



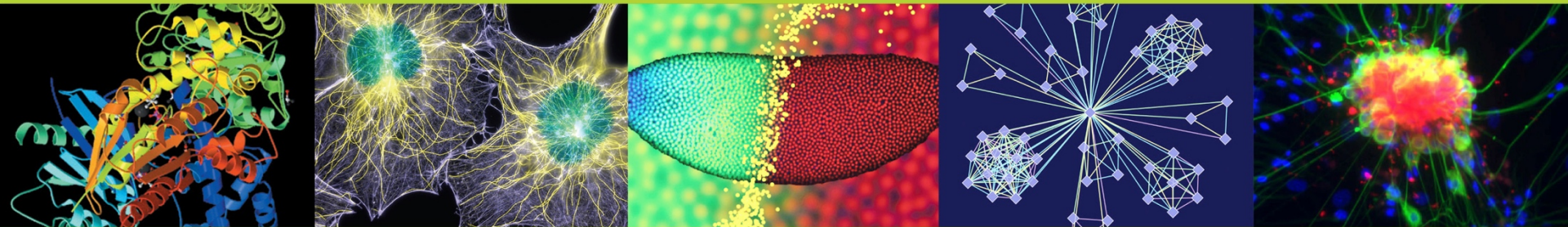
National Institute of
General Medical Sciences



National Advisory General Medical Sciences Council

January 16, 2020

Jon R. Lorsch, Ph.D., Director
National Institute of General Medical Sciences



Ad hoc Council Participants

- **Angela Byars-Winston, Ph.D.**
Professor
Department of Medicine
University of Wisconsin-Madison
- **Angela DePace, Ph.D.**
Associate Professor
Harvard Medical School, Harvard University
- **Laura F. Gibson, Ph.D.**
Senior Associate Vice President for Research & Graduate
Education
Associate Dean for Research, School of Medicine
Alexander B. Osborn Distinguished Professor in
Hematological Malignancies
West Virginia University



Ad hoc Council Participants (cont.)

- **Pamela Stacks, Ph.D.**
Associate Vice President for Research
Division of Research and Innovation
San Jose State University
- **Wendy Young, Ph.D.**
Senior Vice President, Small Molecule Drug Discovery
Department of Medicine
Genentech



Early-Career Investigator *Ad Hoc* Council Participants

- **Nozomi Ando, Ph.D.**
Assistant Professor
Department of Chemistry and Chemical Biology
Cornell University
- **Jeremy E. Wilusz, Ph.D.**
Assistant Professor
Department of Biochemistry & Biophysics
Perelman School of Medicine
University of Pennsylvania



NIGMS Associate Director for Extramural Activities Selected

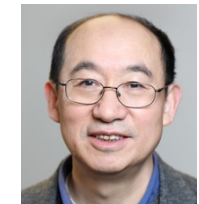
Erica Brown, Ph.D.

- Joined NIGMS in 2017 as Deputy Director for Extramural Activities and has served as acting director since early 2019
- Other NIH experience includes overseeing the *NIH Guide to Grants and Contracts*, directing NIH's AREA program, and serving as a scientific review officer at NIAID
- B.S. in biochemistry from Elizabethtown College and Ph.D. in microbiology and immunology from Wake Forest University School of Medicine



New Hires

- **Miles Fabian, Ph.D.**, Chief, Biochemistry and Bio-related Chemistry Branch, Division of Pharmacology, Physiology, and Biological Chemistry
- **Shawn Gaillard, Ph.D.**, Chief, Developmental and Cellular Processes Branch, Division of Genetics and Molecular, Cellular, and Developmental Biology
- **Zhongzhen Nie, Ph.D.**, Chief, Pharmacological and Physiological Sciences Branch, Division of Pharmacology, Physiology, and Biological Chemistry



New Hires (cont.)

