



Research Updates OSU

Em Harrington, MD, PhD



Clinical research

- Neuroscience Research Institute Brain Bank & Biorepository (NRI-BBB)
- Aging biomarkers in MS
- Clinical trials



NRI-BBB

Neuroscience Research Institute

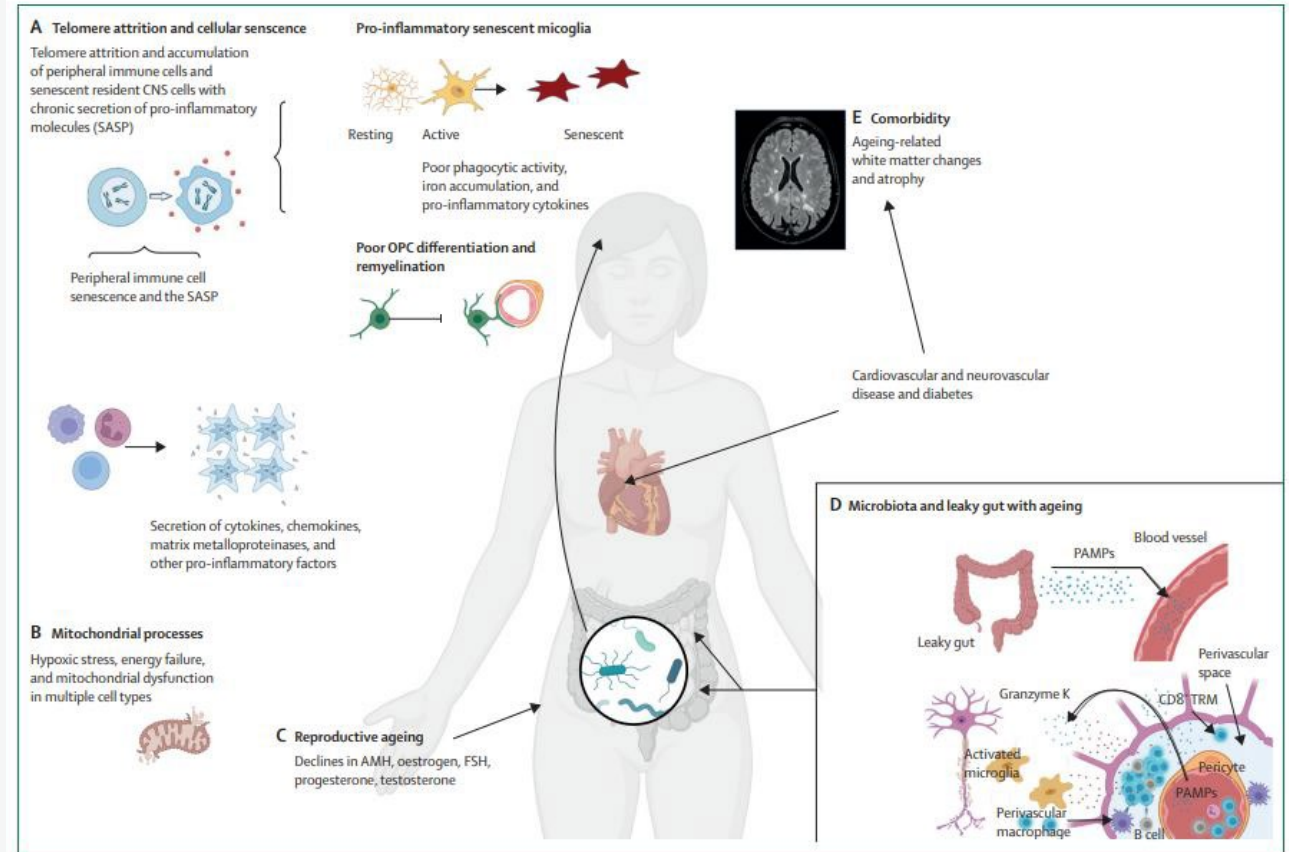
Advancing the Treatment of Neurological Disease and Injury
Outcomes through Innovative Research and Educational Initiatives

