Neurology Department
Annual Research Blitz

November 28, 2017
Movement Disorders division

- Leo Almeida - DBS
- Melissa Armstrong – DLB/PDD, patient-oriented, guidelines
- Wissam Deeb – Dystonia, Tourettes
- Chris Hess – Tremor analysis, DBS
- Irene Malaty – PD outcomes, trials; Tics/Tourettes
- Karen McFarland – transcriptomics, bioinformatics, ataxias, AD
- Nick McFarland – neurodegeneration, PD/atypical parkinsonism, HD
- Michael Okun – DBS
- Addie Patterson – education and palliative care
- Adolfo Ramirez-Zamora – DBS, trials
- Aparna Shukla – Dystonia, tremor, rTMS
- Yuquig Li – Dystonia, RLS
Okun and Gunduz- Brain Mapping Laboratory
Okun, Hess, Almeida- Fellows Research Hour

• Develop closed loop responsive neurostimulation for Tourette, PD Freezing, Essential Tremor (NIH R01, UH3, Michael J Fox)

• Develop new technologies for remote management of deep brain stimulation (NIH R01)

• DBS Physiology, pulse patterns, imaging, clinical outcome studies

• Meet Wed 7-8AM Chair’s conference room

• Meet Tues 715-8AM 34th Street Clinic (Lab)
Rab8a expression mitigates alpha-synuclein toxicity in a rat model of Parkinsonism
Nikolaus R. McFarland MD, PhD*, Mayur Parmar PhD, Hyo-Jin Park PhD, Lyndsey Powell, Rachael Foels, Sophia Anagnostis, Mandy Herring
Center for Translational Research in Neurodegenerative Disease, Department of Neurology, University of Florida, Gainesville, FL 32610

Hypothesis: targeted viral expression of Rab8A will reduce formation of “toxic” αSyn oligomeric species, aggregates, and nigrostriatal dopamine toxicity

Viral expression of Rab8a in vivo did not appear to reduce αSyn-induced nigrostriatal toxicity.

Similarly, nigrostriatal TH-positive terminal density was not affected.

AAV-Rab8a, however, significantly reduced nigral αSyn in midbrain and partially rescue TH expression in striatum, and correlated with increase in striatal dopamine (DA) content.

Partial toxicity from Rab8a expression may have reduced “neuroprotection” in this model system. Variability in injections and low N limit the power of these observations.
McFarland lab

PSP/Atypical Parkinsonism Clinical-Research Initiative

- dMRI (Dr. Vaillancourt – U01)
- Gait/balance analysis (Dr. Chris Hass), vascular disease in PD

Mood disorders in Atypical PD

- Depressive symptoms prevalent
- Apathy
- Anxiety
- Brain circuitry, Tx?

PD/APD Biomarkers

- Cognitive subtypes (Dr. Price)
- Immunophenotyping (Dr. Brusko)
- UTI/infection in PD

Jacobsen et al, 2017
Current Projects

• High Density EEG to study the cortical oscillations associated with head turning in cervical dystonia and healthy controls
• NPF Apprise Clinical Trial (wearable sensors in PD)
• Saliva/serum collection for Immunophenotyping/LRRK2 related PD
• Tremor and myoclonus physiologic analyses

Possible Resident Projects

• Movement disorders case reports
• CMDNR INFORM database retrospective studies
Lewy body dementia research:
• Hospitalization in dementia with Lewy bodies (with A.B., C.S.)
• Qualitative interviews of patients with DLB and caregivers about clinic, research priorities (with A.M.)
• Mixed methods study regarding end-of-life experiences for families of patients who died from DLB (analysis/manuscript in process)
• Patterns of care for DLB in Florida (OneFlorida, AAN CTRS submission with B.P.)
• Identifying current patient marijuana/CBD patterns of use in the MDC (survey, with B.P.)
• Retrospective review of antipsychotic and pimavanserin practices in the MDC

Research on patient engagement, quality care
• Studying impact of patient, caregiver, advocate involvement on AAN guidelines (AHRQ K08)
• Understanding values impacting diverse older adults’ medical decision making (ARHQ R03 under review)
• Understanding values impacting Latino and white non-Hispanic decision-making in persons with and without MCI (1Florida ADRC submission in process, with A.M.)
• Evaluating current practices for AVS use and patient instructions in the neurology clinic
• Designing study about barriers, facilitators to PD quality measure implementation
MOVENT DISORDERS - IRENE MALATY

