

# ***HAND*** ***at UCLA***

2021-2022 Recap & Banquet!





# 2021-2022 Leadership Team



**Tiffany Chen**  
President



**Saumya Tawakley**  
VP of Operations



**Ashley Kim**  
VP of Outreach



**Aarti Jain**  
VP of Education



**Pauline Young**  
VP of Shadowing



**Sravya Sankar**  
Shadowing Director



**Jane Burgan**  
IT Director



**Alex Wu**  
IT Director



**Daniel Hong**  
IT Director



**Nitin Subramanian**  
Webmaster



# 2021-2022 Leadership Team



**Clara Kennedy**  
Education Director



**Sasha Anand**  
Education Director



**Ellen Tahmasyan**  
Outreach Director



**Max Orr**  
Marketing &  
Recruitment Director



**Crystal Zhou**  
Social Director



# Board of Advisors



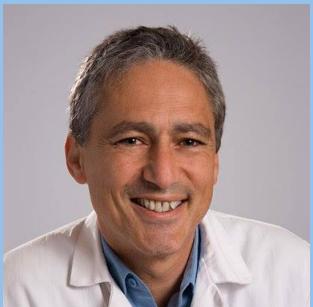
**Dr. Marlius Castillo**  
Faculty Advisor



**Lee Felsenstein**  
Engineering Advisor



**Dr. Jacqueline Chen**  
Medical Advisor



**Dr. Jeff Bronstein**  
Medical Advisor



**Dr. Ana Luisa Trejos**  
Engineering Advisor



**Dr. Martin McKeown**  
Medical Advisor





DAILY BRUIN

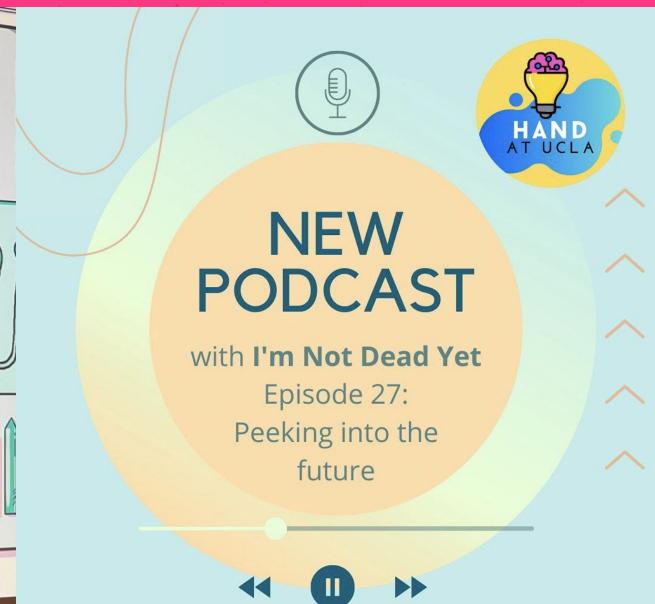
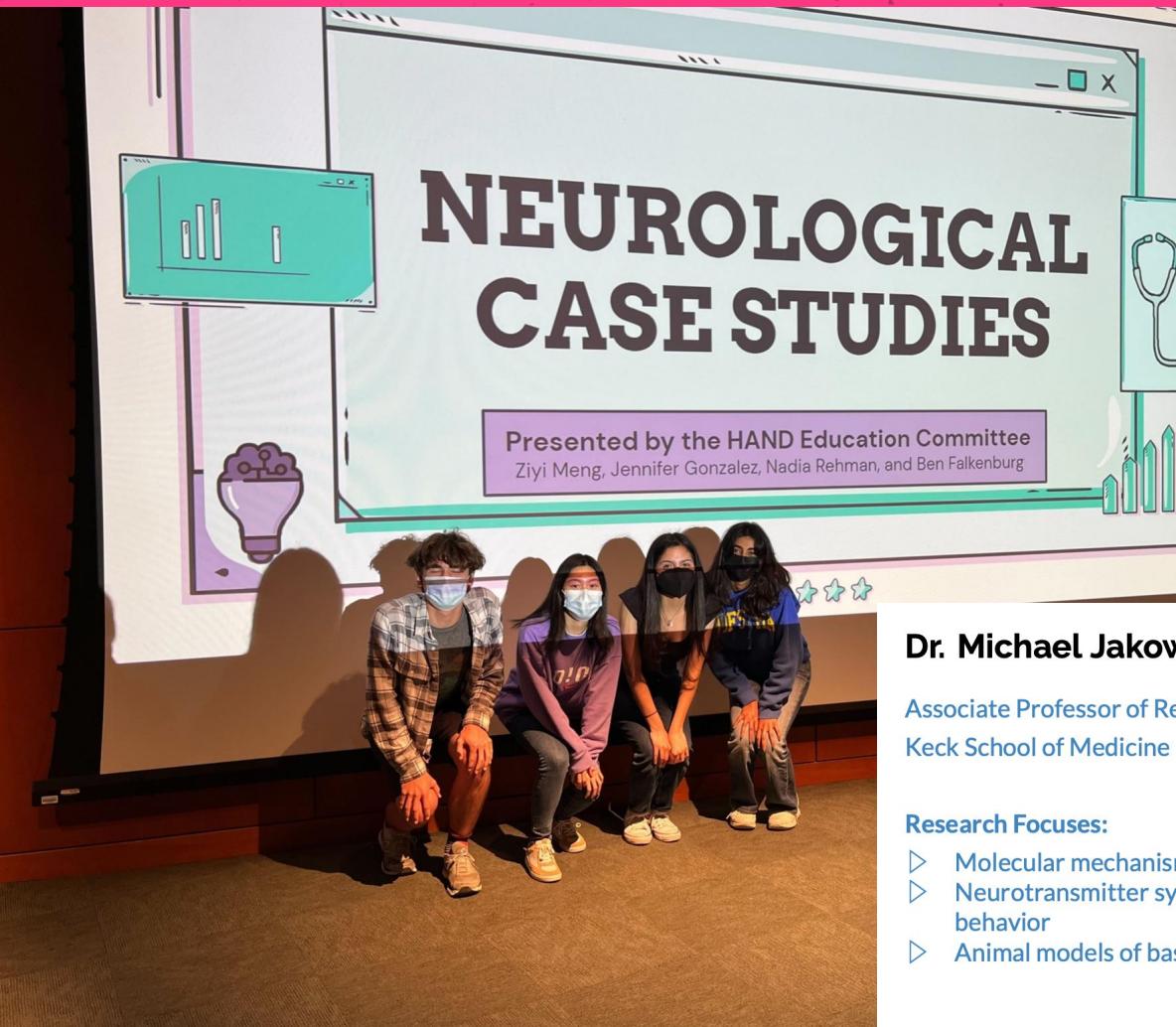
A CLOSER LOOK, NEWS, SCIENCE & HEALTH

