August 13, 2018

Ms. Suzanne H. Plimpton Reports Clearance Officer National Science Foundation 2415 Eisenhower Ave., Suite W18253 Alexandria, VA 22314 *Via regulations.gov and email* 

RE: National Science Foundation; Notice of Intent To Seek Approval To Extend a Current Information Collection; Notice and request for comments; 2019 National Survey of College Graduates (Federal Register Doc. 2018-12622)

Dear Ms. Plimpton:

We are grateful for the opportunity to comment on the National Science Foundation's proposed information collection request related to the 2019 National Survey of College Graduates (NSCG). *See* 83 Fed. Reg. 27354 (June 12, 2018). We are a group of 17 scientific organizations and associations of higher education, including the American Association for the Advancement of Science and American Association of University Professors, and 236 scientists and engineers, including 17 members of the National Academies, committed to promoting diversity in science, technology, engineering, and math (STEM) fields and inclusion of underrepresented groups in our nation's STEM workforce. We write jointly with 8 scholars at the Williams Institute and other institutions who have long worked with federal agencies to improve data collection on the U.S. population and have produced widely-cited best practices for the collection of sexual orientation and gender identity information on population-based surveys.<sup>1</sup> The Williams Institute is an interdisciplinary center at the UCLA School of Law dedicated to rigorous and independent research on sexual orientation and gender identity, including on employment and education of lesbian, gay, bisexual, and transgender (LGBT) people.

Our comments address the importance and feasibility of including sexual orientation and gender identity measures on the NSCG and related surveys administered by the National Science Foundation's National Center for Science & Engineering Statistics, including the Survey of Doctorate Recipients (SDR) and the Survey of Earned Doctorates (SED). Incorporating measures of sexual orientation and gender identity into the NSCG, SDR, and SED would enhance the quality and utility of the information collected, because doing so would provide vital data on the

<sup>1</sup> See Sexual Minority Assessment Research Team (SMART), Williams Institute, Best Practices for Asking Questions about Sexual Orientation on Surveys (2009), <u>https://williamsinstitute.law.ucla.edu/wp-content/uploads/SMART-FINAL-Nov-2009.pdf</u>; Gender Identity in U.S. Surveillance (GenIUSS) Group, Williams Institute, Best Practices for Asking Questions to Identify Transgender and Other Gender Minority Respondents on Population-Based Surveys (2014), <u>https://williamsinstitute.law.ucla.edu/wp-content/uploads/geniuss-report-sep-2014.pdf</u>.

participation of LGBT people, also called sexual and gender minorities, in STEM education and their representation in our nation's STEM workforce.

Like race, sex, and other personal demographic data already collected on the NSCG, SDR, and SED,<sup>2</sup> data on the sexual orientation and gender identity of college graduates and doctoral degree holders in STEM fields would enhance the ability of the National Science Foundation, the Census Bureau, the National Science Board, and the surveys' co-sponsoring agencies - the National Institutes of Health, Department of Education, Department of Agriculture, National Endowment of the Humanities, and National Aeronautics and Space Administration - to improve the understanding of the U.S. STEM workforce. Collecting sexual orientation and gender identity information would increase the utility of official reports, including the National Science Board's Science & Engineering Indicators report and the National Science Foundation's Women, Minorities, and Persons with Disabilities in Science and Engineering report. These reports and data from the NSCG, SDR, and SED more generally are used not only by their sponsoring agencies but also by policymakers, the Office of Management and Budget, the Office of Science and Technology Policy, state and local government agencies, and educational and research institutions across the nation. Adding sexual orientation and gender identity information would further these reports' goals of providing important information on the condition and progress of the nation's STEM fields, including demographic trends, and of understanding and strengthening the participation of under-represented groups in the U.S. STEM workforce and U.S. undergraduate and graduate programs.

## I. Including Sexual Orientation and Gender Identity Measures in the NSCG, SDR, and SED Would Enhance the Quality and Utility of the Information Being Collected

As in previous versions of the survey, the proposed 2019 NSCG would collect some types of personal information from respondents, including race, ethnicity, sex, age, income, and disability status,<sup>3</sup> which we support. However, while the proposed NSCG would collect a variety of personal demographic information from respondents, it would not collect data on respondents' sexual orientation or gender identity. Including measures of sexual orientation and gender identity in the NSCG (as well as the SDR and SED) would enhance the quality and utility of the information being collected.

There has been a growing recognition of the need to measure sexual orientation and gender identity in the STEM workforce.<sup>4</sup> As summarized last month in the scientific journal *Nature*, recent studies show that LGBT people are experiencing disadvantages and disparities in STEM fields similar to other under-represented groups, such as racial and ethnic minorities and

<sup>&</sup>lt;sup>2</sup> We note that some demographic information (e.g., race, sex) is not re-collected on the NSCG or SDR if already collected from a given respondent in a previous survey cycle (or, for the SED, if previously collected from the SDR). Throughout our comment, by collection of demographic information we refer to the availability of that information, whether it is collected on a present or previous cycle.

<sup>&</sup>lt;sup>3</sup> National Science Foundation, National Center for Science and Engineering Statistics, *National Survey of College Graduates* (2018), <u>https://www.nsf.gov/statistics/srvygrads.</u>

<sup>&</sup>lt;sup>4</sup> Wimberly, G. L. (2015). Conclusion and recommendations for further research. In G.L. Wimberly (Ed.), *LGBTQ Issues in Education: Advancing a Research Agenda*, pp. 237–251. American Educational Research Association. <u>https://books.google.com/books?hl=en&lr=&id=2YElDwAAQBAJ</u>

women.<sup>5</sup> Estimates suggest that LGBT people are approximately 20% less represented in STEM fields than expected based on their prevalence in the U.S. population.<sup>6</sup> A 2018 study found that sexual-minority undergraduates were 8% more likely than their heterosexual counterparts to drop out of STEM majors, even though they were more likely to pursue relevant research experience – a pattern commonly associated with difficulties in retaining women and racial and ethnic minorities in STEM fields due to a non-supportive STEM culture.<sup>7</sup>

