NICOLAUS COPERNICUS
UNIVERSITY
IN TORUŃ

Faculty of Biological
and Veterinary Sciences

# Connected by more than just a strand of DNA

## Biology and Veterinary Sciences

## The Scientific Excellence Choice based in a Top 10 Polish Research University

## A leading faculty in Central Europe

# Our mission

Dean, Prof. Werner Ulrich

Biology is much more than the study of a double helix. It is the science about us, as living beings. To understand ourselves we need to know how we function and how we are embedded into the living world around us. We need to explore our evolutionary heritage and to value the biological resources that sustain our species.

The living world around us has fascinated humans ever since Aristotle founded natural history. Today, we are at the edge of deliberate modification and even the creation of organismal live. To do this consciously and responsibly it is even more important to know - to know about the prospects and dangers of biological engineering, of environmental management, and of brain manipulation, to mention only three top directions. Even more, we need knowledge about the very basic biological processes.

Our faculty offers this knowledge. As a faculty of a Polish Excellence University, we are among the top biological faculties in Central Europe with international expertise for instance in plant cell cultures, bioengineering, environmental management, and evolutionary ecology and biogeography. As a state laboratory in bioengineering of genetically modified organisms we have up to date facilities in cell cultures, gene expression and sequencing, and in molecular research.

# Our facilities

**Up to date facilities in:**

- Plant and animal cell cultures
- Molecular reconstruction of phylogeny and evolutionary history
- Bioengineering and gene editing
- Neurophysiology and signal transmission
- Molecular diagnostics and instrumental analysis
- Biogeographic and ecological modelling
- High flow through sequencing
- Genetically modified organisms
- Biochemical analysis
- Physiology of stress

**The faculty in numbers:**

- 17 departments
- > 60 professors
- > 130 scientists
- > 800 students

# Our experience

**Long-term international experience in**

- **Macroecology and biogeographic modelling** including the development of widely-used ecological methods and software for community analysis and data handling
- **Biotic invasions** of European plant and freshwater organisms and the ecological and evolutionary implications of interactions with native organisms
- **Bioconservation and ecosystem assessment** testified by numerous evaluations for administration purposes and landscape planning
- **Evolutionary ecology and phylogeny** of selected plants and animals and the biogeographic reconstruction of European postglacial colonization history
- **Systematic, medical and forensic entomology** based particularly on expertise in invertebrate parasite, butterfly, moth, hymenopteran, and fly taxonomy, life history, and larval development
- **Soil microbiology and metagenomics** using high flow throw sequencing techniques
- **DNA – protein interactions and regulation** based on in vitro cell cultures and advanced optical and immunochemical technologies
- **Gene expression in vivo and in vitro** testified by high ranking publications devoted to gene activation, regulation, and functioning
- **Neurophysiology** based on single-cell neuronal signal analysis
- **Physiology of stress** in vertebrate and invertebrate animals using behavioural and neurobiological methods
- **Biomedical research** using “omics”, molecular markers, epigenetic modifications, and fluorescence analysis
- **Immunology** focusing on biocompatibility of nanomaterials
- **Applied molecular plant science** by current biotechnological, cell culture, and molecular methods

# Our research

Science nature PNAS

nature COMMUNICATIONS

THE EMBO JOURNAL

The American Naturalist

Global Change Biology

Cell

BMC Cancer

POLYMER TESTING

Behavioral Ecology

Journal of Ecology

SCIENTIFIC REPORTS

ECOLOGICAL MONOGRAPHS
ECOLOGICAL SOCIETY OF AMERICA

Journal of Experimental Botany

**OUR RESEARCH GOES AROUND THE WORLD**

# Our teaching

**covers a broad spectrum of current biological disciplines**

- Graduate and master studies in **Biotechnology** focus on molecular techniques in bioengineering and cell cultures
- Graduate and master studies in **Biology** offer a broad range of biological knowledge
- Graduate and master studies in **Environmental Protection** provide expertise in nature conservation and planning
- Graduate studies in **Sport and Wellness** are in line with current trends in fitness and health care
- Graduate studies in **Forensic Biology** acquaint with a broad spectrum of criminalistics and molecular forensic services
- Graduate studies in **Medical Chemistry** jointly organized with the Faculty of Chemistry offer deep knowledge of the chemical basis and biological functioning of current drugs and makeups
- Master studies in **Microbiology** provide advanced concepts and techniques in the study of single cell organisms
- Master studies in **Molecular Diagnostics** focus on up to date knowledge in molecular and cell biological techniques and analytics
- **PhD** studies join master students from around the world

