



The University of Western Ontario

Faculty of Science

Department of Applied Mathematics

APPLIED MATHEMATICS COLLOQUIUM

Date: Wednesday, March 4, 2009

Time: 2:30 pm

Location: Middlesex College, Room 204

Sympatric Speciation *or* How Life Diversifies Without Geographical Isolation

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Abstract:

Sympatry is one of the mechanisms for the phenomenon of speciation. In contrast to allopatry, populations undergoing sympatric speciation are not geographically isolated by, for example, a mountain or a river, yet engage in some form of competition for resources or predator-prey conflict. We discuss our recent observations on necessary conditions for sympatric evolutionary diversification for asexual (clonal) and sexual population, as well as in host-parasite systems. We also present a detailed model of speciation due to host-parasite conflict and autoimmune-based hybrid necrosis in *Arabidopsis thaliana*. The hybrid necrosis is shown to be a sufficient mechanism for gene flow barrier, essential for speciation.