Stroke and Neurologic Restoration Center, Stroke Research Lab.

Lead Investigator: Jason Viereck, MD, PhD, Neurologist & Director,
Stroke & Neurologic Restoration Center,
Clinical Assistant Professor of Medicine (Neurology)

Investigating Prevalence of Carotid Artery Disease in Native Hawaiians and other Pacific Islanders (Lead: Julia Jahansooz, Student: Michelle Trinh)

Ethnicity has previously been identified as a risk factor for ischemic stroke. Native Hawaiians and other Pacific Islanders (NHOPI) were on average 11 years younger at the onset of stroke than their Caucasian and Asian counterparts. The impact of ethnicity on prevalence of carotid artery disease, a precursor to stroke, in NHOPI has not previously been documented in Hawaii. This ethnographic study aims to quantify the prevalence and extent of carotid artery disease in Hawaii to better understand the pathogenesis of carotid artery atherosclerosis in different populations.

Investigating Carotid Artery Disease in Critically Understudied Populations: Comorbidities Seen in Native Hawaiians and Pacific Islanders Stroke and Neurologic Restoration Center, Stroke Research Lab.
(Lead: Anson Lee, Student: Kirra Borrello)

Stroke is one of the primary causes of mortality and disability in the United States, and approximately 15% to 20% of all strokes are caused by carotid artery disease (CAD). Past surveys found evidence that among Native Hawaiian and Pacific Islander (NHPI) populations, individuals were four times more likely to suffer from a stroke and 30% more likely to die from a stroke compared to non-Hispanic white adults. Comorbidities associated with CAD are especially important to assess as multimorbidity was found to be common in stroke with 94% of stroke victims having at least one other long-term condition and 10% suffering from seven or more. Yet, clear-cut information and statistics about NHPI CAD risks, outcomes, and comorbidities have been difficult to ascertain. Our project investigates the types and number of comorbidities associated with CAD and its risk factors in NHPI patients compared to other ethnicities.

Investigating Young Atypical Stroke Risk Factors, Etiologies in Native Hawaiian and Pacific Islander Population Followed up at Hawaii Stroke & Neurologic Restoration Center
(Lead: Michelle Lu, Student: D-Dré Wright)

Strokes in younger patients (<45 years) are relatively uncommon, making up 10-15% of stroke diagnoses. However, the risk of death in younger patients is higher, can disable individuals before their most productive economic years and lower their quality of life disproportionately. Studies have not only shown that stroke risk in Native Hawaiian/Pacific Islander (NHPI) populations is 30% higher than in non-Hispanic whites, but also show that NHPI patients hospitalized for ischemic stroke were also less likely to be older and more likely to be female when compared to whites. Compared to Asians, NHPI are also less likely to be older at the time of hospitalization. This study will aim to characterize the atypical stroke patients treated at Hawaii Stroke & Neurologic Restoration Center, investigating the presence of risk factors such as the use of oral contraceptives, smoking, hypertension, diabetes mellitus, dyslipidemia, obesity, vascular risk factors, congenital cardiac disease, as well as presenting symptoms such as hemiparesis, altered mental status, abnormal movements, migraine with aura. We would also like to identify atypical causes, such as hypercoagulable states, medication-induced thrombosis, vascular conditions, drug abuse, and cardiac malformations that might have led to stroke in younger patients.

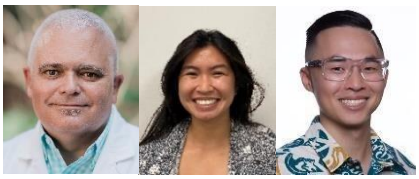
Memory Disorders Center, Alzheimer's Research Lab

Brain Mapping Research Lab, Neurodiagnostic Institute of Technology

Lead Investigator, Jeanette Abramowitz, MD, Neurologist & Assistant Professor of Medicine (Neurology)
(Lead: Nathan Kim, Student: Shay Nakahira, Charissa Tan)

Can EEG Patterns Predict Onset of Preclinical Alzheimer's Disease in CSF Amyloid Positive Patients?
HPN BRITL Brain mapping research lab. is dedicated to studying how neuronal cortical networks interact with the external environment through neurophysiologic and neuroimaging modalities. The integration of behavioral neuroscience, neurophysiology and bio signal processing knowledge is translated into developing better understanding of cortical physiology and how to improve quality of life of those suffering from neurological disorders.
2021 Alzheimer's Association International Conference Poster Presentation 2022 American Epilepsy Society Poster Presentation

Concussion & TBI Center, Concussion Research Lab.