- We collect blood and spinal fluid that are drawn as part of routine care for MS biospecimen research studies
- If you are getting a blood drawn or spinal tap and would like to donate let your provider know
- For more information- <https://wexnermedical.osu.edu/neurological-institute/neuroscience-research-institute#brainbank>



Aging biomarkers in MS study- Dr. Yinan Zhang

- Dr. Zhang is looking at biological aging in MS and how this impacts MS
- In order to participate you will need to donate a research blood sample and undergo cognitive testing
- For more information email MSResearch@osumc.edu



Graves et al. Ageing and multiple sclerosis Lancet 2023



Clinical trials

- CALLIPER
- GEMINI 1
- PERSEUS

➤ If interested in being screened for enrollment contact our clinical trial coordinators:

Kasturi Ganesh Barki, 614-293-6123, kasturi.ganesh@osumc.edu

Ryan Dickerson, 614-688-9162, ryan.dickerson@osumc.edu



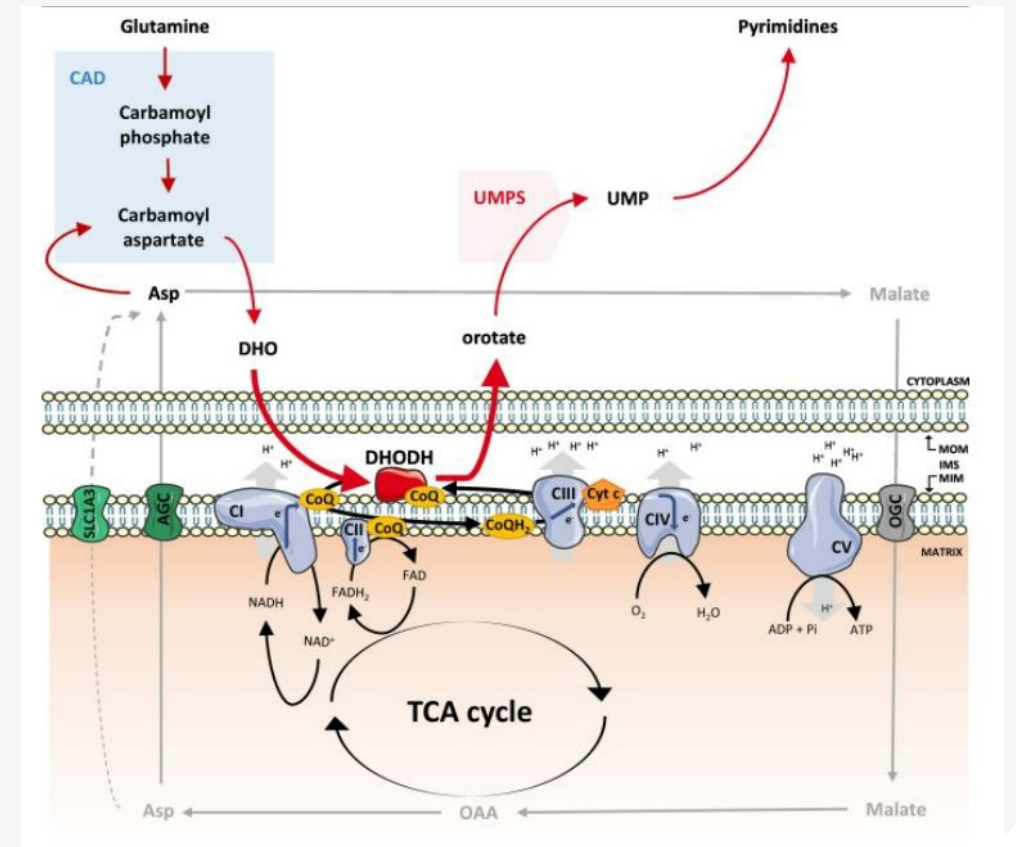
CALLIPER (NCT-05054140)

