How to obtain a PhD in Life Sciences in Utrecht, The Netherlands

Information for prospective PhD candidates

Utrecht University
Graduate School of Life Sciences

www.uu.nl/lifesciences
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1. Preface

Welcome to the Utrecht University Graduate School of Life Sciences and, specifically, to our PhD programmes. The PhD programmes offer breadth and depth of research across all the major Life Sciences disciplines. This provides Master’s students and PhD candidates from all over the world with exceptional training. As a PhD candidate at Utrecht University Graduate School of Life Sciences you will be typically employed as a junior research assistant for a period of four years, though there are some exceptions. Notably, for medical specialists in training the track lasts often three years. During that period you will be supervised by a top scientist (full professor) and have full access to state-of-the-art facilities at Utrecht Science Park. From day 1 you will be working on your own research project, side by side at the bench with Master’s students, fellow PhD candidates and postdocs. You will also discuss the results of your research project at local scientific meetings and national and international conferences. At the end of your PhD track, the doctoral thesis will be a compilation of scientific papers you will write during your PhD track.

As a PhD candidate, your department will be your main academic home, but you will also be a member of a PhD programme and the Graduate School of Life Sciences, other intellectual and social communities within this large university. This will give you the chance to engage with academics and fellow PhD candidates across different disciplines, which is a distinctive advantage over universities organised solely on departmental lines.

This document provides an overview of the Life Sciences research in Utrecht, and what it is like to do your PhD here. We hope it will help you make the best choice for your future career and I wish you a lot of success. Please note that this document was designed primarily for online use and will be updated regularly. The most recent copy can be found at our website (www.uu.nl/lifesciences).

Prof. Gerrit van Meer, PhD
Dean of the Faculty of Science
Chair to the Board of Studies
Utrecht University Graduate School of Life Sciences
2 Introduction

In The Netherlands, scientific research is carried out in research universities, research institutes and companies. Only the fourteen research universities, among which Utrecht University, can award PhD degrees. However, since other research institutes generally work in close collaboration with these universities, they can also provide positions to PhD candidates and a professor of Utrecht University supervises such PhD candidates. Their PhD track is subject to the same regulations imposed by Utrecht University as that of PhD candidates employed at Utrecht University.

3 How to apply for a PhD position?

3.1 JOB OPPORTUNITIES
It is important to note that as a PhD candidate in the Netherlands, you are not a student but, in most cases, are employed as a junior research assistant. As such, you will be paid the standard salary for junior research assistants as specified by the Collective Labour Agreement of Utrecht University. Therefore you are called a PhD candidate rather than a PhD student.

So if you want to become a PhD candidate you cannot just apply for enrolment into a PhD programme, like you would for a Master’s programme. Instead, positions for PhD candidates are advertised as job opportunities. So, in order to get a position, you need to apply in response to an advertisement, which can be found here:
Utrecht University
University Medical Center Utrecht
Hubrecht Institute

3.2 GRANT OPPORTUNITIES
Some PhD candidates are not employed by the institution but finance their PhD research through a fellowship or grant. Often these candidates come from abroad. If you want to use this option there are two things you need to arrange:
1. Find yourself a fellowship or grant. To find available fellowships and grants please visit the Grantfinder or Euraxess-The Netherlands. Grants may also be obtained in your home country.
2. Find yourself a supervisor at one of our institutions.
4 How to qualify for a PhD position?

PhD positions in Utrecht are of high quality; therefore, candidates need to meet high standards. It is important that candidates begin their research with a solid background in the theory and methods of their field. You will need to have a recognised Master’s degree. Specific requirements can be found in the job advertisement. Please take note that a good mastering of the English language, both in speaking and writing, is another major requirement. Our doctoral theses are written in English and 20% of our staff and students are international, so English is often the preferred language. These language skills must be demonstrated before you can obtain a position, e.g. by passing language tests such as TOEFL (minimum score: 93) or IELTS (minimum score: 6.5 overall band, at least 6 for writing and speaking). On top of that, most supervisors will like to experience your verbal English skills through an interview, e.g. via Skype, if necessary, as part of the selection procedure.

5 Visa

If you need entry visa, you are advised to contact your institution to find out what to do in your particular situation. Practical information about immigration procedures, social security, taxation, healthcare insurance, etc. can be found at:

- Euraxess
- Dutch government immigration site
- Study in Holland
- Utrecht University
- International Neighbour Group Utrecht
6 Life Sciences research topics in Utrecht

More than 220 full professors and their staff perform research in the realm of Life Sciences in Utrecht, ranging from fundamental and applied research to translational and clinical research. We cover the whole scope of Life Sciences, from molecules and cells, via tissues and organs, to individuals and populations in the following research areas:

- Biomembranes
- Cancer, Stem Cells & Developmental Biology
- Cardiovascular Research
- Clinical & Experimental Neuroscience
- Clinical & Translational Oncology
- Computational Life Sciences
- Drug Innovation
- Environmental Biology
- Epidemiology
- Infection & Immunity
- Medical Imaging
- Molecular Life Sciences
- Regenerative Medicine
- Toxicology & Environmental Health

7 Working environment

Utrecht University is located at Utrecht Science Park, a 15 min. bike-ride from the city centre. All associated research institutes, including the University Medical Center Utrecht and the Hubrecht Institute are within walking distance from each other, permitting intense interaction and collaboration between scientists. In fact, almost all PhD programmes bring together PhD candidates from different institutes.

