

microstructural changes in brainstem auditory pathway regions among children with SNHL. Longitudinal studies are warranted to assess the predictive value of DTI imaging for long-term outcomes and prognosticating intervention.

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### **A Preliminary Study on the Pharmacodynamics of Oral Cannabis Ingestion in Older Adults**

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**OBJECTIVES/GOALS:** Our study explores the dose-related effects of THC on cardiovascular measures, self-reported effects, balance, and cognitive function among older adults. We also evaluate the acceptability and feasibility of study procedures, to inform future study designs employing this population. **METHODS/STUDY POPULATION:** Using a within-subject, double-blind, placebo-controlled design and standard behavioral pharmacology methods, reasonably healthy male and female adults aged 55-70 years undergo an eligibility screening, followed by a mock session and 3 experimental sessions (>7 days apart). During experimental sessions, participants are administered cannabis-infused brownies with varying THC doses. Prior to and at multiple intervals post-consumption, subjects complete assessments including self reports and observer ratings, psychomotor and cognitive performance measures, and vital signs. Follow-up interviews regarding the experience will be conducted one day after each session. **RESULTS/ANTICIPATED RESULTS:** We anticipate our results to mirror those of previously reported studies conducted in adults under 45 years old in that a dose-response relationship exists for subjective drug effects and vital signs with the caveat that this relationship may be exacerbated in our population. We additionally anticipate findings that indicate THC impairs balance and coordination, potentially increasing the risk of falls and accidents among this population, and cognitive function, affecting attention, memory, and executive functions. Feedback provided during the follow-up interviews will help refine procedures for future studies, ensuring that the methodology is acceptable and feasible for this population. **DISCUSSION/SIGNIFICANCE:** Prior work demonstrates the safety and efficacy of THC in conditions common among older adults, however, no conclusive data regarding tolerability and safety in this population exists. The presented work is vital groundwork for future research on THC as a potential therapeutic for older adults.

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### **Investigating the Impact of Inflammation on White Matter Tracts using Diffusion Tensor Imaging that may Contribute to Motivational Deficits and Negative Symptoms in Patients with Schizophrenia**

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**OBJECTIVES/GOALS:** Previous research has linked inflammation to changes in brain reward circuitry and subsequent negative symptoms in patients with schizophrenia. This project aims to understand brain-immune interactions using diffusion tensor imaging (DTI) to investigate the impact of inflammatory markers on white matter (WM) tracts. **METHODS/STUDY POPULATION:** Patients with

schizophrenia, ages 18 to 45, were recruited at Grady Hospital in Atlanta, GA. All subjects were stable outpatients and underwent extensive medical screening to rule out medical causes of acute inflammation. DTI data was collected from 39 participants on a 3-Tesla Siemens scanner. Blood was collected between 9-11AM for later assay of serum inflammatory markers. Negative symptoms were assessed using the Brief Negative Symptom Scale (BNSS). A diffusion tensor imaging model will be fitted with the data to generate well-known diffusion tensor measures (fractional anisotropy and mean diffusivity). Linear regression will be used to analyze the relationship between DTI measures and inflammation (C-Reactive Protein, CRP), controlling for possible confounders. **RESULTS/ANTICIPATED RESULTS:** The hypothesis of this proposal is that decreased microstructural integrity in WM tracts between the nucleus accumbens (NAc) and insula will be associated with increased inflammation, which in turn are associated with increased negative symptoms. Negative symptoms include deficits in motivation/pleasure as well as diminished expressivity, and are strongly associated with poor functional outcomes. Based on previous data from this sample demonstrating relationships between CRP and negative symptoms as well as CRP and fMRI functional connectivity between the NAc and insula, we anticipate results that demonstrate similar relationships with WM microstructural integrity, such as functional anisotropy and mean diffusivity. **DISCUSSION/SIGNIFICANCE:** Given the lack of treatment options for negative symptoms, this research will provide key data to further our understanding of the potential role of inflammation on neural circuits that underlie these symptoms, including WM integrity. This research also has the potential to inform future anti-inflammatory therapies for patients with schizophrenia.

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### **Quantification of serum neurofilament light chain (NfL) in cubital tunnel**

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**OBJECTIVES/GOALS:** The long-term goal of our lab is to develop clinical and intra-operative methods to aid in assessment of compressive and traumatic peripheral neuropathies. The overall objective of this project is to identify the potential of serum neurofilament light chain as a diagnostic biomarker for nerve injury. **METHODS/STUDY POPULATION:** The objective of this prospective study is to obtain data on serum NfL levels in patients with cubital tunnel syndrome and traumatic nerve injuries. Serum NfL from patients with cubital tunnel and traumatic nerve injuries will be compared to serum NfL of asymptomatic, sex and aged matched controls. Pre-operative and post-operative serum levels will be measured and compared to patient's pre-operative physical exam findings, motor and sensory function testing, electrodiagnostic studies, ultrasound, presence of intraneural vascularity, and post-operative patient reported outcome measures for cubital tunnel patients. For patients with traumatic nerve injury, acute phase and a subsequent serum NfL measurement will be used to assess temporal changes in NfL. **RESULTS/ANTICIPATED RESULTS:** The central hypothesis of this study is that symptomatic compression of the ulnar nerve or traumatic injury to the brachial plexus leading to axonotmesis will result in measurable increases in serum NfL proportional to the degree of nerve injury. This hypothesis has been formulated based on clinical experience and published studies demonstrating increased expression of serum NfL levels with axonal injury secondary to varying