

Friday, April 10, 2015  
4:00 PM  
Ackert Hall, Room 120

Coffee & cookies served  
preceding the seminar in  
Ackert Hall, Room 225

# Division of Biology Seminar

**Louis Bernatchez, Ph.D**

Department of Biology  
IBIS, Université Laval  
Québec, Canada



## **Investigating Ecological Speciation by Means of an Integrative Biology Framework**

In this presentation, I will review the main findings of a long-term research program that we have been conducting on the sympatric forms of whitefish (*Coregonus* spp., *Salmonidae*) engaged in the process of speciation. The overarching objective is to contribute to the elucidation of the respective role played by historical contingency, ecological factors and evolutionary processes in shaping the genetic and phenotypic changes leading to the origin of new species. We present this system as an example of how applying a combination of approaches under the conceptual framework of the theory of adaptive radiation has yielded substantial insight into evolutionary processes in a non-model species, “hard to work with”. Namely, I will present recent results illustrating the potential offered by combining population, functional and meta-genomics with cytology, physiology and ecology in order to decipher the nature and complexity of the processes involved in the evolution of adaptive divergence and reproductive isolation, all the way from the genes to the phenotype. Some of the key questions we have been addressing recently and that I will discuss are: the extent of parallel and non-parallel evolution, the relative occurrence of plastic and adaptive responses, the genetic architecture of reproductive isolation during speciation-with-gene-flow, the respective contribution of coding vs. regulatory standing genetic variation, the implication of transposable elements reactivation in transcriptomic shock acting as a strong postzygotic isolation mechanisms, using gene co-expression networks to identify key drivers of phenotypic divergence, the co-evolution of microbiomes and their hosts, and the role of physiological divergence in ecological speciation. So there should be a little something for everybody...

If you would like to visit with Dr. Bernatchez, contact Mike Herman at [mherman@ksu.edu](mailto:mherman@ksu.edu) or Jennifer Rhodes at [jenniferrhodes@ksu.edu](mailto:jenniferrhodes@ksu.edu).

