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DETAILS

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NEWS

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AWARDS

VOLUME XVII Winter 2022

## Focus on Research

### Helping Budding Scientists Find Neuroscience Niche



**Raymond Swanson, MD**

*Staff Physician, Neurology Service, SFVAHCS  
Professor, Department of Neurology, UCSF*

Two years ago, Olive Tambou Nzoutchoum was a senior majoring in neurosciences at Macalester College, a small but highly selective liberal arts school in Saint Paul, Minnesota.

Today, she is a doctoral student in UCSF's Neurosciences Graduate Program, which is one

of the top ranked neurosciences programs in the world.

Nzoutchoum's leap from earning a bachelor's degree in Spring 2021 to a PhD student this fall is due to her drive, academic achievement, and general brilliance. A full-time job last year in the laboratory of Raymond Swanson, MD, an NCIRE-supported scientist, offered a career-defining boost.

Swanson's UCSF/SFVAHCS Lab at Mission Bay explores bioenergetics and oxidative signaling in neurological disease, and its aim is to identify therapies for stroke, Parkinson's disease, and related disorders. For Nzoutchoum, an aspiring scientist fascinated with the inner workings of the brain, this was her dream job.

She received hands-on experience in a lab with transgenic animal models and the newest brain research imaging technology. Nzoutchoum also interacted with and was mentored by senior scientists, post-doctoral scholars, and graduate students – the people who make a top-notch academic research laboratory tick.

Nzoutchoum, who graduated in 2017 from Lowell High School in San Francisco, developed an interest in research before her senior year during a summer internship hosted by the UCSF Science and Health Education Partnership. That summer, she worked in a pediatrics diabetes clinic and researched the psychosocial components of managing Type I

diabetes in adolescents.

By college, Nzoutchoum wanted to delve beyond psychology and into the physiology, biochemistry, and molecular biology of neural circuits of the brain. And while many of her peers in the biological sciences sought a path to medical school, Nzoutchoum eyed a career as a research scientist.

### Propelled by UCSF and NCIRE

During her senior year at Macalester, Nzoutchoum was looking for research internships and eventually applied to UCSF PROPEL (Post-Baccalaureate Research Opportunity to Promote Equity in Learning). The program provides trainees from historically underrepresented backgrounds with research experience and mentorship to be competitive for top-tier basic science PhD and MD/PhD programs.

Diversity in the sciences is sorely lacking. Although they make up one-third of the U.S. population, underrepresented minorities – including African Americans and Hispanics – hold only 9 percent of doctoral degrees in science, engineering, and health fields, according to a 2019 report by the National Science Foundation.

It was a PROPEL “matchmaking event” at which Nzoutchoum fortuitously connected with Swanson, UCSF Professor and former SFVAHCS Chief of Neurology Service.

Swanson is not only an accomplished clinician and neuroscientist, he is a longtime advocate for social justice and diversity in biomedical research. He is also a dedicated mentor; and his lab typically includes undergraduate and high school interns with a passion for science.

Swanson proposed to NCIRE two years ago that NCIRE should become a partner in UCSF’s PROPEL Program, and NCIRE agreed. Its objective is to “offer additional encouragement to future graduate students from underrepresented backgrounds,” notes NCIRE’s PROPEL Diversity Funding Policy. “NCIRE wants to provide individuals who have the potential to become researchers in biomedical or behavioral sciences the opportunity to develop their research capability further, so they may successfully apply to a science-focused PhD program.”

NCIRE is also backing “a VA strategic workforce

that is mandated to support diversity, equity, and inclusion.”

A requirement of PROPEL is that its scholars, like Nzoutchoum, are hired by a UCSF lab to obtain research experience and mentoring in their fields



*UCSF/NCIRE PROPEL Scholar  
Olive Tambou Nzoutchoum*

of interest. And with funding support from NIH “Diversity Supplements” and NCIRE, Swanson brought Nzoutchoum into his lab as a “junior specialist” last year.

### Preparing scientists

For PROPEL scholars, the program offers much more than on-the-job training. Scholars attend skills and career development courses, including research literature reviews, graduate school applications panels, and mock interview workshops.

“On top of the lab research training, this extra guidance helped me apply successfully to the UCSF doctoral program in neurosciences,” said Nzoutchoum.

