

## **4-year PhD studentship available at the University of Manchester**

**Would you like to be part of a multi-disciplinary project bringing together the fields of ecology, evolution, computer science and control theory?**

### **1) Title of the project**

The evolution of sexual imprinting behaviour

### **2) Anticipated start date for project**

If a studentship is awarded, the start date will be September 2013.

### **3) Closing date for applications**

The application process is now open. The closing date is December 7<sup>th</sup>, 2012.

### **4) Description**

Why do individuals choose the mates they choose? In many species, including humans, mate choice depends in part on sexual imprinting. Sexual imprinting is a process by which individuals learn preferences for mates with certain phenotypes by observing other members of their populations. Different populations, and different sexes within populations, exhibit different sexual imprinting strategies. Sexual imprinting is an important component of animal behaviour, and it helps to shape how phenotypes evolve and if and when speciation occurs. However, how sexual imprinting itself evolves, and why strategies differ between populations and sexes, remains poorly understood.

The goal of this project is to develop a synthetic theory for the evolution of sexual imprinting. With guidance from Drs. Tucker Gilman (Faculty of Life Sciences) and Eva Navarro-López (School of Computer Science) at the University of Manchester, the student who undertakes this project will develop analytical models and agent-based computational simulations to understand when sexual imprinting should evolve and what imprinting strategies we should expect to see in nature. Research will consider how evolved imprinting strategies can affect trait evolution in environments in which selective pressures are heterogeneous in space and time. In the third year of the studentship, the student will spend six months in the lab of Prof. Erik Svensson at Lund University, where he or she will gain experience with experimental approaches to the study of sexual imprinting, as well as professional experience working with international collaborators.

Training will include classical methods in biology (e.g., population genetics, adaptive dynamics) and hybrid systems modelling - a nascent area of research that merges computer science, control engineering and dynamical systems analysis. The student will gain empirical experience and professional experience with international collaborators in the lab of Prof. Erik Svensson at Lund University.

## 5) Applicant's profile and skills

Candidates should:

- be interested in using mathematical models to understand evolutionary processes;
- have a sound mathematical background;
- have a background in biology, or a willingness to acquire such a background;
- have good verbal and written communication skills, good interpersonal skills, and a collaborative attitude.

The ideal candidate will also:

- have experience with dynamical systems analysis;
- have experience with mathematical models, and with mathematical and computational tools required to carry out the project;
- have experience in programming;

Applicants with multi-disciplinary backgrounds are especially welcome.

## 6) Amount of funding available and eligibility:

The studentship provides tuition fees and a stipend (£13,590 per year, tax free) to cover living expenses for 4 years for eligible UK students. Students from the EU but outside the UK are eligible for tuition and fees, but a stipend cannot be guaranteed to non-UK students. A small amount of travel funding is attached to the studentship. Students from outside the EU will be considered, but must have their own funding source.

## 7) Contact for further information:

Dr. Tucker Gilman ([tucker.gilman@manchester.ac.uk](mailto:tucker.gilman@manchester.ac.uk)), Dr. Eva Navarro-López ([eva.navarro@cs.man.ac.uk](mailto:eva.navarro@cs.man.ac.uk)), Prof. Erik Svensson ([Erik.Svensson@biol.lu.se](mailto:Erik.Svensson@biol.lu.se))

For further information about our research, please, visit the webpages:

Gilman: [http://www.nimbios.org/personnel/pd\\_Gilman](http://www.nimbios.org/personnel/pd_Gilman)

Navarro: <http://www.cs.man.ac.uk/~navarro/>

Svensson: <http://www4.lu.se/o.o.i.s/26007>

## 8) How to apply:

Potential applicants should send an email message to Dr. Tucker Gilman ([tucker.gilman@manchester.ac.uk](mailto:tucker.gilman@manchester.ac.uk)), including:

- A cover letter
- A curriculum vitae
- A brief description of the applicant's background
- A brief description of current work or interests
- Some representative work (if applicable)