- **Eileen Oni, Ph.D.**, Health Science Policy Analyst, Division of Data Integration, Modeling, and Analytics
- **Jiong Yang, Ph.D.**, Program Director, Division of Pharmacology, Physiology, and Biological Chemistry
- **Xiaoli Zhao, Ph.D.**, Program Director, Division of Pharmacology, Physiology, and Biological Chemistry



Departures

- **Rashada Alexander, Ph.D.**, Program Director, Division for Research Capacity Building
- **Alison Cole, Ph.D.**, Chief, Pharmacological and Physiological Sciences Branch, Division of Pharmacology, Physiology, and Biological Chemistry (retirement)
- **Luis Cubano, Ph.D.**, Program Director, Division Training, Workforce Development and Diversity
- **Robert Lees, Ph.D.**, Program Director, Division of Pharmacology, Physiology, and Biological Chemistry (retirement)

Departures (cont.)

- **Pamela Marino, Ph.D.**, Chief, Biochemistry and Bio-related Chemistry Branch, Division of Pharmacology, Physiology, and Biological Chemistry (retirement)
- **Scott Somers, Ph.D.**, Program Director, Division of Pharmacology, Physiology, and Biological Chemistry (retirement)

NIH Selection

Joshua Denny, M.D., M.S.

- New Chief Executive Officer of the *All of Us* Research Program
- Currently a professor in the Departments of Biomedical Informatics and Medicine at Vanderbilt University Medical Center
- Longtime NIGMS grantee in pharmacogenomics
- *All of Us* current CEO Eric Dishman will become chief innovation officer, and current Deputy Director Stephanie Devaney, Ph.D., will become chief operating officer



NIH Departure

Martha J. Somerman, D.D.S., Ph.D.



- Director of the National Institute of Dental and Craniofacial Research for the past 9 years
- Retired from NIH in December, but will remain Chief of the Laboratory of Oral Connective Tissue Biology at the National Institute of Arthritis and Musculoskeletal and Skin Diseases
- Lawrence A. Tabak, D.D.S, Ph.D., NIH Principal Deputy Director, serving as acting director

NIGMS Grantees Receive Presidential Honor

2019 Presidential Early Career Award for Scientists and Engineers (PECASE)

- **Michael Boyce, Ph.D.**
Associate Professor, Duke University
School of Medicine
- **Elizabeth Nance, Ph.D.**
Assistant Professor, University of Washington
- **James Olzmann, Ph.D.**
Associate Professor, University of California,
Berkeley
- **Sohini Ramachandran, Ph.D.**
Associate Professor, Brown University



Upcoming Event: NIGMS/FASEB Research Organism Webinar

Diversifying the Research Organism Landscape

- January 21, 2020; 2:00-3:00 p.m. ET
- Panelists:

Dorit Zuk, Ph.D., Director, NIGMS Division of Genetics and Molecular, Cellular, and Developmental Biology

Emma Farley, Ph.D., Assistant Professor, University of California, San Diego School of Medicine

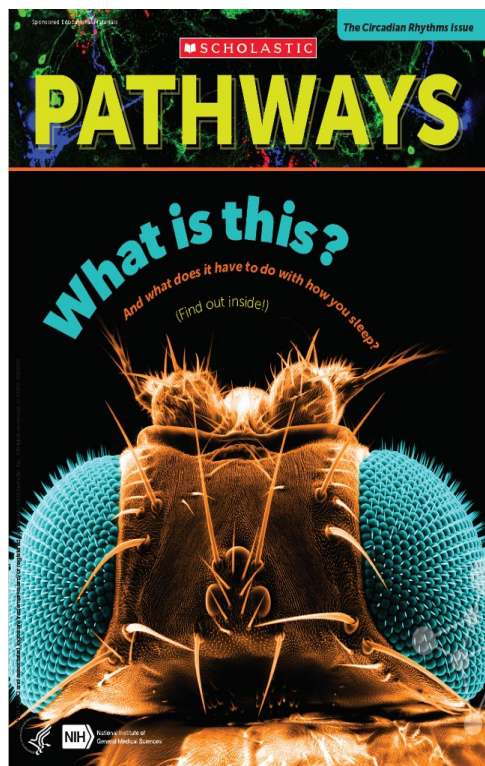
Wallace Marshall, Ph.D., Professor, Department of Biochemistry and Biophysics, University of San Francisco

- Attend live or later:
<https://faseb.org/Professional-Development/FASEB-Webinars.aspx>



Pathways: NIGMS & Scholastic, Inc.

