

**Practical Applications Assignment - EVOLUTIONARY BIOLOGY FALL 2014
(20 points total)(due December 3rd 2014)**

The goal of this assignment is to find examples of the practical application of the evolutionary principles we have been studying in class.

There is a nice synthesis of the basic evolutionary processes we have covered in a review paper by Andrew Hendry and colleagues. This paper, "Evolutionary Principles and their Practical Application" is a good jumping off point for finding a paper(s) that demonstrate the relevance of the concepts in evolutionary biology to real world challenges.

- Identify an area where evolutionary thinking is relevant to human or environmental health and well being. There are many possibilities ranging from understanding the dynamics of infectious pathogens to multi-drug resistance in bacteria. Cancer Biology and research on human genetic disorders have benefited from an evolutionary perspective. Evolutionary principles are useful in trying to understand the consequences of environmental change which may have a large impact on the health and function of natural communities and the species in them. There are also many applications in agriculture, harvesting and pharmaceutical development. The list is long and not limited to the areas mentioned above!
- Conduct a literature search to identify at least **ONE** original paper that illustrates the practical application of the concepts we discussed in class. The paper(s) you chose should be data papers not reviews, and they should be published within the last 10 years.

In your paper cover the following points and questions:

- Summarize the area of practical concern where understanding evolutionary processes and principles can have a large impact.
- Explain the relevance of the paper(s) you chose to this area.
- How do these studies help us resolve a pressing issue in human or environmental health.
- What future research do you think should be done to further advance our understanding in this area?

Guidelines:

Length: Two page limit.

Submission: Submit your paper electronically via email.

Include appropriate in text citations to papers (e.g., Hendry et al. 2011) and a reference list at the end in this format:

Hendry, A. P., M. T. Kinnison, M. Heino, T. Day, T. B. Smith, G. Fitt, C. T. Bergstrom, J. Okeshott, P. S. Jorgensen, M. P. Zalucki, G. Gilchrist, S. Southerton, A. Sih, S. Strauss, R. F. Denison, S. P. Carroll. 2011. Evolutionary principles and their practical application. *Evolutionary Applications* 4:159-183.