

Diversity in all dimensions - People, life experiences and ideas

May 25, 2021

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UCLA College
Physical Sciences

Diversity, Equity, and Inclusion in Chemistry and Chemical Engineering

A Virtual Workshop from the Chemical Sciences Roundtable

The National Academies of
SCIENCES • ENGINEERING • MEDICINE



Diversity in all Dimensions: Disciplines, Ideas, Perspectives, Experiences and People

Communities of scholars with common characteristics, backgrounds, languages, and culture, who are focused on common scientific endeavors.



SOME ADVANTAGES

- Easy to challenge each other's results and paradigms
- Share the same jargon
- No language barriers
- No cultural misunderstandings
- No interpersonal tension

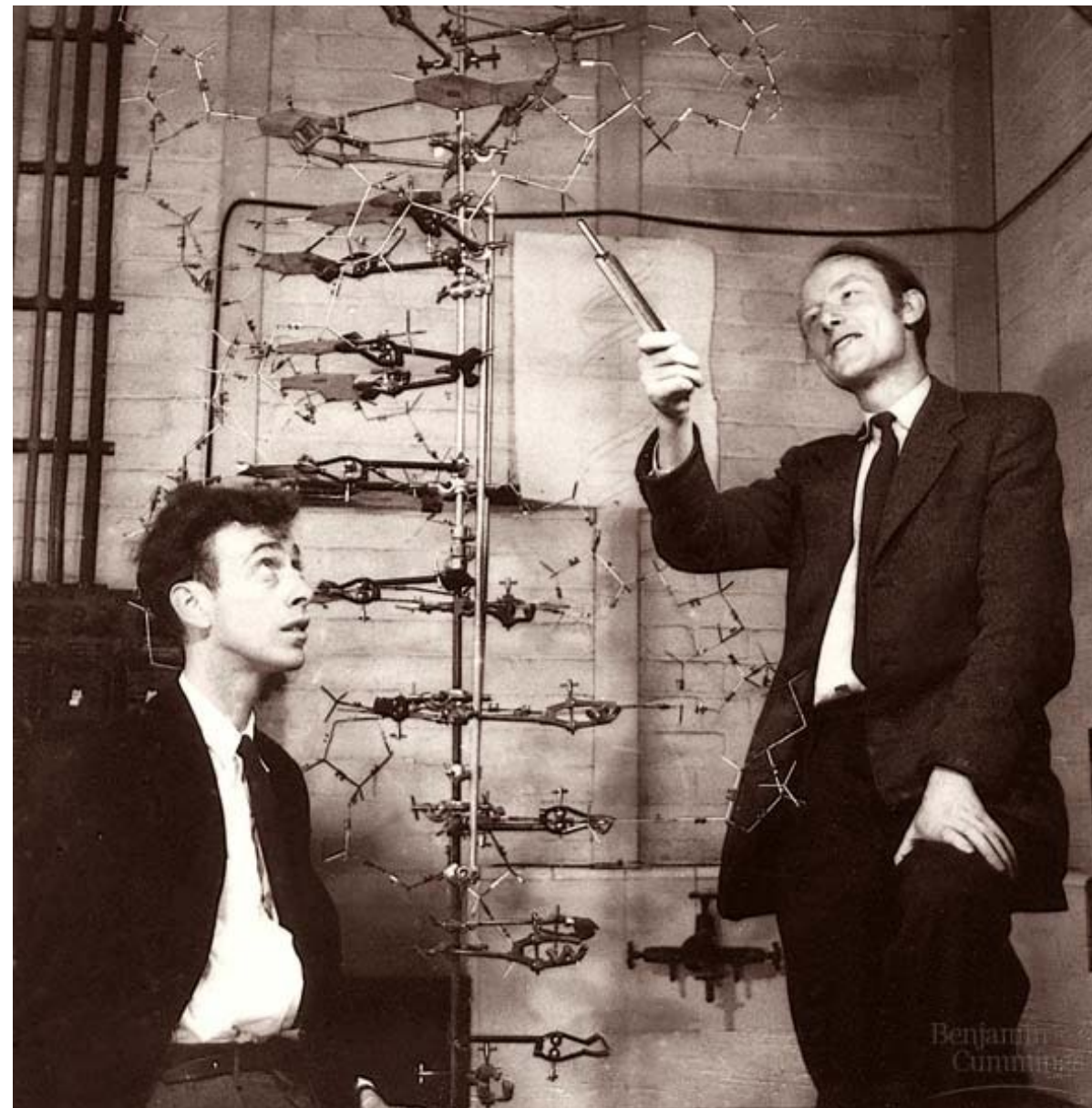
Many things have been done, and are done well !

... but not enough

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

Diversity in all Dimensions: Disciplines, Ideas, Perspectives, Experiences and People

... However, truly impactful scientific advances occur more frequently as a result of a diversified effort with contributions from scholars with different backgrounds.



— There may be some **intellectual diversity** in disciplines, languages

— Allows them to exchange ideas and become more open to what they originally may have

*James Watson, a
Francis Crick, a British Physicist*

Rosalind Franklin, A Chemist



, but **the**
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rations, and helps
ose interactions
relevant.

and Zoologist

Diversity in all Dimensions: Disciplines, Ideas, Perspectives, Experiences and People

Making science more inclusive to all people regardless of their genders, their ethnicities and cultural expression may not seem obvious, but they are proven to result in many direct and indirect benefits to science and to society.