As a majority of the research projects involve lab work, many PhD candidates spend time doing experiments in the lab. If your project is more clinically oriented, you can for instance be positioned in one of the clinical departments at the UMC Utrecht or at the faculty of Veterinary Medicine. You will be working side by side with fellow PhD candidates, technicians, postdocs and
Master’s students, which provides a very stimulating work setting. You will discuss the progress of your work regularly: with your daily supervisor, direct (lab) colleagues, other scientists within your department and PhD programme and at national and international conferences. On top of that, most research departments and PhD programmes organise social activities after working hours at a regular basis, like drinks, movies, karaoke, etc. Since the campus is only 15 min. by bike from the city centre, it is easy finding a good place to spend some time in a relaxed atmosphere.

8 Graduate School of Life Sciences

In Utrecht the Graduate Schools are the organising body of training and supervision of PhD candidates (and Master’s students). They also monitor the quality of research. For the Life Sciences, this is done by the Utrecht University Graduate School of Life Sciences, which is the research school for the Faculty of Science (departments of Biology, Chemistry and Pharmacy), Faculty of Veterinary Medicine and the University Medical Center Utrecht (faculty of Medicine). The Graduate School of Life Sciences offers 13 research Master’s programmes and 14 PhD programmes, with ± 1,000 registered Master’s students and ± 1,700 registered PhD candidates.

9 The PhD track

The PhD track, typically 4 years, is defined as the combined activities of a PhD candidate in a defined period of time with the aim of writing and defending a doctoral thesis. The PhD track includes activities such as the execution of a research project, reading and absorbing relevant scientific literature, following training to deepen and broaden knowledge and expertise in a particular scientific area and to acquire professional skills necessary to become an independent scientist.

A PhD track involves research activity and little course work. In Utrecht you start doing research from day one. This allows you to develop your own ideas and priorities in your research project while maintaining close contact with your supervisor (who often works in the same department). As a PhD candidate you will be part of the Graduate School of Life Sciences providing you with an
inspiring and challenging research and networking environment and tailor-made study pro-
grammes, including courses, masterclasses, journal clubs, seminars and (international) confer-
ences.

Upon successful completion of the PhD track, you should demonstrate achievement of the
following learning outcomes:
− you have made an original contribution to academic research that can withstand the scrutiny
of national and international peer review;
− you are able to independently use scientific methods of inquiry in creating, interpreting and
applying new knowledge in one of the areas of the life sciences;
− you are able to develop and implement an extensive knowledge-creation project;
− you have become acquainted and worked with a substantial body of knowledge which at least
encompasses the principles and methods of international scientific inquiry as well as the theory
development process, methods and studies in the relevant area;
− you are able to adequately communicate the knowledge and methods in the relevant speciali-
sation and/or field;
− you are able to carry the social responsibility for the conduct, application and use of your own
research.

10 Supervision

At the start of your PhD track a supervisor and daily supervisor are assigned to you. The supervi-
sor (‘promotor’ in Dutch) is a full professor at Utrecht University. The daily supervisor (‘copromo-
tor’), often an associate professor, provides guidance on a day-to-day basis throughout the entire
research period, which is typically 3-4 years. Apart from the day-to-day supervision progress will
be monitored in a required annual assessment interview, the content of which is based on a
progress report written by the PhD candidates. In the first assessment interview, one year after
start of the PhD track, continuation of the PhD track is determined by the ‘go-no go decision’.
(Discontinuation does occur, usually by mutual agreement, but is rare). A Supervisory Committee
is also assigned at the start of the research track. Its role is to provide independent advice to you
and the (daily) supervisor(s) with respect to the progress (rate, direction) of the PhD track. The
Supervisory Committee consists of 1-2 members, each of them being a researcher in a related
field, and not involved in your research project. The minimum contribution of the Supervisory
Committee is to discuss the annual progress report of the PhD candidate with the PhD candidate and his/her supervisors. Especially before the end of the first year of the PhD track, when the go-no go decision is made, the contribution of a Supervisory Committee is very important.

11 Training & Supervision Agreement

The Training & Supervision Agreement (TSA) is a standard agreement between you and relevant representatives of the Graduate School of Life Sciences to ensure proper training and supervision during your PhD track. It contains the name of the PhD programme to which you are registered, the names and signatures of the supervisor(s) and daily supervisor(s), the name(s) of the member(s) of the Supervisory Committee and the intended training programme.

12 Training Certificate

When you have met the requirements of the Graduate School of Life Sciences you will qualify for the Training Certificate at the end of the PhD track. These requirements are:
- The training should comprise a minimum of 5 credits* for each year of research appointment, which will be at least 2 years and no more than 4 years (10-20 credits in total).
- A minimum of 40% of the total credits should be spent on thematic courses of the PhD programme to which you have been admitted.
- A maximum of 20% of the total credits may be spent on symposia/conferences.
- A minimum of 20% of the total credits should be spent on general courses.

* Credits are assigned according to the European Credit Transfer System (ECTS) where 1 credit = 28 hours.
13 Doctoral thesis

The doctoral thesis of the Graduate School of Life Sciences must be written in English and consists of scientific papers in peer-reviewed journals, accompanied by an introduction and general discussion. The exact requirements differ per faculty, but, typically, 2-3 papers need to be accepted for publication or already published.

Once the thesis is complete, your supervisor determines if it is ready for submission and defence. A committee of professors is appointed to read and approve the thesis and to examine you during an oral defence. The thesis will be made public (parts of it may have already been published as articles in international journals during the PhD track). Doctoral theses from Dutch universities generally meet the highest academic standards and are therefore held in high regard.

