



ACTRIMS Forum 2023 – Highlights

Tirisham Gyang, MD

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ACTRIMS Forum 2023

- San Diego, CA
- February 23-25th
- “MS Going Viral”
- Almost 2000 attendees



- Community of leaders/experts from the United States and Canada
 - Dedicated to the treatment and research in MS
 - Focus on knowledge dissemination, education and collaboration among disciplines
 - Annual Forum for clinicians and researchers to exchange information, debate current issues and discuss advances related to basic research and clinical issues.
 - Foster the careers of young neurologists/scientists in training who have an interest in multiple sclerosis



OSU at ACTRIMS

- Planning committee and Board of Directors
 - Dr. Benjamin Segal
- Resident summit faculty
 - Dr. Benjamin Segal (Chair)
 - Dr. Em Harrington
 - Dr. Tirisham Gyang

Meeting Highlights

- EBV (Epstein Barr Virus) and MS
- Diet and MS
- New digital tools to monitor MS
- Diversity and inclusion in MS research
- PBS documentary premier – MS in the Black and African Americans
- Resident Summit



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FORUM 2023

San Diego, California | February 23-25



MS:
GOING
VIRAL



DISEASE

Epstein-Barr virus and multiple sclerosis

EBV (Epstein Barr Virus) and MS

Dr. Lawrence Steinman, Stanford University

- Epstein Barr Virus (EBV) causes infectious mononucleosis
- EBV has been postulated to trigger MS
 - Prior studies reveal that increased serum antibodies to EBV in ~99.5% of MS patients compared with ~94% of healthy individuals
 - Multiple studies have identified EBV-infected B cells in the brains of MS patients



MULTIPLE SCLEROSIS

Longitudinal analysis reveals high prevalence of Epstein-Barr virus associated with multiple sclerosis

Kjetil Bjornevik^{1†}, Marianna Cortese^{1†}, Brian C. Healy^{2,3,4}, Jens Kuhle⁵, Michael J. Mina^{6,7,8}, Yumei Leng⁶, Stephen J. Elledge⁶, David W. Niebuhr⁹, Ann I. Scher⁹,
Kassandra L. Munger^{1†}, Alberto Ascherio^{1,10,11*†}

Dr. Marianna Cortese from Harvard University

- Cohort of 10 million young adults in active US military
 - Blood sample analysis
 - Over a 20-year period (1993–2013)
- 955 were diagnosed with MS during service
 - Risk of MS increased 32-fold after infection with EBV
 - This risk was not observed with other viruses
 - Serum levels of neurofilament light chain, a biomarker of neuroaxonal degeneration, increased only after EBV seroconversion



MULTIPLE SCLEROSIS

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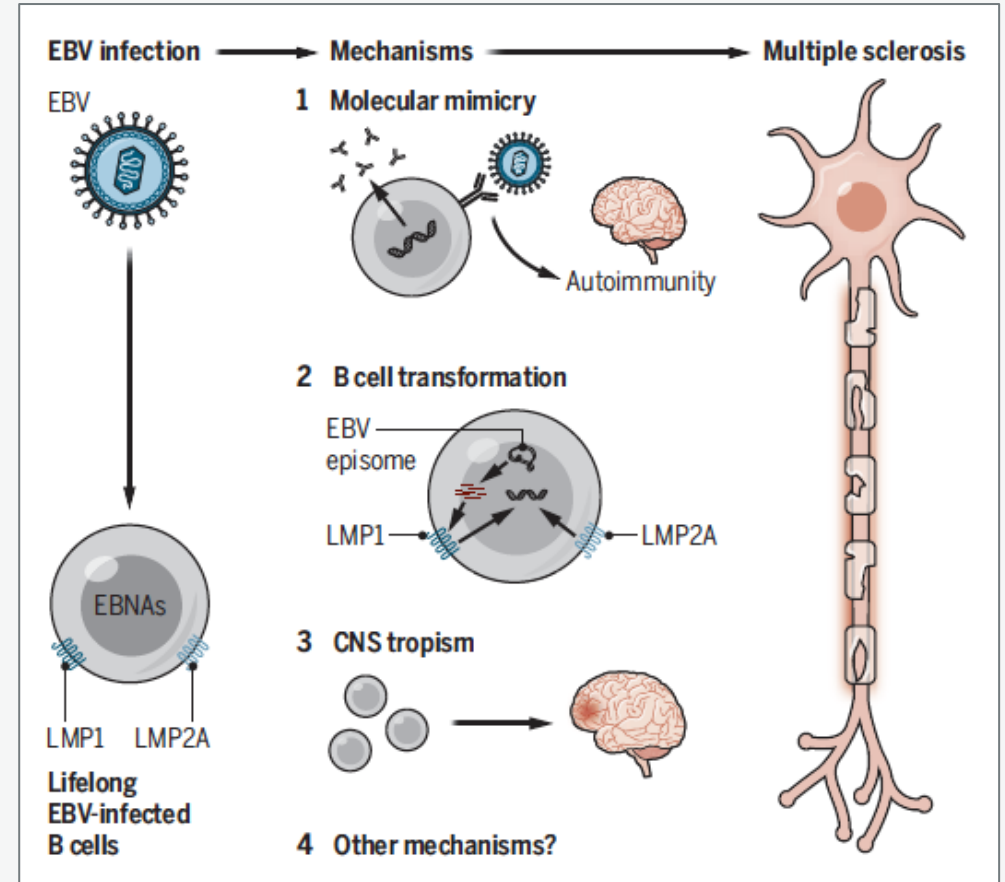
Kjetil Bjornevik^{1†}, Marianna Cortese^{1†}, Brian C. Healy^{2,3,4}, Jens Kuhle⁵, Michael J. Mina^{6,7,8}, Yumei Leng⁶, Stephen J. Elledge⁶, David W. Niebuhr⁹, Ann I. Scher⁹,
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- 955 were diagnosed with MS during their period of service
 - 35 of the 801 MS cases were initially EBV seronegative
 - 34 became infected with EBV before the onset of MS
 - EBV seropositivity was nearly universal at the time of MS development
 - Only one of 801 MS cases being EBV seronegative at the time of MS onset