## UCLA club lends a hand to address neurological diseases via innovation, awareness



Members of the High-tech and Neurological Disorders club stand in front of the UCLA MakerSpace. The student organization started in fall 2020 and works to educate the community about neurological diseases. (Chelsea Westman/Daily Bruin staff)





## Dr. Michael Jakowec (PhD)

Associate Professor of Research Neurology,  
Keck School of Medicine

### Research Focuses:

- ▷ Molecular mechanisms in neuroplasticity
- ▷ Neurotransmitter systems involved in motor behavior
- ▷ Animal models of basal ganglia injury





## Neurological Disorders: What Are They?

@AIMATUCLA and @HANDUCLA

@aimatucia X @handucla

Neurodivergence  
in College





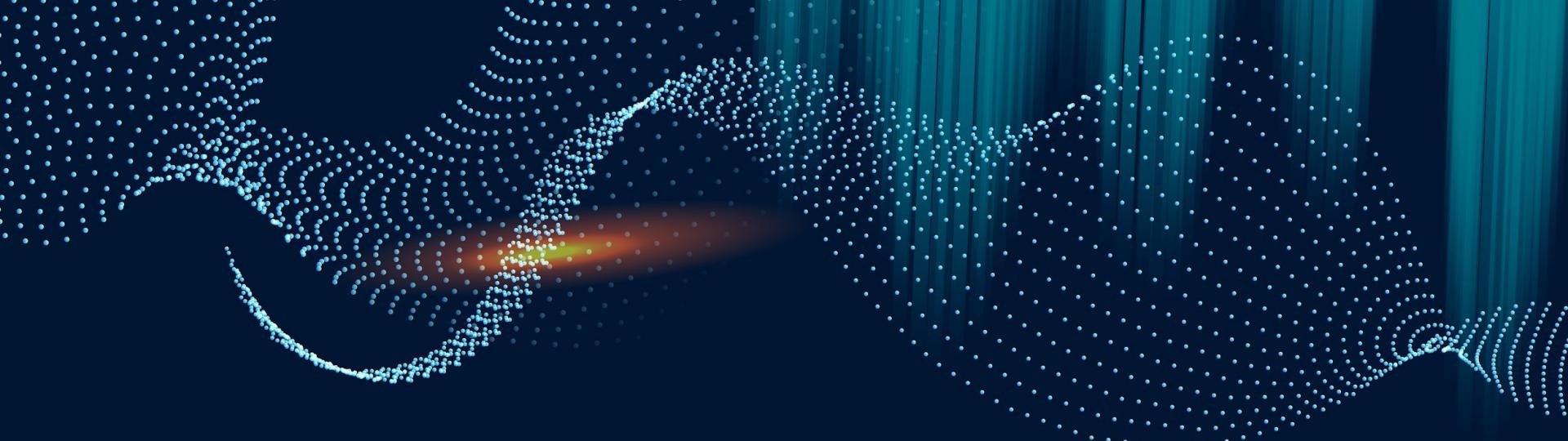


# EDUCATION

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SPRING QUARTER RECAP

# KAHoot



**01 | PODCASTS**

# Podcasts

- Recorded, edited, and released podcast episode 9
  - Spoke with Judy and Travis from Parkinson's Community Los Angeles (PCLA) about living with Parkinson's disease

Check it out now if you haven't already!

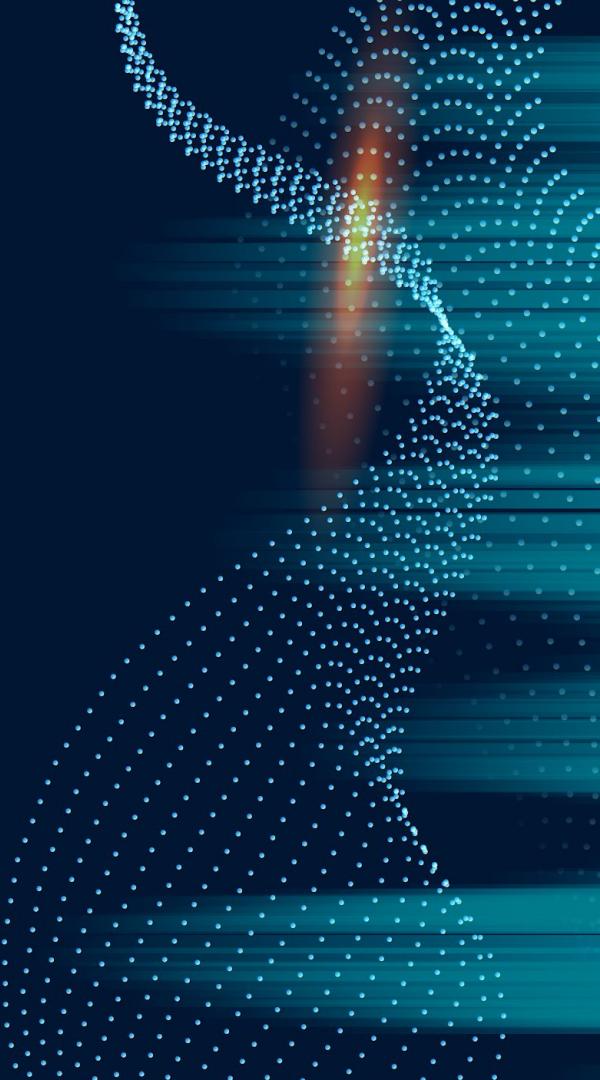


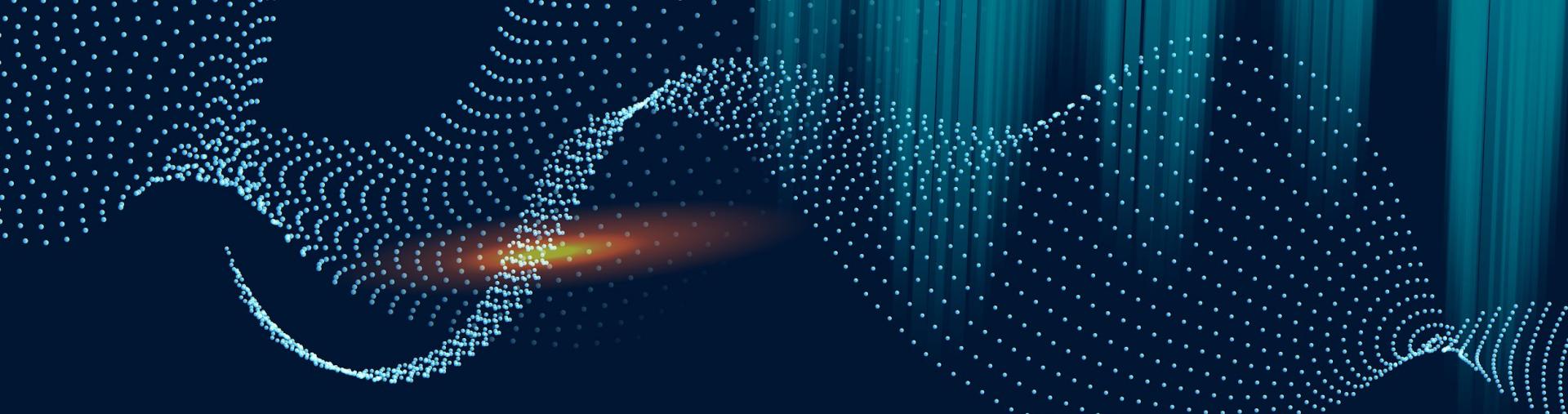
# Podcasts

- Working on the last episode for the year!