New issue on circadian rhythms coming soon!



- Will reach an estimated 2.5 million middle and high school students and 19,000 teachers across all 50 states
- Student magazine in Scholastic's *Science World*
- Lesson plans for teachers that map to curricular standards
- Online activities and videos featuring NIGMS scientists and research

<http://www.scholastic.com/pathways>

Notice of NIH's Interest in Diversity

Updated Notice of NIH's Interest in Diversity Notice

Number: NOT-OD-18-210

Key Dates

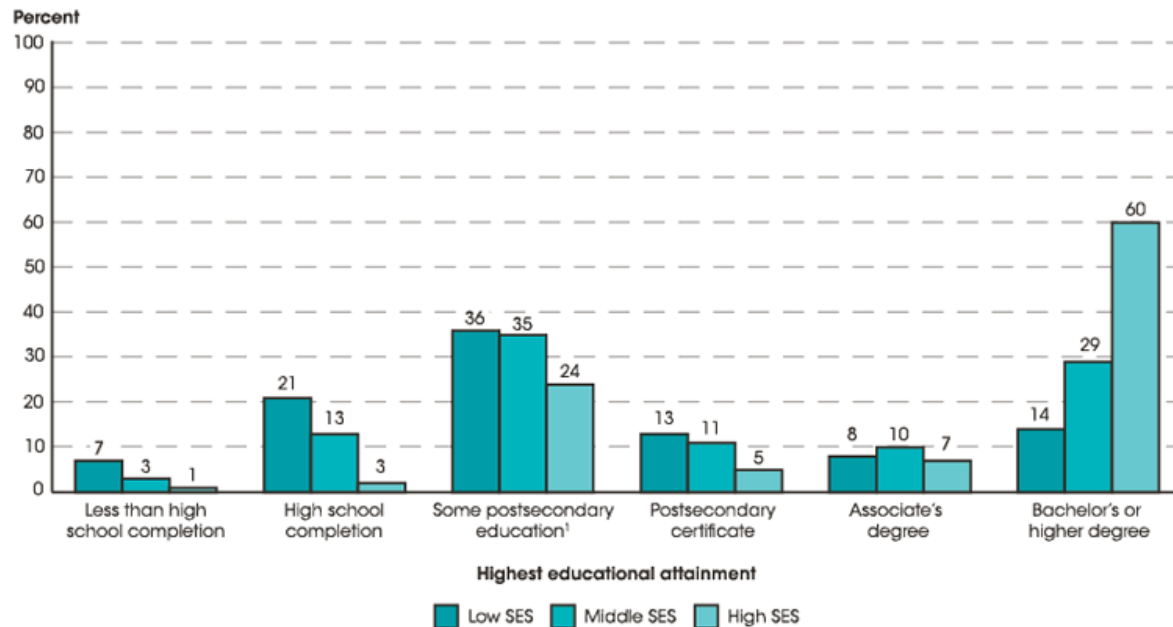
Release Date: July 16, 2018

NIH encourages institutions to diversify their student and faculty populations to enhance the participation of individuals from groups that are underrepresented in the biomedical, clinical, behavioral and social sciences, **such as:**

- A. Individuals from racial and ethnic groups that have been shown by the National Science Foundation to be underrepresented in health-related sciences on a national basis...
- B. Individuals with disabilities...
- C. Individuals from disadvantaged backgrounds...

Socioeconomic Status Is Highly Correlated with Educational Attainment

Figure 1. Percentage distribution of highest level of educational attainment of spring 2002 high school sophomores in 2012, by socioeconomic status (SES)



https://nces.ed.gov/programs/coe/indicator_tva.asp

Previous Language

Updated Notice of NIH's Interest in Diversity Notice

Number: NOT-OD-18-210

Key Dates

Release Date: July 16, 2018

C. Individuals from disadvantaged backgrounds, defined as:

1. Individuals who come from a family with an annual income below established low-income thresholds. These thresholds are based on family size, published by the U.S. Bureau of the Census; adjusted annually for changes in the Consumer Price Index; and adjusted by the Secretary for use in all health professions programs. The Secretary periodically publishes these income levels at <http://aspe.hhs.gov/poverty/index.shtml>.
2. Individuals who come from an educational environment such as that found in certain rural or inner-city environments that has demonstrably and directly inhibited the individual from obtaining the knowledge, skills, and abilities necessary to develop and participate in a research career.