Lead Investigator, Enrique Carrazana, MD
Neurologist & Clinical Educator of Medicine (Neurology)
(Lead: Chloe Delos Reyes, Student: Ryan Nakamura)

Is Traumatic Brain Injury More Prevalent & Severe in Patients with Alzheimer's Dementia?
Assessing fall risk in older adults has long guided both patient and provider in implementing interventions to prevent falls. Following a fall, fractures and traumatic brain injuries (TBI) are of particular concern as they may result in high mortality. Although not fully understood, patients with dementia are at a greater risk of falls which may be attributed to impairment in mobility, balance, and muscle strength. This study seeks to determine whether patients with cognitive impairments are at greater risk for more falls resulting in more frequent and severe traumatic brain injuries.

Brain Research Innovation & Translation Laboratory

Lead Investigator, Russell Woo, MD,
Medical Student Research Director,
Professor of Surgery
(Anson Lee, Student: Ryan Nakamura, Violet Nguyen)

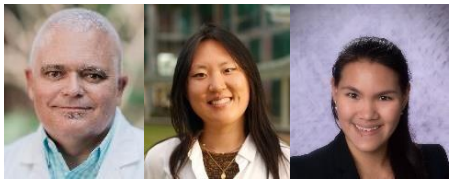
Medical Student Neuroscience Research Outcome in Hawaii
The active number of practicing neurologists in the U.S. is projected to be at 18,060 in the year 2025. But when this is paired with the estimated 2025 demand for neurologists at 21,440 physicians, there is a clear 19% deficit. Without ways to effectively increase the number of new neurologists and retain existing professionals, there will undoubtedly be increased future difficulties in obtaining adequate neurological care. A potential solution to offset this problem is to focus recruitment efforts at the medical student level. However, while many studies have suggested the positive impact of medical student mentorship and research on interest in neurology, few have actually quantified the effectiveness of such a program. To better understand how these programs may benefit students, this study assessed the impact of a neuroscience-focused medical student mentoring and research program on student research productivity and specialty interest at a single institution.

Comprehensive Epilepsy Center, Video-EEG Epilepsy Monitoring Unit,

Lead Investigator, Kore Liow, MD,
Neurologist & Director, Comprehensive Epilepsy Center
Clinical Professor of Medicine (Neurology)
(Lead: Julia Jahansooz, Students: Ho Hyun Lee, Elizabeth Rooks)

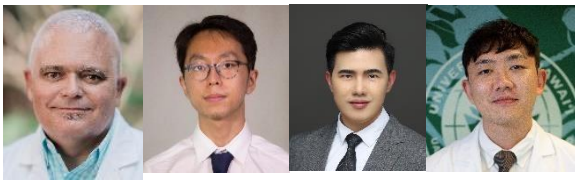
The Diagnostic Course of Video-EEG from Presentation to Treatment in Hawaii.
Routine electroencephalograms (EEG) are a first-line diagnostic tool used to detect abnormalities in brain waves. Outpatient Video-EEG monitoring (VEEG) is a more extensive, multi-day procedure that helps to determine the cause of these abnormalities. The distribution of etiologies of Hawaii Comprehensive Epilepsy Center patients who underwent an VEEG is currently unknown. This project aims to evaluate the clinical course of a patient from presentation to VEEG. Factors that will be considered include criteria for EEG and VEEG testing, time to elicit an epileptic event, type of response, accuracy of initial diagnosis, therapeutic management, and socioeconomic status.