Look out for topics such as:

- The brain-gut connection
- The role of the immune system in neurodegenerative diseases
- Brain-machine interfaces
- Potential treatments for Alzheimer's





# **SEMINARS AND RESEARCH**

**02**

# Seminars and Research

- Created an interactive case studies presentation
  - Covered topics such as Multiple Sclerosis, Parkinson's Disease, and Epilepsy!

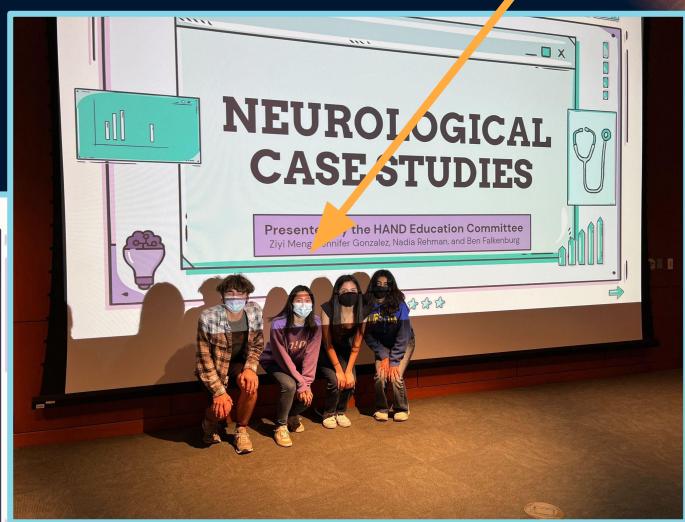
Our lovely S&R presenters!



This screenshot shows the second slide of the presentation. The title 'Case Study #2: Treatments' is centered in a large, bold, black font. To the right of the title is a circular graphic containing illustrations of various medical items: a purple lightbulb, several white and blue capsules, and a small diagram of a brain. Below the title is a bulleted list of treatments:

- Anti-epileptic drugs (AEDs)
  - Carbamazepine
  - Sodium valproate
  - Lamotrigine
- Surgery to remove a small part of the brain that is causing the seizures
- Implant that can help control seizures
- Ketogenic diet

At the bottom of the slide are five small, semi-transparent blue stars.

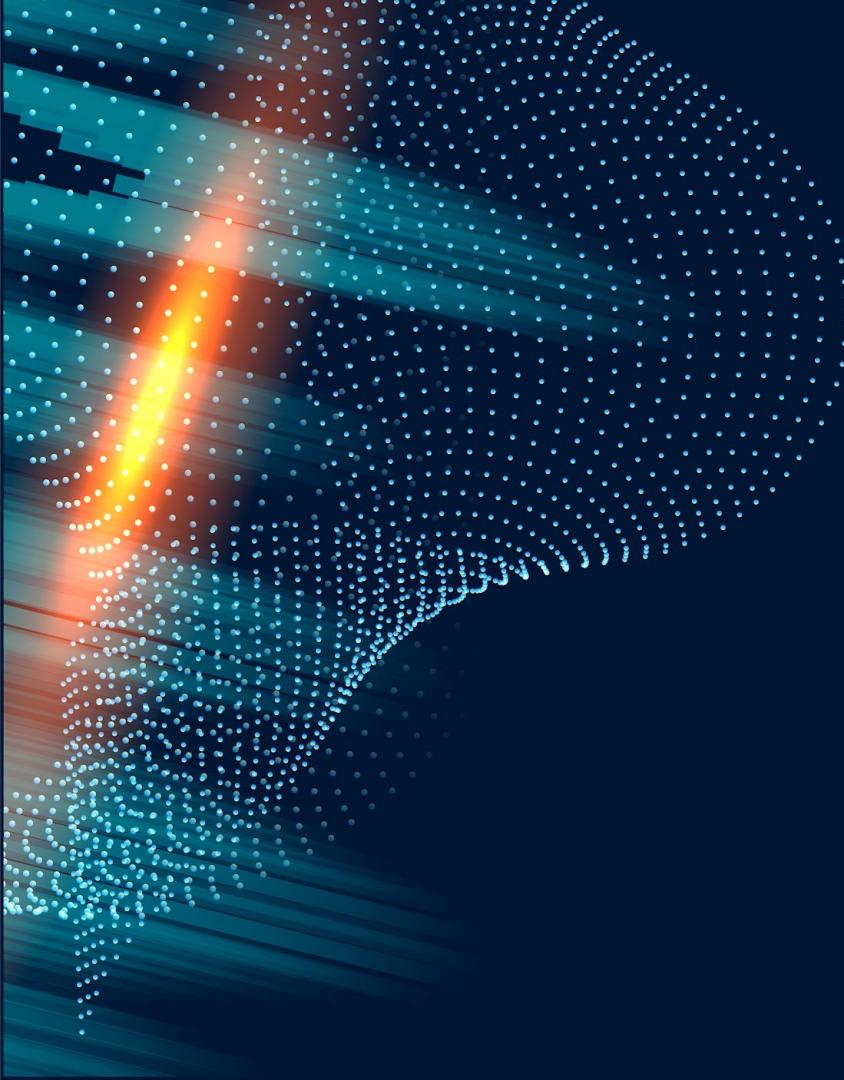


# Seminars and Research

- Working on a newsletter to close out the school year
  - Will feature Education Committee highlights from the past year!

## Preview from Last Year's Recap



A dark blue background featuring a glowing orange-yellow streak on the left and a blue dotted pattern on the right.

