SAGE supplement awardee?
Q: At the time you became a SAGE supplement awardee, what was your professional status?

- INSTRUCTOR
- PROFESSOR
- ASSOCIATE PROFESSOR
- ASSISTANT PROFESSOR

Q: At the time you became SAGE supplement awardee, what stage investigator were you?

- NOT APPLICABLE
- EARLY STAGE INVESTIGATOR (ESI)
- NEW INVESTIGATOR (NI)
SAGE PIs’ Publications by Fiscal Year
FY’13 Cohort

SABV Keywords Used:
- Biological variable
- Bisexual
- Bisexuality or homosexuality
- Female
- Gay
- Gender
- Gender difference
- Gender differences
- Gender disparities
- Gender disparity
- Gender identities
- Gender identity
- Gender inequalities
- Gender inequality
- Lesbian
- LGBT
- Male
- Man
- Men
- Queer
- SABV
- Sex
- Sex as a biological variable
- Sex characteristics
- Sex difference
- Sex differences
- Sex distribution
- Sex effect
- Sex effects
- Sex factors
- Sex ratio
- Sexism
- Sexual and gender minorities
- Sexual dimorphism
- Transgender
- Transgender persons
- Woman
- Women

Yes = Publications that contain keywords related to sex/gender and SABV
No = Publications that DO NOT contain keywords related to sex/gender and SABV
FY’13 Supplement Awardees: SABV Non-responsive and Responsive Applications

SAGE Applications (in %)

- SABV Non-responsive Applications
- SABV Responsive Applications

Fiscal Years

- FY 2014 (N = 168)
- FY 2015 (N = 173)
- FY 2016 (N = 173)
- FY 2017 (N = 196)
- FY 2018 (N = 180)
- FY 2019 (N = 188)
- FY 2020 (N = 190)

SABV Keywords Used:
- Biological variable
- Bisexual
- Bisexuality or homosexuality
- Female
- Gay
- Gender
- Gender difference
- Gender differences
- Gender disparities
- Gender disparity
- Gender identities
- Gender identity
- Gender inequalities
- Gender inequality
- Lesbian
- LGBT
- Male
- Man
- Men
- Queer
- SABV
- Sex
- Sex as a biological variable
- Sex characteristics
- Sex difference
- Sex differences
- Sex distribution
- Sex effect
- Sex effects
- Sex factors
- Sex ratio
- Sexism
- Sexual and gender minorities
- Sexual dimorphism
- Transgender
- Transgender persons
- Woman
- Women
FY’13 Supplement Awardees: SABV Non-responsive and Responsive Awards

SABV Keywords Used:
- Biological variable
- Bisexual
- Bisexuality or homosexuality
- Female
- Gay
- Gender
- Gender difference
- Gender differences
- Gender disparities
- Gender disparity
- Gender identities
- Gender identity
- Gender inequalities
- Gender inequality
- Lesbian
- LGBT
- Male
- Man
- Men
- Queer
- SABV
- Sex
- Sex as a biological variable
- Sex characteristics
- Sex difference
- Sex differences
- Sex distribution
- Sex effect
- Sex effects
- Sex factors
- Sex ratio
- Sexism
- Sexual and gender minorities
- Sexual dimorphism
- Transgender
- Transgender persons
- Woman
- Women
Q: Did you present any of the data from your SAGE supplement award at any national or international conferences?

- Yes: 82%
- No: 18%

Q: If you indicated that you presented your SAGE research at one or more national or international conferences, were the conference(s) specifically focused on sex and/or gender, or women's health?

- Yes: 10%
- No: 90%
Q: Do you feel that students, fellows, and other trainees in your lab/research group are better equipped to consider sex and/or gender in their research as a result of your SAGE supplement award?

- Yes: 5%
- No: 95%

Q: Do you feel that research in your field/discipline appropriately addresses sex and/or gender?

- Yes: 44%
- No: 56%
Q: How has obtaining a SAGE supplement award impacted your career path?