How does EBV infection lead to MS?

- We do not exactly know
- Possible mechanisms
 1. Molecular mimicry
 2. B cell transformation
 3. EBV infection might cause damage to nerves in the brain and spinal cord
 4. Other unknown mechanisms?



EBV and MS

- Nearly everyone is infected with EBV, but only a small fraction develop MS.
 - It is likely that other factors, such as genetic susceptibility, are important in MS pathogenesis
 - Timing of EBV infection may be relevant – higher risk associated with exposure in pre-teen and adolescent years compared to childhood exposure
- Debate – (Dr. Peter Calabresi and Dr. Jeffrey Cohen)
 - Would a vaccine against EBV protect against MS?
 - Would antivirals that target EBV provide effective therapy to MS patients?
 - Can the B cells in the nervous system be killed or inactivated with therapeutics?

DISEASE

Epstein-Barr virus and multiple sclerosis

Infection with Epstein-Barr
virus is the trigger for
the development of multiple
sclerosis

By William H. Robinson^{1,2} and
Lawrence Steinman³

- “Now that the initial trigger for MS has been identified, perhaps MS could be eradicated.”

Robinson WH, Steinman L. 2022;375(6578):264-265

Diet and MS – Caloric restriction

Dr. Laura Piccio from Washington University St. Louis

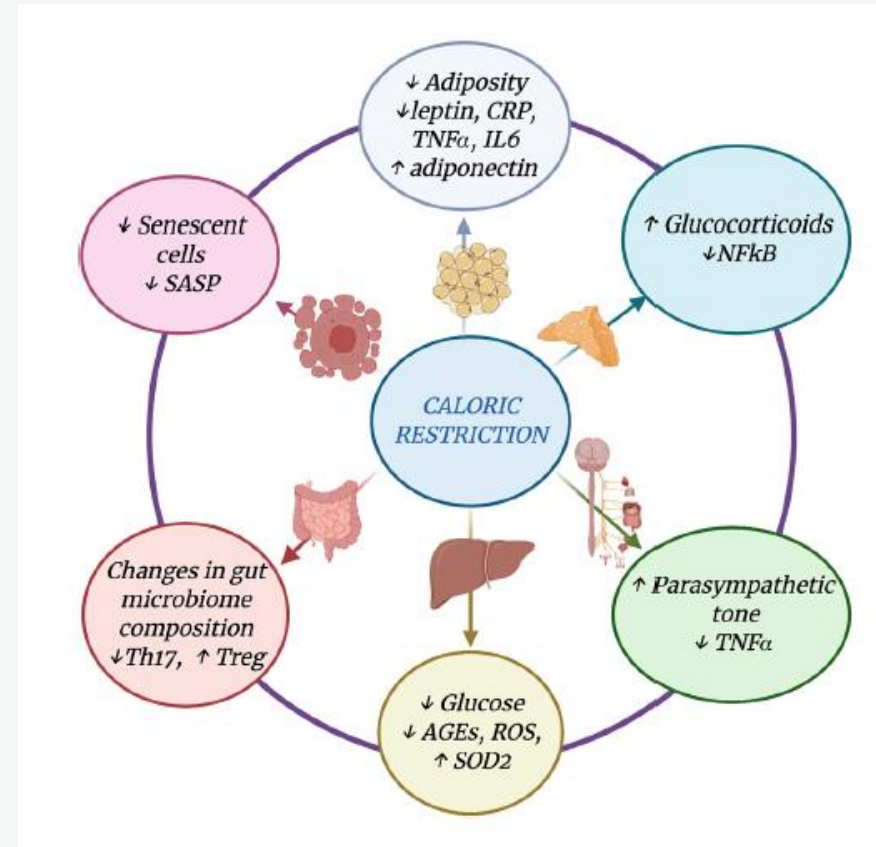
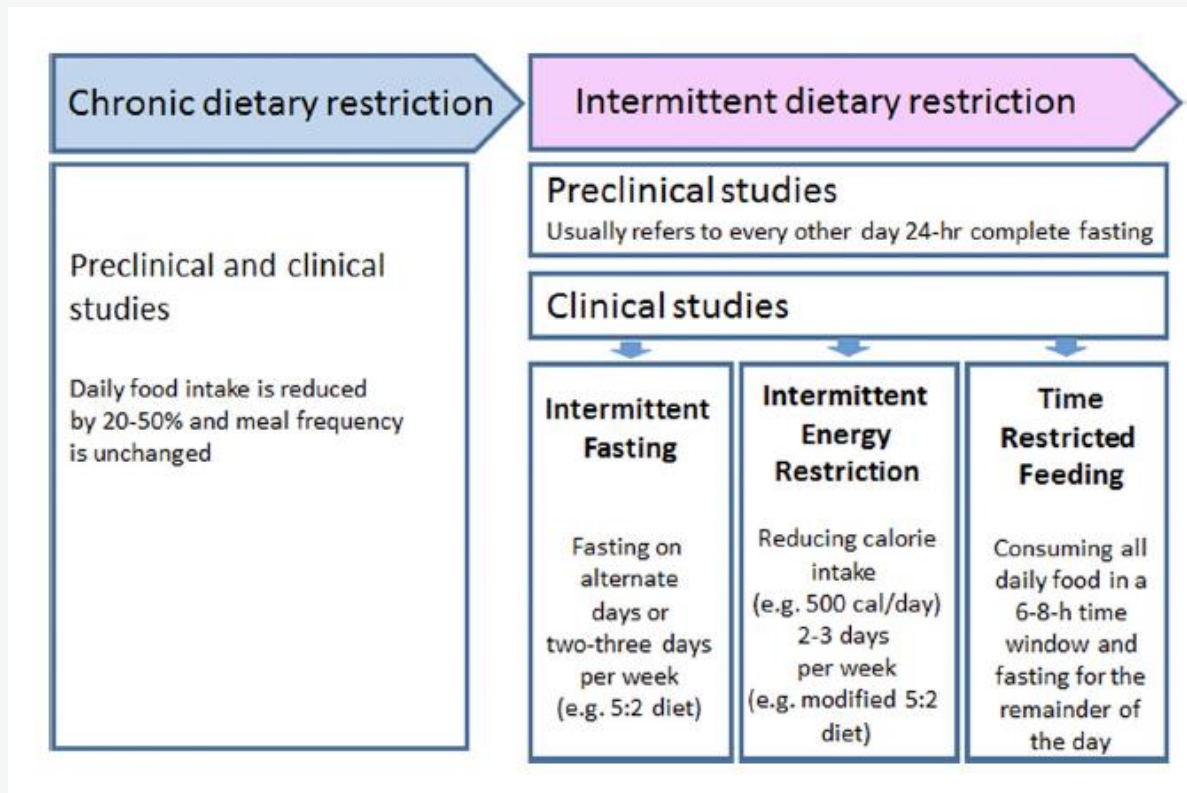
- Animal model of MS in mice
 - Caloric reduction shown to reduce neuroinflammation
- Human study in MS patients – randomized study
 - Normal diet vs. calorie restricted diet 2 days a week
 - The 5:2 diet – 500 calories/day, 2 days of the week
 - Calorie restriction was associated with
 - Reduction in weight and body fat percentage
 - Faster cognitive processing speeds
 - Increase anti-inflammatory molecule levels and altered T cell responses



