



# Research Updates

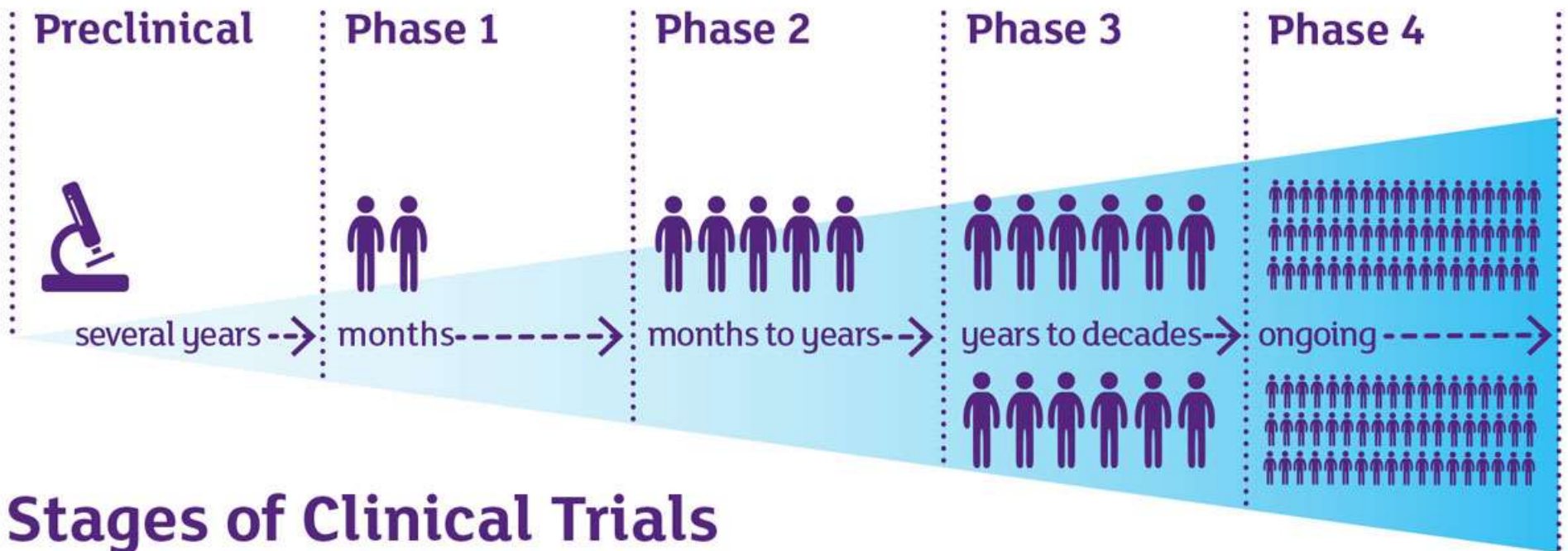
Tirisham Gyang, MD

December 9<sup>th</sup> 2021

# Poll question

# Current research at OSU

- Clinical trials – phase 3
  - RRMS study of BTK inhibitor
  - PPMS study of BTK inhibitor
- Bench and translational research
  - Neuroscience Research Institute Brain Bank & Biorepository (NRI-BBB)
  - Repair pathways in MS
  - Immune response to DMTs
  - Aging and MS
  - Neuromuscular function and MS

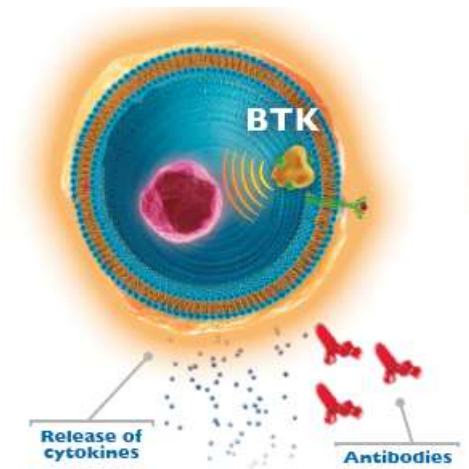


<http://stemcellsaustralia.tac-web04.accsysit.com.au/About-Stem-Cells/What-are-clinical-trials-.aspx>



# BTK inhibitors in RRMS and PPMS

- Bruton's tyrosine kinase (BTK) inhibitor – BTK-i
  - BTK is an enzyme found inside certain immune cells
    - B cells
    - Myeloid cells – macrophage and granulocytes
    - Microglial cells in the central nervous system
  - Blocking BTK may have therapeutic benefits in
    - Certain types of malignancies – leukemia, lymphoma
    - Graft vs host disease – transplant patients
    - Autoimmune diseases



# BTK-i in RRMS and PPMS

- Potential advantages of BTK-i in MS
  - Effects on both adaptive and innate immune cells
  - Ability to penetrate the blood brain barrier
  - Direct effect on microglia cells in the CNS
  - May have neuroprotective effects
  - Potential benefit in both relapsing and progressive MS
- Preliminary studies
  - EAE – BTK-i effectively treats experimental mouse model of MS
- RRMS – BTK-i vs. placebo – 12 weeks
  - 85% relative reduction in new gadolinium-enhancing lesions
  - 89% relative reduction in new or enlarging T2 lesions (secondary outcome)

Crespo O. J Clin Immunol. 2011;31(6):1010–1020

Reich DS. Eur J Neurol. 2020;27(Suppl. 1):1–102.