- Increased awareness of including sex and/or gender... 114
- Changed research area or focus 68
- Changed research approach (e.g., protocols or methodologies) 20
- Led to new collaborations 59
- Increased research funding related to sex and/or gender 55
- Assigned a medical student working with me to write a... 23
- Published articles in journals in which you have not previously... 7
- Have on-going local (campus) collaborations, established as a... 1
- Extended the therapeutic potential of a medication we are... 1
- I've always been cognizant of sex/gender issues (my PhD work... 1
- I every way mentioned above and more. E.g. it allowed to... 1
- New research ideas and projects 1
- The SAGE supplement had immediate and long-lasting effects.... 1
- Will likely lead to new grants. 1
- No change 1
- Other (if other, please explain in text field below) 1

Responses
Data Hidden in Plain Sight (FY 2016)

SPIE data analyses of FY 2016 identified a number of SPIE objectives that represented gaps in our portfolio. The 2017 (PA-17-078) and 2018 (PA-18-658) FOAs were modified accordingly.

In FY 2017, a new FOA (PA-17-101) was issued for SPIE 3.9 to target Under-studied, Under-represented and Under-reported (U3) women.

So far, ORWH has funded 59 applicants and has invested >$10 Million in U3 program

SPIE 3.9: Examine health disparities among women stemming from differences in such factors as race and ethnicity, socioeconomic status, gender identity, and urban-rural living, as they influence health, health behaviors, and access to screening and therapeutic interventions.

*SPIE = Strategic Plan Implementation Evaluation
Sex As a Biological Variable Workshop, Oct 26-27, 2017, NIH

Keynote speaker: Dr. Virginia Miller

Sex-specific risk for cardiovascular dysfunction and cognitive decline

Sessions:

- Sex Differences in Brain Function and Behavior
- How Sex Impacts Our Interactions with External Influences
- Sex Differences in Animal Models
- Sex Differences in Gene Expression
- Poster Session
- Panel Discussion on Applying SABV

SABV Workshop was organized by ORWH and the Office Strategic Coordination (NIH Common Fund)

Materials (Agenda, Speaker Biographies, Oral Presentations, Poster Abstracts, and Participant list), and videocast of individual sessions are available online: https://commonfund.nih.gov/sexdifferences/workshop
Total Registered Guests – 206, and more than 150 guests attended the workshop in person

Workshop had a live Videocast – **119 people (day 1)** and **53 people (day 2)** viewed in real-time

Videocast is archived for on-demand viewing:
Overall Summary

Sex/Gender Administrative Supplement program

- Supported researchers to:
  - Add the Opposite Sex/Gender
  - Increase Sample Size (N)
  - Analyze Existing Data

- Stimulated the investigators to address:
  - Sex differences in basic and clinical research studies
  - Sex/gender in research approaches and methodologies

- Warranted the continuation of the program with some modifications – the survey data
  - 76% said their SAGE award motivated them to seek additional funding related to sex/gender
  - ~60% submitted subsequent applications using data from the SAGE award

Since the SAGE program has accomplished the intended objectives and beyond, there is an opportunity to address other gaps in the consideration of sex/gender in biomedical research.

- 76% said their SAGE award motivated them to seek additional funding related to sex/gender
- ~60% submitted subsequent applications using data from the SAGE award
Research is needed to address Gaps related to Sex/Gender Influences on COVID-19 Pandemic

- ORWH published, “Guiding Principles: Sex and gender influences in COVID-19 and the health of women”, which was developed in collaboration with CCRWH COVID-19 working group members.

- The Guiding Principles cover five major themes:
  - The Principles
  - SABV Policy Requirements and COVID-19
  - NIH Inclusion and COVID-19
  - COVID-19 and the Health of Women
  - Consequences of COVID-19 on the Biomedical Workforce
A new Funding Opportunity Announcement (FOA) to support studies on the SARS-CoV-2 virus or COVID-19 disease in alignment with efforts across NIH to:

- Develop and implement effective therapeutics and vaccines and
- Accelerate research on technologies to validate and improve programs that will overcome barriers and increase uptake of effective therapeutics and vaccines at the point of care

FOA research topics of interest could include, but are not limited to:

- Sex and gender influences in the development and administration of effective therapeutics and vaccines
- Investigations of sex and gender differences in access to care (e.g., admission, diagnosis, and treatment) of COVID-19 affected individuals
- Investigation of sex and gender influences on the outcome of patient interactions with health care providers
- The impact of sex and gender on mortality due to co-morbid conditions
Thank you so much!
Any Comments or Feedback?