



MMI

Maud Menten Institute
Mathematics for the Life Sciences



**University
of Victoria**



***Maud Menten Institute /
Mathematical and Statistical Biology Seminar***

Monday, November 16, 2026

12 pm PCT (in person)

Hickman Rm 116

Join Zoom Meeting

<https://uvic.zoom.us/j/85786033554?pwd=hubhZhpQcInRrAe6uxTM2JuQ3DY8vs.1>

Meeting ID: 857 8603 3554

Password: 124534

Attend the Watch Party:

At UAlberta @ 1:00 (ABT) - room UComm 2-108

At UManitoba @2:00 (CDT) - St. Paul's College - room 225

Thomas Hillen

Department of Mathematical and Statistical Sciences
University of Alberta

Multiscale Modelling of Multiple Sclerosis; Initiation and Progression

The mathematical modelling of MS so far has focused on a few aspects of the disease, but an overall modelling framework is missing. Here we propose a paradigm for the mathematical modelling of MS. Based on biological principles we propose a sequence of mathematical models for MS. We begin with the healthy state, look at the MS prodrome and we show that periodic disease outbreaks are possible in this framework. We also include the presence of Epstein-Barr virus infections as MS initiator and disease promoters such as low levels of estrogen, low levels of vitamin D, and mutations in the HLA-DR gene. Most importantly, we find that memory B-cells play a dominant role in the disease progression. (Joint work with A.J. Jenner, QUT).