



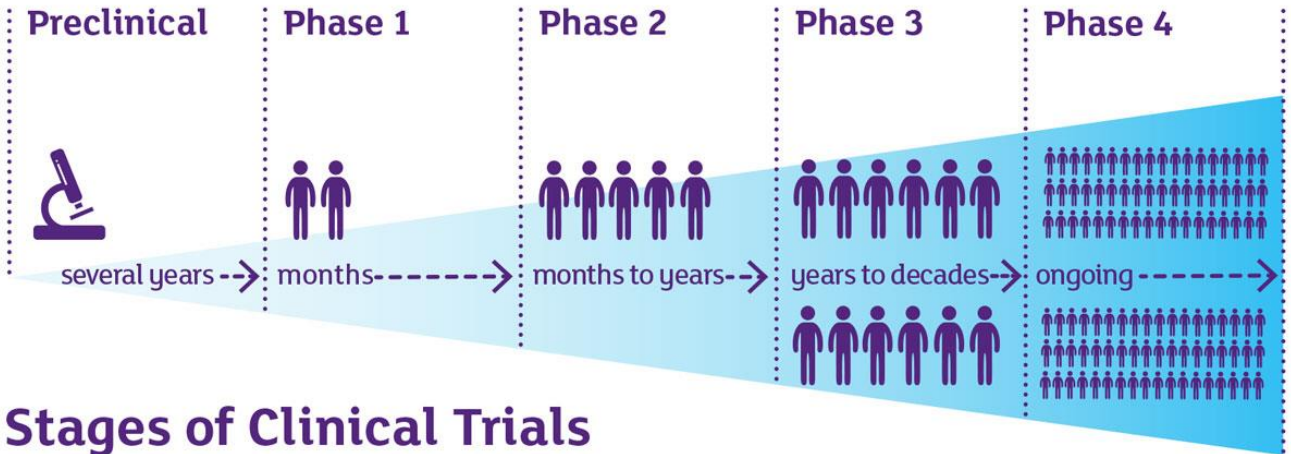
Research Updates

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Current research at OSU

- Clinical trials – phase 3
 - RRMS study of BTK inhibitor
 - PPMS study of BTK inhibitor
- COVID19 vaccine study in MS
- Lab (translational) research
 - Repair pathways in MS
 - The impact of ageing in MS
 - Immune response to DMTs



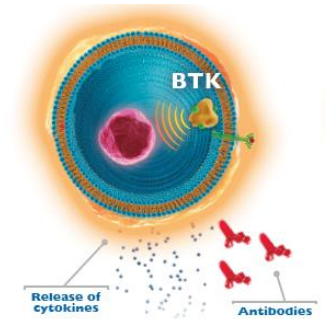
<http://stemcellsaustralia.tac-web04.accsysit.com.au/About-Stem-Cells/What-are-clinical-trials-.aspx>

Current MS DMTs

Interferon Beta <ul style="list-style-type: none">• Rebif• Betaseron• Avonex• Plegridy	Glatiramer Acetate <ul style="list-style-type: none">• Copaxone• Glatopa	Teriflunomide <ul style="list-style-type: none">• Aubagio	Fumarates <ul style="list-style-type: none">• Tecfidera (DMF)• Vumerity• Bafietram
S1P1 modulators <ul style="list-style-type: none">• Fingolimod• Siponimod• Ozanimod	B cell depleting therapies <ul style="list-style-type: none">• Ocrelizumab• Rituximab• Ofatumumab	Natalizumab <ul style="list-style-type: none">• Tysabri	Others <ul style="list-style-type: none">• Alemtuzumab• Cladribine

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

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

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

Phase 3 BTK inhibitor (BTK-i) in MS

- RRMS
 - BTK-i 60mg daily vs. Teriflunomide 14mg daily
 - Primary end point – annualized relapse rate

- PPMS
 - BTK-i 60mg daily vs. placebo
 - Primary end point – time to onset of 6-month confirmed disability progression

COVID19 vaccine in MS study

- Questions the study will help to answer
 - Does MS affect the response to the COVID vaccine?
 - Are there DMTs that affect the response to the COVID vaccine?
- Currently enrolling patients MS and healthy controls
- Blood testing prior to and after COVID vaccination
- Unique assay to test for COVID19 neutralizing antibodies

Contact information

- Misty Green
 - 614-293-6486
 - Misty.green@osumc.edu

- Contact your provider
 - mychart

- Neurology clinic
 - 614-293-4969



Multiple Sclerosis and the COVID19 vaccine

- Do you have multiple sclerosis (MS) or a similar disorder like neuromyelitis optica (NMO) or MOG-antibody related disorder?
- You may qualify for an interesting study with the OSU MS center.

The Ohio State Department of Neurology is currently enrolling for a research study to determine the effectiveness of the COVID19 vaccine in patients with MS and similar diseases.

YOU MAY QUALIFY IF:

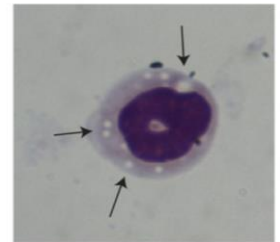
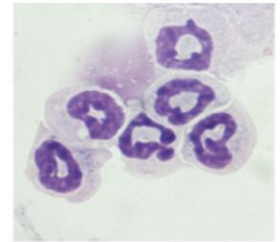
- You are age 18 years and above
- You have a diagnosis of MS, NMO or MOG-antibody related disorder
- You plan on taking the COVID19 vaccine when it becomes available

Participants will have blood samples taken before and after they receive the COVID19 vaccine.

For more information, please call 614-293-6486 or email misty.green@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
 - Isolating cell subsets from human umbilical cord blood and testing their neuroprotective and pro-regenerative properties
 - Goal: To ultimately develop drugs that reverse damage and restore lost neurological functions in people with MS



Dr. Segal - Lab research

- Impact of aging on MS
 - insights into new approaches for the treatment of established progressive MS
 - strategies to block the transition from relapsing to progressive disease
 - Goal: To increase our understanding of how changes in the body that normally occur during aging interact with the pathogenic pathways in MS to drive the transition from a relapsing to a progressive disease course
- In depth analysis of immune responses in relapsing and progressive MS pre- and post-initiation of DMT
 - analysis of plasma, PBMCs, CSF, CSF cells
 - Goal: To discover biomarkers predictive of responsiveness to individual DMTs, or that reflect disease activity, and to elucidate new therapeutic targets

Thank You

