



# PREVALENTLY APPLICATIVE DOCTORAL STUDIES IN MEDICINE AND BIOLOGY

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# Introduction



- “Vasile Goldiș” Western University of Arad is accredited as a Doctoral Studies Organizing Institution (I.O.S.U.D.) in Medical and Biological Sciences and has obtained the highest mark “High confidence rating” awarded by the Romanian Agency for Quality Assurance in Higher Education (ARACIS).

- Our university organizes and carries out doctoral studies of an applicative type, and doctoral candidates may obtain the title of doctor in Medical Sciences or Biological Sciences, with the following specializations: Internal Medicine, Family Medicine, Orthopedics and Traumatology, Urology, Radiology, Pharmacology, Psychiatry and Gastro-enterology, Plant Biotechnologies, Geobotanics, Molecular Ecotoxicology, Glicobiology, Immunochemistry, Electronic Microscopy, Genetics.
- Our university’s doctoral school is based on creation and advanced fundamental and applicative research, contributing to the development of knowledge, competences and abilities.

# Competences acquired through Doctoral School



- General and specialized knowledge, competences and abilities enable graduates of scientific and applicative doctoral studies to:
  - systematically and comprehensively understand the field of study and use the fundamental and applicative research methods associated with this field;
  - design and initiate a research project and perform research management under the conditions of observing professional ethics and deontology;
  - critically analyze, evaluate and synthesize new and complex ideas;
  - communicate with the professional community and civil society in the context of their field of research;
  - contribute to the progress of knowledge through original research with a national and international impact, proven through scientific publications;
  - contribute to the promotion of technological, social and cultural development in the context of a knowledge-based society and economy.

# Organization of the Doctoral School



- The doctoral school in Arad is organized and complies with European, national and internal regulations, by introducing regulations and internal procedures specific to doctoral school.
- Thus, at “Vasile Goldiș” Western University of Arad, the doctoral study **program in Medical and Biological Sciences is carried out in two phases**, through the advanced academic study program and through the scientific-applicative research program, both forms of educational being mandatory.
- **The advanced academic training program** is carried out within our university, based on educational curricula approved by the University Senate and has a period of 2 semesters, whereas the **scientific-applicative research program** has a period of 6 semesters – Medical Sciences and 4 semesters – Biological Sciences.

# The applicative character of the Doctoral School in Arad

- As part of quality assurance mechanisms for advanced study programs within our university, apart from doctoral coordinators and other PhD professors, the studies also involve scientific researchers and experts that are active in other prestigious Doctoral Studies Organizing Institutions, national or abroad, as collaborators.
- In this respect, the **Doctoral School addresses inter-disciplinary fields** by involving the various complementary medical and biological specializations, but also some fundamental preclinical disciplines, without which scientific research within the Doctoral School would be devoid of a basis and an advanced scientific value (*i.e.* Cellular and Molecular Biology, Histology and Histopathology, Physiology and Physiopathology, Biochemistry and Biophysics etc.)



# Management of research projects



- **Our doctoral candidates are actively involved in various research projects and programs financed by national or European bodies**, such as: National Research-Development and Innovation Program (PNCDI-I, PNCDI-II), Structural Funds, Sector Operational Programs (Environment, Human Resources), grants of Romanian Academy, International Cross-border Hungary-Romania PHARE programs etc.

- The involvement of PhD students in these projects is made **since the phase of designing the financial request**, of collecting the necessary bibliographical data for sustaining the idea of the project, but also **in the implementation and development period of the project**, by carrying out specific analyses and tests in the field in which the research project is financed.
- PhD students are also involved in terms of **collecting and analyzing data** that is necessary for phase reporting and final reporting.
- Through all these phases and steps covered throughout a project, **our PhD students develop transferable abilities and competences**, leading to an increase in the prospects of a career and of being hired in both the private sector and the public one.

