



## Seattle Institute for Biomedical and Clinical Research

July - September 2022

### Spotlight Feature

#### ERIK S. CARLSON, MD, PhD



**Erik S. Carlson, MD, PhD**, is a Clinician-Investigator at VA Puget Sound Health Care System, where he has worked since 2018 in the Geriatric Research, Education and Clinical Center and an Assistant Professor of Psychiatry and Behavioral Sciences at the University of Washington. His research focuses on circuit-behavior relationships of non-motor functions of the cerebellum in mice, and on the role of the cerebellum in neurodegenerative diseases affecting cognitive function, such as Alzheimer's Disease. During residency training in the UW Department of Psychiatry and Behavioral Sciences, Dr. Carlson worked as a post-doc in the laboratory of Larry Zweifel, PhD, where he learned advanced viral and molecular methods for interrogating circuits in the mouse brain with optogenetics, chemogenetics, and in vivo recording methods. In addition, he sees patients with cognitive impairment in the GRECC memory disorders clinic.

Dr. Carlson started his laboratory at VA Puget Sound in 2019 and is leading several ongoing research projects. The Carlson lab's primary goal is to understand cerebellar circuits as they relate to psychiatric and neurodegenerative illnesses and utilize this knowledge to inform and improve current and novel psychiatric illnesses, primarily in cognitive and emotional domains. His R01 project is aimed at mapping and elucidating the function of catecholaminergic inputs and neurons in the dentate nucleus of the cerebellum in mice. Manipulations of these circuits in the Carlson lab have revealed the necessity and sufficiency of several cerebellar cell types for cognitive function, including a striking finding that selective inhibition of excitatory output neurons in the dentate nucleus with inhibitory designer receptor exclusively activated by designer drugs (DREADDs) led to facilitation of learning on a working memory task. This same task was impaired when catecholamine inputs to this region were deleted. The other projects in the lab relate to investigations of specific behavioral and circuit interventions designed to engage cognitive cerebellar circuits in mouse models of TBI, amyloidopathy, and tauopathy which result in rescue of normal cognitive functions. His lab also has a project investigating morphological and functional changes in the human cerebellum in healthy agers, patients with mild cognitive impairment, and patients with dementia.

For fun in the summer, Dr. Carlson loves hiking the Cascades, Olympics, and canoeing the Boundary Waters in Minnesota. He's also an intermediate level snowboarder at Steven's Pass (and Whistler when possible), and avid ice skater. He's been learning how to golf, and rekindling painting as a hobby.

#### ANNUAL MEMBERS' MEETING AND NEW MEMBERS

**SIBCR Annual Members' Meeting:** SIBCR had a good turnout for the Annual Members' Meeting held on June 16th with presentations by Drs. Laura Feemster, Nicole Liachko and Rebecca Hull-Meichle. SIBCR's annual report can be found on our [website](#).

**New SIBCR Members:** Welcome Peggy Kim, MD, MS, MBA, and Pandora "Luke" Wander, MD, MS, FACP, and congratulations on your most recent federal awards!