14 Summer Schools

If committing yourself for 4 years to the unknown seems too big a leap, you may consider attending one of our 1-2 week Summer Schools first so you can get the flavour of our programmes, university, city and country. Utrecht University organizes the largest Summer School in Europe. A number of our PhD programmes participate in the Summer School.
15 Education and Training

The PhD training programme refers to the collected training activities to which you have access. Thematic training is provided by the different PhD programmes (see below). General training in professional competences and skills are provided by a number of institutions. You have access to a defined annual budget, provided by the faculty of affiliation, for general training. The aim of the PhD training is to provide you with:

- Practical and methodological knowledge and skills to collect, analyse, present and discuss research data for an independent and original contribution to science in the domain of the research project;
- Discipline-specific knowledge to read, discuss and contribute to the scientific literature in the domain of the research project;
- Experience (e.g. with regard to teaching, management, writing, presenting, working in a team, applying for grants) to continue an academic or other professional career.
- Awareness of the responsibilities of scientists towards society and in particular the obligation to conduct scientific practice in an integer manner.

Thematic education is organized in thematic PhD programmes. PhD candidates can also attend courses from other PhD programmes of the Graduate School of Life Sciences, and from Graduate Schools of other universities.

15.1 GENERAL SKILLS AND PROFESSIONAL DEVELOPMENT

The Graduate School of Life Sciences has assigned a budget to each PhD candidate to spend on courses on general skills and personal development. These include courses on communication, management, statistics, and career orientation. A selection of courses on offer can be found at the School's website. Some PhD programmes (see below) also offer such courses. Please note that some courses are offered in Dutch only.

15.2 PhD PROGRAMMES

Thematic training and education is organised in 14 PhD programmes, which range in size from 25 - 150 PhD candidates. These programmes offer educational activities such as courses, journal clubs, seminars, master classes, and PhD retreats. Their work, training programme and associated researchers are summarized below. Only once you have obtained a position as a PhD candidate you will, together with your supervisor, decide to which programme you will register. We cover the whole chain, from molecule and cells, via tissues and organs to individuals and populations in the following PhD programmes:

- Biomembranes
- Cancer, Stem Cells & Developmental Biology
- Cardiovascular Research
- Clinical & Experimental Neuroscience
- Clinical & Translational Oncology
- Computational Life Sciences
- Drug Innovation
- Environmental Biology
- Epidemiology
- Infection & Immunity
- Medical Imaging
- Molecular Life Sciences
- Regenerative Medicine
- Toxicology & Environmental Health

The most recent course list of the thematic PhD programmes can be found here.
15.2.1 Biomembranes

Programme director: Prof. Bernd Helms, PhD
Programme coordinator: Willie Geerts, PhD
Contact: w.j.c.geerts@uu.nl
Website: Biomembranes

Research area
The Institute and Graduate school of Biomembranes (IB) is a unique multi-disciplinary research-training institute at Utrecht University. Cutting-edge research on biological membranes provides optimal training and infrastructure for the next generation of talented researchers and allows a strong contribution to solving societal problems by knowledge valorisation. The IB has been founded by members of the department of Biology, the department of Chemistry (Faculty of Science), the Faculty of Veterinary Medicine, and the University Medical Center Utrecht. Currently, the IB research focuses on membrane biogenesis, membrane trafficking, and membrane structure & dynamics. During their training, PhD candidates obtain large-scale and in-depth exposure to researchers of the Faculty of Science, University Medical Center and the Faculty of Veterinary Medicine. At these institutes, there is increasing demand of IB PhD candidates in the framework of the much advocated ‘One Health concept’ that requires integrated knowledge from animal to man at the molecular level. The multi-disciplinary character of the IB is optimally suited for the next generation researchers ranging from molecular life sciences to applied life sciences in human and animal health. Due to the multidisciplinary approach of membranous structures the IB covers a wide range of research areas ranging from Microbiology, Biotechnology, Biochemistry, and Cell Biology to Veterinary medicine.

Associated research groups
All information regarding our researchers and research groups can be found at our website.

Profile of prospective PhD candidates
Admission to the IB requires that the candidate has successfully finished Bachelor and Master Studies. As IB scientists provide courses within the Molecular & Cellular Life Sciences Master’s programme of the Utrecht University Graduate School of Life Sciences, high potential students are often already selected and invited during this Master’s programme to apply for a PhD position within the IB. However, to select the best candidates we do not restrict recruitment for the IB PhD positions to our own Master’s students, but advertise both nationally and internationally. The strong competition with international candidates for positions will ensure that only the best students will be selected.

IB PhD candidates can also write a PhD project based on their personal interest. A selection committee, including internal scientists representing the different IB faculties, and external experts, including members of the scientific advisory committee of the school, review applications for positions. The selection committee will be instructed to give particular attention to the grades of the PhD candidates for their internships and take into account to what extent this is an original...
proposal reflecting the ideas of the student. The projects will be selected based on scientific excellence, originality and feasibility of the project idea, and potential to create collaboration between different IB research groups.

Mission of the training programme
Research in the IB is aimed at increasing insight into the function of biological membranes. This research is focused on three topics: membrane biogenesis, membrane trafficking, and membrane structure & dynamics. The functions of biomembranes are studied using a multidisciplinary approach using different biological model systems, which is reflected in the composition of associated groups that originate from different departments and faculties of the Utrecht University and UMC Utrecht. With this focus, the IB fits seamlessly in the strategic theme Life Sciences of Utrecht.