— Different people have different live experiences and perspectives that broaden both the range of questions and the means to obtain answers.



— Interactions across across gender, cultural, ethnic, languages (accents), abilities, religious differences, etc., may be as difficult as interactions across different disciplines, but their benefits are worth it

Key Concepts

Diversity: representation of the variety of human identities and life experiences. Each and everyone of us contributes.

Inclusion: having one's identity understood, respected and valued. To be welcomed, and to be given the opportunity to develop our potential

Equity: achieving fairness by providing people with what they need, so they can attain their potential according to their circumstances (different from equality)



Civil Rights Compliance: Legal Obligations

Education ← UNIVERSITY → Employer

Sect. 504 Rehab. Act '91
(Education / Disabilities)

Sect. 503 Rehab. Act '91
(Employment / Disabilities)

Title IX
(Education / Sex)

ADA
(disabilities)

Title VI
(Financial Assistance / sex, race,
color, religion and national origin)

Title VII
(Employment / sex, race, color,
religion and national origin)



Affirmative Action

Civil Rights Compliance: Legal Obligations

LAW (AND UNIVERSITY POLICY) PROHIBITS

Discrimination

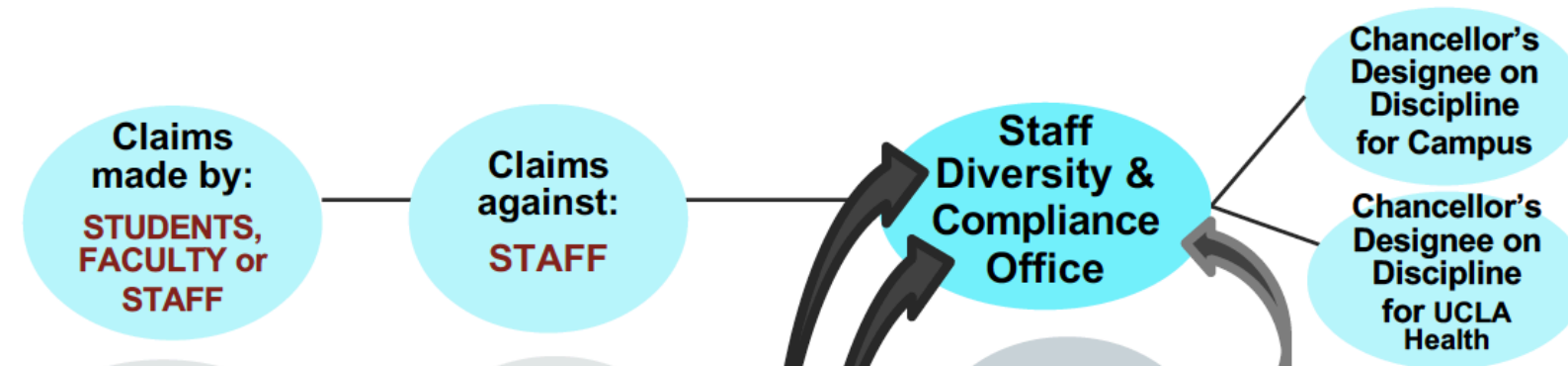
Harassment

Retaliation

Based on protected categories:

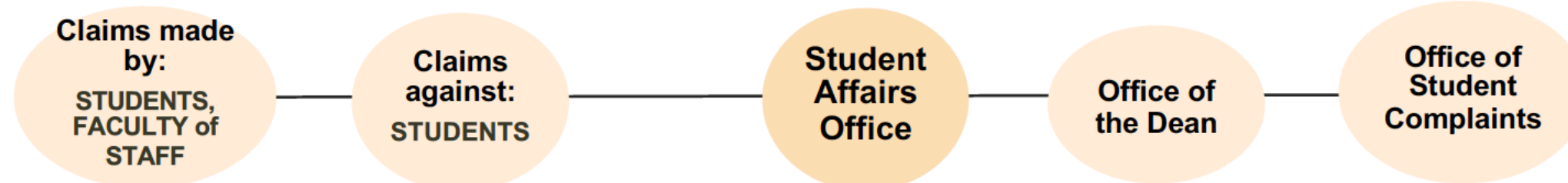
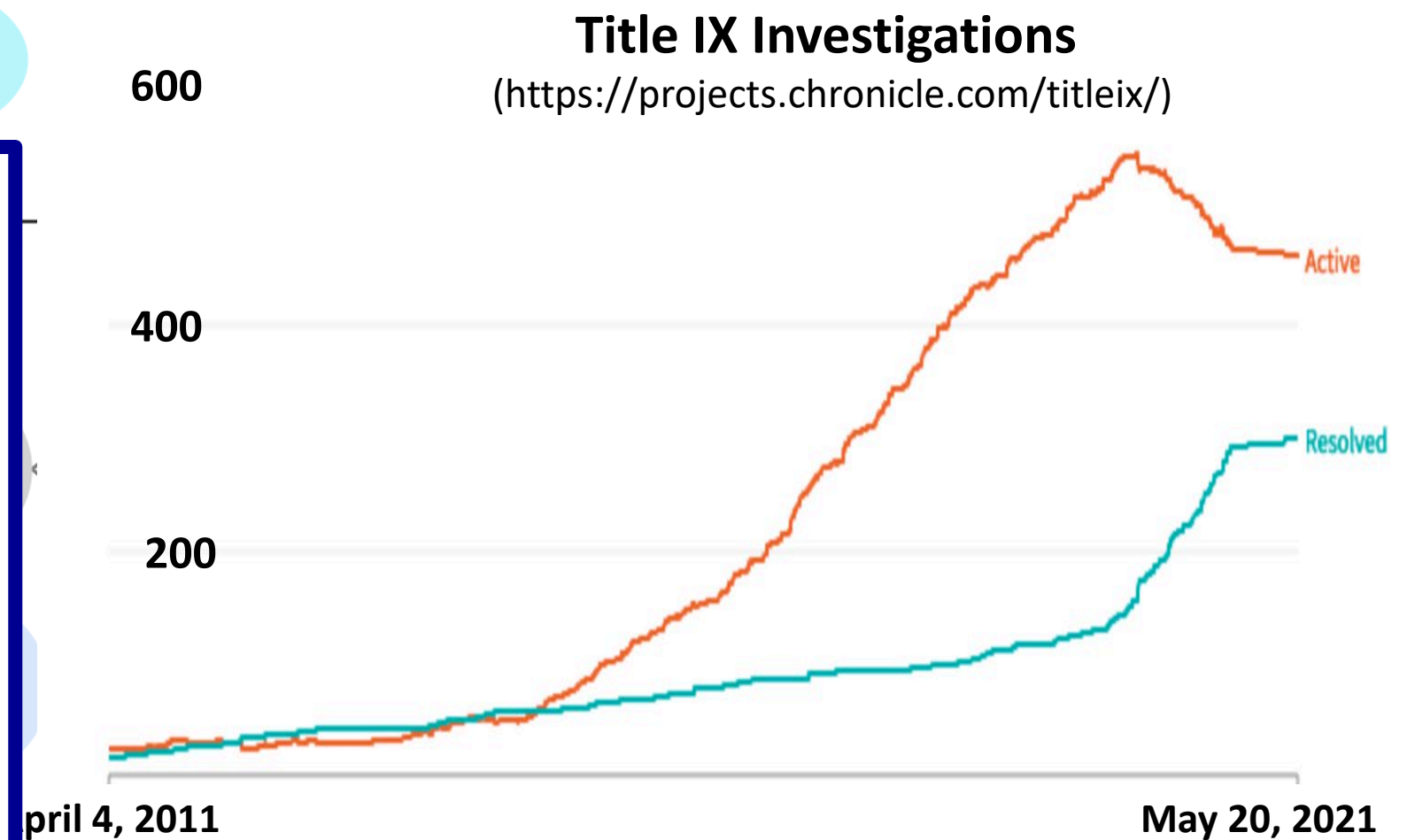
- Race, ethnicity, color
- National origin, citizenship
- Religion
- Gender (sex, sexual orientation, gender expression, gender identity), pregnancy
- Marital/domestic partner status
- Medical condition, genetic predisposition
- Veteran status

Typical University Civil Rights Office Investigation Map (\$\$\$)



Being Reactive and Only Because it is the Law
Would Be:

Expensive
Confrontational
Toxic
Wrong
etc.



Be Pro-Active - Change the Climate !

University (Department) EDI Climate:

The current attitudes, behaviors and standards of faculty, staff, administrators and students concerning the level of respect for individual needs, abilities, and potential.

It includes the experience of individuals and groups on a campus (Department) - and the quality and extent of the interaction between those various groups and individuals.



Screen shot from an add of the movie "Whiplash"