Indeed, several studies have shown that LGBT people encounter non-supportive environments in STEM fields. LGBT people report more negative workplace experiences in STEM fields than do non-LGBT people in those same fields, or than do LGBT people in non-STEM industries.<sup>6</sup> Among sexual-minority STEM faculty members who are 'out' about their sexual orientation, 69% report feeling uncomfortable in their academic department, which is related to exclusion and harassment they report.<sup>8</sup> Some STEM fields, such as chemistry, have conducted surveys on the professional environment that included questions of sexual orientation and gender identity. In a 2016 survey in chemistry, 44% of LGBT people reported that they were harassed, intimidated, or excluded at work.<sup>9</sup>

As noted by the 2018 National Academies' *Measuring the 21st Century Science and Engineering Workforce Population: Evolving Needs* report, the science and engineering workforce "is becoming increasingly diverse...in terms of gender, race/ethnicity, and other characteristics".<sup>10</sup> In this respect, the report highlights an evolving need:

Future recruitment, growth, and development of the nation's scientists and engineers will depend on greater understanding not only of the diverse composition of the science and engineering workforce but also of the factors that facilitate or impede the entry, retention, and advancement of underrepresented groups in the workforce.<sup>10</sup>

Inclusion of sexual orientation and gender identity measures on the NSCG, SDR, and SED would directly address such evolving needs identified by the National Academies. Doing so would provide important data regarding how LGBT people navigate the STEM environment – from their undergraduate and graduate education through to the workforce – and where they may experience barriers to entering or remaining in STEM fields. Such data would also provide information about the experiences of LGBT people in STEM more generally, including, for

<sup>9</sup> Wang, L (2016) LGBT chemists seek a place at the bench. Chemical Engineering and News, 94:41, 18-20.

<sup>&</sup>lt;sup>5</sup> Freeman, J. B. LGBTQ scientists are still left out, 36 *Nature*, 559, pp. 27-28 (July 3, 2018).

<sup>&</sup>lt;sup>6</sup> Cech, E. A., and Pham, P.V. Queer in STEM organizations: Workplace disadvantages for LGBT employees in STEM related federal agencies. *Social Sciences* 6.1 (2017); Cech, Erin A. "LGBT professionals' workplace experiences in STEM-related federal agencies." *Proceedings of the 2015 American Society for Engineering Education (ASEE) National Conference, Seattle, WA, USA*. 2015., <u>https://peer.asee.org/lgbt-professionals-workplace-experiences-in-stem-related-federal-agencies</u>

<sup>&</sup>lt;sup>7</sup> Hughes, B.E., 2018. Coming out in STEM: Factors affecting retention of sexual minority STEM students. *Science advances*, *4*(3), p.eaao6373.

<sup>&</sup>lt;sup>8</sup> Patridge, E.V., Barthelemy, R.S. and Rankin, S.R., 2014. Factors impacting the academic climate for LGBQ STEM faculty. *Journal of Women and Minorities in Science and Engineering*, 20(1).

<sup>&</sup>lt;sup>10</sup> National Academies, *Measuring the 21st Century Science and Engineering Workforce Population: Evolving Needs* (2018), <u>https://www.nap.edu/catalog/24968/measuring-the-21st-century-science-and-engineering-workforce-population-evolving</u>

example, whether they are satisfied with their jobs, receiving sufficient professional support, or experiencing pay inequality.

There are many potential uses of sexual orientation and gender identity data in STEM workforce surveys. For example, such data would inform institutions, agencies, and researchers developing strategies to address under-representation or career or educational barriers experienced by LGBT people. Reports based on NSCG, SDR, and SED data, including the *Science & Engineering Indicators* and *Women, Minorities, and Persons with Disabilities in Science and Engineering* reports, are routinely used by policymakers overseeing diversity initiatives at educational and research institutions across the nation and at funding agencies, including the National Science Foundation and National Institutes of Health. Data on LGBT representation could therefore similarly inform such diversity programs, as these programs may be interested to address under-representation of LGBT people in specific STEM fields and career stages, if and where it exists. As with other under-represented groups, such diversity initiatives could include fellowships for doctoral students, scholarships for undergraduate students, or recruitment strategies for faculty, graduate students, and/or postdoctoral researchers. More generally, the data would also inform research aimed at developing interventions or paradigms to reduce disadvantages experienced by LGBT scientists and engineers.

In short, including sexual orientation and gender identity measures in the NSCG, SDR, and SED would increase the quality and utility of the information collected, because such data would enhance the understanding of diverse and under-represented groups' participation in STEM education and their representation in the STEM workforce.

## II. Importance of Governmental Data Collection on Sexual Orientation and Gender Identity (SO/GI); SO/GI Data Collection is Becoming Increasingly Common

Adding sexual orientation and gender identity measures to the NSCG, SDR, and SED would reflect a growing trend among federal, state, and other data collections that include demographic measures. This trend is responsive to a need succinctly described by the Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys:

At a time when sexual and gender minority (SGM) populations are becoming more visible in social and political life, there remains a lack of data on the characteristics and well-being of these groups. In order to understand the diverse needs of SGM populations, more representative and better quality data need to be collected.<sup>11</sup>

A growing number of federal government surveys allow people to voluntarily disclose their sexual orientation and/or gender identity. Examples of federal government surveys that collect these data include the National Health Interview Survey, Behavioral Risk Factor

<sup>&</sup>lt;sup>11</sup> Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys, *Current Measures of Sexual Orientation and Gender Identity in Federal Surveys* (2016), <u>https://s3.amazonaws.com/sitesusa/wp-</u> content/uploads/sites/242/2014/04/WorkingGroupPaper1 CurrentMeasures 08-16.pdf.