The disadvantaged background category (C1 and C2) refers to the financial and educational background of individuals, particularly before graduating from high school, while residing in the United States

HHS Poverty Guidelines

2019 POVERTY GUIDELINES FOR THE 48 CONTIGUOUS STATES AND THE DISTRICT OF COLUMBIA	
PERSONS IN FAMILY/HOUSEHOLD	POVERTY GUIDELINE
For families/households with more than 8 persons, add \$4,420 for each additional person.	
1	\$12,490
2	\$16,910
3	\$21,330
4	\$25,750
5	\$30,170
6	\$34,590
7	\$39,010
8	\$43,430

Programs using the guidelines (or percentage multiples of the guidelines — for instance, 125 percent or **185 percent of the guidelines**) in determining eligibility include Head Start, the Supplemental Nutrition Assistance Program (SNAP), the National School Lunch Program, the Low-Income Home Energy Assistance Program, and the Children’s Health Insurance Program.

<https://aspe.hhs.gov/poverty-guidelines>

Previous Language

Updated Notice of NIH's Interest in Diversity Notice

Number: NOT-OD-18-210

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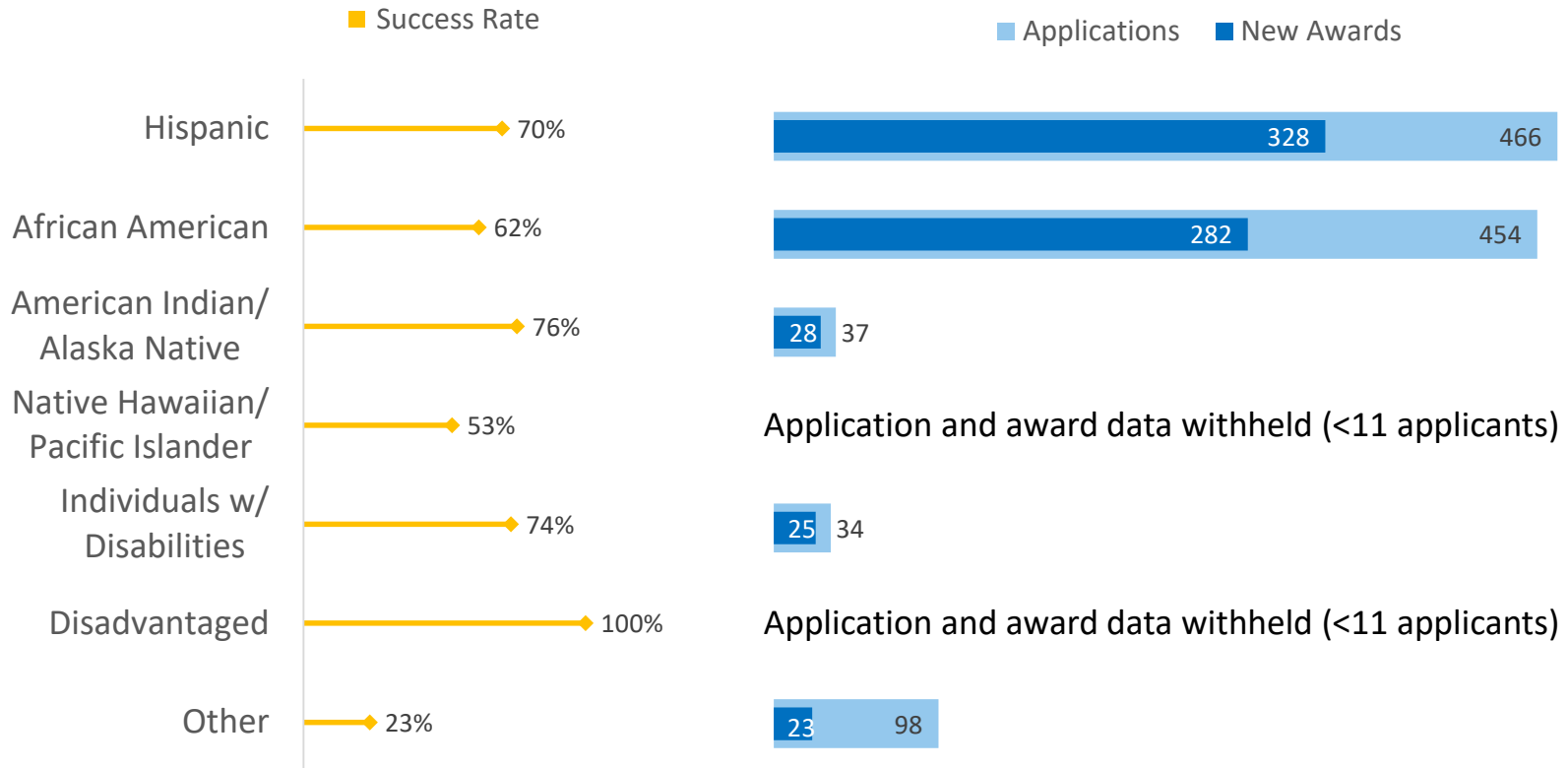
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<1% of Diversity Supplement Applicants in FY 2018 Came in under the Disadvantaged Category