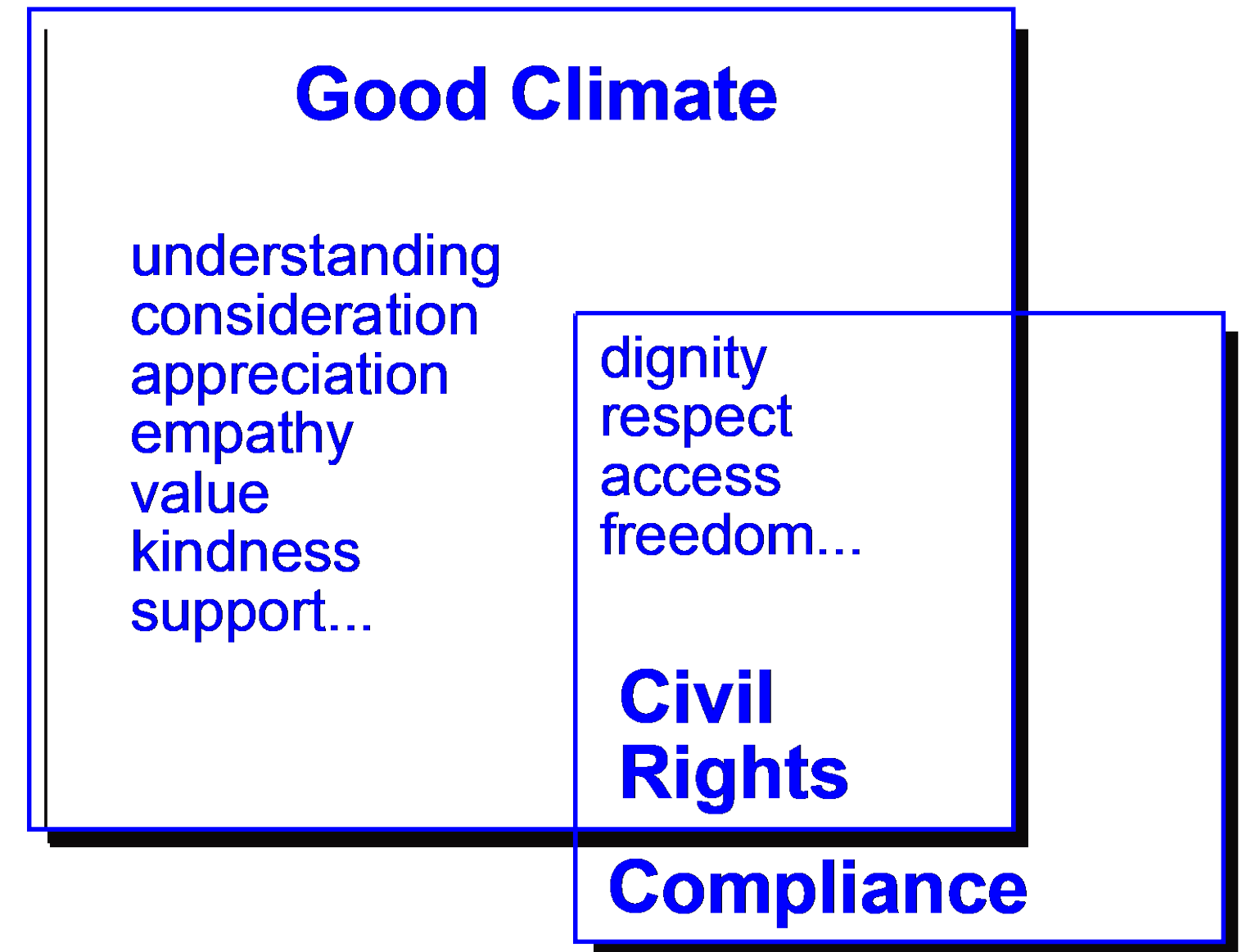
<https://www.parentingscience.com/student-teacher-relationships.html>

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Transformational Organizational Change for EDI - From Compliance to Good Climate

A Possible Approach...

- Assess current climate based on data – Actions must be evidence-based
- Change leadership style: A clear, consistent commitment to EDI by leadership and by **all centers of power (*i.e., most of us*)**
- Build trust through accountability and transparency – messaging
- Educate the campus community on relevant aspects of human behavior
- Shift from carrots/sticks approaches to acculturation
- **Promote human connections and relationship-building ****

With the right guidance and leadership people will change one another

Equity, Diversity and Inclusivity Climate – A Personal Perspective

- **Me:** Hired@UCLA in 1992. Only Hispanic faculty in Chemistry (out of ca. 50) and one of two in Physical Sciences (out of ca. 200).
- **Dr. Rafael Ortiz:** UCLA PhD 1993. One of 2 or 3 Hispanic Students in the graduate program (out of ca. 300). Group leader at Procter&Gamble in 2005



“(Diversity wise) things have certainly changed a lot! What can I do to help? (2005)”

- **Both: Can we help change the Climate?** (faculty and student attitudes)

Why Could this be of interest to P&G?