- Randomized placebo controlled trial of IMU-838 vs. placebo in progressive MS (SPMS and PPMS)
- Oral daily medication
- Assess changes in brain volume and disability progression over 120 weeks
- Criteria to enroll- SPMS or PPMS (PPMS diagnosis within past 10 years), age 18-65, EDSS 3-6.5 (7 wheelchair), disability progression in last 2 years
- 70-100 study locations in North American and Europe



CALLIPER (NCT-05054140)

- IMU-838 vidofludimus calcium, small molecule inhibitor of DHODH dihydroorotate dehydrogenase (same target as teriflunomide/Aubagio)
- DHODH involved in DNA synthesis and energy production in mitochondria, targets immune cells which are metabolically active
- Medications with similar actions have been used in rheumatoid and psoriatic arthritis



Boukalova et al. Dihydroorotate dehydrogenase in oxidative phosphorylation and cancer. BBAMBD 2020

GEMINI 1 (NCT-04410991)

- Randomized placebo controlled trial of Bruton's tyrosine kinase (BTK) inhibitor tolebrutinib vs. teriflunomide (Aubagio) in relapsing MS
- Active, not currently enrolling in US due to elevated liver enzymes
- Oral daily medication
- Assessing new lesions, disability, brain volume and cognitive function, quality of life, plasma neurofilament light chain over 36 months
- Criteria to enroll- RRMS, age 18-55, EDSS<5.5 (6 cane required for 100m)
- Estimated completion August 2023



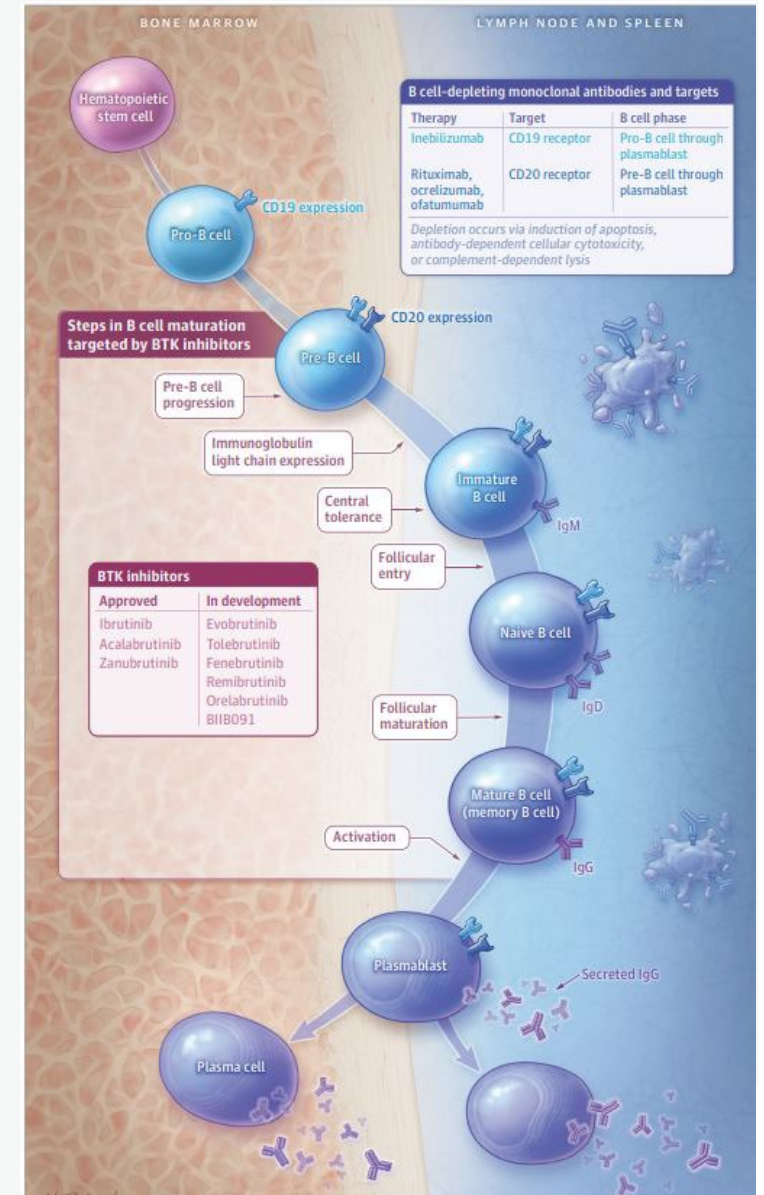
PERSEUS (NCT-04458051)