Source: Kay Lund, DBRW, OER

C. Individuals from disadvantaged backgrounds, defined as those who meet two or more of the following criteria:

1. Were or currently are homeless, as defined by the McKinney-Vento Homeless Assistance Act (Definition: <https://nche.ed.gov/mckinney-vento/>);
2. Were or currently are in the foster care system, as defined by the Administration for Children and Families (Definition: <https://www.acf.hhs.gov/cb/focus-areas/foster-care>);
3. Were eligible for the Federal Free and Reduced Lunch Program for two or more years (Definition: <https://www.fns.usda.gov/school-meals/income-eligibility-guidelines>);
4. Have/had no parents or legal guardians who completed a bachelor's degree (see <https://nces.ed.gov/pubs2018/2018009.pdf>);
5. Were or currently are eligible for Federal Pell grants (Definition: <https://www2.ed.gov/programs/fpg/eligibility.html>);
6. Received support from the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) as a parent or child (Definition: <https://www.fns.usda.gov/wic/wic-eligibility-requirements>).
7. Grew up in one of the following areas: a) a U.S. rural area, as designated by the Health Resources and Services Administration (HRSA) Rural Health Grants Eligibility Analyzer (<https://data.hrsa.gov/tools/rural-health>), *or* b) a [Centers for Medicare and Medicaid Services-designated Low-Income and Health Professional Shortage Areas](#) (qualifying zipcodes are included in the file). Only one of the two possibilities in #7 can be used as a criterion for the disadvantaged background definition.

Students from low socioeconomic (SES) status backgrounds have been shown to obtain bachelor's and advanced degrees at significantly lower rates than students from middle and high SES groups (see https://nces.ed.gov/programs/coe/indicator_tva.asp), and are subsequently less likely to be represented in biomedical research. For background see Department of Education data at, <https://nces.ed.gov/>; https://nces.ed.gov/programs/coe/indicator_tva.asp; <https://www2.ed.gov/rschstat/research/pubs/advancing-diversity-inclusion.pdf>.

Some Advantages of the New Disadvantaged Background Category

- Ease of self-reporting using these criteria
 - All criteria are defined by other federal agencies and/or law and are published on government websites
 - All categories in the Notice are self-reported
- There is substantial overlap between those in the Disadvantaged Background category and underrepresented racial and ethnic groups
 - Allows multiple on-ramps into NIH diversity programs
 - Allows for inclusion of populations not clearly called out in current language – e.g., certain Asian minorities that are underrepresented and low SES
- Provides on-ramp for students from low SES rural backgrounds