An annual highlight is a summer symposium at which scholars present their research. Last

August, Nzoutchoum's research presentation, "The significance of glutathione (GSH) in Parkinson's disease," clearly indicated her immersion in the Swanson lab's research. Her studies of more than five dozen transgenic mice tracked signaling of a neuronal enzyme (GSH) that may play a crucial role in the progression of Parkinson's disease.

Now, she is immersed in the first of what may be up to six years of education and training that will net her a PhD in neurosciences.

And while Nzoutchoum headed down the PhD path at UCSF, Swanson opened his laboratory door to a new NCIRE-supported PROPEL scholar this fall.



*UCSF/NCIRE PROPEL Scholar  
Khukheper Awakoaiye*

Khukheper Awakoaiye, an Oakland native who graduated from Howard University last spring, is also passionate about neurosciences, but he has a different career path in mind. Awakoaiye wants to enter a MD/PhD program and eventually become a research physician.

At Bishop O'Dowd High School, Awakoaiye developed a burning interest in science and biology. "There is so much going on at the molecular level, and I wanted to learn everything about the body."

Seeing elderly residents of a nursing home near his neighborhood sparked an interest in Alzheimer's disease, depression, and other neurological disorders. At Howard University, he was a pre-med student, majoring in biology and doubled-minored in chemistry and biology.

As a scientist, Awakoaiye wants to learn about the roots of neurological disorders, and as a physician, apply a broad wealth of knowledge to treating patients. Outside of his full-time work in the Swanson Laboratory, he will prepare – with the aid of PROPEL resources and mentors – for applying to MD/PhD programs. Once accepted into such a program, it can take up to eight years to complete the dual degrees.

UCSF and NCIRE PROPEL scholars Olive Tambou Nzoutchoum and Khukheper Awakoaiye are on long but exciting neuroscience career paths. NCIRE hopes that it might be a circular one. Perhaps in several years, one of them returns here to benefit the SFVAHCS research community and the health of the patients it serves.

## About PROPEL

PROPEL is a 1-2 year paid post-baccalaureate research opportunity serving 10-15 incoming post-bac researchers from groups underrepresented in science through a modest financial incentive for faculty hiring managers, career and professional development training sessions, networking opportunities, and laboratory mentorship. Scholars must be employed full-time at UCSF and all funding must be provided by the host lab. The PROPEL program does not have its own funding, but can help faculty apply for NIH supplements and additional incentives (\$10-15K) if available from a UCSF department or institute that the host lab is a part of to support the scholar.

For information about the PROPEL Program see <https://propel.ucsf.edu/>.

For information on NCIRE's PROPEL Support Program see [https://ncire.sharepoint.com/SiteAssets/SitePages/1/NCIRE-PROPEL-Diversity-Funding-Policy\\_03-09-2022.pdf](https://ncire.sharepoint.com/SiteAssets/SitePages/1/NCIRE-PROPEL-Diversity-Funding-Policy_03-09-2022.pdf).

# Q and A: An Interview with Dr. Karunesh Ganguly



**Karunesh Ganguly, MD, PhD**

*Professor, Neurology, UCSF Weill  
Institute for Neurosciences*

*Chief, Neurology and Rehabilitation  
Service, SFVAHCS*

*Principal Investigator, Neural  
Engineering and Plasticity Lab*

*NCIRE Board Member*

**Q: Neural engineering is an emerging discipline which shows great promise for technologies to treat neurological disorders. How did you become interested in this field?**

**A:** The field of neural engineering is relatively new. It has only existed for the past 10-15 years or so; I became interested in it during my neurology residency training at UCSF. Prior to then, I had completed a dual degree MD/PhD program.

My PhD graduate school training focused on “systems neuroscience,”

which is devoted to understanding the nervous system as a whole rather than using reductionist approaches. Systems neuroscience draws heavily on engineering principles. For example, you must know a lot about measuring bioelectrical signals, and it also leans heavily on data analysis.

As I went through my clinical training, I kept an eye out for how to apply systems neuroscience to clinical applications. The field of neural engineering, which in many ways is applying systems neuroscience to solve clinical problems, felt like a natural fit. I then completed the four-year postdoctoral fellowship at UC Berkeley in the Electrical Engineering and Computer Science Department.

I have run our laboratory for the last decade; and I’m certainly glad I went into this field. To date, there have been great examples of translational success; and I have great confidence there are breakthroughs around the corner.

