



12 PhD Stipends

in the Graduate Research School (Graduiertenkolleg)

Evolutionary Networks: Organisms, Reactions, Molecules (E-Norm)

at the Heinrich-Heine-University Düsseldorf, Germany

The Department of Biology, the Institute of Computer Science, and the Institute of Mathematics at the Heinrich-Heine-University of Düsseldorf (HHU) are now accepting applications for 12 PhD stipends to support advanced interdisciplinary studies at the graduate level in the field of **evolutionary networks**.

The central goal of the interdisciplinary Graduate Research School "Evolutionary Networks: Organisms, Reactions, Molecules" (E-Norm) is to apply the conceptual and analytical framework of networks to the investigation of biological systems, spanning several levels of biological organization: genes, genomes, biochemical pathways, organisms, behaviour, and ecology. Research will focus on the formation, function, heritable properties and evolution of networks in biological systems. The participating institutes at the HHU bring together internationally leading expertise from different disciplines (Biology, Computer Science and Mathematics). Their common goal in E-Norm is to further develop the basic science and application of networks in biology with a unifying focus on evolutionary processes.

In addition to developing specialized expertise in the application and investigation of biological networks through their scientific research, successful applicants will be receive professional career preparation and soft skill training through the iGRAD programme of the HHU-D (<http://www.uni-duesseldorf.de/iGRAD/>).

The E-Norm programme currently encompasses 12 research projects that fall into three broader subject areas; phylogenomics, ecology, and molecules.

1. Phylogenomic networks

- Phylogenomic networks of plants
- Reassortment in Influenza A viruses
- Trends and barriers in lateral gene transfer among prokaryotes
- Significance testing and genome data analysis
- Gene transfer, metabolic transformation, and origins of higher taxa

2. Ecological and organismal networks

- Behavior and genetic network interactions under social organization
- Behavioral and ecological dynamics in competitive pollination networks
- Past diffuse co-evolution and recent interaction networks

3. Molecular networks

- Concerted protein evolution
- Demographic and selective effects on plant genome evolution
- Networks of reactions paths - the chemical master equation
- Bacterial decision strategies - effects on microbial communities.

A short outline of each research project and information about the associated institutes can be found at <http://www.hhu.de/enorm/>. The stipends are valued at € 1400 per month for 3 years starting May 1, 2012. Applicants should hold an undergraduate degree in Biology, Mathematics, Computer Science, Chemistry or Physics. Applications should contain

- a one-page cover letter stating contact information and date of availability,
- a short curriculum vitae of no more than three pages in length,
- scanned copies of undergraduate degrees received, and
- the title of up to three research projects among the 12 listed, ranked in order of interest.

Applications should be submitted electronically as a single pdf file to sek-molevol@hhu.de (the office of the coordinator, Prof. Dr. William Martin) with the subject line "E-Norm Stipend". Deadline for applications is February 29, 2012. Selected applicants will be asked to visit for an interview. All (reasonable) travel expenses in connection with the interview will be covered.