# Other Projects!

# HAND Book

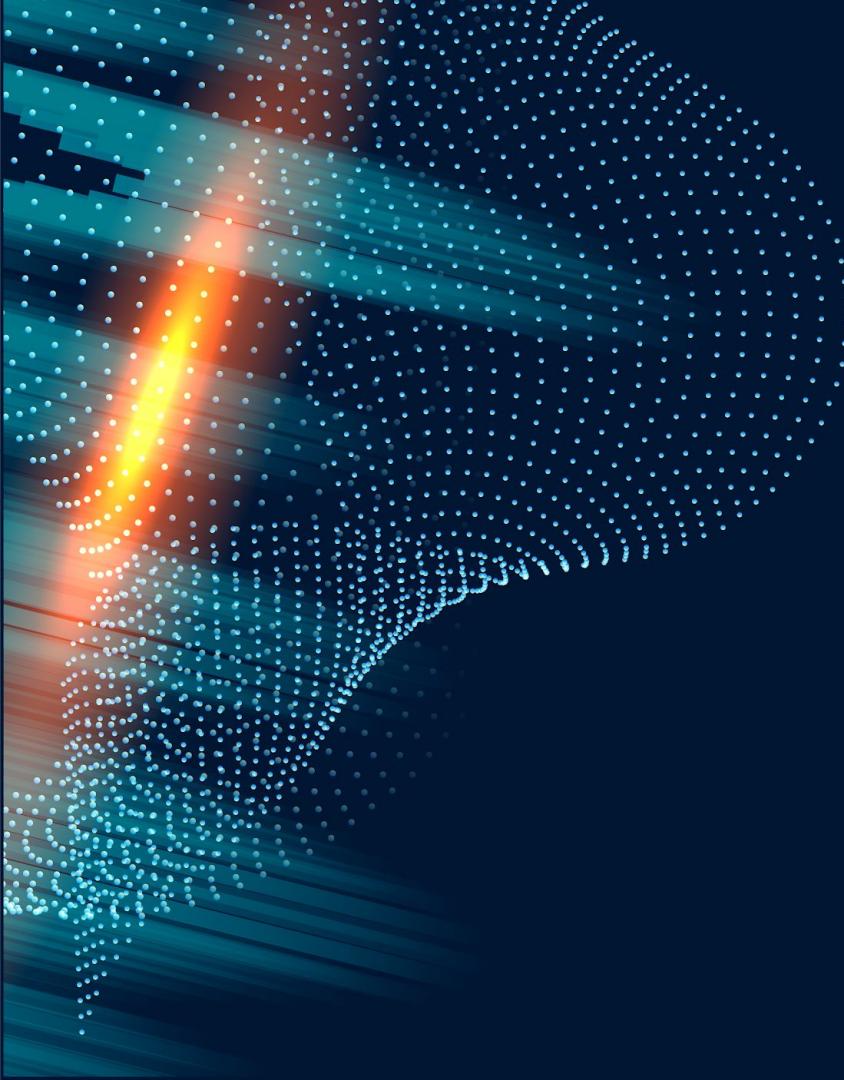
- Collaborative Education Committee Project
- Provides insight into critical neurological terminology
  - Ex. Neurons, Action Potential, Alzheimer's Disease
- Currently scripting sections
  - Stay tuned for the release!

Section 1: Basics of Neuroscience and Neuroanatomy and Imaging Technology:  
[Section 1 Research Document](#) || [Section 1 Written Section](#)

- Vocabulary - done
  - Neuron, Synapse, Action Potential
  - Neurotransmitter
    - Dopamine
    - Serotonin
    - Acetylcholine
    - GABA
    - Glutamate
- Neurodegenerative Disorders
  - *Section 2: Neurological/neurodegenerative Disorders:*  
[Section 2 Research Document](#) || [Section 2 Written Section](#)
  - Overview
  - Biology
  - Onset
  - Symptoms
  - Diagnostic tests
  - Prognosis (timeline, progression of disease)
  - Brief summary of treatments used (mostly covered by section 3)
    - What they are (not the mechanics, how they work)

Section 3: Tech Solutions + Treatment:  
[Section 3 Research Document](#) || [Section 3 Written Section](#)

- Types of Treatments Used (basic overview)
  - Pharmacological treatments, electrode stimulation, rehab
  - Which treatments are used
    - i.e. DBS, tCDS, carbidopa-levodopa, immunomodulators
  - Mechanisms - how it works specifically for the disease
  - Why specific treatments are used
- Dementias
  - Alzheimer's - **Shane**
  - Huntington's - **Shruti**
- Movement Disorders
  - Parkinson's - **Nyari**
  - Essential Tremor - **Francheska**
- Multiple sclerosis - **Rita**



# Socials!

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**THIS QUARTER,  
EDUCATION HOSTED 2  
SOCIALS.**

**WE HAVE PHOTO  
RECORDS OF NEITHER.  
(but there was a lot of pizza  
involved)**



So here's a pic of our social from Fall quarter instead!



# Outreach Committee **2021-2022 Recap**

# Our Goals

01

Community  
Outreach

02

Brain  
Awareness  
Week

03

Collaborations

04

Increasing  
Involvement



# Introduction

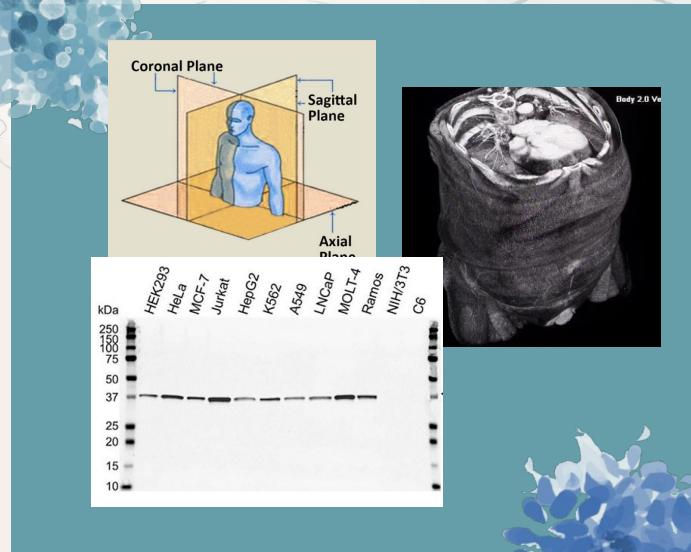
This year HAND's Outreach Committee accomplished wonderful feats including numerous collaborations as well as completion of projects to increase awareness within our local and extended community.

# Fall Quarter

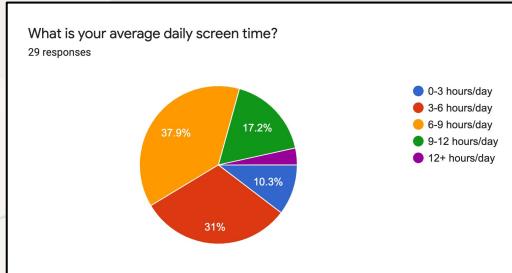
01

# Virtual Lab Tours

- ❖ Discussed lab types such as Wet Lab versus Clinical Lab
- ❖ Learned about techniques such as Western Blot & Immunostaining
- ❖ Western Blot - Identify presence and size of target protein in sample - run gel and mark with primary and secondary antibodies
- ❖ Immunostaining - Identify location of protein within cell sample - use antibody conjugated fluorescent tag binds to bind to target protein



# Mental Health General Meeting



- ❖ Discussed Mental Health Stigmas
  - Examined anxiety & Depression
- ❖ Conducted a Mental Health Meditation Activity
- ❖ Surveyed members to better understand mental health gaps among college students

02

# Winter Quarter

# Resume/CV Workshop



## Resume/CV Workshop

Events Team - Outreach Committee

### What Should I Include...?

#### A Personal Introduction

Keep it short but clearly tell the researcher about yourself!