Training programme

<table>
<thead>
<tr>
<th>Name of the activity</th>
<th>Frequency</th>
<th>Credits</th>
<th>Organizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>IB introduction course</td>
<td>1x/yr</td>
<td>1.5</td>
<td>IB</td>
</tr>
<tr>
<td>IB seminars</td>
<td>25x/yr</td>
<td>5.0*</td>
<td>IB</td>
</tr>
<tr>
<td>IB PhD Day</td>
<td>1x/yr</td>
<td>1.5*</td>
<td>IB</td>
</tr>
<tr>
<td>IB conference on Biomembranes</td>
<td>1x/yr</td>
<td>1.5*</td>
<td>IB</td>
</tr>
<tr>
<td>IB PhD Evenings</td>
<td>8x/yr</td>
<td>4.0*</td>
<td>IB PhD Board</td>
</tr>
<tr>
<td>IB PhD Retreat</td>
<td>1x/2yr</td>
<td>3.0*</td>
<td>IB PhD Board</td>
</tr>
<tr>
<td>Journal clubs</td>
<td>Continuous</td>
<td>0.5/yr</td>
<td>IB</td>
</tr>
</tbody>
</table>

* when attended over a 4-year period.

15.2.2 CANCER, STEM CELLS & DEVELOPMENTAL BIOLOGY
Programme director: Prof. Hans (Johannes) Bos, PhD
Programme coordinator: Annelies Speksnijder, PhD
Contact: CSnD-PhD@umcutrecht.nl
Website: Cancer, Stem Cells & Developmental Biology

Research area
Fundamental developmental processes are frequently affected in human disease. Many of the important genes and mechanisms controlling development also regulate adult physiology, and deregulation of these processes may result in pathological conditions. Our understanding of the genome (all genes) and the proteome (all proteins) is rapidly increasing, but the regulatory processes that shape our bodies and, when affected, cause diseases such as cancer, are still poorly understood and require fundamental research. Genomic and proteomic technologies have shaped a new area of research enabling us to monitor the expression of some 20,000 genes simultaneously and to monitor the presence and modifications of proteins. Bioinformatics has become a major aspect of modern biomedical research. In addition, microscopic analysis has witnessed a true revolution in the past few years. The PhD programme Cancer, Stem Cells & Developmental Biology focuses on understanding processes underlying cancer and developmental biology using techniques and applications of
post-genomic research, including microarray analysis, next generation sequencing, proteomics, metabolomics and advanced microscopy techniques. PhD candidates in this programme explore research questions concerning embryonic growth, stem cells, signalling pathways, gene regulation, evolution and development in relation to health and disease using various model systems.

Associated research groups
All information regarding our researchers and research groups can be found at our website.

Profile of prospective PhD candidates
Prospective PhD candidates should have a Dutch or equivalent foreign MSc degree in life sciences (medicine, biomedical sciences, biology, chemistry). We expect PhD candidates to be highly motivated, talented and capable of working independently as well as in groups.

Mission of the training programme
The programme offers training programmes at both the Master’s and PhD level, which are frequently combined in joint courses and other activities so as to offer students a truly integrated research and educational programme with a natural progression from the Master’s to the PhD level. The aim of the programme is to offer research, training and education that builds on novel methodology in genomics, proteomics, metabolomics and bioinformatics technology applied to biomedical and developmental systems and processes. PhD candidates participate in the research lines of the participating groups, collaborating with their fellow PhD candidates and postdocs yet at the same time developing their own research project and expertise within the group that should lead to a series of articles and a PhD thesis to be defended in public before an expert committee. PhD candidates are encouraged to seek collaborations outside Utrecht and The Netherlands and to attend international workshops and meetings in addition to the course and seminar programme offered by the CS&D PhD programme.

Master’s students seeking a PhD position within CS&D are expected to be highly motivated to perform their thesis research in this field, as the programme aims to attract the most talented and motivated students in the life sciences from the Netherlands and abroad.

Training programme
Seminar series
Every Thursday at 16.00 pm an invited (international) speaker presents a seminar on a topic relevant to the programme’s research programme. PhD candidates are expected to attend the seminars and engage in the discussion sessions. A seminar committee is responsible for the selection of high quality speakers. Both group leaders and PhD candidates are asked to send suggestions for speakers to the committee’s chair.

Introductory course
All first-year PhD candidates participate in a 3-day course aimed at introducing them to the school’s research programme. The course consists of a theoretical part and a visit at the organizing departments as an introduction to the practical aspects of the research performed by the affiliated research groups. A syllabus containing abstracts of the presentations and background literature is provided.

Specialized courses
Several specialized 1-5 day courses are organized every year on topics such as bioinformatics, genome biology, molecular mechanisms in cancer, stem cells, and zebrafish, plant and mammalian development. In addition, the school offers courses on technology transfer and science communication and education (the ‘non-science’ courses).
Master class
Every December, a 2-day Master class is organized for all PhD candidates at a conference centre away from the lab. International leaders in the field of cancer, stem cells and developmental biology are invited to present the latest developments in their research area and discuss these with the participants.

PhD candidate retreat
This 3-day meeting in June is organized entirely by and for the PhD candidates. The programme’s PhD committee composes a programme consisting of seminars by the senior PhD candidates and poster sessions by the junior PhD candidates that are discussed between themselves without any interference from supervisors.