# Phase 3 BTK inhibitor (BTK-i) in MS

- Relapsing remitting MS
  - BTK-i 60mg daily vs. Teriflunomide 14mg daily
  - Primary end point – annualized relapse rate
- Primary progressive MS
  - BTK-i 60mg daily vs. placebo
  - Primary end point – time to onset of 6-month confirmed disability progression
- Secondary progressive MS (starting very soon)
  - BTK-i 60mg daily vs. placebo

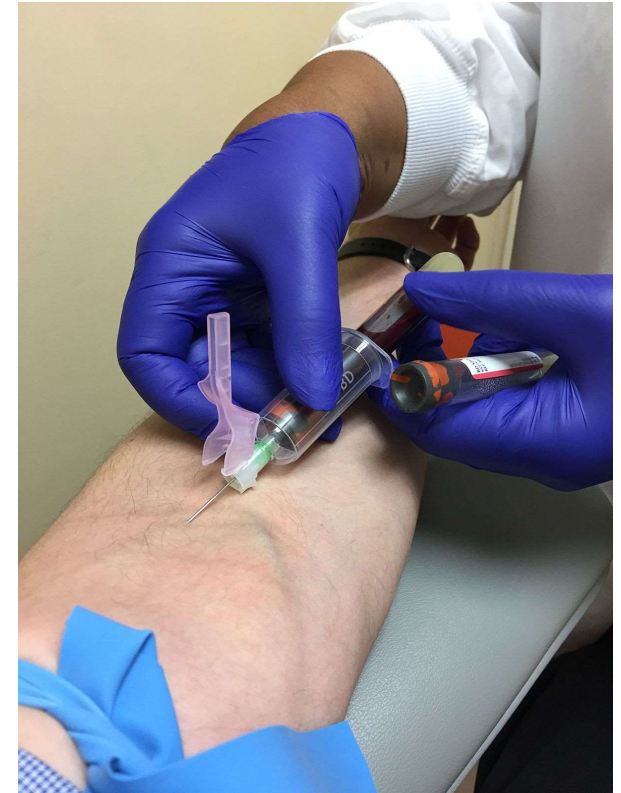
# Phase 3 BTK inhibitor (BTK-i) in MS

- Contact information
  - **Kasturi Ganesh Barki**
  - 614-293-6123 Office
  - Email: [Kasturi.ganesh@osumc.edu](mailto:Kasturi.ganesh@osumc.edu)
- Discuss with your MS doctor and let them know you are interested



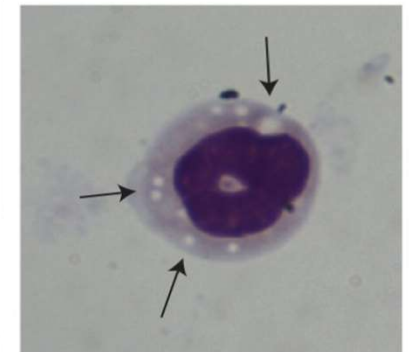
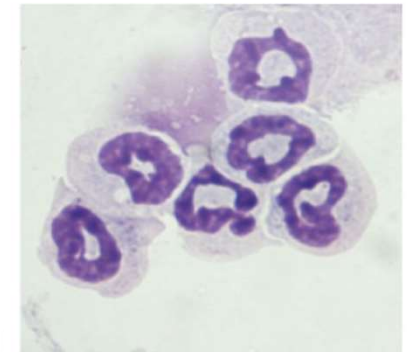
# Neuroscience Research Institute Brain Bank & Biorepository (NRI-BBB)

- The aim of this study is to collect and store biospecimens like blood, spinal fluid and tissue from patients undergoing routine testing for clinical care.
- If you are undergoing routine blood work or a procedure, you can be enrolled to provide an extra sample of blood, fluid or tissue to the biorepository
- These bio-samples will be used for research to increase our understanding of the disease process in MS and other neurological disorders
- **Email:**
  - [MSResearch@osumc.edu](mailto:MSResearch@osumc.edu)



# Dr. Segal - Lab research

- Interrogation of repair pathways in MS
  - Investigating the potential of novel white blood subsets
    - suppress destructive inflammation
    - induce remyelination/ nerve fiber regeneration in mouse models of MS
- In depth analysis of immune responses in relapsing and progressive MS pre- and post-initiation of DMT
  - Goal: To discover biomarkers predictive of responsiveness to individual DMTs, or that reflect disease activity, and to elucidate new therapeutic targets



# Aging and MS

- Dr. Zhang is recruiting for a study of biological age in MS
  - To see if people with MS age differently than those without MS
  - To understand the impact of aging on the disease course in MS
- You may be eligible if you are over 18 years of age and have relapsing-remitting MS or secondary-progressive MS.
- Participants will undergo a blood draw and participate in neurological exams and neuropsychological assessments.
- For more information, please email [MSResearch@osumc.edu](mailto:MSResearch@osumc.edu)

# Neuromuscular function in MS

- Dr. Zhang is planning a study of neuromuscular function in MS
  - Progressive weakness is common in older adults with MS
  - Age and MS both contribute to weakness
- Goals:
  - Assess feasibility of neuromuscular testing in older adults with MS
  - Measure neural and muscular factors involved leg strength
- The study will take place at Ohio University in Athens
- Recruitment anticipated to start in summer 2022

**Thank You**