Surveillance System, Youth Risk Behavior Surveillance System, National Survey for Family Growth, and National Crime Victimization Survey, among others.<sup>11</sup> Further, several state and local government surveys also collect data on sexual orientation and gender identity, such as the California Health Interview Survey,<sup>12</sup> as do several large surveys administered by private entities, most notably Gallup through its Daily Tracking Survey.<sup>13</sup>

While more and better data are needed, governmental and other data collections that include measures of sexual orientation and gender identity have allowed researchers to begin to describe the size of the LGBT population and LGBT people's demographics; employment, housing, and family circumstances; health and well-being; and the discrimination and disparities they face. These data are vital to policymaking in order to ensure that stereotypes and myths are not driving policies that impact LGBT people, and so that programs and services are appropriately targeted at vulnerable LGBT populations. For example, we now know that there are an estimated 11 million LGBT individuals living in the U.S.<sup>13</sup> We also know from the data that the LGBT population is remarkably diverse and that the experiences of LGBT people are not uniform but, rather, are shaped by factors such as race, ethnicity, socioeconomic status, geographical location, primary language, education, disability, religion, family composition, and age.<sup>14</sup> We have also learned that LGBT people are more likely to be in poverty than non-LGBT people,<sup>15</sup> contrary to the popular stereotype of LGBT affluence, and that LGBT people face persistent and pervasive discrimination in employment, housing, educational, and other important settings.<sup>16</sup> Noting the disadvantages LGBT people are facing in STEM fields (see Section I), the inclusion of sexual orientation and gender identity measures in STEM workforce surveys (NSCG, SDR, and SED) would provide similarly vital information about the experiences, career trajectory, and representation of LGBT people in STEM fields.

# III. Experience Indicates NSCG, SDR, and SED Respondents Would Willingly and Accurately Disclose Their Sexual Orientation And Gender Identity

Federal and other population-based surveys that collect sexual orientation and gender identity data indicate NSCG, SDR, and SED respondents would be willing and are able to answer questions about their sexual orientation and gender identity, and doing so would not raise privacy or other concerns. As an initial matter, we note that the National Science Foundation's National Center for Science & Engineering Statistics and the Census Bureau (who directly administers the NSCG) remove respondents' names and other identifying information, in

<sup>&</sup>lt;sup>12</sup> National Cancer Institute, Division of Cancer Control and Population Sciences, *National Health Interview Survey* (2018), <u>https://healthcaredelivery.cancer.gov/chis</u>

<sup>&</sup>lt;sup>13</sup> Gallup, In U.S., Estimate of LGBT Population Rises to 4.5% (2018),

https://news.gallup.com/poll/234863/estimate-lgbt-population-rises.aspx <sup>14</sup> Institute of Medicine, *The Health of Lesbian, Gay, Bisexual, and Transgender People: Building a Foundation for Better Understanding* (2011), http://www.iom.edu/Reports/2011/The-Health-of-Lesbian-Gay-Bisexual-and-Transgender-People.aspx.

<sup>&</sup>lt;sup>15</sup> Badgett et al., Williams Institute, *New Patterns of Poverty in the Lesbian, Gay, and Bisexual Community* (2013), <u>http://williamsinstitute.law.ucla.edu/wp-content/uploads/LGB-Poverty-Update-Jun-2013.pdf</u>.

<sup>&</sup>lt;sup>16</sup> See, e.g., Pizer et al., Evidence of Persistent and Pervasive Workplace Discrimination Against LGBT People, 45 Loy. L.A. L. Rev 715 (2012); James et al., Nat'l Ctr. for Transgender Equality, *Report of the 2015 U.S. Transgender Survey* 44-45 (2016), <u>http://www.transequality.org/sites/default/files/docs/usts/USTS%20Full%20Report%20-%20FINAL%201.6.17.pdf</u>.

addition to other measures, to protect respondents' confidentiality. And federal law protects the confidentiality of individually identifiable information collected by these agencies.<sup>17</sup>

Experience shows that respondents are willing to answer questions about their LGBT status. Indeed, the Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys has explained that "[m]ost surveys incorporating [sexual orientation and gender identity] items have not found higher nonresponse rates than other 'sensitive' questions, such as personal or household income."<sup>18</sup> Likewise, federal surveys incorporating these measures and other research demonstrate that including sexual orientation and gender identity questions does not cause survey breakoff.<sup>19</sup>

Although nearly all college graduates and doctoral degree holders taking the NSCG, SDR, and SED are adults, the sample includes those who would be considered young adults. Experiences with other federal government and population-based surveys show that youth and young adults are capable and willing to answer questions about sexual orientation and gender identity. For example, as the Sexual Minority Assessment Research Team report explained, "[s]exual orientation questions have been asked on large-scale school-based surveys of adolescents around the world since the mid-1980's."<sup>1</sup> For instance, the National Survey of Youth in Custody includes a measure of sexual orientation,<sup>20</sup> and the National Youth Risk Behavior Survey successfully includes respondents as young as 13 and has included sexual orientation measures since 2015. The National Survey of Family Growth, which includes respondents as young as 15, has included a sexual orientation behavior measure for many years.<sup>21</sup>

While sexual orientation and gender identity data should be treated with the same concern for confidentiality of respondents as any other demographic category, there is no rational basis to single out the questions on sexual orientation and gender identity as warranting special concern about the sensitivity of this type of information. As noted above, sexual orientation and gender identity measures do not have materially higher non-response rates than other potentially

<sup>&</sup>lt;sup>17</sup> U.S. Census Bureau, National Survey of College Graduates, Frequently Asked Questions (2018), <u>https://www.census.gov/programs-surveys/nscg/respondent/faqs.html</u>

<sup>&</sup>lt;sup>18</sup> Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys, *Current Measures of Sexual Orientation and Gender Identity in Federal Surveys* (2016), <u>https://s3.amazonaws.com/sitesusa/wp-</u>

<sup>&</sup>lt;u>content/uploads/sites/242/2014/04/WorkingGroupPaper1</u> CurrentMeasures 08-16.pdf; see also Saewyc, E.M. et al., Measuring sexual orientation in adolescent health surveys: Evaluation of eight school-based surveys, 35 J. of Adolescent Health 345 (2004) ("These studies indicate that orientation items, although sensitive questions, are no more sensitive or more likely to be skipped than other sexual risk behavior questions. This finding can reassure researchers and school administrators who are concerned that such items might be too sensitive for most students to answer, and who worry that nonresponse rates will render the results inaccurate and of limited use.").