The new Notice also provides a category for women at the faculty level

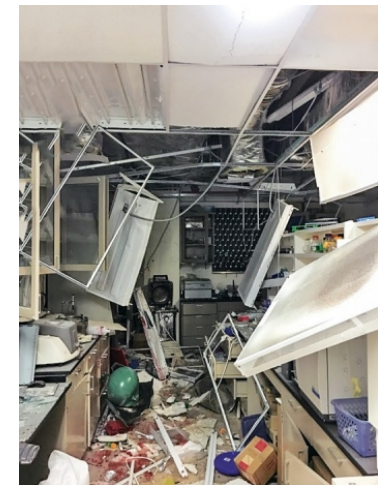
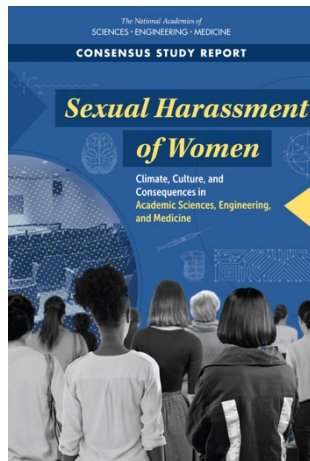
D. Literature shows that women from the above backgrounds (categories A, B, and C) face particular challenges at the graduate level and beyond in scientific fields. (See, e.g., From the NIH: A Systems Approach to Increasing the Diversity of Biomedical Research Workforce <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5008902/>).

Women have been shown to be underrepresented in doctorate-granting research institutions at senior faculty levels in most biomedical-relevant disciplines, and may also be underrepresented at other faculty levels in some scientific disciplines (See data from the National Science Foundation National Center for Science and Engineering Statistics: Women, Minorities, and Persons with Disabilities in Science and Engineering, special report available at <https://www.nsf.gov/statistics/2017/nsf17310/>, especially Table 9-23, describing science, engineering, and health doctorate holders employed in universities and 4-year colleges, by broad occupation, sex, years since doctorate, and faculty rank).

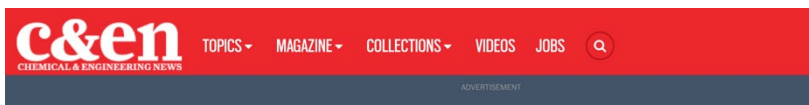
Upon review of NSF data, and scientific discipline or field related data, NIH encourages institutions to consider women for faculty-level, diversity-targeted programs to address faculty recruitment, appointment, retention or advancement.

What does NIGMS mean by “safe” training and research environments?

- Safety from harassment, abuse and intimidation
- Safety on campus
- **Laboratory safety**



Serious accidents in the lab happen more often than most people think



LAB SAFETY

10 years after Sheri Sangji's death, are academic labs any safer?

Chemists discuss their efforts

by *Jyllian Kensley*

DECEMBER 28, 2018 | APPEARED IN **VOLUME 97, ISSUE 1**

On Dec. 29, 2008, Sheharbano "Sheri" Sangji was **working on a chemical synthesis** in a lab at the University of California, Los Angeles. One of the reagents she was using was *tert*-butyllithium (*t*-BuLi), which ignites spontaneously in air. It was likely only the second time she had handled such a hazardous substance. She had graduated from college a few months earlier and was working in the lab as a staff scientist while applying to law schools.



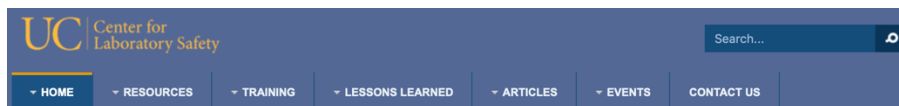
Sheri Sangji

Credit: Courtesy of Naveen Sangji

She was transferring a total of 160 mL of *t*-BuLi solution using a 60 mL plastic syringe, **according to her lab notebook**. For unknown reasons, the plunger came out of the syringe barrel and the *t*-BuLi was exposed to the atmosphere. The *t*-BuLi ignited, along with Sangji's clothes. She wore nitrile gloves, no lab coat, and possibly no eye protection. A lab mate attempted to use a lab coat to smother the fire, then started pouring water on Sangji from a nearby sink.

"Her clothing from the waist up was largely burned off, and large blisters were forming on her abdomen and hands—the skin seemed to be separating from her hands," the lab supervisor, chemistry professor Patrick Harran, later recalled for investigators. Sangji died from her injuries on Jan. 16, 2009. She was 23 years old.

