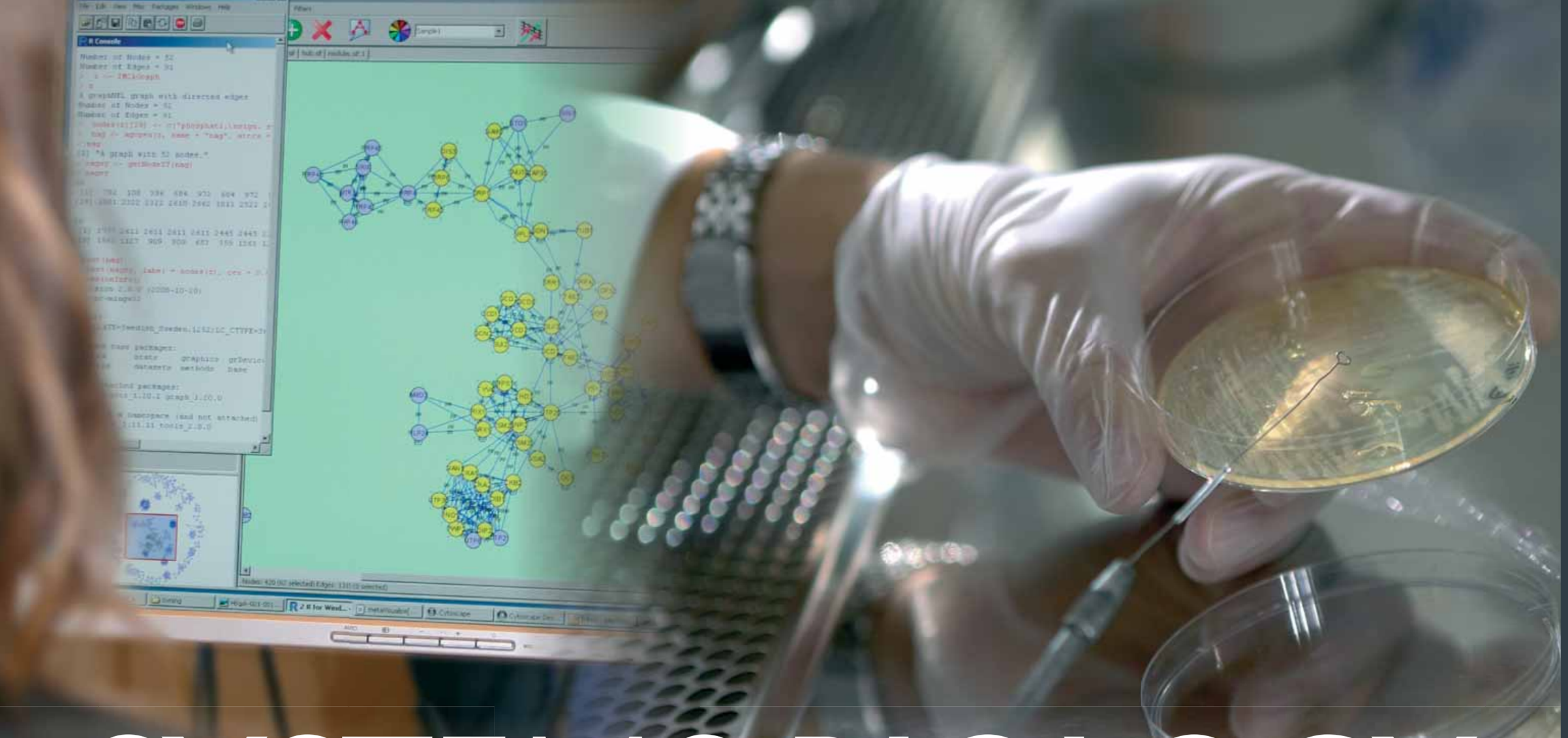

SYSTEMS BIOLOGY

RESEARCH CENTRE AT UNIVERSITY OF SKÖVDE

www.his.se/systembiologi

RESEARCH AREAS

Ecological and evolutionary networks

- The spread of animal infectious diseases in animal farm networks
- Swedish animal transport systems and animal welfare
- Artificial neural networks in the study of evolution
- Trophic networks: Understanding the decline of Arctic char in Lake Vättern
- Tools for assessing the robustness of ecological networks to biodiversity change

Immunology and microbiology

- Modelling T helper cell activation and development
- Parameter estimation in Ulcerative colitic mouse models
- Modelling the formation of microbial biofilms
- Network modeling of pneumococcal transmission
- Characterizing the dynamics of systems in Staphylococcus aureus

Tumor genomics

- Large-scale methods for identification of cancer specific genetic alterations
- eQTL analysis of cancer susceptibility
- Deriving oncogenetic tree models of tumor evolution
- Use of miRNAs as diagnostic and prognostic markers for cancer
- Combined signatures for cancer prognosis

Bioinformatics

- Human embryonic stem cells differentiation
- Developing methods for large-scale network analysis
- Cold acclimation in plants
- Semantic pathway comparison algorithms for systems biology

Physiology, Pharmacology and Toxicology

- Studying factors involved in coordinating and maintaining cells, organs or organisms in homeostasis
- Studying biological processes related to physiology, pharmacology or toxicology
- Characterizing the use of different substances and their medical and toxicological influence in humans in a multi-ethnic perspective
- Characterizing pathological conditions at different levels, aiming at the development of new treatments
- Biotechnology research with focus on plants

Miscellaneous

- Information fusion in precision agriculture for real-time nitrogen application
- Ecology of freshwater mussels and their suitability as bioindicators for detecting harmful chemicals in freshwater ecosystems.
- Release patterns of hormones of well-being and stress

EDUCATION IN SYSTEMS BIOLOGY

Example courses, basic level

- Systems biology – Introduction
- Systems biology – Applications in medicine

Example courses, advanced level

- Systems biology – History
- Systems biology – Formulation of Mathematical Models
- Systems biology – Parameter Estimation from Data
- Systems biology – Enzyme Kinetics
- Systems biology – Population Dynamics
- Systems biology – Modelling Intracellular Networks
- Research in Systems Biology and Critical Reading
- Research in Systems Biology and Scientific Writing

These advanced courses are 1.5 ECTS credits each, and are suitable to combine in different modules.

UNIVERSITY OF SKÖVDE

School of Life Science, University of Skövde, Box 408, 541 28 Skövde, Sweden