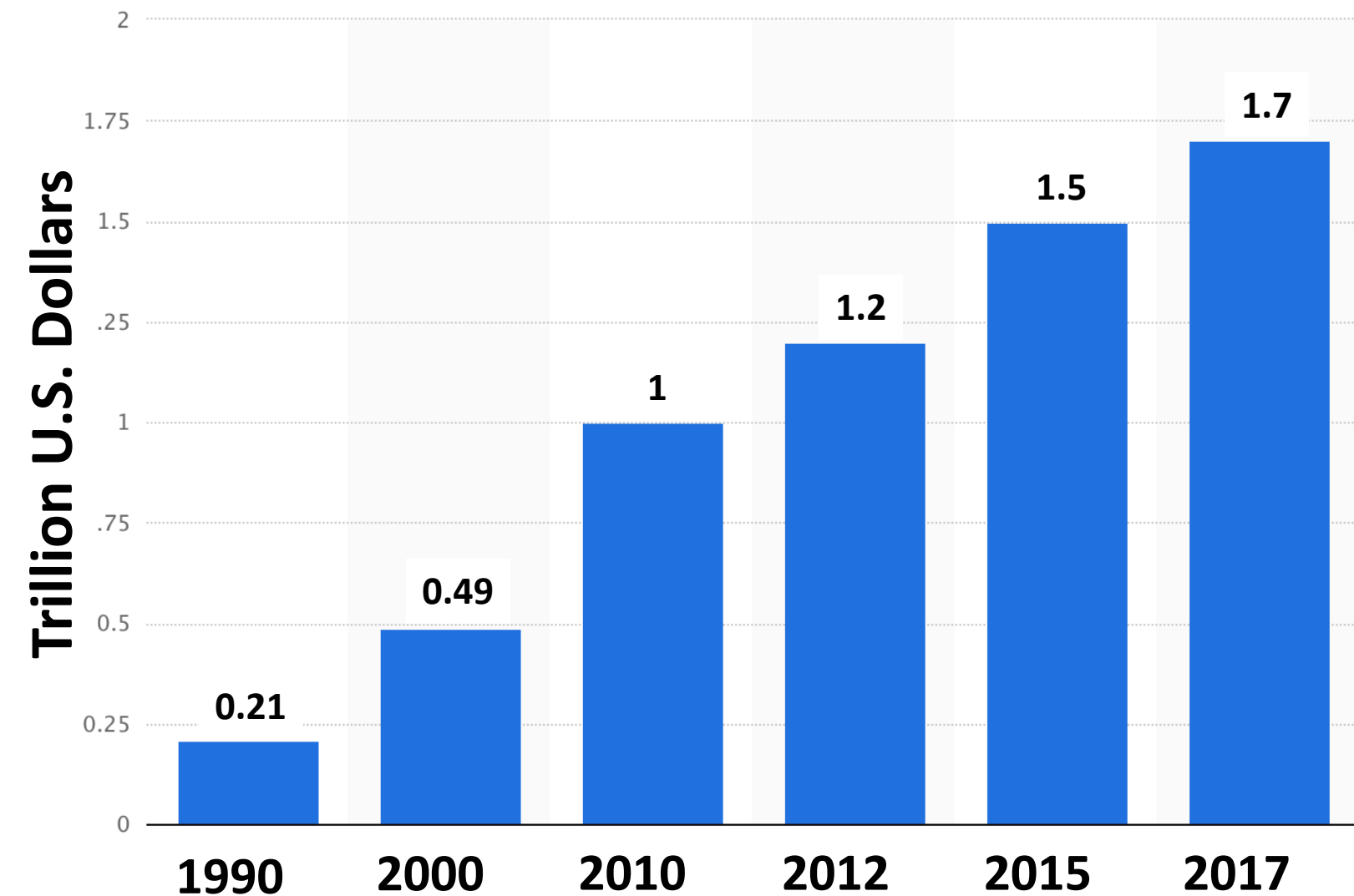
To Recruit a Diverse Workforce, and...

Tap into the buying Power of US Hispanic Population



Credit: Hinterhaus Productions/Getty

Nature, 2018, 558, 149



[Complete Source Details](#)

Helping Change the Climate in a Chemistry Department

(In consultation with a group of URM graduate students)

Goal:

Change the climate in the UCLA Department of Chemistry and Biochemistry

Means

- Empowering students (let them manage their funds)
- Help them develop a strong network
- Help students make professional contacts (jobs, postdocs)
- Help them prepare a strong portfolio (e.g., NSF predoctoral, etc.)

Strategy:

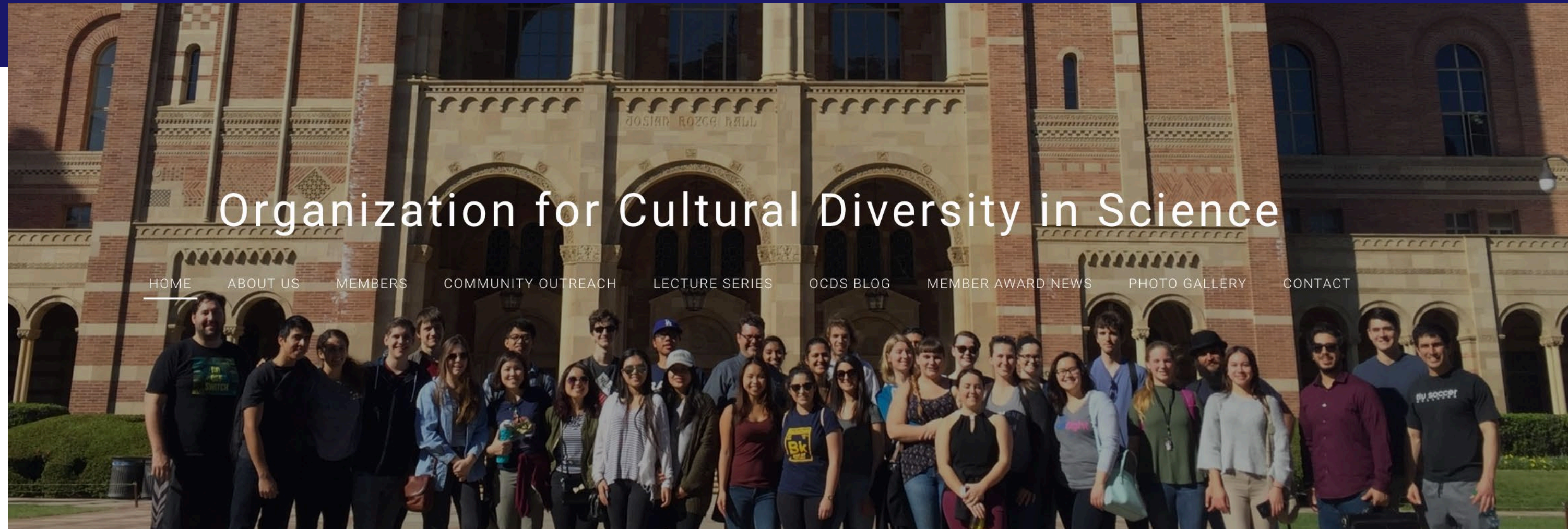
- Have them invite influential URM and Female role models for Departmental Seminars – Celebrate their Science and their URM identities; interact extensively with the speakers during a reception and meals
- **Be 100% Inclusive. Invite Caucasian males and international students – Everyone who cares about diversity is welcome**
- Organize social events & celebrate holidays (4 of July, thanksgiving, 5 de Mayo, Holi, St Patricks, Chinese new year, etc.)
- Promote leadership & Community engagement / Reach out to K-12 schools and community colleges