REVIEW

Effects of dietary restriction on neuroinflammation in neurodegenerative diseases

Luigi Fontana^{1,2,3}, Laura Ghezzi^{4,5}, Anne H. Cross⁴, and Laura Piccio^{4,6}



New digital tools to monitor MS

Dr. Jennifer Grave, University of California, San Diego

- New innovative tools are needed to monitor the progression of MS in clinics and in clinical trials
- Current measures focus on walking and leg strength and do not adequately capture certain changes like vision, cognition, hand function



New digital tools to monitor MS

Dr. Jennifer Grave, University of California, San Diego

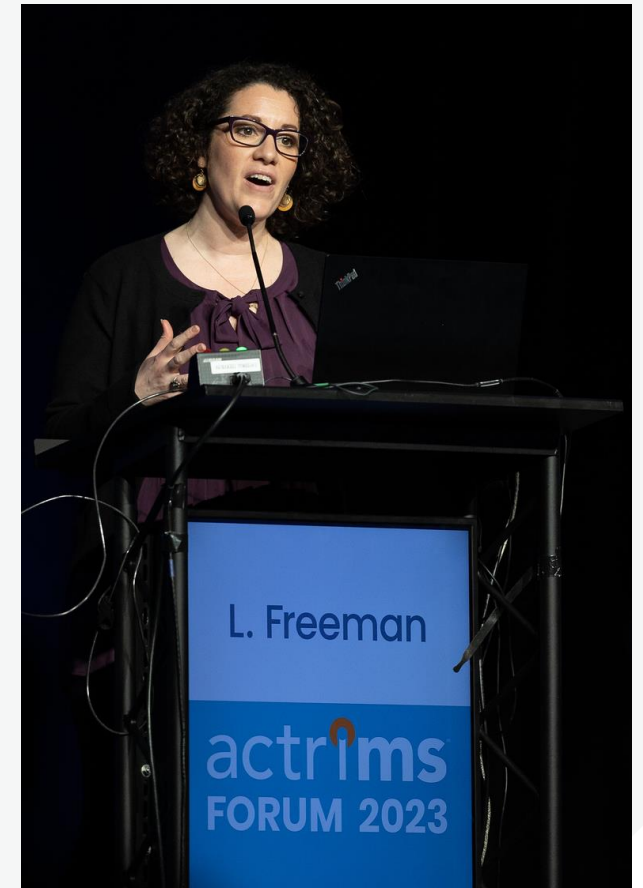
- Dr. Graves described
 - A portable device for measuring visual conduction
 - a variety of wearable accelerometer devices that can measure direction and speed of movement of the arms and legs
 - Apps for measuring hand function
- These new innovations are being validated and will be available soon for monitoring of MS patients.



Diversity and inclusion in MS research

Dr. Leorah Freeman from University of Texas at Austin

- Under-representation of minority populations in MS research and clinical trials
- Diverse representation in research is very important in generalizing results from studies
- More studies are needed to understand MS in minority populations



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OSU Clinical research/trials

- Phase 3 study – Tolebrutinib in relapsing and progressive MS
- Phase 3 study – Vidofludimus calcium (IMU-838) in secondary and primary progressive MS
- Aging in MS study
- NACRMS registry
- Neurology Research Institute Brain Bank & Biorepository (NRI-BBB)

Interested in research

- Contact
 - **Kasturi Ganesh Barki**
 - Clinical research manager
 - 614-293-6123 Office
 - msresearch@osumc.edu
- Ask your provider



Documentary – MS in Black and African Americans

- Documentary Premier
- Panel discussion
 - Two people living with MS—Tyler and Dawn
 - Dr. Mitzi Williams, neurologist and MS expert
 - Dr. Sophia Woodson, nurse practitioner and MS expert
- Full documentary available at <https://www.abovems.com>



Resident summit

- Over 80 neurology residents (doctors in training) from all over the country including OSU
- Lectures, workshops, career panels, etc.
- Chaired by Dr. Benjamin Segal
- OSU Faculty – Dr. Em Harrington and Dr. Tirisham Gyang



OSU at ACTRIMS

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West Palm Beach, Florida | February 29 - March 2

Thank you

REFERENCES

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