**Q: Who do you hope will benefit most from your research?**

**A:** Our research focuses on technology to improve motor recovery after stroke or other brain injuries. This is, of course, an area of great significance to Veterans and the Department of Veterans Affairs. Our research can also greatly benefit many patients, as

there are approximately 800,000 strokes each year in the U.S. alone.

Our focus has been on developing methods in preclinical animal models. However, we have now transitioned into testing our approaches through pilot clinical trials. One approach is to use brain implants to allow completely paralyzed patients to control assistive devices by using brain signals. The second approach is to allow the device to induce changes in brain properties to allow better recovery in those with some movement capacity.

**Q: What have been some key research developments? What are some goals?**

**A:** While most of our initial work was focused on preclinical models, our research is shifting towards pilot clinical trials. We needed to first work out specifically how to stably record brain activity over long periods of time. We also needed to determine how to allow this artificial system to seamlessly integrate into the nervous system.

A key area of this research has been to determine how to configure mutual learning between the brain and the artificial system. I am excited to say that this work has paid off in our translational research. We found that our approach could really allow the subject to intuitively control the prosthetic limb. We will continue to work on both the preclinical research

and the pilot trial, as this offers us the opportunity to make progress more rapidly.

**Q: You are conducting studies to demonstrate brain-controlled prosthetic limbs. How soon might we see such technologies in the clinic?**

**A:** We currently have two subjects with chronic brain implants. While the first has been implanted for nearly four years, the second participant was more recently enrolled. We have made tremendous progress which is allowing our first subject to control prosthetic limbs.

The key innovation of our approach is to allow control to mimic natural skill learning. This was not possible prior to our approach. We can now allow something that we call

“plug-and-play.” The subject can simply control the robot when reattached to the neural interface without having to relearn each time as in other approaches. We hope that at the end of our pilot trial, we can try to collaborate with commercial partners to move this approach forward. It’s hard to say when precisely, but I hope that we have some clinical systems in the next decade or so.

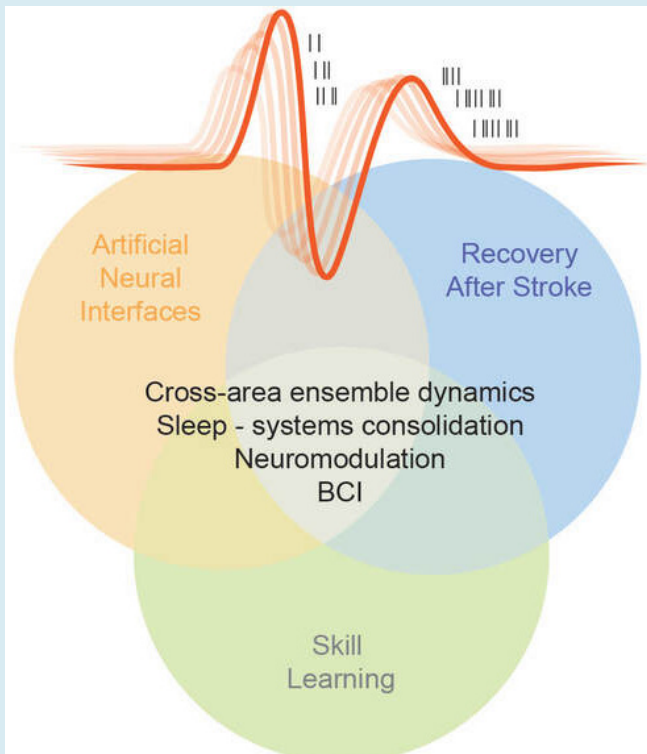
**Q: As a recipient of the Presidential Early Career Award for Scientists and Engineers, you were recognized and honored by President Obama at the White House in 2014. Describe that experience.**

**A:** Visiting President Obama at the White House was an incredible experience. I never dreamed that I would ever enter the White House.

It was very exciting to share this experience with other awardees, two of whom were also from San Francisco. While our meeting with President Obama was brief, it was very exciting to meet such a historic figure.

**Q: What would most people be surprised to know about you?**

**A:** When I was a kid, I was really addicted to video games, particularly those focused on science fiction. I really liked that science fiction focuses on what is possible and is often incredibly creative, and sometimes even prescient. As most parents can relate, I find myself trying to limit my kids’ exposure to video games. Who knows, perhaps that’s the wrong approach.