The California Division of Occupational Safety and Health **fined UCLA \$31,875** for workplace safety violations leading to Sangji's death. The Los Angeles County District Attorney charged the University of California system and Harran for **felony violations of California labor laws**. Both cases **settled**.



The UC Center for Laboratory Safety (UCCLS) was created to improve the practice of laboratory safety through the performance of scientific research and implementation of best safety practices in the laboratory. The Center operates under the oversight of the UC Center for Laboratory Safety Advisory Board with technical support from the UCLA Office of Environment, Health and Safety.

The UC Center for Laboratory Safety White Paper can be viewed [here](#).

CENTER NEWS

Workshop on Laboratory Safety

Our 2020 Workshop on Laboratory Safety will be hosted at UCLA, May 3-5. [Visit our event page for more information.](#)

A series of Lessons Learned have been published in the Journal of Chemical Health and Safety

[Lessons learned - Mercury thermometer incident.](#) *New*

[Lessons learned - Organic peroxide incident.](#) *New*

[Lessons learned - Vacuum pump fire.](#) *New*

Proceedings of the 2016 workshop Safety by Design - Improving safety in research laboratories

E. Czornyj, D. Newcomer, I. Schroeder, N.L. Wayne, C.A. Merlic, 2018, J Chem Health and Safety

The report summarizes the major outcomes of the 2016 Workshop on Laboratory Safety and describes specific actions to improve laboratory safety culture. [Read more](#)

The UC Center for Laboratory Safety and Associate Vice Chancellor for Research Nancy Wayne Received National Awards for Promoting Laboratory Safety

The UC Center for Laboratory Safety received the 2017 Innovation Award of Honor from the Campus Safety, Health and Environmental Management Association (CSHEMA) for promoting laboratory safety at UCLA. Nancy Wayne, an associate Vice Chancellor for Research, was honored with a 2017 Campus Leader Who Cares Award of Honor. [Read more](#).

Accident Investigation UH Manoa

UCCLS conducted an investigation of the March 16, 2016 explosion in a laboratory at the University of Hawaii at Manoa. UCCLS' reports on the accident were [released by UH Manoa](#). View the report on the [Technical Analysis of the Accident](#) and [Recommendations for Improvements in UH Laboratory Safety Programs](#). The results of the forensic tests can be viewed [here](#).

Webinar on APLU Guidelines and Toolkit

UCCLS together with BioRAFT organized a webinar on how the APLU Guidelines and Toolkit can be implemented in academic institutions. [View here](#)

Some tragic lab accidents in recent years

- Postdoc lost arm and suffered other serious injuries after compressed gas tank explosion at University of Hawaii
 - Losses and fines have already totaled nearly \$1M
- Yale student killed when hair became caught in lathe while working alone at night
- Student at University of Utah suffered corneal damage when sodium hydroxide splashed into his eye; the lab did not have an eyewash

*“But UCCLS, which was founded at UC Los Angeles in the aftermath of the Sangji catastrophe, notes in the report that **many other institutions also tolerate poor safety cultures and practices**. It therefore fittingly intends its report to also “serve as a direct call to action for researchers, administrators and [Environmental Health and Safety Office] staff not only at the UH, but at all institutions of higher education that conduct research.”*”

Are we missing a culture of safety?

A 9.4 Tesla **super conducting magnet**, used for mass spectroscopy in a campus laboratory recently suffered a **catastrophic failure**. The incident was apparently caused by over pressurization and failure of the liquid helium (LHe) chamber. Although there were no injuries because the incident occurred during off-hours, the potential for significant injury due the venting of LHe into the facility was present. There was also significant damage to equipment associated with the magnet.

A laboratory worker received a **potentially fatal electrical shock** when he accidentally **touched a high voltage electrical connector on an electropherisis device**. The contact points were on the right elbow and right knee. Had one of the contacts been on the opposite side of the body, the shock could have been fatal. The primary cause of this incident was the existence of an exposed high voltage conductor in the form of a stackable banana plug at the device. When connected to the male plug on the device, the male connector plug was left exposed with no insulation or guarding.