**Student Organization for Cultural Diversity in Chemistry
OCDC Leaders, ca. 2006**

Top (left to right): Luis Campos, Julie Magallanes, Diana Azurdia, Eduardo Falcao,
Lizette Bartell, Tanya Porras, Karina Heredia

Bottom (left to right): Adam Braunschweig, Ray Villa, Marino Resendiz, Jose Nunez,
Miguel Jimenez, Khin Chin



Mission Statement

The Organization for Cultural Diversity in Science strives to create a welcoming community among graduate students in the sciences, with an emphasis on increasing cultural diversity at UCLA.

We project a positive portrayal of underrepresented groups and allies in the sciences to undergraduate and graduate students, to the academic and scientific community, and to the public at large.

We aim to provide networking, outreach and professional development opportunities to our members to support them in their ultimate career goals.

<http://uclaocds.weebly.com/>

OCDS Quarterly Lecture Series

Professors are invited by the graduate student members based on their scientific success and status as a traditionally underrepresented minority to give a research seminar and a diversity seminar at UCLA. The addition of a diversity talk gives speakers a unique opportunity to describe their journey to professorship and any unique hurdles they may have overcome to arrive at their present position. This program has brought over 40 professors to UCLA and continues to be one of the most popular seminars attended by the faculty and students.

A Sample of OCDS Lecture Series Speakers Through the Years

Winter 2005
Professor Ignacio Tinoco, Jr.

Spring 2008
Prof. Eusebio Juarisi

Spring 2014
Professor Angel Marti

Spring 2017
Professor Gerald Hammond

UCLA College | Physical Sciences
Chemistry & Biochemistry

ORGANIZATION FOR CULTURAL DIVERSITY IN SCIENCES SEMINAR



Prof. Markita del Carpio Landry

Department of Chemical and Biomolecular Engineering, University of California Berkeley

Monday, May 3, 2021
4:00 PM
via Zoom

“Nanomaterials Enable Delivery of Genetic Material Without Transgene Integration in Mature Plants”

Genetic engineering of plants is at the core of sustainability efforts, natural product synthesis, and agricultural crop engineering. The plant cell wall is a barrier that limits the ease and throughput with which exogenous biomolecules can be delivered to plants. Current delivery methods either suffer from host range limitations, low transformation efficiencies, tissue regenerability, tissue

Professor Steve Mayo
Caltech University

Professor Javier Read de Alaniz
University of California, Santa Barbara

Professor Stéfan France
Georgia Institute of Technology

Etc., Etc.

Organization for Cultural Diversity in Science Seminar



Professor Rodney D. Priestley
Department of Chemistry and Biological Engineering, Princeton University

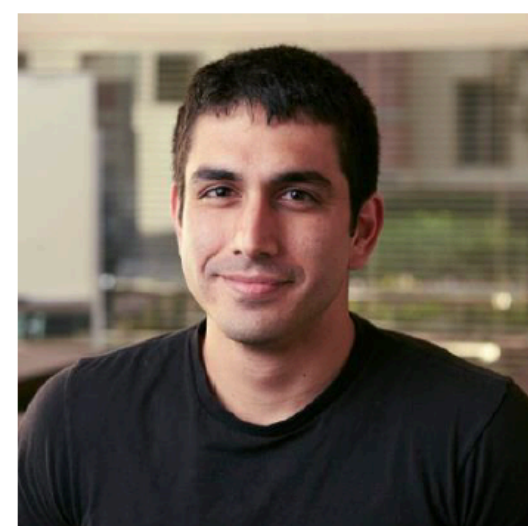
“Molecular Dynamics and Glass Formation of Nanoscopically Confined Polymer”

Abstract: Many technological advances are driven by the ongoing emergence of nanostructured polymers as the critical component to enable innovation. Yet, from a materials design perspective, we cannot presume that the bulk properties of polymers define their behavior when physically confined to nanoscale dimensions. This is, in fact, not true, as there is now convincing evidence that the nanoscale properties of polymers, including the glass transition temperature, can be profoundly different from the bulk. Here, I

And OCDS Student Seminar Series



Organization for Cultural Diversity in Science Student Seminar



Marco Messina

Department of Chemistry
University of California, Los Angeles

Between Two Laboratories: Developing Inorganic Approaches to Polymerization and Bioconjugation

Abstract: During this seminar, I will present a broad overview of three projects completed during my dissertation studies. The initial topic will focus on our discovery that boron-rich clusters of the type $B_{12}(OCH_2Ar)_{12}$ ($Ar = Ph$ or C_6F_5) can act as powerful photooxidants to carry out visible-light initiated polymerization of

Marco is a UCPPF in Prof. Christopher Chang Lab at UC Berkeley and he will be in the academic job market very soon

OCDS Alumni – Where are they now?

