An overview of kinetic theory modelling for immune-mediated disorders

Abstract: In this seminar, we will briefly describe some variants of a kinetic model for the anomalous response of the immune system. These models encompass cell proliferation and destruction, along with other effects relevant to autoimmune diseases. We then consider the corresponding macroscopic models and investigate various mathematical properties of both kinetic and macroscopic systems, including equilibrium states, stability, relapse-remission patterns, and time-delay effects. Finally, we will present and interpret some numerical results to illustrate the model's capabilities in the biological context.