#### Your interests

Why are you interested in this lab? What specifically draws you to this lab over others?

#### Your goals

How does this specific lab contribute to your goals in life? How could you contribute to this lab?

#### Your CV and Cover Letter

Briefly encompass all three aspects above into a clean and professional portrayal of yourself.

#### Your Transcript

Show your relevant coursework and also your understanding of the material through your transcript.

#### Relevant Experience/Awards

Be sure to show that you're a great fit for the lab through your previous experiences and achievements.



### Formatting Tips

#### General Formatting Tips:

- 1) 1 PAGE total, single-spaced. Be concise.
- 2) Follow the font type/font size/format of resume
- 3) Put contact info, address etc. at the top of the page as header
  - a) Name should be big/ easy to find
- 4) Have 3-5 short body paragraphs
- 5) Separate paragraphs or sections with an extra line for readability
- 6) Address hiring manager with their name
- 7) Remember to proofread & check spelling!

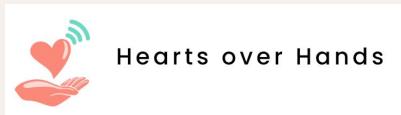
- ❖ Educated HAND members about resume and cover letter formatting
- ❖ Discussed professional applications



# Increasing Community Involvement Presentation

## Ways to get involved in our community!

Curriculum Team - Outreach Committee



- ❖ Provided members with insight on other organizations to join such as
  - Step-Up Tutoring
  - Brain Awareness Week
  - UCLA Alumni Mentor Program
  - Hearts over Hands
  - Mentorship Program at UCLA
  - Virtual Shadowing

# City Lab Collaboration



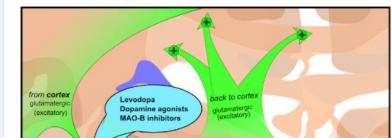
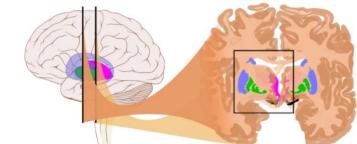
- ❖ Presented to middle-school level students about the key aspects of neuro-technologies
- ❖ Showcased HAND's iStopShaking Device
- ❖ Hosted a virtual escape room to test student's knowledge and boast collaboration

### Neuro-tech devices: Transcranial Direct Current Stimulation (tDCS)

<b>WHAT IS IT?</b> <ul style="list-style-type: none"><li>- Treatment that uses electrical currents to stimulate parts of the brain.</li><li>- Noninvasive (patients do not need to undergo surgery to be fitted with the tDCS device)</li><li>- Stimulation is delivered via electrodes placed on the head.</li><li>- Changes excitability of neurons</li></ul>	<b>BENEFITS &amp; DRAWBACKS</b> <ul style="list-style-type: none"><li>- Inexpensive, Low-Risk, Portable</li><li>- Imprecise</li></ul>	<b>tDCS &amp; PARKINSON'S</b> <ul style="list-style-type: none"><li>- Placed in brain areas controlling motor and cognitive function</li><li>- Cognition: increase PFC excitability</li><li>- Motor: tDCS increases mobility, balance, etc</li></ul>
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The next patient is showing signs of brain damage due to small strokes that impact areas of the brain which control movement. The patient is complaining of muscle stiffness and problems with maintaining balance. Which type of Parkinson's disease do you think the patient should be diagnosed with? Hint: The name of this disease is associated with a system in the body that is made up of vessels that carry blood through the body.





03

# Spring Quarter

# HAND Outreach Curriculum Booklet

- ❖ Members of the Outreach Committee collaborated to create a booklet discussing various Neuroscience topics
- ❖ These ranged from types of neuroscience research, mental health, learning, memory, biotechnology professions, and more
- ❖ We are currently looking into clinics to distribute our booklet to

HAND OUTREACH COMMITTEE

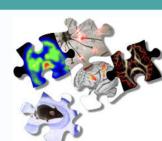
## NEURO DISORDERS



A presentation by Henrietta Mitchell

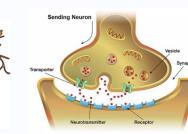
### 5. Translational and Clinical Neuroscience Research

Works with neurologists, neurosurgeons, and other medical personnel firsthand to develop therapies, as well as depict ways to improve upon clinical neuroscience research as a whole.



Analyzes previous studies and track patient progress as they undergo new therapies as well as improve patient encounters within this field. It also keeps up to date with new technology and methodologies.

### Neurons & Message Signaling



#### What are Neurons?

Neurons are the basic building blocks of the nervous system!

- Specialized to send information throughout the body
- Can communicate through chemical and electrical signals

#### Neuron Structure

- **Dendrites:** receive information from other neurons
- **Cell Body (Soma):** here is where the nucleus is, and where the neuron is maintained and kept functional
- **Axons:** elongated fiber that extends from the cell body to the terminal endings and transmits the neuron's signals to other neurons

#### Message Signaling

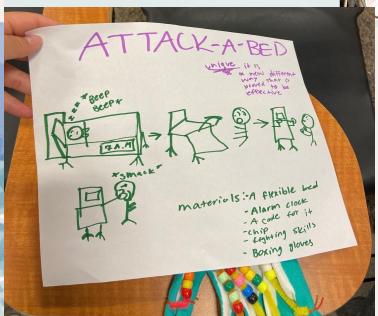
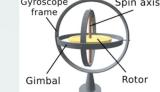
- Neurons use action potentials to communicate with each other
- Synaptic Communication: either the electrical impulse itself or chemical communication in the form of a neurotransmitter will bridge the gap between neurons at the synapse
- Neurotransmitters: chemical messengers that reach the receptor sites of other neurons
  - Examples of neurotransmitters:
    - Acetylcholine: memory, learning, muscle contraction
    - Endorphins: emotions and pain perception
    - Dopamine: thinking and pleasurable feelings

# Project Bruin



## Key Components & Facts About the iStop Shaking Device

- Gyroscope stabilization
  - Counteract tremor force
  - Main stabilization
  - Accelerometers to detect tremors and spin accordingly
- Non-Newtonian fluid
  - Special type of fluid that can become thicker if manipulated
  - When tremors occur, fluid will thicken and become solid-like
  - Restrict movement
  - Examples: Cornstarch, Oobleck, Ketchup