- **Parkinson Disease**
  - Parkinson Outcomes Project - Large international collaboration collecting treatment and outcomes data from thousands of patients
    - Goal is to determine which modifiable variables influence best care
    - Subprojects can be done requesting this data which has been collected internationally, or initiating a local subproject among patients enrolled
  - In evolution - Plans for a project in PD psychosis

- **Tourette Syndrome**
  - Handwriting project - Dysgraphia in TS - 3 center collaboration
  - Adults with Tourette syndrome and persistence of co-morbidities
  - Factors associated with persistent tics in adulthood

- **Botulinum toxin**
  - Potential: Describe treatment response in sialorrhea patients treated with botulinum toxin

- **Miscellaneous**
  - Multiple Case report opportunities
  - **Industry sponsored trials:**
    - **Pfizer A-Rose** - The Efficacy, Safety and Tolerability of PF-06649751 in Subjects with Motor Fluctuations.
    - Abbvie Post-market follow-up for Duopa therapy
    - Lundbeck - RESTORE: A Clinical Study of Patients With Symptomatic Neurogenic Orthostatic Hypotension to Assess Sustained Effects of Droxidopa Therapy.
    - Dystonia Coalition - Multi-center project collecting video, clinical assessments, & blood samples of patients with dystonia to compile a natural history & biorepository database
Movement Disorder Research interest/current projects

Dr. Ramirez

- Effect of Zona incerta DBS on head tremor in essential tremor
- Effect of Globus Pallidus interna DBS on non-motor symptoms and gait in Parkinson's disease
- Long term outcomes of DBS for treatment of movement disorders utilizing the INFORM database
- Effect of Iron chelation in animal model of Parkinson's disease
- Clinical research in movement disorders (Principal investigator and sub-investigator in NIH and industry sponsored trials)
• Novel stimulation patterns in deep brain stimulation for movement disorders
  – Aiming to investigate safety, tolerability, and potential clinical benefits of novel stimulation patterns in DBS

• Use of diffusion tensor imaging (DTI) for targeting in movement disorders DBS surgery
  – Aiming to evaluate the segmentation of each used target and evaluate outcomes based on target-cortex connections

• Closed-loop DBS research
  – Various projects

• DBS and non-DBS movement disorders research
  – Various projects
Addie Patterson

• Movement disorders case reports/case series
• Medical education projects
  • Example: Impact of (soon to be) implemented ward teaching elective on
    • student interest in neurology
    • satisfaction with clerkship
    • performance on rotation
Wissam Deeb

• Clinical research focused on Tourette syndrome
  • Testing whether wearable technology can reliably detect tics – developing a tic detector – ongoing
  • Using wearable technology to track response to treatment – future
  • Evaluating neuropsychiatric symptoms in Tourette (in collaboration with the psychiatry department) – just started

• Clinical research in cervical dystonia
  • Using TMS and EMG to determine physiologic changes correlated with botulinum toxin injections – ongoing
General/TBI
TRUAMA, CONCUSSION & SPORTS NEUROMEDICINE (TRACS) PROGRAM

MCKNIGHT BRAIN INSTITUTE
UNIVERSITY OF FLORIDA

- Inter-Disciplinary Care
- Innovative Research
- Engaging Outreach and Education
- State-Of-The-Art Technology

Science, Practice and Collaboration for Recovery

UFHealth
UNIVERSITY OF FLORIDA HEALTH

neurology.ufl.edu/TRACS
Resident Research Opportunities

• Multi-D Clinic Concussion Database Initiatives

• Shands Rehab
  • Evaluate Sleep and Outcome Effect Outcomes

• GaitRite Evaluation
  • Dual Task Comparisons

• Use of Helmet Sensors
Post Traumatic Headaches

• **Objective:**
  - Define patient population who would benefit best from specific bridge therapy
  - Determine ways to better match patients to bridge therapy

• **Data collection**
  - Database from the TBI clinic and Headache Clinic
    - Past headache hx, Concussion hx, Co-morbidities, Medications, Severity of Injury
    - Exam findings: occipital tenderness, cervicalgia, vestibular findings, oculomotor findings

• **Faculty**
  - Michael Jaffee, MD
  - Bernadette Nazario, MD
General neurology: Pseudotumor cerebri
Dr. Shuhaiber, Dr. Orlova

Know your patient:
Demographic, clinical features, BMI, clinical diagnosis, medications, etc.