# Ongoing research projects



- Cross-border PHARE CBC Project HU-RO / 0801 / 110, 2009-2011, In vitro study of plant extract of a natural origin, with an emphasis on their potential antitumor effect.
- PHARE CBC Project, Cross-border clinical network for detection and research of rhino-allergic pathology, screening of metabolic diseases in the newborn;
- PROJECT - HURO/0801/194 – Cross-border: Evaluation of the structure of habitats and services from ecosystems in the valleys of Mureş and Crişul Alb rivers
- PNCDI II Project, Exploration of the integrative biological system involved in the maximal muscular effort;
- POS-MEDIU Project, No. 991/2008-2011, Priority Axis 4: Elaboration of conservation strategies for monitoring and durable development plans for SCI Gorge of Lower Mures;
- PNCDI II no. 52158/2008-2011, PROGRAMME 4 PARTNERSHIP: Identification and evaluation research for bioforms of *Trichogramma* in agro- and silvo- ecosystems, the impact and management of introducing bioactive nanomaterials in the proliferation technology of the oophaga;
- PNCDI II no. 52121/2008-2011, PROGRAMME 4 PARTNERSHIPS: New methods of evaluating the sanogenesis of fish products with a view to increasing food safety and securing sanitary-veterinarian protection;
- PNCDI II nr. 62072/2008, PROGRAMME 4 PARTNERSHIPS: Hepatoprotective nanoparticles with increased bioavailability;
- POS DRU 2010-2014 Project, Postdoctoral School for zootechnical biodiversity and food biotechnology on the basis of eco-economy and bioeconomy necessary to eco-sanogenesis, ID 63258
- POS DRU 2010-2014 Project, Transnational network of integrated management of postdoctoral research in the field of Science Communication. Institutional construction (postdoctoral school) and scholarship programme (CommScie) ID 63663

# Doctoral School collaboration programmes between universities and industry



- Our university has determined and achieved **the extension of Doctoral School collaboration programs between universities and industry (the entrepreneurial dimension)** according to the issues debated at the EUA Council for Doctoral Education meeting in 2009.
- Our PhD students are active in research centers, state-owned and private clinics in the medical specialty in which their doctoral studies are taken:
  - Swedish University of Agricultural Sciences, Uppsala, Sweden
  - Biodiversity Centre of Sweden
  - Centre for Biological Research of the Hungarian Academy of Science in Szeged, Hungary
  - Institute of Agrar and Molecular Research, Nyiregyhaza, Hungary
  - Museum of Natural History of Hungary
  - University of Transcarpatia , Ujgorod, Ukraine
  - Station for Biological Research of Agigea , Romania
  - Institute of Biology, Bucharest , Romania

# Doctoral School collaboration programmes between universities and industry

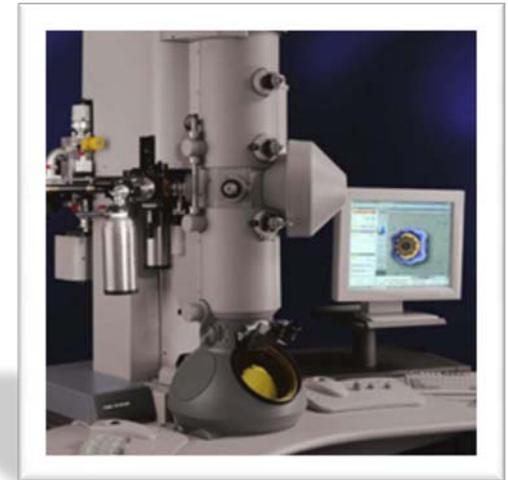


- In this respect, the university ensures the availability, for doctoral candidates, of **University Clinics, Private Bio-Medical Clinic** (with which the university has partnership agreements) and, last but not least, the **Institute of Life Sciences** through its scientific research centres:
  - **The Centre for Research and Treatment of Alzheimer's Disease** (created in international partnership with a private medical entrepreneur and with the Medical Consortium Del-Borsodi, Miskolc, Hungary),
  - **The Centre for Research in Experimental and Applicative Biology,**
  - **The Centre for Research of Applicative Physiology and Molecular Biology** (created under the auspices of the Romanian Academy),
  - **The Centre for Botanical Research of Macea.**

# The Centre of Excellence in Electronic Microscopy



- This spring our university will open a **Centre of Electronic Microscopy**, to which PhD students will have unlimited access and where they will be trained in using electronic microscopes, obtaining and interpreting electronic microscopy images, cellular structure and ultrastructure, but also with respect to the obtainment of surface data and chemical compounds present in the analyzed object.