<sup>&</sup>lt;sup>19</sup> See, e.g., Landers et al., Presentation: Developing Data for Advocacy (National LGBTI Health Summit: 2007); Case, *Disclosure of Sexual Orientation and Behavior in the Nurses' Health Study II: Results from a Pilot Study*, 51 J. Homosexuality 13 (2006).

<sup>&</sup>lt;sup>20</sup> Bureau of Justice Statistics, Data Collection: National Survey of Youth In Custody (NSYC),

<sup>&</sup>lt;u>https://www.bjs.gov/index.cfm?ty=dcdetail&iid=321</u> (last visited May 5, 2018); Bureau of Justice Statistics, NYSC Questionnaire—Younger Youth 5 (2011) <u>https://www.bjs.gov/content/pub/pdf/nsyc\_yy12.pdf</u>; Bureau of Justice Statistics, NYSC Questionnaire—Older Youth, 5 (2011), <u>https://www.bjs.gov/content/pub/pdf/nsyc\_oy12.pdf</u>.

 <sup>&</sup>lt;sup>21</sup> See Anjani Chandra et al., Sexual Behavior, Sexual Attraction, and Sexual Identity in the United States: Data From the 2006–2008 National Survey of Family Growth, 36 National Health Statistics Reports 1 (Mar. 3, 2011), <a href="https://www.cdc.gov/nchs/data/nhsr/nhsr036.pdf">https://www.cdc.gov/nchs/data/nhsr/nhsr036.pdf</a>.

sensitive personal questions. Moreover, according to the Federal Interagency Working Group, "[the] perceived sensitivity of questions can affect the willingness of survey practitioners to include [sexual orientation and gender identity] questions even when inclusion of these measures would support agency mission and data needs."<sup>22</sup> In this case, the inclusion of these measures strongly supports the mission of the National Science Foundation and furthers the goals of several federal agencies, as described in Section I.

We recognize that sexual orientation and gender identity questions could be sensitive for certain respondents, although there is no reason to believe they would be more sensitive than other questions, such as income or disability status. And even if the sexual orientation and gender identity questions would be sensitive for some respondents, the questions would be voluntary, as is the case in other federal government surveys and recommended by the Federal Interagency Working Group. Thus, no respondent would be forced to answer these questions. In other federal government surveys, these questions frequently have "don't know" and "something else" or "none of these" response options, giving respondents options for responding to these questions if they are uncomfortable disclosing or unsure about their sexual orientation or gender identity.<sup>1</sup> In addition, as described earlier, responses are highly confidential and are strongly protected under federal law.

In short, previous experiences in governmental and other data collection suggest that NSCG, SDR, and SED respondents will not encounter any issues in willingly and accurately disclosing information about sexual orientation and gender identity. Nor will such disclosures introduce issues of confidentiality or privacy, a high non-response rate, or survey breakoff.

## IV. The NSCG, SDR, and SED Have Sufficiently Large Samples to Produce Reliable Estimates Related to Sexual Orientation And Gender Identity

The Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys cautions that small samples may lead to significant errors in estimation and description and/or an inability to produce reliable estimates related to sexual orientation and gender identity.<sup>22</sup> However, the current sample sizes of the NSCG, SDR, and SED are all sufficiently large, and thus there is no rational basis for concerns related to small sample sizes in the context of these STEM workforce surveys.

For instance, recent versions of other federal government surveys, such as the National Health Interview Survey and National Survey of Family Growth, entailed sample sizes of approximately 87,500<sup>23</sup> and 10,000,<sup>24</sup> respectively, and both surveys currently collect information about sexual orientation. Sample sizes of the NSCG are far larger: the NSCG has a

<sup>&</sup>lt;sup>22</sup> Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys, *Evaluations of Sexual Orientation and Gender Identity Survey Measures: What Have We Learned?* (2016), <u>https://s3.amazonaws.com/sitesusa/wp-</u>

content/uploads/sites/242/2014/04/Evaluations of SOGI Questions 20160923.pdf.

<sup>&</sup>lt;sup>23</sup> Center for Disease Control and Prevention, *National Health Interview Survey* (2018), <u>https://www.cdc.gov/nchs/nhis/about\_nhis.htm</u>

<sup>&</sup>lt;sup>24</sup> Center for Disease Control and Prevention, *National Survey of Family Growth* (2018) https://www.cdc.gov/nchs/nsfg/about\_nsfg.htm

sample of approximately 135,000, the SDR approximately 120,000, and the SED approximately 55,000.<sup>10</sup> Thus, concerns of small sample size are unwarranted.

The NSCG, SDR, and SED routinely ask about race and ethnicity information, and many of the race and ethnicity classifications have a prevalence in the U.S. population that is smaller than that of LGBT people. For instance, the 2017 *Women, Minorities, and People with Disabilities in Science and Engineering* report provides recent estimates of each race and ethnicity classification's prevalence in the U.S. population, so as to permit comparison with corresponding percentages in science and engineering fields. For the following four race and ethnicity classifications included in the 2017 report (and collected in the NSCG, SDR, and SED), their prevalence estimate in the U.S. population is:

- Asian: 5.3%
- American Indian or Alaska Native: 0.7%
- Native Hawaiian or other Pacific Islander: 0.2%
- Two or more races (not Hispanic): 2.0% <sup>25</sup>

Despite being quite small, STEM workforce surveys currently provide full data on each of these race and ethnicity classifications. Most recent estimates of the prevalence of LGBT people in the U.S. adult population, according to the Gallup's 2017 Daily Tracking Survey (n=340,604), is 4.5%.<sup>13</sup> This prevalence is roughly on par or only slightly smaller than that of the U.S. Asian population, and is considerably higher than those of the other three race and ethnicity classifications. Thus, the NSCG, SDR, and SED currently collect information on race and ethnicity classifications that have expected samples smaller than those of LGBT people.