- Randomized placebo controlled trial of Bruton's tyrosine kinase (BTK) inhibitor tolebrutinib vs. placebo in primary progressive MS
- Active, not currently enrolling in US due to elevated liver enzymes
- Oral daily medication
- Assessing new lesions, disability, brain volume and cognitive function, quality of life, plasma neurofilament light chain over 48 months
- Criteria to enroll- PPMS, age 18-55, EDSS 2-6.5 (7 wheelchair), positive OCB in CSF
- Estimated completion August 2024



BTK Inhibitors

- Bruton's tyrosine kinase- signaling molecule important in B cell development
- BTK inhibitors already approved for some B cell cancers- lymphomas
- Goal in MS is to reduce mature B cells and may have added benefit of targeting myeloid cells and microglia and neuroprotective/pro-regenerative effect



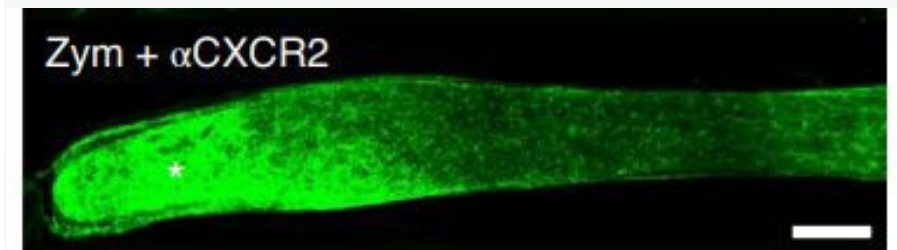
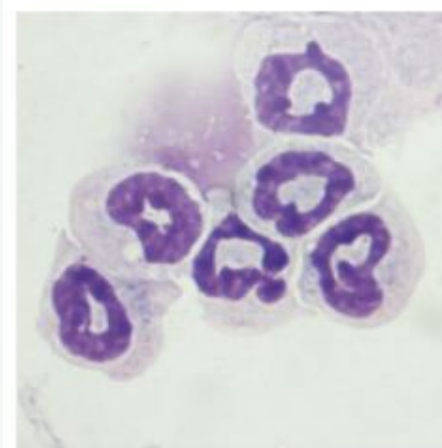
Clinical Research

- If interested in being screened for enrollment in OSU clinical trials contact our trial coordinators:
Kasturi Ganesh Barki, 614-293-6123, kasturi.ganesh@osumc.edu
Ryan Dickerson, 614-688-9162, ryan.dickerson@osumc.edu
- Ask your MS provider about donating biospecimens to NRI-BBB
- Information about research studies available throughout the US on National MS Society website- <https://www.nationalmssociety.org/Research/Participate-in-Research-Studies>