- In this respect we have a contract with the American company FEI and we have foreseen and reserved expenses, this year, for purchasing two state-of-the-art electronic microscopes (for transmission – Tecnai and scanning – Quanta) from which our researchers, as well as our PhD students, will benefit.

# Mobility of PhD students

- As regards the **mobility strategy for career development**, our PhD students have applied for various national and international programmes, and for mobility scholarships granted by the university.
- Examples of doctoral mobility: Orthopedics (Frankfurt and Hanau, Germany), Cardiology (Eggenfelden, Germany), Radiology and Imaging, Oto-rhino-laryngology (Tubingen, Germany) and Gastro-Enterology (Szeged, Hungary).
- PhD students can specialize in exploiting and handling high-performance machinery, within the partner universities “Eberhard Karls” University (Tubingen, Germany), “Szent-Györgyi Albert” University (Szeged, Hungary) and the Institute of Psychotherapy and Hypnosis (Hanau, Germany), University of Sciences and Technology (Lille1, France).
- Expenses for mobility within research projects for which PhD students apply have also been foreseen.
- These mobility expenditures serve to cover expenses regarding travelling abroad, access to international conferences in country and beyond, access to laboratories and research centres abroad, as well as publishing scientific articles in ISI-rated journals with an increased factor of impact.



# Institutional cooperation agreements

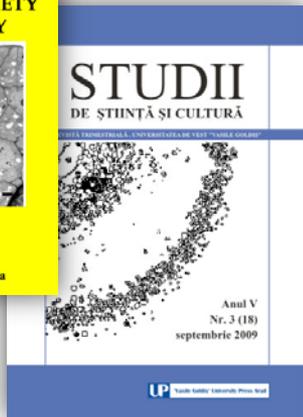
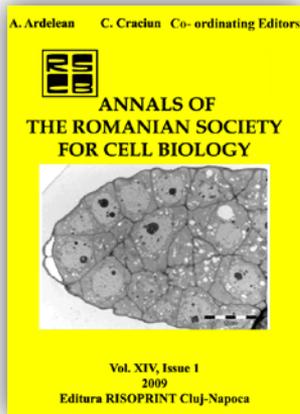
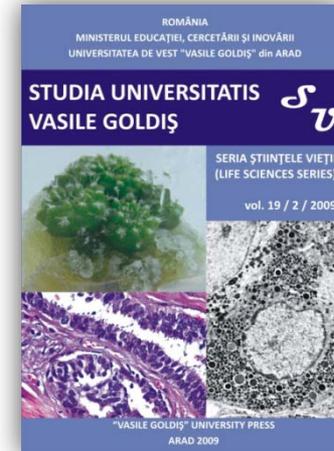


- Our university offers to PhD students, **through partnership agreements concluded with various universities and institutions abroad**, the possibility to study at these universities through student exchange programmes.
- We would like to mention some of these institutions: University of Tubingen, Germany; Institute of Medicine in Hanau, Germany; University of Szeged, University of Debrecen, Hungary; University of Sciences and Technologies, Lille 1, France; University of Heidelberg, Germany; College of Nyiregyhaza, Hungary; University of Novi Sad, Serbia and Montenegro; University of Padua, Italy and other prestigious universities in Europe and the world.