Are we missing a culture of safety?

A researcher was plating bacteria onto a petri dish using ethanol and a Bunsen burner as part of a standard sterile transfer on a lab bench. **The metal spreader was dipped in a jar of ethanol and burned off in the burner. Somehow, the jar of ethanol spilled on the lab bench and onto the researcher's bare arms and t-shirt, and caught fire.** The flames were reported to be up to two feet high. The researcher immediately went to the safety shower, pulled the handle which activated the emergency shower and got in. The shower water quickly put out the fire and cooled the burns. Other combustible papers on the bench and trashcan caught fire. A colleague used a nearby fire extinguisher to put out the fire. 911 was called -- the fire department responded and transported the researcher to the hospital for medical attention. At the hospital, first and second degree burns were treated and he was released.



Are we missing a culture of safety?

A laboratory worker received burns to the face and chest while carrying chemicals from one area of the laboratory to another. The worker placed **unsealed centrifuge tubes filled with phenol-chloroform into a Styrofoam centrifuge tube shipping container**. The **Styrofoam broke and the phenol-chloroform splashed onto the worker's face and dripped down the chest**. The worker immediately flushed the area with a drench hose, but still suffered from second-degree burns to the face, chest and abdomen.

A post doctoral researcher was reaching into a New Brunswick Scientific Model G-25R Shaker Table Incubator to clean up a spill when **her right hand got caught in the spinning exhaust fan blade**. She lacerated her middle finger and lost part of the finger nail. She was treated in a local hospital emergency room.



What to do?

Language in all NIGMS training FOAs, e.g.:

- *Institutional Letter*: "ensures that the research and clinical facilities as well as the laboratory and clinical practices **promote the safety of trainees...**"
- *Review Criteria*: "Have the PD(s)/PI(s) received training on how to effectively mentor trainees, including those from underrepresented groups, and promote inclusive, **safe**, and supportive research training environments?"
- *Review Criteria*: "Is there evidence that the research facilities and laboratory practices ensure the **safety of trainees**?"
- *RCR*: "Does the plan include a sufficiently broad selection of subject matter, such as conflict of interest, authorship, data management, human subjects and animal use, **laboratory safety**, research misconduct, research ethics?"

What to do?

- Revised predoctoral T32 FOA (coming soon!) will have even more emphasis on safety
 - **Integrate teaching of safety** throughout curriculum and mentoring
 - Develop a **culture of safety**
- Encourage programs to start teaching to **industry standards** for safety
 - As well as for other practices such as record keeping
- Had a plenary presentation at the TWD Program Directors' meeting about laboratory safety
 - Craig Merlic, Ph.D., UC Center for Laboratory Safety

What to do?

- Continue to provide supplements to training grants for developing curricular materials related to safety
 - **Title:** *Training in Laboratory Safety and Accident Prevention to Build a Culture of Safety*
Principal Investigator: Jonathan D. Smith, Ph.D., Cleveland Clinic
- R25s for safety training modules?
- Create a clearinghouse on the NIGMS website for links to safety training materials
- Partner with professional societies?

ACS has been a leader on lab safety including new policies for its journals



Volume 94 Issue 48 | p. 7 | News of The Week
Issue Date: December 5, 2016 | Web Date: December 1, 2016

ACS journals enact new safety policy

Authors to be required to address novel or significant hazards

By *Jyllian Kemsley*

American Chemical Society journals will have a new safety reporting requirement starting in 2017: Authors must “address and emphasize any unexpected, new, and/or significant hazards or risks associated with the reported work,” says an *ACS Central Science* editorial describing the change (2016, DOI: [10.1021/acscentsci.6b00341](https://doi.org/10.1021/acscentsci.6b00341)).

ACS Publications editors and staff took a closer look at how the journals addressed safety after a “confluence of events” that included **high-profile accidents** and a survey of safety policies of chemical journals (*J. Chem. Health Saf.* 2016, DOI: [10.1016/j.jchas.2015.10.001](https://doi.org/10.1016/j.jchas.2015.10.001)), says Sarah Tegen, vice president for global editorial and author services at ACS. ACS also publishes C&EN.

Questions & Comments