Intracranial elastance in IIH – comparison of LP under fluoroscopic guidance at bed side

Case presentation: AAN, American Headache Society

“Empty sella”: what are the clinical correlates?

Your project is here
Neurocutaneous Syndrome Program (Multidisciplinary Program)

Neurocutaneous Program is clinical program to create a database for the Neurogenetic Syndromes of: Neurofibromatosis Type 1 and Type 2, Tuberous Sclerosis and Sturge Weber Syndrome. So far (few of each patients)

**NF-1:**
- Using UF RedCap to insert data
- Following patient diagnosed in Childhood
- Molecular genetic testing if not being diagnosed
- Following them with surveillance imaging for plexiform neurofibroma (B/C/T/L—spine)
- Risk for nerve sheath tumors (Collaboration with peripheral nerve program with Neurosurgery)
- EEG and Epilepsy evaluation and EMG/NCS studies (Looking at NCS changes in NF-1)
- Eye evaluation: Optic Glioma and Lisch nodules
- Moya Moya and increased risk for strokes. (MRA/MRI vascular imaging)
- Vitamin D status and secondary hyperPTH (sun exposure worsen Neurofibroma and expose to Vitamin D def)
- Bone scan DEXA scan
- Neuropsych evaluation: ? Lots of patients have cognitive imp/intellectual issues
- Adult onset Hypertension (follow them for Refractory HTN)

Welcome Resident Physician participation.

Hans Shuhaiber Tel 312 286 1059 hans.shuhaiber@neurology.ufl.edu
Stroke and Neurocritical Care
Anna Khanna, MD
Vascular Neurology Research

- Interests:
  - Proposal to Portola for using a novel oral anticoagulant Betrixaban in preventing stroke in patients with heart failure and EF <35%
  - TCD in autoregulation, prediction of elevated ICP in Intracranial Hemorrhage, and in the diagnosis of acute large vessel occlusion
  - Resident Projects: Dr. Stone-tPA administration and outcomes in those with other comorbidities, a retrospective review

- Collaborations:
  - Laryngeal adaptation for speech and swallowing
  - Disparities in Transitions of Care in Stroke

- Clinical Trials as PI:
  - CREST 2, CREST H
  - Mariss
  - MyRIAD
  - POINT
Adam Kelly, MD

• Who? Incoming Chief, Stroke division

• Research interests:
  • Variation in life-sustaining interventions after stroke. Some hospitals never place feeding tubes or write new DNR orders after stroke, others do it in 25-30% of patients. Why is there such a range?
  • Can decision aids or other instruments be utilized to improve these and other stroke-related decisions?
  • Are there other practices (inter-hospital transfers, carotid revascularizations) that are subject to excess variation, and lead to decreased healthcare quality/value?
Christina Wilson, MD PhD

• Stroke projects
  • Factors influencing patient delay in presentation
  • Low NIHSS on presentation – predictors of worsening
  • Predictors of post-stroke dysphagia/PEG
  • Stroke in patients with HIV/AIDS
  • Transcranial Doppler
    • Longitudinal vessel monitoring post-tPA
    • Embolic detection in Afib
  • Use of CTP in non-stroke alert patients (neuroradiology)
  • Factors predicting cancelled stroke alerts

• Medical education projects
  • Burnout in Neurology residents
  • Teaching professionalism
  • IPASS-like system for verbal feedback
1. Microbleeds and Hemorrhagic Transformation
2. FLAIR changes in acute stroke
3. Perfusion deficits in lacunar stroke and outcome
4. Hyperintense vessel sign and correlation with CTA/P
5. Stroke in young adults
6. Evaluate non reversible core infarct with higher order diffusion imaging – EPICS study
Alexis Simpkins, MD, PhD. 
Assistant Professor of Neurology 
Neurovascular Division