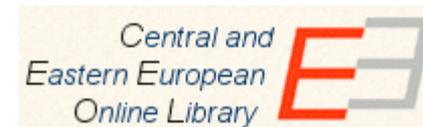
# The contribution to the progress of knowledge



- For the purpose of scientific recognition of conducted research, **PhD students have to publish** scientific articles in ISI-rated journals or in journals that are indexed in international databases.



- We mention only a few of **our university journals that are indexed in international databases:** *Studia Universitatis "Vasile Goldiș"*, *Life Sciences Series* (indexed by Scopus, ProQuest, EBSCO, Index Copernicus), *Arad Medical Journal* (Index Copernicus), *Studies of Science and Culture* (EBSCO and CEEOL) and *Studia Universitatis "Vasile Goldiș"*, *Economic Sciences Series* (CEEOL).



# Access to international databases



- With a view on obtaining data from specialized literature and for substantiating conducted research, **PhD students have access to international databases**, such as **SpringerLink**, which is made available to PhD students by the university, through an institutional access, within our Information Centre for PhD students.
- Through the SOP - Human Resources Development 2010-2014 project, “Postdoctoral School for zootechnical biodiversity and food biotechnology on the basis of eco-economy and bioeconomy necessary to eco-sanogenesis”, in the total amount of to 900,000 EUR, the students of our Postdoctoral School can access such IDBs.

- Through our “Tudor Arghezi” Library, PhD students have access to books, magazines and journals in their respective fields of expertise, the library having a very rich book stock and journal exchanges, both nationally and internationally.
- As part of scholarships for YDS (young doctoral students) but also of research programmes accessed by them, expenses have been foreseen for PhD students’ personal access to other international databases and for purchasing subscriptions and full-text scientific articles.

# Organization of scientific events



- The students of the Arad Doctoral School actively participate in the **organization of scientific events with international participation**. Out of these events we mention: The Francophone Summer School, The International Gerontology Conference, The International Neurorehabilitation Conference, The International Conference on Aquatic Biodiversity and The Annual Scientific Paper Session of the Romanian Society for Cellular Biology.
- An important place for our PhD students is held by the **Francophone Summer School “Molecular Pathology and Pharmacology. Biotechnologies”**, which has reached its 16<sup>th</sup> edition this year, organized in collaboration with the University of Sciences and Technology in Lille1, France, under the auspices of the Paris Academy of Sciences and of the Romanian Academy.
- At this event, PhD students can present the results they obtained, but also accumulate recent information and data presented by renowned researchers and professors from diverse universities and research units in France.
- Apart from organizing these manifestations, PhD students are also involved by presenting articles and studies that are part of the research topic and the results they obtained in the field.

# Doctoral studies in Schools of Excellence



- Through its actions, “Vasile Goldiș” Western University of Arad adheres to and sustains the new project initiated by the National Council for Scientific Research in Higher Education (CNCSIS)
- The purpose of this project is to create a national framework for evaluation of quality in national research, to structure a new programme of excellence in Romanian Universities and to develop the ability for publishing and scientific authorship, all the three components contributing synergistically to the attendance of Doctoral studies in Schools of Excellency
- For sustaining this project, our university has determined to contribute to the elaboration, testing and implementation of a methodology that would secure the international evaluation of research quality in the university, the sustainment of the Doctoral School of Excellence, as well as the increase in the ability of scientific publication at an institutional and individual level, with an impact on the quality of doctoral programmes.

# Actions aimed on promoting Doctoral Schools in our university

- The promotion of the Doctoral Schools of our university is carried out according to the following directions of action:
  - Rigorous regulation of the selection of doctoral candidates and the coverage of doctoral study programs (granting of scholarships to the most valuable doctoral candidates);
  - Establishment of highly topical subjects for doctoral theses, conduct of top research and promotion of research results (publication of research results ISI-rated publications or included in IDBs);
  - Continuous development of the documentary and research facilities of the Doctoral School.
  - Creation of consortiums and networks with national and abroad universities through partnership agreements, doctoral studies in co-tutelage and inclusion of PhD students in international research teams.