### Developing physiologically-inspired neurotechnology

Dr. Ganguly’s co-published perspective, *Modulation of neural co-firing to enhance network transmission and improve motor function after stroke*, asserts that to improve clinical translation, there is a need to develop a common neurophysiological framework for understanding how neurotechnology alters network activity.

His lab aims to delineate the network dynamics of learning and to develop physiologically-inspired neurotechnology to enhance recovery and function with the following goals:

**Goal 1:** Understand how distributed network activity permits learning and skill consolidation.

**Goal 2:** Neural interfaces to restore neural circuit dynamics.

**Goal 3:** Translate to patients.

Learn more: <https://www.gangulylab.org/index.html>

## In the Helix



*Derek Flenniken*  
NCIRE VAARC IT Director

**Q: What are you currently binge-watching?**

**A:** I recently watched “The Bear” and it was great. I’ve also been catching up on the latest chapter of Stranger Things and Westworld (I think that was this year).

**Q: What’s the one thing about you that surprises people?**

**A:** I’m a good cook. Never much of a baker. Though during the pandemic I harvested wild yeast to make a sourdough starter. These days, I still have my starter, but I mostly make whole wheat blueberry pancakes every week. I haven’t made a loaf of bread in a while.

**Q: What are you looking forward to in the upcoming year?**

**A:** I’m looking forward to having a snowy winter (hopefully). I am an avid snowboarder. I am also looking forward to taking a vacation in the spring/summer.



*Jessica Schmidt*  
NCIRE Manager, Federal Grants

**Q: What are you currently binge-watching?**

**A:** I’ve been watching a lot of “Alone” lately. The participant gear list is posted online; and I like playing along by picking out which items I would have selected for each season. Their survival skills always impress me.

**Q: What’s the one thing about you that surprises people?**

**A:** I am ambidextrous; and it surprises people to see me switch from left to right if my hand is tired when taking notes.

**Q: What are you looking forward to in the upcoming year?**

**A:** I am starting a woodworking class in January. The aim of the class is to learn how to make a piece of simple furniture. I really enjoy refinishing old pieces and am looking forward to trying my hand at something new.



*Ebony Mocanu*  
NCIRE Staff Research Associate II

**Q: What are you currently binge-watching?**

**A:** I am currently binge-watching Formula 1: Drive to Survive, a docu-series on Netflix about Formula 1 racing.

**Q: What’s the one thing about you that surprises people?**

**A:** People are surprised to find out that I grew up in Romania and moved to the U.S. at the age of 14.

**Q: What are you looking forward to in the upcoming year?**

**A:** This upcoming year I am really looking forward to attending medical school and traveling to Europe!

If you or someone you know is an NCIRE employee and would like to be featured in *In the Helix*, please feel free to contact us at [dna@ncire.org](mailto:dna@ncire.org).

## NCIRE Contracts & Grants Updates

Contracts & Grants is proud to announce the promotion of Jessica Schmidt, CRA to Manager, Federal Grants as of November 2022. Please join us in congratulating Jessica on this well-earned promotion!

# New Federal Funding Awards

**Congratulations to the following Principal Investigators for your recently funded awards!**

## **Linda Chao, PhD**

Project Title: Enrichment of Data Collection for the Boston Biorepository and Integrative Network for GWI: The Non-Exclusionary Wave (NEW BBRAIN) Cohort

Sponsor: Subcontract via Boston University under Army Medical Research & Material Command AMRC.

Project Start Date: 10/11/2022

## **Alison Hwong, MD, PhD**

Project Title: Multimorbidity, health disparities and mortality in older adults with serious mental illness

Sponsor: NIH - NIA

Project Start Date: 11/4/2022

# Grant Funding Opportunities

## Industry Opportunities

**Please contact Newton Ong, [newton.ong@ncire.org](mailto:newton.ong@ncire.org) or at x23892, for further information on the following Industry Opportunities.**

### **Astra Zeneca**

Efficacy and Safety of Benralizumab in Moderate to Very Severe Chronic Obstructive Pulmonary Disease (COPD) With a History of Frequent Exacerbations (RESOLUTE) 10/27/22