1. Blood biomarkers in acute ischemic stroke: 
   - mRNA and miRNA analysis 
   - Pathway Analysis

2. MRI biomarkers in acute stroke

3. Blood brain barrier assessment in acute stroke

Identification of Reversible Disruption of the Human Blood–Brain Barrier Following Acute Ischemia

Alessio N. Simpkins, MD, PhD; Christian Dias, BS; Richard Leigh, MD; on behalf of the National Institute of Health National Library of Stroke Investigators

Background and Purpose—Animal models of acute cerebral ischemia have demonstrated that diffuse blood–brain barrier (BBB) disruption can be reversible after early reperfusion. However, irreversible, focal BBB disruption is human is associated with hemorrhagic transformation in patients receiving intravenous thrombolytic therapy. The goal of this study was to use a magnetic resonance imaging biomarker of BBB permeability to differentiate these two forms of BBB disruption.

Methods—Acute stroke patients imaged with magnetic resonance imaging before, 2-hours after, and 24-hours after treatment with intravenous tissue-type plasminogen activator were included. The average BBB permeability of the acute ischemic region before and 2-hours after treatment was calculated using a T2* gradient-echo weighted source images. Change in average permeability was compared with patient reperfusion using linear regression. Focal regions of maximal BBB permeability from the peritumoral magnetic resonance imaging were compared with the occurrence of parenchymal hemorrhage (PH) formation on the 24-hour magnetic resonance imaging scan using logistic regression.

Results—Signals indicating reversible BBB permeability were detected in 16/20 patients. Change in average BBB permeability correlated inversely with patient reperfusion (P=0.006), indicating that early reperfusion is associated with decreased BBB permeability, whereas persistent ischemia is associated with increased BBB disruption. Focal regions of maximal BBB permeability were significantly associated with subsequent formation of PH (P=0.01).

Conclusions—This study demonstrates that diffuse, mild BBB disruption with acute ischemia human brain is reversible with reperfusion. This study also confirms prior findings that focal severe BBB disruption confers an increased risk of hemorrhagic transformation in patients treated with intravenous tissue-type plasminogen activator (Stokes, 2010; 27:2005-2009. DOI: 10.1161/STROKEAHA.110.613805.)

Key Words: acute stroke | blood–brain barrier | hemorrhagic transformation | magnetic resonance imaging | permeability imaging
Stroke Projects

• The Influence of Social Networks in Stroke Health Disparities

• Retrospective Review of Stroke Rehabilitation Therapies

Neurocritical Care Projects

• Use of Ketamine in Acute Stroke Management

• Modified Early Warning Score (MEWS) Use in the Neuro-ICU

• Rothman Index (RI) Score Use in the Neuro-ICU
Neurocritical Care

• Saving the Survivors of Cardiac Arrest
  • Improving neuroprognostication: exciting prospective international multicenter observational trial (clinicaltrials.gov NCT03261089) aiming at developing a multimodal prognostic algorithm
  • Enhancing knowledge re cardiac arrest survivors: retrospective database UF & Yale – lots of clinically impactful scientific questions to be answered

• Keep Parkinson’s Disease Patients Safe
  • QI initiative to optimize hospital management of PD patients regardless of reason for admission.

• Sleep Patterns and Their Impact on Acute Brain Injury Outcomes
  • Multi-institutional and multi-departmental effort in exploring the association of quantitative and qualitative sleep characteristics and functional recovery in various acute brain injuries (SAH).
• Evaluation of the Applicability of Alert Scores in the Neurocritical Care Unit
  • **MEWS Score:** How predictive of sepsis in the neurocritically ill population?
  • **Alternatives:** Rothman index. Can they perform better?

• Emergency Neurologic Life Support Education
  • **Instrument tool:** What is the educational impact in knowledge during training?
  • **Simulation:** Can the learning experience be enhanced by educational tools?