Training programme

<table>
<thead>
<tr>
<th>Name of the activity</th>
<th>Frequency</th>
<th>Credits</th>
<th>Organizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introductory course</td>
<td>1x/yr</td>
<td>1.0</td>
<td>CS&amp;D</td>
</tr>
<tr>
<td>Seminars</td>
<td>40x/yr</td>
<td>2.0</td>
<td>CS&amp;D</td>
</tr>
<tr>
<td>(International) specialised courses</td>
<td>1x/yr</td>
<td>2.0</td>
<td>CS&amp;D</td>
</tr>
<tr>
<td>Master class</td>
<td>1x/yr</td>
<td>1.0</td>
<td>CS&amp;D</td>
</tr>
<tr>
<td>PhD retreat</td>
<td>1x/yr</td>
<td>1.0</td>
<td>CS&amp;D</td>
</tr>
<tr>
<td>Journal clubs</td>
<td>Continuous</td>
<td>0.5/yr</td>
<td>CS&amp;D</td>
</tr>
</tbody>
</table>

15.2.3 CARDIOVASCULAR RESEARCH
Programme director: Prof. G. Pasterkamp, MD, PhD
Programme coordinators: M.L. Zonderland, PhD
M.F.A. Bierhuizen, PhD
Contact: m.l.zonderland@umcutrecht.nl
m.f.a.bierhuizen@umcutrecht.nl
Website: Cardiovascular Research

Research area
In the western world, cardiovascular diseases still are one of the most prevalent causes for morbidity and overall mortality. Our research programme aims to enhance our knowledge concerning atherothrombosis and heart failure in order to improve therapeutic options for these disorders. The two lines of research include the whole spectrum from basic to clinical activities. The research is done at various levels of complexity ranging from health care in general, to population and prevention, patient care, experimental work on animals, cell biology and using molecular techniques as proteomics and genomics. Within the theme Atherothrombosis, research is aimed to enhance knowledge concerning vascular remodelling, plaque vulnerability, relevance of toll-like receptors, coagulation, arteriogenesis, thrombogenicity of platelets and protein misfolding. The theme Heart Failure focuses on understanding the pathophysiology of and signals responsible for cardiac adaptation processes leading to ventricular hypertrophy, heart failure, arrhythmias and sudden cardiac death. Complementary integrative research is conducted on inherited and acquired diseases related to heart and kidney with an emphasis on the consequences of aging for the progression of the disease.
Within the UMC Utrecht the Cardiovascular Research (CVR) programme comprises the research activities of eight divisions (Heart and Lungs; Internal Medicine and Dermatology; Laboratory and Pharmacy; Surgical Specialties; Radiation, Radiology and Nuclear Medicine including Imaging; Julius Center; Neuroscience, Paediatrics); within Utrecht University extensive collaborations exist with the Faculty of Veterinary Medicine (Prof. Alain de Bruin, PhD, Pathology), the departments of Pharmacy (Prof. A. de Boer, PhD, Pharmaco-epidemiology and Pharmacotherapy), and Biology (Jan Andries Post, PhD, Cell Biology) and the Proteomics Centre (Prof. Albert Heck, PhD) of the Faculty of Science.

Associated research groups
All information regarding our researchers and research groups can be found at the programme’s website.

Profile of prospective PhD candidates
Prospective candidates have to be highly motivated and capable of doing research independently but also working in a team. The interest in cardiovascular disease should be apparent from the pre-education, e.g. through knowledge of (patho)physiology and pathology of heart and vessels obtained during Bachelor’s and Master’s studies in Life Sciences.

Mission of the training programme
The programme aims to challenge PhD candidates to gain more in-depth knowledge of cardiovascular research. In a multidisciplinary setting PhD candidates participate in research, meetings, symposia and courses, a.o. on the (patho)physiology of heart and vessels. Subjects include thrombotic aspects, methodology including animal models, valorisation and regenerative medicine. Via this, the PhD candidates are offered the opportunity to explore the area from the level of molecular biology to patient care. Besides theoretical education the programme aims to train academic researchers who are familiar with exceeding the limits of their own project.

After completion of the programme, the PhD candidate:
– Has profound knowledge of cardiac and vascular diseases and disease mechanisms;
– Is able to communicate and collaborate with peers and other scientists in the Netherlands and abroad;
– Can operate independently;
– Can formulate new research questions and write grant proposals;
– Is able to communicate with the broad scientific community on an academic level, and with the general public;
– Will have insight into the various possibilities to develop his/her career according to personal interests.

Training programme

<table>
<thead>
<tr>
<th>Name of the activity</th>
<th>Frequency</th>
<th>Credits</th>
<th>Organizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCARE-seminars</td>
<td>10/yr</td>
<td>1.5 /4yrs</td>
<td>CVR</td>
</tr>
<tr>
<td>Regenerative Medicine luncheon meetings</td>
<td>10/yr</td>
<td>1.5 /4 yrs</td>
<td>RM*</td>
</tr>
<tr>
<td>Cardiovascular animal models</td>
<td>1x/2yr</td>
<td>3</td>
<td>CVR</td>
</tr>
<tr>
<td>Seminar series ‘Entrepreneurship and innovation in life sciences &amp; health’</td>
<td>10x/yr</td>
<td>3*</td>
<td>CVR</td>
</tr>
<tr>
<td>Sophisticated laboratory techniques in cardiovascular research</td>
<td>1x/2yr</td>
<td>3</td>
<td>CVR</td>
</tr>
<tr>
<td>Innovations in clinical cardiovascular medicine</td>
<td>1x/2yr</td>
<td>3</td>
<td>CVR</td>
</tr>
<tr>
<td>PhD Retreat</td>
<td>1x/yr</td>
<td>0.3</td>
<td>CVR</td>
</tr>
<tr>
<td>Courses by the Netherlands Heart Foundation</td>
<td>1x/yr</td>
<td>1.5</td>
<td>NHF</td>
</tr>
</tbody>
</table>