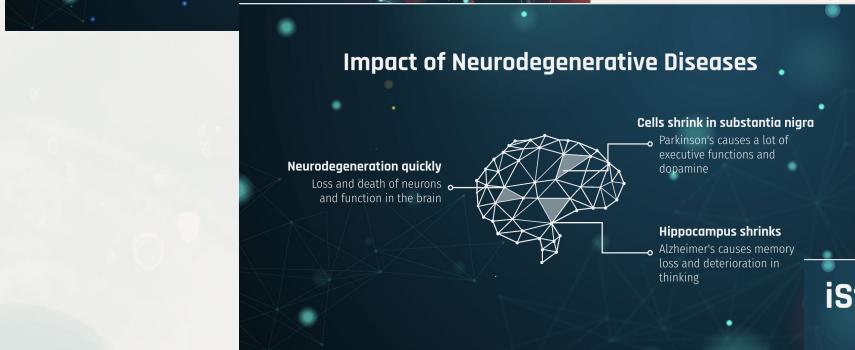


- ❖ Presented to students from K-12 about Neuro-medical Devices
- ❖ Students created their own model of the iStopShaking Device
- ❖ Students also worked in teams for a Shark-Tank activity to pitch a creative product

# Interaxon Collab

## Neurodegenerative Diseases & Neuro-Technology

Presented By: High-Tech & Neurological Disorders Outreach Committee & Innovation Team



## iStopShaking Device

The iStopShaking Device is a mechanical glove that aims to reduce the tremors that are a result of Parkinson's Disease. We hope to accomplish this by using mini-gyroscopes and accelerometers as a way to mechanistically minimize tremors while also using sensors as a way to track our patients and their outcomes.



# Goals For Next Year

More Collabs!



Creating additional  
community  
resources

Successful Distribution of  
Our Outreach Booklet



Teaming up with  
Local Clinics

# THANK YOU!

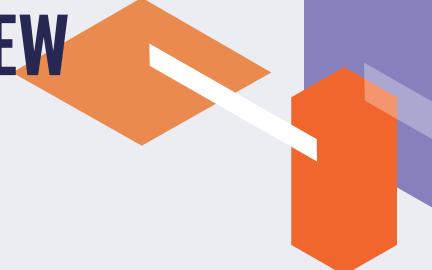
Cheers to exciting new things to come!

# PR/M&R YEAR RECAP

F21 - S22



# PR/M&R's ACCOMPLISHMENT OVERVIEW



01

## F21 & S22 Recruitment

Two recruitment cycles led  
- over 60 new members +  
new board members!

02

## Graphic Design

Countless designs for GM  
& committee recaps,  
fundraisers, spotlights,  
podcasts

03

## Fundraising

Organized and led  
multiple fundraisers

04

## HAND x AIM

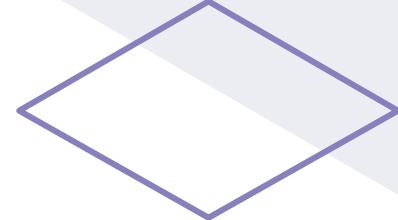
Expanding our  
knowledge of  
neurodivergence



# 01. RECRUITMENT

- F21 Cycle
  - 21 members recruited
- S22 Cycle
  - Flyering!
  - 40 members recruited
  - 8 new board members!

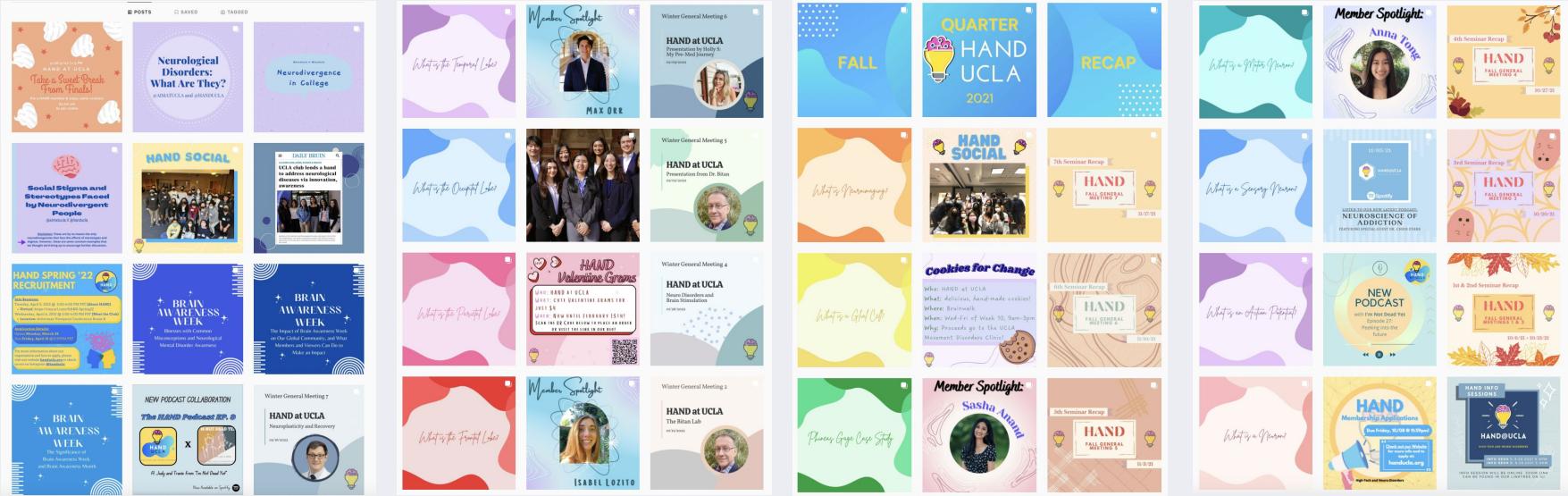




**NEW PR/M&R DIRECTORS**

**ISABEL LOZITO  
&  
ALLISON PENG**

# 02. GRAPHICS



# 03. FUNDRAISING

## 3 total fundraisers

- Cookies for Change
- HAND Valentine Grams
- Pie a HAND member/Cookies
  - This Thursday & Friday (1-5pm)



# 04. HAND x AIM Collaboration

## Neurological Disorders: What are They?

Neurological Disorders:  
What Are They?

@AIMATUCLA and @HANDUCLA

## Neurodivergence in College

@aimatuela X @handucla  
Neurodivergence in College

## Social Stigmas and Stereotypes



**Social Stigma and Stereotypes Faced by Neurodivergent People**  
@aimatuela X @handucla

**Disclaimer:** These are by no means the only neurodivergencies that face the effects of stereotypes and stigmas. However, these are some common examples that we thought we'd bring up to encourage further discussion.