• Neuro-Urology
  • Urinary retention: who develops retention, and why?
Epilepsy and Sleep
Kalamangalam/Epilepsy

**Short term projects (3-6 months, resident driven)**

- Medication withdrawal in EMU – questionnaire survey
- Seizures in the EMU – questionnaire/telephone survey + chart review
- Medication responsiveness in the epilepsies – retrospective chart review

**Longer term projects (under supervision/as part of team)**

- New MR-based imaging methods for epilepsy: several subprojects, technically demanding but may be appropriate for the right person
- Electrocorticography, seizures, cognition, data visualization: Many avenues, also technically demanding (joint effort with Okun/Gunduz lab), short project possible
- EEG-fMRI (new venture): challenges unknown, really long term
- Video-EEG anonymization (new venture): technical, but promise of quick(ish) returns
Epilepsy/ Cibula

• ACTIVE:
  • Foundation for Anesthesia Education Research: Simulation Model for EEG Education (PI: Fahy)
  • Precision Ketogenic diet for adults (PI Borum)

• Possibilities:
  • EEG quality studies including skin breakdown, FLESH validation, alternate electrode development, Validation of EP norms
  • Development of a Baby FLESH scale
  • Status epilepticus chart reviews (how often, drugs, outcomes, etc)
  • Epilepsy Surgery chart reviews, database development
  • STAT order to EEG time (Hella)
  • Hypothermia chart analyses (how often, outcomes, etc)
  • EEG reading by nonphysicians- survey of programs
1. **Epilepsy Surgery Database**
   - Database includes seizure type, localization, imaging, neuropsychological data, pathology and outcome

2. **Hippocampal Cell Density**
   - Comparison of cell densities within CA1, CA2, CA3, CA4, and subiculum to seizure type, frequency, duration, imaging, and neuropsychological testing and post-surgical outcome

3. **VA Epilepsy Centers of Excellence Database**

4. **Sleep Neurophysiology in the NeuroICU** (Pis: Maceil/Youn)

5. **Motor Control Deficits Following Transient Ischemic Attack (NIH R21)**

6. **Effect of Armodafinil on Simulated Driving, Electroencephalogram and Cognitive Performance in Sleep Deprived Healthy Subjects (Haliburton Foundation)**

7. **Driving in Obesity (pre- and post-bariatric surgery)**

8. **Driving Questionnaire in VA Cooperative and/or UF Neurology Clinic**

9. **Assessment of Driving Following Sleep Deprivation Associated with Consecutive Night Float**
Projects - Hella

• Predictive value of certain EEG patterns in patients developing seizures post-stroke
  • Ongoing project with Dr. Eisenschenk/Khanna and Kaye
  • AAN abstract submitted

• Quality project: looking at aspects of EEG services at UF Health with aim to improve seizure and status diagnosis and prompt treatment
  • Data set obtained
  • Need to match up with EEG information and additional details
    – Time of EEG order, time EEG completed, time of AED order, time of administration etc.
Projects-Hella

• EEG/Epilepsy education

• Survey of residents regarding various aspects of their education in EEG with the aim of improving
  – Format, timing during residency, content of lectures, organization of the EEG rotation etc.
Epilepsy/Wang

Active:
- Precision Ketogenic diet for adults (PI Dr. Borum)

Possibility:
- Management of status epilepticus, chart review
- Efficacy of ketogenic diet based on long term follow up with repeat EEGs (data from Dr. Borum)
- Neurophysiology fellowship nationwide questionnaire survey
- Optic imaging as an alternative tool for seizure detection
James Wymer, MD, PhD
POTENTIAL PROJECTS FOR RESIDENTS

• Case reports:
  • B-cell lymphoma
  • Check point inhibitors and neuropathy
  • Others
• Epidemiology of ALS in Florida
• Epidemiology of demyelinating neuropathies in Florida
• EMST in IBM
• Autonomic function testing in Neuromuscular disorders.
• Clinical Trials:
  • ALS, CMT, DPN, Ataxia
S. H. Subramony, MD
POTENTIAL PROJECTS FOR RESIDENTS

- Gut microbiome and GI dysfunction in myotonic dystrophy
- Contractile properties of muscles in myotonic dystrophy
- Proprioceptive deficits in myotonic dystrophy and Friedreich ataxia
- Cognitive deficits in myotonic dystrophy
- New genes for spinocerebellar ataxias
- Potential projects
  - Community based screening for neuropathy and impact on balance
  - Electrophysiological approach to acute focal or generalized weakness in in-hospital setting (review paper)
Miguel Chuquillin, MD