Finally, reports of NSCG, SDR, and SED data, such as the *Women, Minorities, and People with Disabilities in Science and Engineering* report, typically suppress a cell of data only if the sample constituting that data cell is less than 0.1% (due to concerns of an unreliable estimate or that so few respondents raises concerns of identifiability), and this is far lower than 4.5%. Dividing into specific subgroups and intersections with other demographic information in theory could lead to subgroup samples constituting less than 0.1% or where concerns of unreliability of identifiability are relevant. However, as with the race and ethnicity classifications currently collected with even smaller samples, such specific LGBT subgroup data could be suppressed wherever necessary. That certain subgroups or intersections may have overly small sample sizes does not warrant the wholesale exclusion of sexual orientation and gender identity information more generally.

Given that federal surveys with smaller sample sizes than the NSCG, SDR, and SED already currently collect sexual orientation and gender identity information, and that these STEM workforce surveys routinely collect information related to race and ethnicity classifications that have smaller prevalence in the U.S. population than LGBT people, concerns of unreliable or invalid estimates of LGBT people in STEM workforce surveys have no substantive support.

<sup>&</sup>lt;sup>25</sup> National Science Foundation, National Center for Science & Engineering Statistics, 2017 Women, Minorities, and Persons with Disabilities in Science and Engineering Report <u>https://www.nsf.gov/statistics/2017/nsf17310/data.cfm</u>

### V. Conclusion

The National Science Foundation is committed to promoting diversity in STEM fields and providing resources to ensure that science and engineering are inclusive to all.<sup>26</sup> Collecting sexual orientation and gender identity data on the NSCG, SDR, and SED would provide vital information about LGBT participation in the STEM pipeline – from undergraduate and graduate education through to the workforce – and LGBT representation among our nation's scientists and engineers. This information would enhance the ability of the National Science Foundation and other federal agencies to provide critical data and support to the scientific community and to advance the future of the U.S. STEM workforce.

Thank you for your consideration. We look forward to opportunities to discuss with you further. Please direct any correspondence to jon.freeman@nyu.edu.

Respectfully Submitted,

Jonathan B. Freeman, PhD Associate Professor of Psychology and Neural Science New York University

Adam P. Romero, JD Arnold D. Kassoy Scholar of Law Director of Legal Scholarship and Federal Policy Williams Institute, UCLA School of Law

Laura Durso, PhD Vice President, LGBT Research and Communications Center for American Progress

### **Institutional Signatories:**

American Association for the Advancement of Science (AAAS)

American Association of University Professors (AAUP)

American Anthropological Association (AAA)

American Educational Research Association (AERA)

American Psychological Association (APA)

Association of Population Centers (APC)

<sup>&</sup>lt;sup>26</sup> National Science Foundation, Office of the Director, *Broadening Participation* (2018), <u>https://www.nsf.gov/od/broadeningparticipation/bp.jsp</u>

American Society for Engineering Education (ASEE)

Consortium of Social Science Associations (COSSA)

Federation of Associations in Behavioral and Brain Sciences (FABBS)

Inter-university Consortium for Political and Social Research (ICPSR)

Linguistic Society of America (LSA)

National Organization of Gay and Lesbian Scientists and Technical Professionals (NOGLSTP)

Out in Science, Technology, Engineering, and Mathematics (oSTEM)

Population Association of America (PAA)

Society for Experimental Social Psychology (SESP)

Society for Personality and Social Psychology (SPSP)

Society for Research in Child Development (SRCD)

### Individual Signatories (members of the National Academies listed first):

Natalie G. Ahn, PhD Member, National Academy of Sciences Professor of Chemistry and Biochemistry University of Colorado at Boulder

Mahzarin R. Banaji, PhD Member, National Academy of Sciences Richard Clarke Professor of Social Ethics Harvard University

Carolyn R. Bertozzi, PhD Member, National Academy of Sciences Anne T. and Robert M. Bass Professor of Chemistry Stanford University

Axel Brunger, PhD Member, National Academy of Sciences Professor of Molecular and Cellular Physiology Stanford University Lynn Ann Conway, PhD Member, National Academy of Engineering Professor of Electrical Engineering and Computer Science, Emerita University of Michigan, Ann Arbor

Ronald S. Duman, PhD Member, National Academy of Medicine Elizabeth Mears and House Jameson Professor of Psychiatry, Professor of Neuroscience Yale School of Medicine

Susan T. Fiske, PhD Member, National Academy of Sciences Eugene Higgins Professor of Psychology and Public Affairs Princeton University

Susan A. Gelman, PhD Member, National Academy of Sciences Heinz Werner Distinguished University Professor University of Michigan

Richard L. Huganir, PhD Member, National Academy of Sciences Bloomberg Distinguished Professor Johns Hopkins University School of Medicine

Raymond Jeanloz, PhD Member, National Academy of Sciences Professor of Earth & Planetary Sciences and Astronomy University of California, Berkeley

Jay D. Keasling, PhD Member, National Academy of Engineering Professor of Chemical & Biomolecular Engineering and Bioengineering University of California, Berkeley

John H. Krystal, MD Member, National Academy of Medicine Robert L. McNeil, Jr. Professor of Translational Research, Professor of Psychiatry Yale School of Medicine

Robert C. Malenka, MD, PhD Member, National Academy of Sciences Member, National Academy of Engineering Member, National Academy of Medicine Nancy Friend Pritzker Professor in Psychiatry and Behavioral Sciences Stanford University Eric J. Nestler, MD, PhD Member, National Academy of Medicine Nash Family Professor of Neuroscience Icahn School of Medicine at Mount Sinai

James T. Randerson, PhD Member, National Academy of Sciences Ralph J. and Carol M. Cicerone Professor of Earth System Science University of California, Irvine

Henry L. Roediger, III, PhD Member, National Academy of Sciences James S. McDonnell Distinguished University Professor Washington University in St. Louis

Elizabeth S. Spelke, PhD Member, National Academy of Sciences Marshall L. Berkman Professor of Psychology Harvard University

Christian N. Adames, AB Graduate Student Teachers College, Columbia University

Alex Aslam Ahmed Doctoral Student Northeastern University

David M. Amodio, PhD Associate Professor of Psychology New York University

Derek Applewhite, PhD Assistant Professor of Biology Reed College

Joshua Aronson, PhD Associate Professor of Applied Psychology New York University

Emily Balcetis, PhD Associate Professor of Psychology New York University Lisa Feldman Barrett, PhD University Distinguished Professor of Psychology Northeastern University

