# Francisco Úbeda de Torres, Ph.D.

Assistant Professor of Theoretical Evolutionary Biology

## The University of Tennessee, Knoxville

Born in 1972 in Madrid

Studied Economics at the Universidad Complutense de Madrid and Biology at Oxford University and at Harvard University

FOCUS

PROJECT

## Genetic Conflict@@

The focus of my research is the evolutionary biology of genetic conflict. I study conflict between genes either over transmission or over expression. In particular, I have worked (and continue working) on theoretical aspects of meiotic drive and gene conversion - within the category of transmission distortion - and genomic imprinting and X-chromosome inactivation - within the category of differential expression.

I would like to devote my short stint at the Wissenschaftskolleg to address the following question: Why are imprinted genes clustered within the genome? An imprinted gene is a gene that has a different pattern of expression depending on whether it is inherited via sperm or via egg. A conflict may emerge when a gene's expression in one individual has fitness consequences for other individuals who have different probabilities of carrying a copy of the first individual's paternally-derived allele. Such is the case in a mating system in which females have multiple partners and the resources to raise the offspring are fixed and provided by the mother. Paternally-derived alleles in an offspring will be selected to demand a greater amount of resources than maternally-derived alleles in the same offspring. When the expression of a particular gene results in a greater allocation of maternal resources to her offspring, the maternally-derived allele in this offspring will be silenced and vice versa.

One reason why imprinted genes are peculiar is that they tend to cluster in the genome. I am interested in addressing how these clusters and their expression architecture have evolved.

Recommended Reading

Úbeda, F. and B. B. Normark. 2006. "Male killers and the origins of paternal genome elimination." Theoretical Population Biology 70: 511-526.

Úbeda, F. and D. Haig. 2005. "On the evolutionary stability of Mendelian segregation." Genetics 170: 1345-1357.

Úbeda, F. and D. Haig. 2003. "Dividing the child." Genetica 117: 103-10.

PUBLICATIONS FROM THE FELLOW LIBRARY

Úbeda de Torres, Francisco (2010)

A model for genomic imprinting in the social brain : adults

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=1046036254

Úbeda de Torres, Francisco (Oxford,2005)

On the evolutionary stability of Mendelian segregation

https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=768667690