# Our teaching



# Our proposition for international students

Master studies in **Global Change Biology**

- Two year master studies headed by international experts in environmental and evolutionary biology, macroecology and biogeography, molecular and evolutionary ecology, and bio-conservation
- Courses in animal and plant biogeography, molecular ecology, invasive species, parasites and diseases
- Courses in genetically modified organisms and molecular ecology
- Training in geostatistical analyses and advanced ecological modelling
- Applications of ecosystem services
- Management of protected areas and legal issues
- Introductory courses in biological data analyses and the R environment
- Whole program in English
- Attractive financial conditions

More info on:
www.biol.umk.pl/en/students-candidates

# Our proposition for international students


**International PhD studies** covering all aspects of biological sciences

- Specialized courses and seminars centred around the PhD project
- Courses in scientific writing and successful grant application
- Courses in the history of biological sciences and the nature of scientific inquiry
- Advanced courses in biological data analyses and the R environment

More info on:
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# Life in our faculty

## ... is more than just a strand of DNA!


# Our plans

**Global research needs even bigger data**

- Building G**lobal Networks** of molecular and ecological data bases
- Joining experimental projects in **Global Change Biology**

**Research needs exchange**

- Launching **Exchange Networks** with major international institutions
- Featuring our unique cell culture, neurobiological, and data analytical techniques

**Scientists need communication**

- Initiating international research and Conservation Networks
- Increasing participation in Decision Making

**Science matters**

- Going **R & D**
- Focusing on **Public—Private Partnerships**

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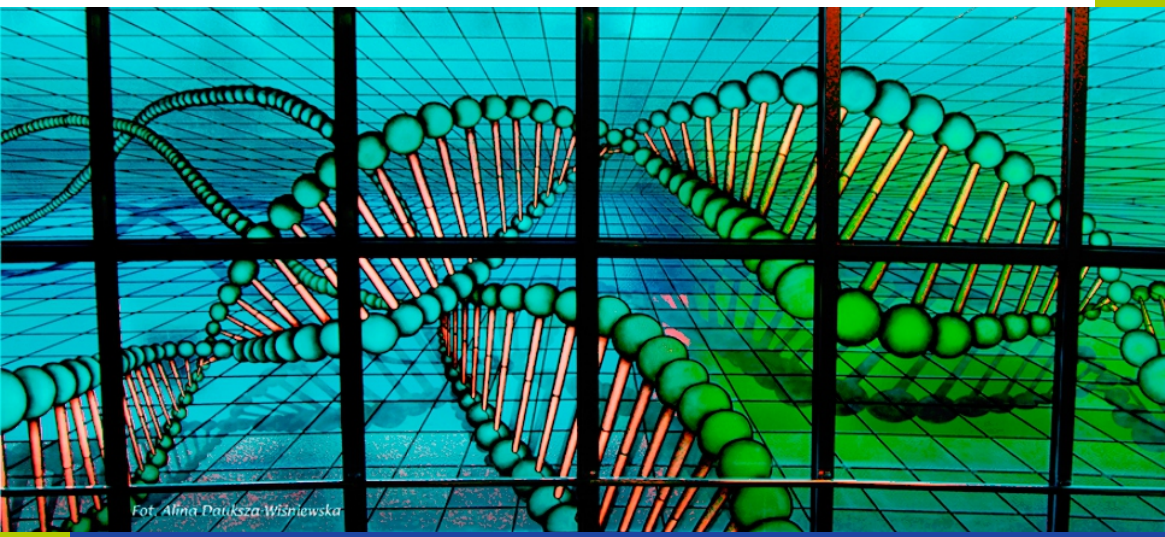


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