Views expressed do not represent Vanderbilt University Medical Center

Or Any Other Biologists Who Wish They Were Better Chemists
Or the Entire State of Florida
Or All of the Filipinx people who love making lumpia
Or the Many Many Scientists Who are Also Artists

My views represent my experiences, my heritage and the village of people who have supported me
Before we talk about me let’s talk about you

Respond at pollev.com/carleensabus243
Or text carleensabus243 to 22333 once to join
What is your age?

Under 18
18-22
22-30
30-55
55+
Are you currently involved in STEM?

- I am majoring in STEM
- I am thinking about majoring in STEM
- I am majoring in something other than STEM
- I work in STEM
- I would like to work in STEM
- I do not work in STEM
- None of the above
What is your favorite holiday and why is it Halloween?

- Halloween, obviously
- Christmas
- Thanksgiving
- Independence Day
- Easter
- Hanukkah
- Chinese New Year
- Ramadan and Eid al-Fitr
- Diwali
- New Years
- Other
How does STEM make you feel in one word?
Share your future goals (grad/medical school, etc) and upvote entries you are pursuing
Thanks for your data!
How to Become a Scientist in 100 Quick & Easy Steps
Becoming a Scientist is One of the Hardest Most Complicated Riskiest Things You Can Ever Do
Books to Bugs to Biopsies

Diversity in STEM

Diversity in Healthcare
University of Alabama at Birmingham
Graduate Biomedical Sciences

- Biochemistry and Structural Biology
- Cancer Biology
- Cell, Molecular, and Developmental Biology
- Genetics, Genomics, and Bioinformatics
- Immunology
- Microbiology
- Neuroscience
- Pathobiology and Molecular Medicine
The Pathobiology & Molecular Medicine PhD Program at the University of Alabama at Birmingham

Rotation 1: Maurizio Grimaldi MD, PhD

Neuropharmacology (Southern Research Institute)
Differentiation of Glioblastoma Cells

Rotation 2: Selvarangan Ponnazhagan, PhD

Pathology
Molecular Switch Between Adipocytes & Osteoblasts

Rotation 3: Eddy Yang, MD, PhD

Radiation Oncology
Optimizing chemotherapeutics and radiation therapy dosage for breast cancer treatments

Rotation 4: Eric Sorscher, MD

Cystic Fibrosis Research Center
Characterization of Rare Disease Causing Mutations

My mentor at 1 at graduation in 2018
Clinical Features of Cystic Fibrosis

- Recurrent pulmonary infection
- Lung abscess
- Chronic bronchitis
- Bronchiectasis
- Honeycomb lung
- Abnormal sweat
- Cor pulmonale
- Chronic pancreatitis
- Meconium ileus (newborn)
- Malabsorption
- Steatorrhea

Damjanov, 2000
Normal CFTR Function

- Mucus layer
- Airway surface liquid
- Ciliated airway epithelium
- CFTR (chloride channel)
- Chloride ion
Normal CFTR Function

- Mucus layer
- Airway surface liquid
- Ciliated airway epithelium
- CFTR (chloride channel)
- Chloride ion
Patients with cystic fibrosis inherit genetic mutations that cause varying levels of sickness. Those differences in one gene affect whether or not a patient responds well to medicine.
Tom @TheJellyTom · Jul 3
@cftrust #Orkambi of course! It's nice to maybe be able to think about a 40th Birthday!

Ariella @ariellapearl · Jul 7
truly happy for everyone that can get #Orkambi... but i can't help but be overwhelmed w/ disappointment that i do not qualify for it
Patients with cystic fibrosis inherit genetic mutations that cause varying levels of sickness. Those differences in one gene affect whether or not a patient responds well to medicine.
Chronic Bronchiolitis

Interstitial Lung Diseases

Idiopathic Pulmonary Fibrosis

Normal Gas Exchange

Impaired Gas Exchange

Lungs

Respiratory Unit

Alveoli Wall
Well, that’s the story I usually tell people
I went to nerd camp

(2004-2007ish)
100% graduate from college  
92% complete the 10-year regimen  
83% matriculate into STEM  
post-baccalaureate educational programs
Becoming a scientist became a choice
Books to Bugs to Biopsies

Diversity in STEM

Diversity in Healthcare
Women in STEM
“the 1960s immigration of Filipinos to the United States to mitigate the country’s nursing shortage. These Filipino immigrants utilized their nursing careers as a means to survive in the U.S., and most of them were successful. They then encouraged their children to pursue healthcare-related careers with the hopes that they too would secure a financially stable future in this ‘scary, foreign land.’”
“So, only the people who have the capacity to have a low income for a decade, at least, are the ones who make it through. Others who need to be able to support their family might not be able to choose this career because they can't afford to live on such a low income.”
Fellow Filipinx in STEM

Sigrid Ladores PhD, RN, PNP, CNE

Pinoys at Vanderbilt
We are a network of Filipino/a/x Scientists in America seeking to utilize our collective expertise and resources to support our communities in the Philippines and the United States.