* Course co-organized by the PhD programme Regenerative Medicine programme.
To ascertain its high quality and actuality, the admission to and mission of the CVR programme is continuously monitored by the programme committee consisting of:

- Prof. G. Pasterkamp (chair), MD, PhD, Exp. Cardiology, UMC Utrecht
- S.A.J. Chamuleau, MD, PhD, Cardiology, UMC Utrecht
- Prof. M.L. Bots, MD, PhD, Julius Center, UMC Utrecht
- M. Roest, PhD, Clinical Chemistry, UMC Utrecht
- J.A. Post, PhD, Cell Biology, Department Biology, Utrecht University
- M.L. Zonderland, PhD, Medical Physiology, UMC Utrecht
- M.F.A. Bierhuizen, PhD, Medical Physiology, UMC Utrecht
- PhD candidate representative(s)

15.2.4 CLINICAL & EXPERIMENTAL NEUROSCIENCE
Programme director: Prof. Marian Joëls, PhD
Programme coordinator: Mariken de Krom, PhD
Contact: m.dekrom-3@umcutrecht.nl
Website: Clinical & Experimental Neuroscience

Research area
Central to our research are five disorders:
- Stroke
- Epilepsy
- Neuromuscular disorders
- Psychotic disorders
- Developmental disorders

Research and care go hand in hand. In most cases, the UMC Utrecht serves as a national referral centre. Large patient cohorts have been established in each of the disease areas. All acquired information is used as input for in-depth investigations into the mechanisms underlying disease processes. In turn, the outcome of our research helps to improve early diagnosis and provides patients with the latest innovations in care.

The five disorders share common research angles:
- Genetic risk factors play an important role in the aetiology of the selected diseases.
- Environmental risk factors, in interaction with the genetic background, further contribute to disease vulnerability.
- These risk factors impact on the structure and connections of the brain and spinal cord.
- Translational approaches, making use of the latest technological possibilities in model systems, allow follow-up experiments to unravel underlying disease mechanisms.
- Implementing research findings in the daily practice of patient care is a common interest of all disease areas.

Associated research groups
All information regarding our researchers and research groups can be found at the programme’s website. In principle all our researchers work in one of the five disease areas and/or with one or more of the research approaches as mentioned under research area (point 2).

Profile of prospective PhD candidates
We are looking for PhD candidates with a broad interest in clinical and experimental neuroscience and who are open to research on the interface of the clinic and the lab. Background can be diverse;
from medical* (is possible in combination with clinical training), biomedical, psychology up to engineering or computer science. Experience with either: imaging techniques, genetic studies and/or translational research (i.e. animal studies, electrophysiology, cell and molecular biology).

*If you want to work in a clinical setting it is advisable that you do speak Dutch (considering patient contact).

Mission of the training programme
The mission of the training programme is to get PhD candidates broadly informed in the large field of clinical and experimental neuroscience; to train and prepare PhD candidates as good as possible for the next step in their (scientific) careers.

Training programme

<table>
<thead>
<tr>
<th>Name of the activity</th>
<th>Frequency</th>
<th>Credits</th>
<th>Organizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction course</td>
<td>2x/yr</td>
<td>0.5</td>
<td>C&amp;EN</td>
</tr>
<tr>
<td>Current issues in clinical neuroscience</td>
<td>1x/yr</td>
<td>1.5</td>
<td>C&amp;EN</td>
</tr>
<tr>
<td>Developmental neurobiology</td>
<td>1x/2 yr</td>
<td>2.0</td>
<td>C&amp;EN</td>
</tr>
<tr>
<td>Neuropsychopharmacology</td>
<td>1x/2 yr</td>
<td>1.7</td>
<td>C&amp;EN + ONWAR*</td>
</tr>
<tr>
<td>Summerschool (theoretical part)</td>
<td>1x/yr</td>
<td>0.5</td>
<td>C&amp;EN</td>
</tr>
<tr>
<td>C&amp;EN symposium</td>
<td>1x/yr</td>
<td>0.5</td>
<td>C&amp;EN</td>
</tr>
<tr>
<td>ONWAR retreat</td>
<td>1x/yr</td>
<td>1.0</td>
<td>ONWAR</td>
</tr>
<tr>
<td>General skills workshops</td>
<td>1-2x/yr</td>
<td>0.5</td>
<td>C&amp;EN</td>
</tr>
<tr>
<td>Several in-depth disciplinary courses</td>
<td>1x/2yr</td>
<td>1-2</td>
<td>ONWAR</td>
</tr>
</tbody>
</table>

* ONWAR is the Neuroscience Research School Amsterdam Rotterdam. All our PhD candidates have free access to these courses.

15.2.5 CLINICAL & TRANSLATIONAL ONCOLOGY
Programme director: Prof. Susanne Lens, PhD
Programme coordinator: Onno Kranenburg, MD, PhD
Contact: o.kranenburg@umcutrecht.nl
Website: Clinical & Translational Oncology

Research area
Cancer is the major cause of disease-related mortality and cancer incidence rates continue to increase. Based on demographic data it is expected that they will continue to do so until 2040, in parallel with ageing of the population. However, more effective treatment regimens have gradually lowered the chance of dying from cancer by ~10% over the past decade. To further improve cancer survival rates research on the causes of cancer, its prevention, and on new and better forms of treatment are essential.