POTENTIAL PROJECTS FOR RESIDENTS

- Case reports:
  - POEMS- neurofascin
  - DOK7 CMS
  - Tongue cancer bulbar ALS
  - Others
- Case series myotonic dystrophy type 1 and 2
- Autonomic testing myotonic dystrophy
- Mucopolysaccharidosis AAV gene therapy follow up (Dr. Heldermon)
- Autonomic function testing in lung transplant patients
- Education:
  - Student grades:
    - Pre and post-New innovations;
    - Attending vs Resident grading
    - Correlation between score and NBME exam
Swallowing and respiratory dysfunction and their response to nusinersen, in adults with spinal muscular atrophy

Scott A. Heller, MD / James P. Wymer, MD, PhD / Emily K. Plowman, Ph.D., CCC-SLP

- Swallowing and respiratory dysfunction are common manifestations of spinal muscular atrophy (SMA), but are not typically studied in controlled trials, and therefore, we lack well-defined biomarkers to monitor these problems in patients with SMA.

- Nusinersen, an intrathecal antisense oligonucleotide drug, has been FDA-approved for the treatment of both children and adults with SMA, however clinical trials investigating this drug have been done exclusively in children and adolescents.

- We are looking to explore two insufficiently studied areas in this patient population by monitoring bulbar and respiratory function in adults with SMA utilizing a collection of well-defined measures of swallowing, breathing, and cough function, and then evaluating the impact that Nusinersen has on these parameters in adult patients.
Nivedita Jerath MD, MS
Resident Research Projects (A few of the many research projects)

- Hand function testing in patients with Charcot Marie Tooth Disease 1A
- Evaluation of dorsal root ganglion stimulation in neuropathic pain
- A review of ankle foot orthotics in patients with acquired and hereditary peripheral neuropathy
POTENTIAL PROJECTS FOR RESIDENTS

- Clinical Correlation of EMG in CIDP
  - Evaluation of serial neurophysiological studies in CIDP
  - Do electrophysiological measures of demyelination parallel clinical course?
- Evaluation of EMG in radicular limb pain
  - Does EMG evidence of radiculopathy alter management?
Multiple Sclerosis and Neuroimmunology

- Patient Reported Outcomes (PROs) Project
  - SF-36
  - PDDS
  - MSQLI
  - NEURO-QOL
  - NIH PROMISE Sexual Function Instrument
  - GLTEQ
  - Employability
  - HADS
  - MFIS
  - BICAMS
- Biobank Project
- Fatigue in MS Patients Receiving Ocrelizumab Project
- NARCOMS database (NMSS)
- Quality Improvement opportunities:
- Clinical Trials
Ashley Ghiaseddin, MD

- One Florida: Statewide repository of health-care data
  - Partners provide 74% of care to the state
- Conduct observational studies that uses aggregate and de-identified patient level data
- Current studies
  - Real world survival data in Glioblastoma patients
  - Assessing Patient Safety Indicators and Health Acquired Conditions in patients undergoing tumor resection/biopsy
- Future studies
  - Real world use of palliative care/hospice in brain tumor patients
  - Real world co-morbidities in brain tumor patients

If interested, please contact ashley.ghiaseddin@neurosurgery.ufl.edu
Behavioral: Possible Resident Research Projects

1) Stroke and Dementia: Development of standardized apraxia test.
2) Stroke and Aphasia: Comprehension with eyes open versus closed.
3) Stroke and spatial attentional distractibility.
4) Limb-Kinetic Praxis: Coin rotation and aging and handedness.
5) Myotonic Dystrophy and impaired comprehension of facial emotions?
6) Attentional Bias: Influence of color on line bisection.
7) Alzheimer’s Disease: Proximal attention bias?
8) Alzheimer’s Disease: Rapid Troxler Fading
9) Handedness: Right hand with a proximal and altitudinal bias?
10) Stroke: Standardization of Florida Cognitive Assessment (FLACA)
Steven T. DeKosky, MD  