# **THANK YOU PR TEAM**

# 2021-2022 HAND Innovation Team ReCap

Directors: Jane | Daniel | Alex | Max | Anu

# Goals!

## Data Analysis

- ❖ Output data from an accelerometer in 3 directions
  - Isolate each direction, store the data, and have a standard of comparison for future patient-related measurements

## Data Output

- ❖ Create a custom gyroscope that produces some force in 1 direction

# Challenges

## Data Analysis

- ❖ Setting up a raspberry pi without a desktop monitor & reliable wifi connection
- ❖ Becoming familiar with the materials bought from last year

## Data Output

- ❖ Brushless motors bought when we needed non-brushless motors
- ❖ General supply chain & material problems

# Data Analysis Achievements

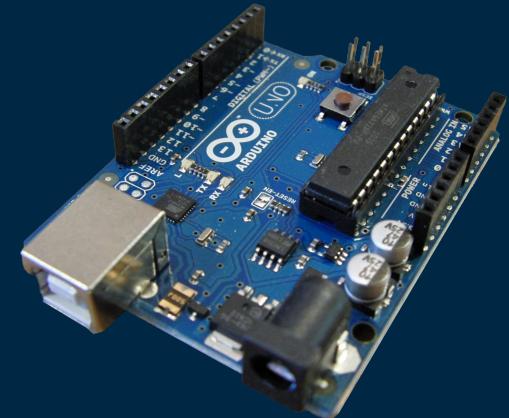
## For raspberrypi:

- Headless set up using hotspot
- Raspberrypi workspace



## For arduino:

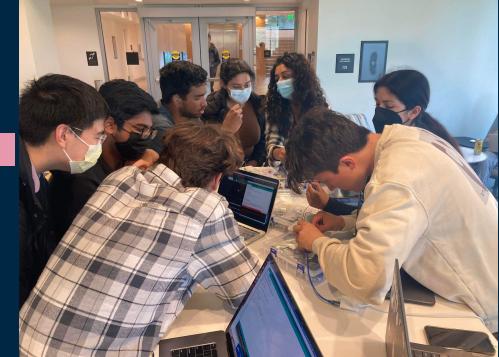
- Set up a successful arduino-accelerometer connection that measures data & outputs to live-graph
- Set up a github repository for the coding we will be doing
- SSH & write data into SD card for storage
- Familiarized ourselves w/ materials (how accelerometer outputs data, how raspberry pi & arduinos connect, etc)



# Data Analysis Process

## Clear & Open Communication

- Improved communication within directors & team members at the beginning of spring quarter
- Had a conversation with members on expectations
  - Will continue these open discussions at the beginning & end of each quarter to set meeting guidelines and structure



## Teamwork & Collaboration

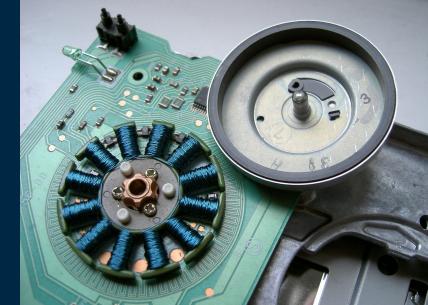
- Working in-person w/ small number of individuals per device → more hands-on for everyone
- Social!



# Data Output Achievements

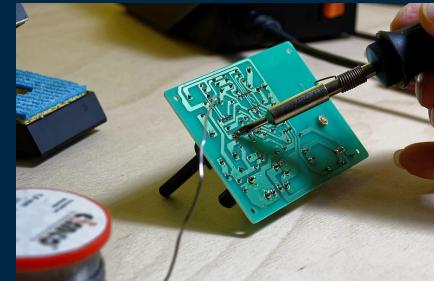
## Finalized Brushless Motors

- Finalized the motors that we would utilize for our gyroscopes



## Sourced Supplementary Material

- Ordered motherboards and other hardware needed to run the motors via proprietary software
- Began to work on skills for hardware functionality and design
  - 3D modeling using Fusion 360
  - Soldering skills through the Makerspace



# Data Output Process

## Trial and Error

- Due to hardware compatibility issues, we had to order and reorder many parts after testing for compatibility
- Many of our initial ideas had to be varied

## Flexibility and Collaboration

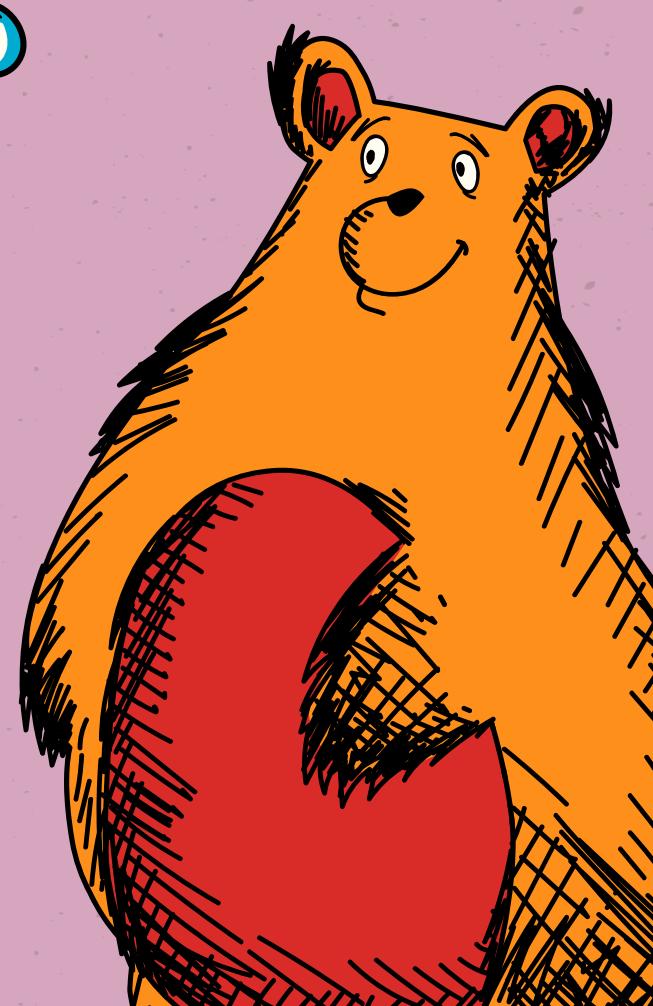
- Due to scheduling constraints of our team, we worked together alongside members and directors to finalize meeting times that work with everyone
- Aiming to have more cross-collaboration between the IT committees



Thank you to our  
wonderful members for  
making this all happen!



# **Senior Send-Offs**





# Aarti Jain

- **Major:** Neuroscience
- **Position:** Education Director, IVP
- **Post-Grad:** Medical School at New York Medical College
- **Favorite HAND Memory:** Socials with the Education Committee!