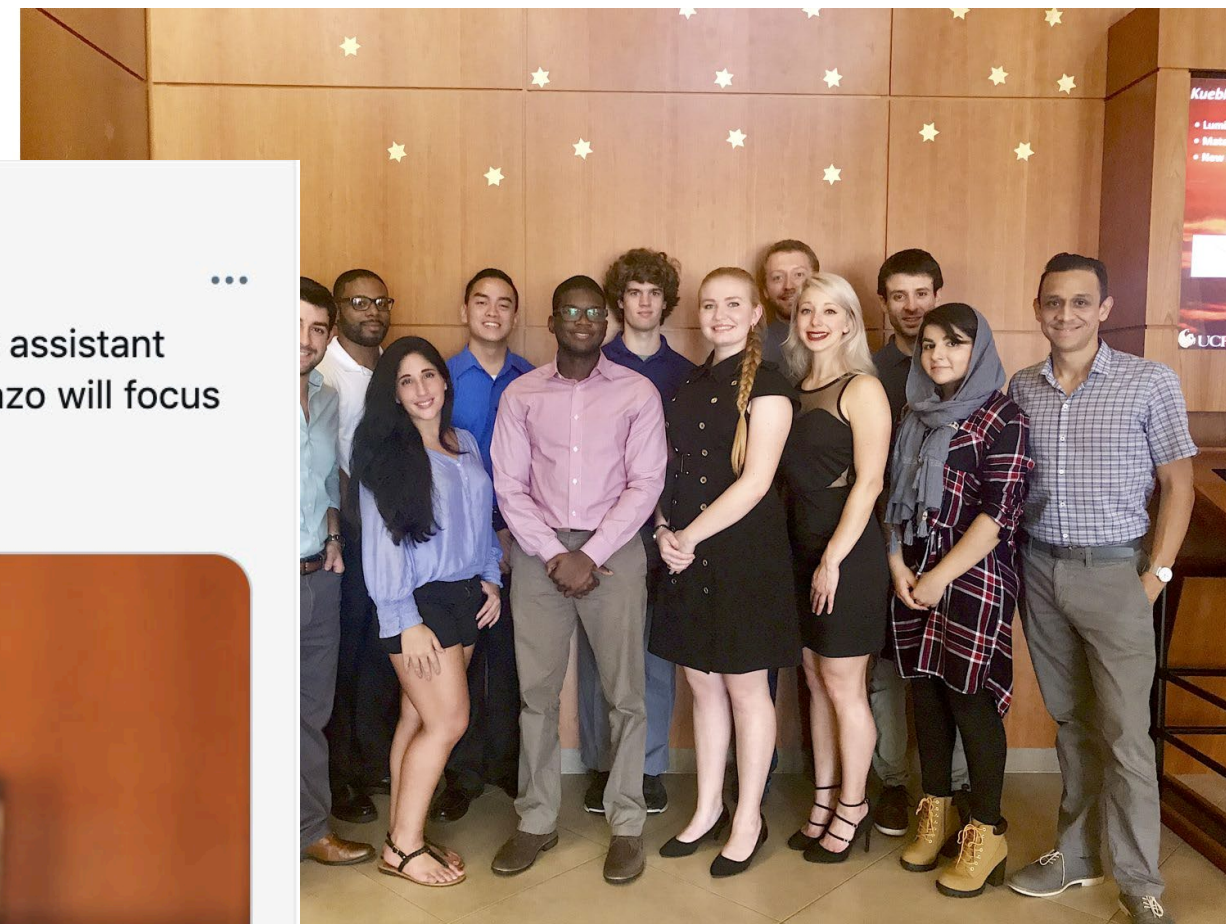
Luis Campos, Columbia



Steven Lopez, Northeastern



Fernando-Urbe Romo, Central Florida



Adam Brawnscheig, C



↻ Elias Picazo Retweeted



USC Chemistry @USCChemistry · Apr 19

We're excited to welcome Dr. Elias Picazo as a tenure-track assistant professor of chemistry starting spring semester 2022! Picazo will focus on research in transition metal catalysis, enantioselective transformations, and photoactive materials. @_Picazo

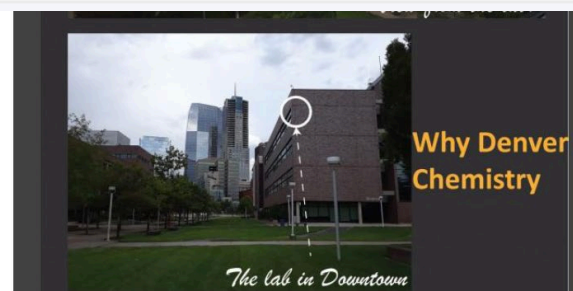


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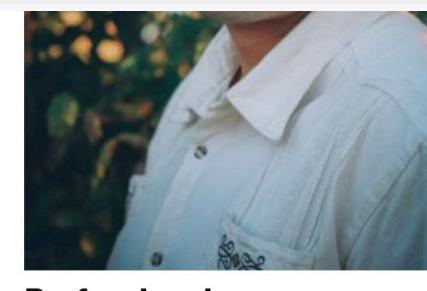
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Why Denver
Chemistry