Laura Baumgartner , PhD Instructor of Biology Front Range Community College

Jay Van Bavel, PhD Associate Professor of Psychology New York University

Mark Baxter, PhD Professor of Neuroscience Icahn School of Medicine at Mount Sinai

Lauren B. Beach, JD/PhD Postdoctoral Reseach Fellow Northwestern University

Elliot Berkman, PhD Associate Professor of Psychology University of Oregon

Rick A. Bevins, PhD Chair and Professor of Psychology University of Nebraska - Lincoln

Benjamin de Bivort, PhD Thomas D. Cabot Associate Professor of Organismic and Evolutionary Biology Harvard University

Bronwyn H. Bleakley, PhD Associate Professor of Biology Stonehill College

Walter Bockting, PhD Professor of Medical Psychology (in Psychiatry and Nursing) Columbia University

Adair Borges, BS Graduate Student University of California, San Francisco Nathaniel Braffman PhD Candidate Harvard University

Natalie Brito, PhD Assistant Professor New York University

Catherine Brown, MA Graduate Student University of Nebraska-Lincoln

Christina M. Brown, PhD Associate Professor of Psychology Arcadia University

William R Buchanan, PhD Executive Director Performing Arts & Creative Education Solutions Consulting

Tyler Burleigh, PhD Research Scientist Data Cubed LLC

Carlos Cardenas-Iniguez, MA Graduate Student, Psychology University of Chicago

Anna Carter, PhD Postdoctoral Research Associate Iowa State University

Stephen J. Ceci, PhD Helen L. Carr Professor of Developmental Psychology Cornell University

Pauline Charbogne, PhD Postdoctoral fellow Johns Hopkins University

Robert S. Chavez, PhD Assistant Professor of Psychology University of Oregon Jacqueline M. Chen, PhD Assistant Professor of Psychology University of Utah

Nicholas D. Chiappini, BA Graduate Student Stanford University

Jason C. Chow, PhD Assistant Professor of Special Education Virginia Commonwealth University

Joseph Cimpian, PhD Associate Professor of Economics and Education Policy Chair, Scholars and Advocates for Gender Equity in Education Research (AERA) New York University

Andrei Cimpian, PhD Associate Professor of Psychology New York University

Jasmin Cloutier, PhD Assistant Professor of Psychological & Brain Sciences University of Delaware

Kim Cobb, PhD Georgia Power Chair and ADVANCE Professor Professor of Earth and Atmospheric Sciences Georgia Tech

Shana Cole, PhD Assistant Professor of Psychology Rutgers University

Anthony G. Collins University President Clarkson University

Kent Connell, BS PhD Candidate in Ecology Kansas State University

Matthew Davis, MSc PhD Candidate University of New South Wales Sarah DeArmond, PhD Associate Professor of Management & Human Resources, Department Chair University of Wisconsin Oshkosh

Jasmine DeJesus, PhD Assistant Professor of Psychology University of North Carolina at Greensboro

Amanda B. Diekman, PhD Professor of Psychological & Brain Sciences Indiana University

Roland Dunbrack, PhD Professor of Biochemistry and Molecular Biophysics Fox Chase Cancer Center

James Dunlea, BS, MS Graduate Student Columbia University

Fred Duong, MA Graduate Student Northeastern University

Juan F. Duque, PhD Assistant Professor of Psychology Arcadia University

Alice H. Eagly, PhD Professor of Psychology Northwestern University

Neville Eclov, PhD Radiation Therapy Physics Resident Duke University

Roberto Efrain-Diaz Graduate Student University of California, San Francisco

Anke A. Ehrhardt, PhD Professor of Medical Psychology (in Psychiatry) Columbia University Tanya Marie Evans, PhD Assistant Professor of Education University of Virginia

Dominic Fareri, PhD Assistant Professor of Psychology Adelphi University

Brian Feinstein, PhD Research Assistant Professor Northwestern University

Melissa Ferguson, PhD Professor of Psychology Cornell University

Timothy Fessenden, PhD Postdoctoral Fellow Massachusetts Institute of Technology

Kara Finnigan, PhD Professor of Educational Leadership University of Rochester

Sarah Fischer, MA Graduate Student University of Nebraska-Lincoln

Andrew R. Flores, PhD Assistant Professor of Political Science, Mills College Visiting Scholar Williams Institute, UCLA School of Law

Stephen J. Flusberg, PhD Associate Professor of Psychology Purchase College, SUNY

Heather Forsythe Graduate Student Oregon State University

Emily Foster-Hanson PhD Student New York University Kathryn Fox, MA PhD Student Harvard University

Kurt Fraser, BS, MA Graduate Student Johns Hopkins University

Paolo Gabrielli, PhD Research Scientist The Ohio State University

Sarah Gaither, PhD Assistant Professor of Psychology Duke University

Alexia Galati, PhD Assistant Professor of Psychological Science University of North Carolina at Charlotte

Siddharth Garg, PhD Assistant Professor of Electrical and Computer Engineering New York University

Nanette Gartrell, MD Visiting Distinguished Scholar Williams Institute, UCLA School of Law

Jason C. Garvey, PhD Assistant Professor of Higher Education and Student Affairs University of Vermont

Dylan Gee, PhD Assistant Professor of Psychology Yale University

Jennifer Glass, PhD Assistant Professor of Earth & Atmospheric Sciences Georgia Institute of Technology

Miriam B Goodman, PhD Professor of Molecular & Cellular Physiology Stanford University Adam D. Gracz, PhD Assistant Professor of Genetics University of North Carolina at Chapel Hill

Deanna J. Greene, PhD Assistant Professor of Psychiatry Washington University School of Medicine

Oliver Grundmann, PhD Clinical Associate Professor of Medicinal Chemistry University of Florida

Joshua A Haby, MA, MLS Graduate Student University of Nebraska-Lincoln

Kathryn Hamilton, PhD Assistant Professor of Pediatrics Children's Hospital of Philadelphia

Nicholas R Harp, BA Graduate Student in Psychology University of Nebraska-Lincoln