Basic Science Research

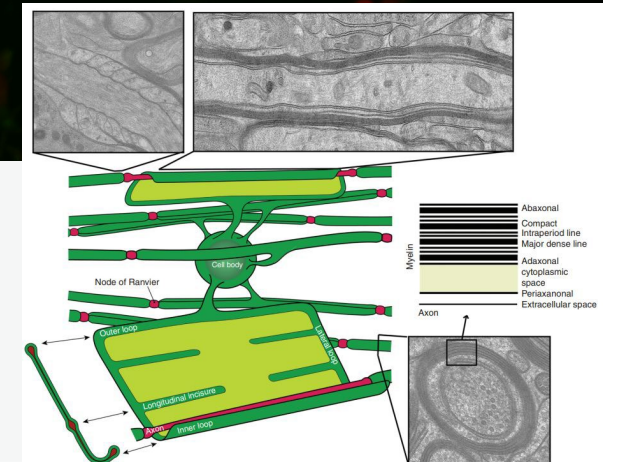
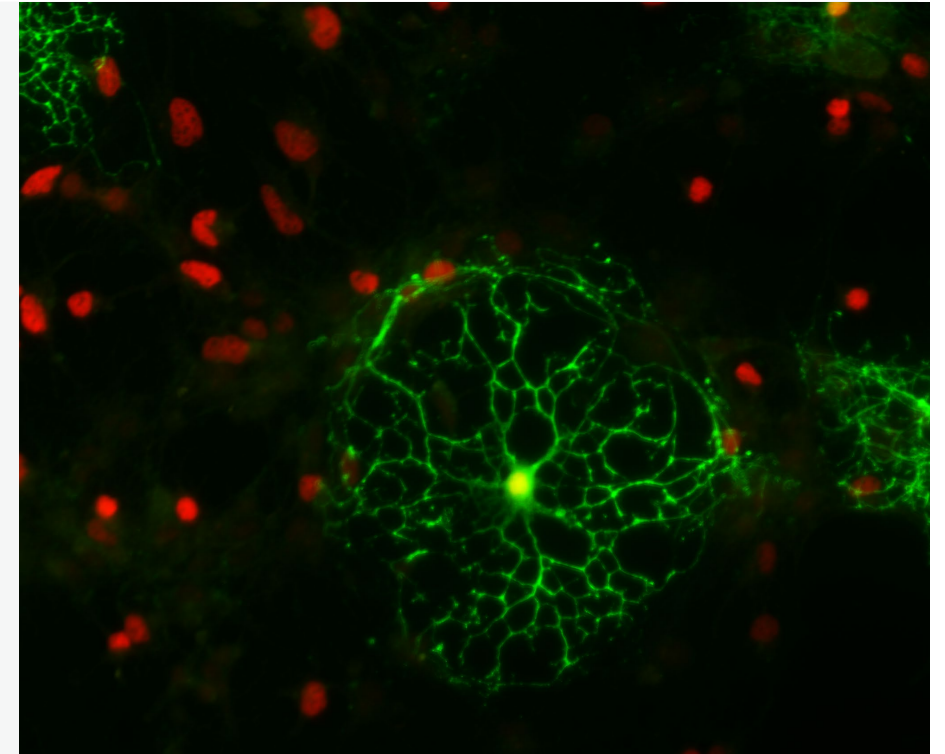
- Segal lab identified pro-regenerative neutrophil capable of inducing regeneration in optic nerve after traumatic injury
- Pro-regenerative neutrophils can be generated from human umbilical cord blood samples
- Can pro-regenerative neutrophils be targeted to promote repair in MS?



Sas et al. A new neutrophil subset promotes CNS neuron survival and axon regeneration. Nature Immunology 2020

Basic Science Research

- Harrington lab is investigating oligodendrocyte responses in inflammatory environment and aging
- Oligodendrocytes make myelin, the insulation of nerves that is attacked in MS
- Oligodendrocytes can behave differently with inflammation and goal is to find ways to promote normal oligodendrocyte function in MS and promote repair



Simons and Nave. Oligodendrocytes: Myelination and Axonal Support. Cold Spring Harb Perspect Biol 2015



Thank you!