The lab in Downtown

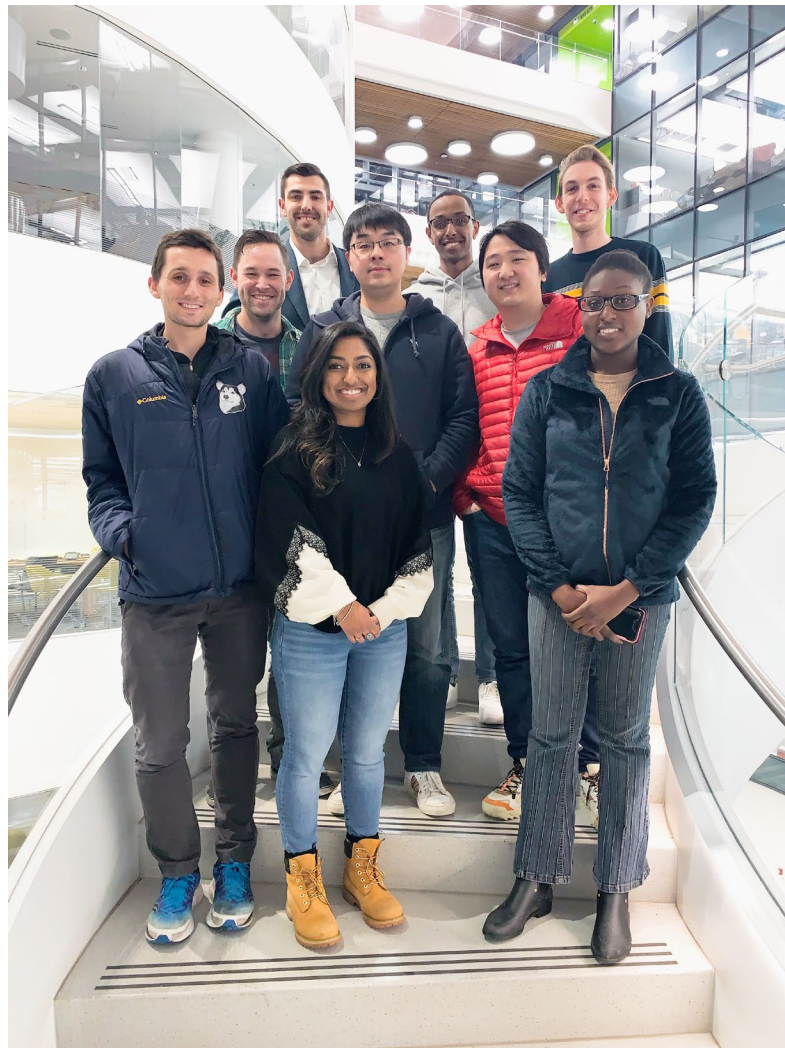


Diana Azurdia, UCLA Recruit & Inclusion



OCDS Alumni – Where are they now?

Steven Lopez, Northeastern



Crystal Valdez, Consultant



<https://www.allianceinscience.org/>



Alliance for Diversity
in Science & Engineering

ABOUT US

EVENTS

MEMBERS

DONATE



AN INCLUSIVE NETWORK

Our mission is to increase the participation of underrepresented groups in academia, industry, and government. ADSE supports, organizes, and oversees local, graduate student-run organizations that reach out to students and scientists of all ages and backgrounds.

**Taking Charge of the Lack of Diversity in STEM from Graduate School to the Professoriate:
Developing a National, Non-Profit Organization**

Crystal E. Valdez* and Steven A. Lopez*

DOI: 10.1021/bk-2017-1256.ch013

So, has the Climate Changed in the Department? Yes!

Faculty Hires Since the Beginning of OCDS



Neil Garg, 2007



Margot Quinlan, 2008



Anastassia Alexandrova, 2009



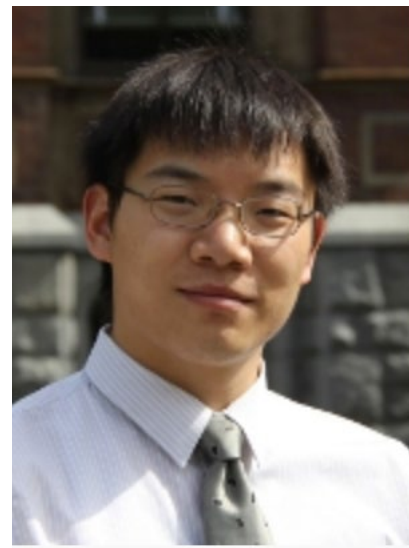
Sri Kosuri, 2013



Hosea Nelson, 2015



Roy Wollman, 2016



Chong Liu, 2017



Louis Bouchard, 2008



Xiangfeng Duan, 2008



Jorge Torres, 2009



Ellen Sletten, 2015



Alex Spokoyny, 2015



Jose Rodriguez, 2017

**2021
Offers out to
3 Women**



Conclusions

A transformational organizational change for EDI, from Government-Dictated Compliance to a Good EDI Climate will reduce the amount of conflict and has the potential of saving a great deal of money in compliance infrastructure and faculty and staff retention. It will give all of us a better and just work environment and a better standard of living

However, if we want to change the EDI climate we need to change leadership stiles and the people in the organization and to do that we need to be smart and intentional