# Jane Burgan

- **Major:** Neuroscience
- **Position:** IT Director
- **Post-Grad:** Medical School at Stony Brook SOM
- **Favorite HAND Memory:** Going to an IT dinner/social and just getting to meet everyone in person after the year of being online
- “I love HAND so much and everyone in it, going to miss everyone:) and can't wait to see what direction the club makes and what all the members accomplish”



# Crystal Zhou



- **Major:** Psychobiology
  - **Position:** Social Director
  - **Post-Grad:** Medical School
  - **Favorite HAND Memory:** Meeting everyone in-person at our first social!
- 
- “Thank you for such a wonderful experience, truly grateful for all the wonderful connections I’ve made here. Wishing the next gen members best of luck - hope to see istopshaking in the market one day soon :)"

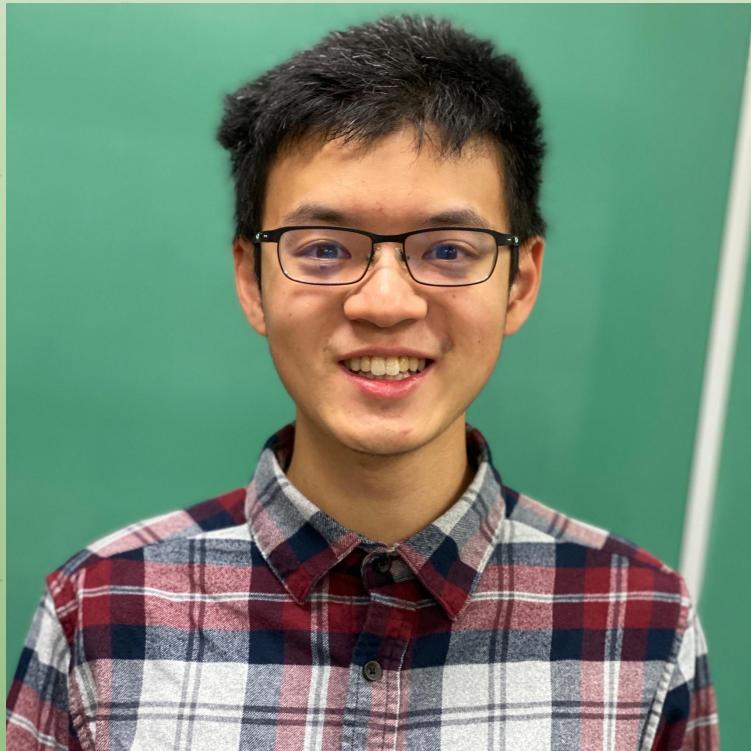
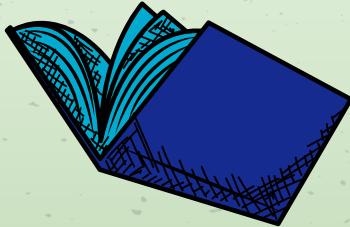




# Sravya Sankar



- **Major:** Psychobiology
- **Position:** Shadowing Director
- **Post-Grad:** Gap Year + Medical School
- **Favorite HAND Memory:** Presenting to middle and high-school student in the early days of HAND in Outreach Committee! So exciting to see younger students interested in the same things that we are and so engaged in learning!
- “Love HAND and all that I’ve been able to experience and people I’ve been able to meet by being part of it! <3”

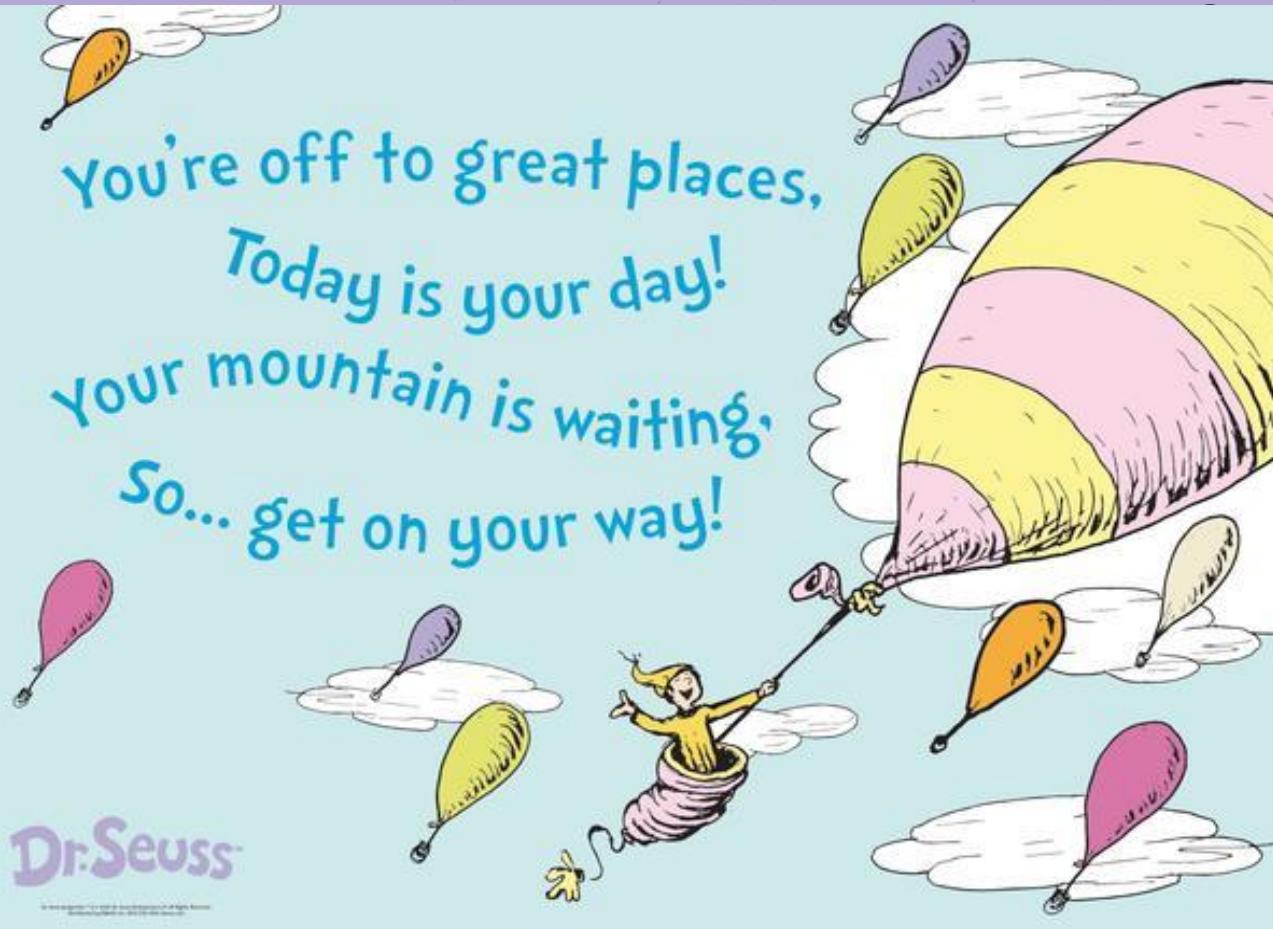


# Loren Chang



- **Major:** MIMG
- **Position:** Education Podcasts Squad
- **Post-Grad:** 2-year post-bacc fellowship at the NIH; Graduate school for immunology or a similar field
- **Favorite HAND Memory:** Zoom meetings for the podcast squad last year were always entertaining. I also liked the socials; I enjoyed being able to interact with fellow club members outside of meetings.

You're off to great places,  
Today is your day!  
Your mountain is waiting,  
So... get on your way!



Dr. Seuss

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