The goal of Translational Cancer Research is to apply the knowledge obtained with basic research to the design of novel treatment modalities and novel tools for diagnosis. Vice versa, it is equally important to use clinical data to formulate scientific research questions.

Novel tumor culture protocols and sophisticated mouse models have greatly improved the quality of translational research. The clinical impact of studies using these platforms will, in all likelihood, be considerably higher than those based on traditional cell culture models. The novel model systems are also increasingly being used for studying basic aspects of tumor biology, metastasis, tumor recurrence following therapy, and therapy resistance. In addition, the rapid development of ‘omics’ technologies that document changes in tumor DNA, RNA, proteins and metabolites allow for an in-depth analysis of the tumors and the genetic background of individual patients. The large datasets that are generated with these techniques requires implementation of Bioinfor-
matics in the research structure. Ultimately these developments should lead to true personalized cancer therapy.

Translational Research can only be successfully done in situations where clinicians and biomedical researchers collaborate closely. The PhD programme Clinical and Translational Oncology strives to optimize such collaboration and most PhD students in the program will work in such an environment. The programme aims to maximize the clinical impact of basic research findings and to identify the conditions for successful therapy by using the above mentioned state-of-the-art technologies.

Associated research groups
All information regarding our researchers and research groups can be found at our website.

Profile of prospective PhD candidates
Applicants should have completed a Master of Science or a Bachelor of Science from an accredited school (HBO) having followed a minimum of 168 weeks of education. PhD fellows that have completed a Biomedical or Medical master will be best suitable candidates for the program. PhD fellows have to participate in (clinical) cancer-research projects carried out in, or associated with one of the departments of the UMC Utrecht, Biology (Utrecht University), Veterinary Medicine (Utrecht University) or Hubrecht Institute.

Mission of the training programme
The mission of the PhD programme Clinical & Translational Oncology is to promote and facilitate excellent oncology research and education for all PhD candidates but with emphasis on the clinically-oriented PhD candidates that perform research projects involving the causes and behaviour of cancer in both animal models and humans as well as projects that aim to improve cancer prevention, diagnosis and treatment. The field of cancer research is rapidly moving forward and the translation of novel preclinical findings into the clinic is the challenge ahead. Because research that involves patients or patient materials requires a different set of skills we have developed the Clinical & Translational Oncology PhD programme. The objective of the programme is to provide PhD candidates the knowledge and skills to become independent, highly qualified (bio)-medical scientists capable of crossing the bridge between bench and bedside.
### Training programme

<table>
<thead>
<tr>
<th>Name of the activity</th>
<th>Frequency</th>
<th>Credits</th>
<th>Organizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction course</td>
<td>1x/yr</td>
<td>1.0</td>
<td>CTO</td>
</tr>
<tr>
<td>Clinical Trial Development</td>
<td>1x/yr</td>
<td>3.0</td>
<td>CTO</td>
</tr>
<tr>
<td>Oncology 3.0: Towards Personalized Cancer Treatment</td>
<td>1x/yr</td>
<td>1.5</td>
<td>CTO</td>
</tr>
<tr>
<td>PhD retreat</td>
<td>1x/yr</td>
<td>0.3/yr</td>
<td>CTO</td>
</tr>
<tr>
<td>Development and Treatment of Breast and Colorectal Cancer</td>
<td>1x/yr</td>
<td>1.5</td>
<td>CTO</td>
</tr>
<tr>
<td>UMC Utrecht Cancer Center Symposia</td>
<td>1x/yr</td>
<td>0.3/yr</td>
<td>UMC Utrecht Cancer Center</td>
</tr>
<tr>
<td>Oncology seminars</td>
<td>Continuous</td>
<td>1.0/30</td>
<td>CTO</td>
</tr>
<tr>
<td>Journal clubs</td>
<td>Continuous</td>
<td>1.0/30</td>
<td>CTO</td>
</tr>
</tbody>
</table>

### Research area

Biological research in the life sciences is changing rapidly and is generating vast amounts of data on exceedingly complex regulatory systems. Bioinformatics plays an essential role in making this data available in interconnected public databases, developing computational tools for analysing the data, and investigating the data to increase our understanding of complex biological systems.

The complexity of biological systems requires a modelling approach to understand the functioning of the regulatory networks, and to go from isolated qualitative descriptions to a larger quantitative understanding. This modelling involves mathematical and computational approaches to estimate parameters, to combine different processes and different levels of organization, and to allow for large scale computer simulations. Thus, a major challenge for biological research in the next decades is to extract useful information from vast amounts of data and to develop computational models to investigate the complex dynamics of living organisms.

Accomplishing these goals will depend on the use of suitable model systems and intense collaboration between experimentalists and computational biologists. This collaborative and quantitative approach of integrating biological data is nowadays called System Biology. Our mission with this PhD programme is to train PhD candidates to become computational biologists with a strong expertise in modelling and bioinformatics, and a strong footing in the life sciences.

Current expertise in the Computational Life Sciences PhD programme involves a variety of biological disciplines and computational approaches. Biological areas that we cover are genome...
evolution, eco-evolutionary dynamics, gene regulatory networks, immunology, cell motility, development, and spatial pattern formation. This enables the PhD programme to train PhD candidates in Systems Biology in a variety of biological backgrounds. We cover computational approaches ranging from large scale bioinformatic data analysis, varying from genomic to gene expression data, mathematical analysis, to computational modelling, where the latter varies from the Cellular Potts model that is used to study development, evolutionary computation, to discrete-event agent based computer simulation models.

