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“The Use of Imaging to Follow Astrocyte Responses to Pro-Homeostatic Elovonoids”

Parkinson’s disease (PD) is the fourth most common neurological disorder. Individuals with this disease experience tremors, bradykinesia, rigidity, and instability. Although the disease is characterized by dopaminergic cell death, there are many aspects to consider. Of them, we considered the role of astrocytes. Inflammation, damage, and dysfunction of astrocytes is associated with many brain diseases, and we believe it plays a major role in PD as well.

Elovonoids (ELVs) were discovered by the N. Bazan laboratory in 2017 and have numerous effects that result in improved cell-survival. Described their bioactivity includes: a) pro-homeostatic regulation, b) modulation of senescence gene programming, including Senescence-Associated Secretory Phenotype (SASP) secretome release, c) attenuation of a form of inflammation called inflammaging, and d) targeting of key protective events in the extracellular matrix between photoreceptors and the retinal pigment epithelial cells. Senescent cells secrete inflammatory cytokines and lead to cell death. Inflammaging is a chronic inflammation that comes with age that is thought to be a catalyst for age-related diseases such as Parkinson’s. By taking advantage of ELVs we hoped to reduce cell death and slow the advance of PD.

Utilizing the imaging software Imaris, we looked at the effects of ELVs on rat astrocytes in which ferroptosis had been induced via erastin. With imaging we are evaluating the possibility that morphological protection of astrocytes may occur when exposed to pathological conditions and treated with ELVs.