Association of Filipino Scientists in America
@AFSAOfficial

We are a community of Filipino/a/x scientists in America seeking to utilize our collective expertise and resources to support our communities. 🧠 🌱 🇫🇷 🇵🇭 🇺🇸

🔗 instagram.com/afsa.official 📅 Joined October 2019

1,321 Following 1,370 Followers
‘The wolf of racial bias’: the admissions lawsuit rocking Harvard

As a trial on alleged Asian American discrimination that may decide the fate of affirmative action plays out in Boston, both sides charge the other with racism.

U.S. college students still more likely than faculty to be racial or ethnic minorities

% of undergraduates and postsecondary faculty who are nonwhite

Note: “Nonwhite” includes blacks, Hispanics, Asians, Pacific Islanders, American Indians or Alaska Natives, and those of two or more races. Those categorized as “non-resident alien” and “race/ethnicity unknown” are not included in this analysis. Source: National Center for Education Statistics.

PEW RESEARCH CENTER
abolish the term “underrepresented minorities”

URM implies
- a deficit among groups that were historically excluded or erased in STEM disciplines
- representation by assimilating in the STEM work climate would solve centuries of oppressive systemic racism that led to these conditions
Ways to find your communities

#BlackInNeuro
#BlackInChem
#BlackAFinSTEM
#BlackBirdersWeek
#BlackInAstro
#PinoyScientists
#BLACKandSTEM

Advancing Chicanos/Hispanics & Native Americans in Science

#ScientistsWhoSelfie
Korie Grayson, PhD
STEM Diversity Advocate
Biomedical Engineer Degree from Cornell

@women.doing.science
@blackincancer
@stemnoire
Stephanie Castillo

- Ph.D. Candidate in Science Communication at Vanderbilt University
- Jackson Wild Media Lab Fellow
- Youtube University
- World Congress of Science & Factual Producers
- Vanderbilt Digital Learning Fellow
In med school, I took an elective called "Stress", foolishly thinking I was going to learn about meditation and yoga. Instead the professor spent 6 weeks proving that being poor or a minority literally destroys your health on a molecular level, and I think about that every day.
A. Minority underrepresentation in clinical trials

- Black or African Americans: 13.4% of the U.S. population, 5% of clinical trial participants
- Hispanic or Latino origin: 18.1% of the U.S. population, 1% of clinical trial participants

B. Lack of minority physicians/researchers

- Black or African American: 4.1% of U.S. physicians, 4.4% of NIH-funded researchers
- Hispanic or Latino: 1.5% of U.S. physicians, 4.6% of NIH-funded researchers

C. Goal of the Clinical Research Pathways diversity project

To advance health equity by increasing the number of minority clinical investigators and participants in clinical trials.
Racist “Normalization” Algorithms in Healthcare

**Do the current eGFR equations disadvantage the black patients?**

**Conclusions** - The use of kidney function estimating equations that include race can cause problems with transparency and may unduly restrict access to care in some cases. The marginal improvement in accuracy may not justify use of this demographic variable.

Visual Abstract by Kithika Mohan (@Kritchism), NSMCI Intern 2019
Campaign Against Racism (CAR) Toolkit to End Racialized Medicine: eGFR edition

What does it take to make a change? Med students publish a toolkit to end racialized medicine

by Emma Mattson

Confronting race in diagnosis: Medical students call for reexamining how kidney function is estimated

Bridget Balch, Staff Writer
September 24, 2020

NEWS  May 19, 2021

UC Davis drops race-based reference ranges from a standard kidney test
Racist “Normalization” Algorithms in Healthcare

The NFL’s Racist ‘Race Norming’ Is an Afterlife of Slavery

A statistical manipulation that underpaid Black players in concussion settlements exemplifies American football’s immersion in the legacy of slavery

By Tracie Canady, Chelsea R. Carter on July 8, 2021

https://www.vox.com/22528334/race-norming-medical-racism
Institutional Racism and Lung Function
The Impact of Race Correction on the Interpretation of Pulmonary Function Testing Among Black Patients

A.T. Moffett, N.D. Eneanya, S.D. Halpern, G.E. Weissman


Figure. Alluvial plot depicting the effect of Black race correction on the degree of severity of obstructive, restrictive, and mixed defects among Black patients. The five categorical axes represent the severity of the defect according to American Thoracic Society criteria, while the separate colors in each bar represent the number of patients with the associated degree of severity when interpreted with, without, or both with and without race correction.
Books to Bugs to Biopsies

Diversity in STEM

Diversity in Healthcare
Diversity in Healthcare

Find mentors & be a mentor

Diversity in STEM

Diversity in Healthcare
Find mentors & be a mentor

Acknowledge, embrace, & use what makes you different
Find mentors & be a mentor

Acknowledge, embrace, & use what makes you different

Fight institutionalized prejudices
Thanks for attending! Questions or Comments?