Headache & Facial Pain Center, Headache Research Lab



Lead Investigator, Enrique Carrazana, MD
Neurologist & Clinical Educator of Medicine (Neurology)
(Lead: Michelle Lu, Student: Anita Cheung)

Migraine Headaches Characterization at Hawaii Headache & Facial Pain Center for Risk Factors Correlations especially in Minority Population especially Native Hawaiian and Asian Population.
Reviews of race-associated migraine prevalence show that Native Americans, followed by Caucasians, Hispanics and African American patients are highest in the United States. However, outcomes of especially severe migraine show significant treatment disparities, and lack of medical access in minority communities may cause under-diagnosis of this disorder. Risk factors that predispose patients to chronic migraine include overuse of acute migraine medication, ineffective acute treatment, obesity, depression, and stressful life events. Female sex, age, and lower education levels also increase the likelihood of developing migraine. Chronic migraines may be treated with pharmacological treatment, monoclonal antibodies, physical therapy, Botulinum toxin, and lifestyle changes. The goal of our project is to characterize the patient population of a single neuroscience center for any ethnic correlations for risk factors and outcomes of chronic migraine disorder.



Lead Investigator, Enrique Carrazana, MD Neurologist & Clinical Educator of Medicine (Neurology)
(Joo Won Choi, Richard Ho, Kyung Moo Kim)

Characterization of Racial, Ethnic, and Socioeconomic Disparities in Diagnosis and Treatment of Hemifacial Spasms in Hawaii. Hemifacial spasm (HFS) is a rare movement disorder characterized by sudden, involuntary unilateral twitching of the face from aberrant activation of the ipsilateral facial nerve. Though it is possible that subclinical cases of HFS are ignored and not brought to medical attention, more severe cases of HFS have major, detrimental impacts to one's quality of life, affecting their sleep, selfconsciousness, and in rare cases resulting in functional blindness. To date, characterization of risk factors that influence diagnosis and management of HFS has been limited to homogenous populations and has never

been investigated in Hawaii. Here, we use data collected between 2016-2020 from patients who were diagnosed with HFS at Hawaii Pacific Neuroscience to characterize racial/ethnic and socioeconomic disparities and identify risk factors that may influence diagnosis, treatment and outcome of HFS.

Brain Research Innovation & Translation Laboratory

Lead Investigator, Enrique Carrazana, MD Neurologist & Clinical Educator of Medicine (Neurology
(Shin Chang (Lead), Ana Tavares, April Hamachi)

Disparities in Malignant Primary Brain Tumors among Native Hawaiian and Pacific Islanders
Previous studies have researched the role racial and ethnic differences have on the incidence and survival rates of malignant primary brain tumors. However, there are limited data on what these factors are like for the Native Hawaiian and Pacific Islander (NHPI) population. The NHPI population suffers disproportionately higher rates of comorbidities such as cardiovascular diseases, diabetes, and asthma. Studies have shown racial disparities among black and Hispanic patients with malignant primary brain tumors, and similar disparities may possibly be seen in NHPI patients. This study aims to characterize the disparities that may exist in malignant primary brain tumors among the NHPI population.

Neuro COVID Clinic, NIH/NYU Neuro COVID Data/BioBank

(Funded by NIH, NINDS Grant 3UL1TR002541-01S1)

Lead Investigator, Kore Liow, MD,
Neurologist & Director, NeuroCOVID Clinic
Clinical Professor of Medicine (Neurology)
(Lead: Ward Weldon, Students: Cierra Nakamura, Jeff Hayashi, Brandon Hong, Jonathan Carino)

The NeuroCOVID project has been initiated at New York University Langone Health to create and maintain a national resource documenting and studying neurological complications of COVID-19 and is funded by the NINDS, NIH through the NIH National Center for Advancing Translational Sciences through its Clinical and Translational Science Awards Program.