### **Novartis**

A phase III, multi-center, open-label, randomized study of tolerability and efficacy of oral asciminib versus nilotinib in patients with newly diagnosed Philadelphia chromosome positive chronic myelogenous leukemia in chronic phase- ASC4START 10/13/22

**Please visit this link for the full list of Industry Opportunities:** <https://ncire.sharepoint.com/sites/crc/Industry%20Opportunities/CRC%20Opportunities.pdf>

## NCIRE Federal Funding Opportunities

**Please contact Jessica Schmidt, [jessica.schmidt@ncire.org](mailto:jessica.schmidt@ncire.org) or at x24514, for further information on the following Federal Funding Opportunities.**

**NIH funding opportunities specific to COVID-19 Research:** <https://grants.nih.gov/grants/guide/COVID-Related.cfm>

**NIH - NLM Research Grants in Biomedical Informatics and Data Science (R01 Clinical Trial Optional) (PAR-23-034)** National Library of Medicine Application Receipt Date(s): January 07, 2026  
<https://grants.nih.gov/grants/guide/pa-files/PA-23-034.html>

**Please visit this link for the full list of Federal Funding Opportunities:** <https://ncire.sharepoint.com/sites/grants/Shared%20Documents/Open%20Federal%20Funding%20Opportunities.pdf>

# Message from the Chief Executive Officer

As we approach the end of 2022, I feel an immense sense of gratitude for the consistent collaboration of everyone at the SFVAHCS campus and the NCIRE staff for their dedication to research. I hope you enjoyed your Thanksgiving Holiday, and that it was filled with joy and warmth.

Thank you for the remarkable contributions to the Winter Newsletter from Drs. Raymond Swanson and Karunesh Ganguly. We appreciate their time and willingness to share their research.

NCIRE offers two generous retirement plans that represent a component of each employee's total compensation package. The Plans are audited annually; both the 403b and defined contribution plans. As of December 31, 2021, the combined Net Asset value of both plans represented \$48.3M, ~17% increase from last year. The audit reports for the calendar year ending 2021 were issued at the end of October 2022. The reports found no issues with the Plan accounting and management practices, resulting in a "clean" audit.

NCIRE has an annual Affirmative Action Analysis review. This analysis considers the available applicant pool in our geographic area, along with the qualified applicants that have applied to each recruitment. This data is compared against the hiring practices. This process indicated NCIRE is doing an excellent job with the hiring of qualified women and minority applicants. NCIRE evaluates our recruitment and employment data to increase staff diversity, ensure pay equity, and a fair promotion system. We continue to strive to increase the hiring of Veterans and minorities in all areas of the organization, especially in management.

I am also pleased to share Grant highlights of the Fiscal Year 2022:

## 116 total applications

- 56 – Prime applications to federal sponsors
- 60 – Subcontracts for federal awards

*Fiscal Year 2021 – 120 applications*

## 24 New Awards

- 7 NIH
- 2 DoD
- 15 Subcontracts on federal awards

*Fiscal Year 2021 – 41 New Awards*

## 7 New CRADA's (industry research/awards)

*Fiscal Year 2021 – 10 New CRADAs*

In the Fiscal Year 2023 financial planning, there are 56 active Investigators, compared to 66 in 2022.

Thank you for taking time to read our Winter 2022 Newsletter. Please let me know if you have any questions or comments.



Rebecca Rosales, MBA, CRA  
Chief Executive Officer

Reminder: NCIRE's Administrative Office will observe a Winter Closure, 12/23/22-1/2/23. We will re-open for business on Tuesday, January 3, 2023. NCIRE's Administrative Staff will not be available during this closure.

## About NCIRE

NCIRE - The Northern California Institute for Research and Education has one mission and one goal: Advancing Veterans Health. We sustain a scientific community of clinicians and researchers and support over 200 researchers who have joint faculty appointments at the University of California, San Francisco (UCSF) and the San Francisco VA Health Care System (SFVAHCS) and are working to foster innovation through leadership in the field of Veterans health research. Our broad portfolio of projects receives generous support from the National Institutes of Health, the Department of Defense, and individual donors, making us the largest nonprofit research institute devoted to Veterans health in the US.

NCIRE is a 501(c)3 nonprofit. (Tax ID #94-3084159). Visit NCIRE at [www.ncire.org](http://www.ncire.org)