Michelle Harran, BS Graduate Student Johns Hopkins University

Eric Hehman, PhD Assistant Professor of Psychology McGill University

Jody L. Herman, PhD Scholar of Public Policy Williams Institute, UCLA School of Law

Melissa Herman, PhD Assistant Professor of Pharmacology University of North Carolina, Chapel Hill

Joscelin Rocha Hidalgo PhD Student Georgetown University Mary Himmelstein, PhD Postdoctoral Fellow University of Connecticut

Jennifer S. Hirsch, PhD Professor of Sociomedical Sciences Columbia University, Mailman School of Public Health

Mark Hoffarth, PhD Postdoctoral Fellow New York University

Mirya R. Holman, PhD Associate Professor of Political Science Tulane University

Olivia L. Holmes, PhD Assistant Professor of Psychology Tennessee State University

Charles Phillip Holmes II, BS PhD Student, Oceanography Texas A&M University

Nicole Horenstein, PhD Associate Professor of Chemistry University of Florida

Tonda L. Hughes, PhD, RN, FAAN Henrik H. Bendixin Professor of International Nursing, Professor of Nursing (in Psychiatry) Columbia University Medical Center

Allison Hung Undergraduate Columbia University

Jeffrey M. Hunger, PhD Postdoctoral Fellow University of California, Los Angeles

Ian Hussey Postdoctoral Fellow Ghent University, Belgium Scott Imberman, PhD Professor of Economics and Education Policy Michigan State University

Tiffany Ito, PhD Professor of Psychology and Neuroscience University of Colorado Boulder

Anne Jefferson, PhD Associate Professor of Geology Kent State University

J. David Jentsch, PhD Empire Innovation Professor of Psychology Binghamton University

Kerri Johnson, PhD Professor of Psychology University of California, Los Angeles

Camille Johnson, PhD Acting Director, School of Management San Jose State University

Kenneth Joseph, PhD Assistant Professor of Computer Science and Engineering SUNY Buffalo

John T Jost, PhD Professor of Psychology and Politics New York University

Sophie Jurgensen, BS, BA Graduate Student, NSF GRF Fellow Louisiana State University

Mike Kaiser, PhD Instrument Manager California State University at Northridge

Shamus Khan, PhD Professor of Sociology, Department Chair Columbia University Laura A. King, PhD Curators' Distinguished Professor University of Missouri Columbia

Olivia Kirtley, PhD Postdoctoral Fellow KU Leuven

Mark Krzmarzick, PhD Assistant Professor of Civil and Environmental Engineering Oklahoma State University

Candace Lapan, PhD Assistant Professor of Psychology Wingate University

Gina Lee-Glauser, PhD Vice President for Research & Scholarship Clarkson University

Nikki Legate, PhD Assistant Professor of Psychology Illinois Institute of technology

Cynthia Levine, PhD Postdoctoral Fellow Northwestern University

Neil Lewis, Jr., PhD Assistant Professor of Communication and Social Behavior Cornell University

Julie Libarkin, PhD Professor of Earth and Environmental Sciences Michigan State University

Phui Cheng Lim, PhD Postdoctoral Fellow University of Nebraska-Lincoln

Corinna Loeckenhoff, PhD Associate Professor of Human Development Cornell University Jason Londo, PhD Adjunct Associate Professor of Integrative Plant Science USDA/Cornell

Debbie S. Ma, PhD Associate Professor of Psychology California State University Northridge

Christy Mallory, JD Director of State and Local Policy Williams Institute, UCLA School of Law

Tara M. Mandalaywala, PhD Assistant Professor of Psychological and Brain Sciences University of Massachusetts Amherst

Freddie Marquez, BS Graduate Student University of California, Irvine

Joshua Martin, PhD Assistant Professor of Biology Colby College

Sara E. Mason, PhD Associate Professor of Chemistry University of Iowa

Allison Master, PhD Research Scientist, Institute for Learning & Brain Sciences University of Washington

Elisabetta Matsumoto, PhD Assistant Professor of Physics Georgia Tech

Justin L. Matthews, PhD Assistant Professor of Psychology California State University, Monterey Bay

Iris Mauss, PhD Associate Professor of Psychology UC Berkeley Gary McDowell, PhD Executive Director Future of Research

Matthew McGill, PhD Research Scientist Goddard Space Flight Center

Patrick McGonigal, BA Graduate Student in Clinical Psychology University of Nebraska Lincoln

Matthias Mehl, PhD Professor of Psychology University of Arizona

Pranjal Mehta, PhD Senior Lecturer of Experimental Psychology University College London

Peter Mende-Siedlecki, PhD Assistant Professor of Psychology University of Delaware

Ilan H. Meyer, PhD Williams Distinguished Senior Scholar of Public Policy Williams Institute, UCLA School of Law

Seth J. Meyer, LMSW, PhD Assistant Professor of Political Science Bridgewater State University

Paul Meyer, PhD Associate Professor of Psychology University at Buffalo

Heino F. L. Meyer-Bahlburg, PhD Professor of Clinical Psychology (in Psychiatry) Vagelos College of Physicians & Surgeons of Columbia University

Nicholas M Michalak, MS PhD Candidate University of Michigan Kalina Michalska, PhD Assistant Professor of Psychology University of California, Riverside

Alyssa Mikytuck, MPP Graduate Student Georgetown University

David I. Miller, PhD Researcher American Institutes for Research

Daniel Lee Millimet, PhD Professor of Economics Southern Methodist University

Tessa Montague, PhD Postdoctoral Fellow Harvard University

Jin Montclare, PhD Professor of Chemical and Biomolecular Engineering New York University

Katherine Moore, PhD Assistant Professor of Psychology Arcadia University

Ethan Morgan, PhD Postdoctoral Fellow Northwestern University

David Moskowitz, PhD Research Assistant Professor Northwestern University

Corinne Alison Moss-Racusin, PhD Assistant Professor of Psychology Skidmore College

Mary C. Murphy, PhD Associate Professor and Associate Vice Provost for Student Diversity and Inclusion Indiana University Maital Neta, PhD Assistant Professor of Psychology University of Nebraska-Lincoln