As of February 2022, Hawaii Neuro COVID Clinic is one of 20 sites among Harvard, Mayo, Duke, Emory, U Penn, Washington U selected by NIH/New York University along to serve as a participating site for the COVID-19 Neuro Databank-Biobank or NeuoCOVID Project. COVID-19 Neuro Databank: The databank will collect information on adults, children with confirmed COVID-19 infection to assess neurological symptoms such as fatigue, brain fog, headache, loss of smell & taste, pain, numbness, autonomic dysfunction and others. COVID-19 Neuro Biobank: The biobank will collect a wide variety of biosamples, including blood, plasma, cerebrospinal fluid, and tissue, from patients who have COVID-19 and experience neurological complications. More Information: **NIH website** or **NYU website, Hawaii Neuro COVID Clinic**

COVID-19 Olfactory Dysfunction: Differences in Prevalence Among Ethnicities & Variants in Hawaii NeuroCOVID Clinic

Olfactory dysfunction is widely known as one of the cardinal symptoms of COVID-19 infection. While earlier studies have suggested differences in anosmia between ethnic groups, the amount of available data at the time limited studies to compare primarily Asians and Caucasians. Since then, data regarding populations such as Africans and Latinos have been published and will be used to determine the prevalence of loss of smell as in a wider variety of groups. In addition to analyzing ethnic data, this study will also use epidemiological data regarding which strains of COVID-19 were prevalent in various regions throughout time in order to elucidate the impact of variants on anosmia.

Diagnostic tools for evaluating long-covid-19 syndrome (LCS): a systematic review at Hawaii NeuroCOVID Clinic

Long Covid Syndrome (LCS) is becoming more and more prevalent across the world. Symptoms of LCS such as fatigue, shortness of breath and brain fog can be very debilitating for patients. Currently, there is no universal standard for evaluating and diagnosing LCS in patients. This review will look at the different methods and scales that have been used to evaluate LCS in previous studies and compare them to each other. The Review aims to make practical suggestions as to the use of scales for evaluating LCS for the researchers and practicing clinicians.

Exercise Intolerance Following COVID-19: Comparing and Contrasting Impact of Different Viral Infections

Emerging literature continues to elucidate effects of COVID-19 that contribute to lasting exercise intolerance in many recovering patients. However, what is the severity and duration of these effects compared to other viral infections such as influenza and EBV? Is COVID-related exercise intolerance different than these other infections and how do the mechanisms create intolerance compare? By answering these questions, we hope that our research will better inform how to prevent and treat exercise intolerance both regarding COVID-19 and other viral infections.

Sleep & Insomnia Center , Sleep Research Lab

Lead Investigator, Michael Slattery, MD, Neurologist & Interim Director, Sleep & Insomnia Center , Clinical Assistant Professor of Medicine (Neurology)
(Lead,)

Self-Care, Lifestyle & Wellness Center, Lifestyle Research Unit

Lead Investigator, Paul Smith, MD,
Director, Self-Care, Lifestyle & Wellness Center
Clinical Assistant Professor of Medicine
(Lead,)

Neuromuscular Rehabilitation Center, Neuromuscular Research Lab

Lead Investigator, Jason Chang, MD,
Physiatrist & Director, Neuromuscular Rehabilitation Center
Clinical Assistant Professor of Medicine (Neurology)

Parkinson's & Movement Disorders Center, Parkinson's Research Lab

Lead Investigator: Jason Viereck, MD, PhD, Neurologist & Director, Clinical Assistant Professor of Medicine (Neurology)

Hawaii Center for Neuromodulation, Neuromodulation & Brain Computer Interface Laboratory

Lead Investigator, Kore Liow, MD, Neurologist & Director, Clinical Professor of Medicine (Neurology)

Spine & Pain Management Center, Pain Research Lab

Lead Investigator, Jason Chang, MD, Physiatrist & Director, Clinical Assistant Professor of Medicine (Neurology)

Comprehensive MS Center, MS Research Lab

Lead Investigator: Jason Viereck, MD, PhD, Neurologist & Director, Clinical Assistant Professor of Medicine (Neurology)