



# NIMBioS

National Institute for Mathematical  
and Biological Synthesis



## NIMBioS Interdisciplinary Seminar

3:30 p.m.\*, Tuesday, March 10, 2015

**Dr. Laurent Excoffier**

Population Genetics

Institute of Ecology and Evolution, Univ. of Bern

NIMBioS Postdoctoral Fellows Invited Distinguished Visitor

### Consequences of Spatial Expansions on Population Functional Diversity

It is known that spatial expansions have had a major influence on population genetic diversity: some neutral variants can increase in frequency and spread over large areas in newly occupied territories. This is the phenomenon of gene surfing. However, selected variants can also surf and thus modify the fitness of expanding populations. We have studied this phenomenon by simulations and by analytical derivations in relatively simple models of expansions in homogeneous environments. Very generally, we find that the fitness of populations located on the expansion front decreases proportionally to their distance from the origin of the expansion. The creation of this expansion load happens in 1D or 2D expansions, in case of hard or soft selection, in presence or absence of recombination and for different distribution of fitness effects. The evolutionary dynamics of this expansion load differs between cases, and also depends on the level of dominance between variants. All these cases will be briefly presented, and we will conclude by showing some evidence that this phenomenon also occurred in human populations.

**Location: Tom Hallam Auditorium, Room 206 at NIMBioS, Claxton Education Bldg,  
1122 Volunteer Blvd.**

*\*Join us for refreshments at 3 p.m. in the Auditorium.*

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