Research Areas

• Alzheimer’s Disease and Aging
  • Early detection of cognitive decline
  • Neuroimaging in MCI and dementia
  • Transcranial electrical stimulation and cognition
  • Intermittent hypoxia as a priming stimulus for regenerative responses
    • Study in normal aging and early Alzheimer’s Disease

• Traumatic Brain Injury (TBI) & Chronic Traumatic Encephalopathy (CTE)
  • Free water on MRI as a biomarker for CTE
  • CTE imaging on MRI and amyloid/tau imaging on PET
  • Longitudinal study of people at risk for CTE
Brain and heart, sleep, memory, emotion, mood
MCI/AD, TBI, PTSD, Heart Failure
Williamson lab
BRRC, Center for Cognitive Aging and Memory

- Heart failure, autonomic function and brain health
- CRT\(^{\uparrow}\) Cardiac Output
- Does this improve cognition and brain health, and how?
- Pilot data: CO associated with cognitive performance and task dependent dorsolateral prefrontal cortex activity
- baseline, 3 months, 6 months
- Multimodal/multisystem
  - Heart (echo)
  - brain (ASL, TCD, MRS, fMRI, DTI)
  - Cognition
- Status: active enrollment (target n = 30)
- Multi-site: UF/ Mayo
- Funding: NHLBI, R56, Siemens

- Neuromodulation projects
  - tVNS modifies sleep architecture?
    - Pilot data: basic, increases slow wave sleep power, increases RSA
    - Target: sleep disruption in PTSD
    - Status: active enrollment (target n = 20)
    - Funding: VA BRRC
  - tVNS modifies cognition in MCI?
    - Pilot data: DARPA TNT, tVNS enhances episodic memory, healthy; VNS delays AD progression (small pilot)
    - Target: enhance exec function and memory in amnestic MCI
    - Status: active enrollment (target n = 60)
    - Funding: NIH, NIA R21

Interdisciplinary: neuropsychology, neurology, cardiology, neuroscience, biomedical engineering, statistics, psychophysiology
Modeling Alzheimer's disease in Drosophila

Diego Rincon-Limas, PhD. - Neurology Fly Lab

“Vision, olfaction, locomotion behavior, neurodegeneration”

Gene and drug discovery efforts

Aβ42 + Tau

Aβ42 Tau

Memory performance

Control flies

Alzheimer flies

NIH National Institute on Aging

National Institute of Neurological Disorders and Stroke

Florida Department of Health

Howard Hughes Medical Institute
Ribosomal Profiling in Neurodegeneration
-Karen McFarland, PhD

• Why examine ribosomes?
  • Translatome
  • Actively translated mRNAs
  • Different picture than transcriptome

• AAV-based expression in Brain Slice Cultures
  • Single construct expression of neurodegenerative protein with GFP-tagged ribosomal protein Rpl10a
    • aSyn WT & mutants
    • Tau WT & mutants
    • YFG...
  • Long-lasting expression in culture
  • Cell-type specific expression (CBA, neurons, astrocytes, microglia, oligodendrocytes)

• TRAP-Seq at various timepoints
  • Differentially translated transcripts
  • Compare against RNA-Seq data (transcriptome)

• Golde lab (CTRND) and Berglund lab (CNG)
Pathophysiology and Experimental Therapeutics of Neurological Disorders

- Mouse/Worm Genetics and Neuroscience Lab
- Focus on Neurobiology of Disease and Pathophysiology, we also work on Preclinical Drug Discovery.
- We study a variety of brain regions: striatum, cerebellum, hippocampus, cerebral cortex, amygdala, and spinal cord.
- Mouse Models of Neurological Disorders: Dystonia, Restless Legs Syndrome, ALS, Epilepsy, Myoclonus, Parkinson’s Disease, and Alzheimer’s Disease
- Depending on student’s interests and experience, project will be in one of the following using the above mouse models: mouse genetic studies, electrophysiological recording, anatomical studies, biochemical studies, or behavioral studies.
- Contact information: Yuqing Li, PhD, Professor of Neurology and Neuroscience, Division of Movement Disorders, Department of Neurology, College of Medicine yuqingli@ufl.edu, phone: 273-6546, ARB R4-120A