John M. Nicoludis, PhD Postdoctoral Fellow University of California, San Francisco

Julie K Norem, PhD Hamm Professor of Psychology Wellesley College

Danielle Findley-Van Nostrand, PhD Assistant Professor of Psychology Roanoke College

James S. Nowick, PhD Professor of Chemistry University of California, Irvine

Tehila Nugiel, MS Graduate Student The University of Texas at Austin

Philip Nussenzweig MD/PhD Student, Clinical Fellow The Rockefeller University

Jessica O'Brien Undergraduate New York University

Paul A. O'Keefe, PhD Assistant Professor of Psychology Yale-NUS College

Allison P. O'Leary, PhD Assistant Professor of Psychology Brevard College

Kristina Olson, PhD Associate Professor of Psychology University of Washington Christina Padilla, MPP PhD Student Georgetown University

Elizabeth Levy Paluck, PhD Professor of Psychology and Public Affairs Princeton University

Dr. Shauna M Paradine, PhD Assistant Professor of Chemistry University of Rochester

Dipanwita Pati, PhD Postdoctoral Fellow UNC-Chapel Hill

Karl J. Petersen, PhD Researcher Curie Institute

Rachel Pizzie, PhD Postdoctoral Fellow Georgetown University

Nick D. Pokorzynski, BSc Graduate Student Washington State University

Morgan Polikoff, PhD Associate Professor of Education University of Southern California

Marisa Putnam, MPP Graduate Student Georgetown University

Kimberly Quinn, PhD Associate Professor of Psychology DePaul University

Kristina Rapuano, PhD Postdoctoral Fellow Yale University Thomas Remble, MS, MPH, DHS Director of Research, IMPACT Northwestern University

Kelly Rentscher, PhD Postdoctoral Scholar University of California, Los Angeles

Shawn Rhoads, BA. PhD student Georgetown University

Abigail Riemer, MA Doctoral Student, NSF Fellow University of Nebraska-Lincoln

Charles Samuel Henry Robinson, BS, MSc PhD Candidate The University of New Mexico

Troy A. Roepke, PhD Associate Professor of Animal Sciences Rutgers University

Fred Rubino Graduate Student Harvard University

Stephen T. Russell, PhD Priscilla Pond Flawn Regents Professor in Child Development Chair, Department of Human Development and Family Sciences University of Texas at Austin

Jocelyn Samuels, JD Executive Director and Roberta A. Conroy Scholar of Law Williams Institute, UCLA School of Law

Eric J. Schelter, PhD Professor of Chemistry University of Pennsylvania

Eric W. Schrimshaw, PhD Associate Professor of Sociomedical Sciences Columbia University Gabriel Schwartz PhD Candidate Harvard University

John Sciarappo Graduate Student New York University

Heather Sheridan, PhD Assistant Professor of Psychology University at Albany, State University of New York

Jeffrey Sherman, PhD Professor of Psychology UC Davis

Margaret Shih, PhD Professor of Psychology University of California, Los Angeles

Wolfgang Sigmund, PhD Professor of Materials Science and Engineering University of Florida

Jennifer Silvers, PhD Assistant Professor of Psychology University of California, Los Angeles

Gale M. Sinatra, PhD Stephen Crocker Professor of Education University of Southern California

Christofer Skurka, MS PhD Candidate in Communication Cornell University

Pamela K. Smith, PhD Associate Professor of Economics and Strategic Management University of California, San Diego

Jeanine Stefanucci Associate Professor of Psychology University of Utah Janet D. Stemwedel, PhD Professor of Philosophy San Jose State University

Steven J. Stroessner, PhD Professor of Psychology Barnard College

Daphna Stroumsa, MD, MPH Clinical Lecturer in Obstetrics & Gynecology University of Michigan

Brittany Lynne Sutherland, PhD Postdoctoral Fellow University of Arizona

Abigail L. S. Swann, PhD Associate Professor of Atmospheric Science and Biology University of Washington

Elise Swanson Graduate Student University of Arkansas

Courtney Sobers Swindell, PhD Assistant Teaching Professor Rutgers University-Newark

Rae Thomas, MA Behavioral Health Counselor - ERC University of Nebraska - Lincoln

Amy O. Tsui, PhD Professor of Population, Family and Reproductive Health Johns Hopkins Bloomberg School of Public Health

Lucina Uddin, PhD Associate Professor of Psychology University of Miami

James S. Uleman, PhD Professor of Psychology New York University Fernanda Vasconcelos, PhD Postdoctoral Fellow University of Florida

Bess Vlaisavljevich, PhD Assistant Professor of Chemistry University of South Dakota

Austin Wadle, BA PhD Student Duke University

Abraham Waldman, PhD Postdoctoral Fellow Stanford University

Micaiah Ward, BSc PhD Candidate in Cellular and Molecular Biology Florida State University

Omar Wasow, PhD Assistant Professor of Politics Princeton University

Ryan Watson, PhD Assistant Professor of Human Development and Family Studies University of Connecticut

Bradley M. Weisz, PhD Assistant Professor of Psychology California State University, Long Beach

Brenton M. Wiernik, PhD Assistant Professor of Psychology University of South Florida

Katie Wilkinson, PhD Associate Professor of Biological Sciences San Jose State University

Wendy M. Williams, PhD Professor of Human Development Cornell University Bianca D.M Wilson, PhD Rabbi Barbara Zacky Senior Scholar of Public Policy Williams Institute, UCLA School of Law

Joseph P. Wilson, PhD Senior Education Consultant American Institutes for Research

Matthew Wipperman, PhD Research Scholar Memorial Sloan Kettering Cancer Center

Daniela Witten, PhD Professor of Statistics and Biostatistics University of Washington

Lisa Xu PhD Candidate Harvard University

Jeffrey M Yau, PhD Assistant Professor of Neuroscience Baylor College of Medicine

Jeremy B. Yoder, PhD Assistant Professor of Biology California State University Northridge

Joshua Zosky, BA Graduate Student University of Nebraska-Lincoln

Arnold M. Zwicky, PhD Distinguished University Professor of Linguistics, Emeritus The Ohio State University