Associated research groups
All information regarding our researchers and research groups can be found at our [website](#).

Profile of prospective PhD candidates
Highly motivated prospective, PhDs in Computational Life Sciences ideally have a strong background in biology as well as computational modelling. Because of the interdisciplinary nature of our PhD programme the criteria for admission are, however, flexible and depend on the specific requirements of the PhD project. An optimal preparation for a PhD in Computational Life Sciences is the track Theoretical Biology & Bioinformatics in the master programme Molecular & Cellular Life Sciences of the Graduate School of Life Sciences. However, students with a master education in mathematics or physics may also be admitted provided that they have successfully completed courses in the biological, modelling and/or bioinformatics areas relevant to the PhD project. Similarly, students with a master in biology, that have not yet developed sufficient modelling or bioinformatics skills, should repair their computational skills to be admitted to the school. An excellent preparatory course for any future candidate is the Computational Biology course given by our group.

Mission of the training programme
− The main objective of the Computational Life Sciences PhD programme is to train PhD candidates to become excellent and independent researchers in Theoretical Biology and Bioinformatics, with solid expertise in modelling and bioinformatics, and a good interdisciplinary knowledge in the life sciences. Specifically, PhD candidates should be able to:
  − Critically read and judge both theoretical and experimental publications in their area of expertise,
  − Write scientific papers for international peer-reviewed journals, reporting their findings and interpreting these in their biological context,
  − Present their results on posters and presentations at international scientific conferences and workshops,
  − Be able to communicate with members of interdisciplinary research teams (PhD candidates with a theoretical background have to understand the underlying biology, and biologists should master the innovations in computational biology),
  − Supervise master students, discuss scientific results with peer scientists, communicate with editors,
  − Formulate new exciting research questions from their own research and new findings reported by others,
  − To participate in scientific discussions at an international level, and
  − Write competitive research proposals.

These requirements are in line with the rules for obtaining a PhD degree at Universities in the Netherlands, and the thesis is the final proof of competence. After their graduation PhD candidates should be “computational biologists” capable of high-level research in biological modelling and/or bioinformatics in international research environments devoted to Systems Biology, Computational and Theoretical Biology, or Bioinformatics.
Training programme
PhD candidates in our group attend the advanced courses that we give ourselves, and various other national and international courses. Examples of schools and courses attended by our PhD candidates:
- the Computational Biology, Bioinformatics and Evolutionary Genomics and Immunobiology courses that we organize ourselves
- Complex Systems Summer School of the Santa Fe Institute
- Advanced immunology courses given by the PhD programme Infection & Immunity
- Statistical and programming courses in R and Bioconductor
- The EMBO Practical Workshop on Multilevel modelling of Morphogenesis given at the John Innes Centre in Norwich, UK.
- General courses on statistics, writing papers, and giving presentations.

15.2.7 DRUG INNOVATION
Programme director: Prof. W.E. Hennink, PhD
Programme coordinator: P.A.J. Henricks, PhD
Contact: Science.UIPS@uu.nl
Website: Drug Innovation

Research area
The research area of Drug Innovation is best described by the multidisciplinary collaboration of chemists, biologists, pharmacists, and biomedical and clinical scientists, in order to translate scientific hypotheses to products for care, cure and prevention of diseases. We want to perform ground breaking, exploratory research in areas, which are the supports of drug innovation: disease targets, bio-active molecules, drug targeting and action and evaluation.

Almost all PhD candidates are working in one of the research groups of the Utrecht Institute for Pharmaceutical Sciences (UIPS). The UIPS consists of 5 groups studying medicines, but with a different focus. The Pharmaco-Epidemiology and Clinical Pharmacology group focuses on patients and is our bridge to society, clinicians and patients. The Pharmaceutics group focuses on the targeted delivery of active molecules, like drugs, proteins and genes. The Medicinal Chemistry & Chemical Biology and Biomolecular Analysis group focuses on synthesising and analysing bioactive and bio inspired molecules. The Biomolecular Mass Spectrometry and Proteomics group focuses on protein expression in (stem) cells. The Pharmacology group focuses on models for CNS and immune disorders, using drugs and medical nutrition. All groups offer courses in the training programme.

Associated research groups
All information regarding our researchers and research groups can be found at our website.
Profile of prospective PhD candidates
The PhD programme is open to candidates having a Dutch or equivalent foreign MSc in Life Sciences (e.g. Pharmaceutical, Chemical or Biomedical Sciences). Depending on the research project the PhD candidate is entering, he/she should have the required theoretical and lab-skill background. PhD candidates should be team players with good communication skills, should have a high degree of achievement drive and initiative and should have a good knowledge of English (both writing and speaking).

Mission of the training programme
The research projects of the PhD candidates are focused on interdisciplinary research in the field of innovation and usage of drugs, biologicals and diagnostics. The underlying philosophy is a cyclic approach of starting with the disease; applying top chemistry to bring active molecules into a sequence of molecular and cellular characterization; developing delivery options; administering the drug within a clinical setting and to the population; and finally looping back real life experiences with medicines again into the discovery and development process. The scientific research centres on gene function and structure-function relationships of peptides and proteins with an emphasis on the development of new innovative concepts for the diagnosis, prevention and treatment of important diseases (e.g. central nervous system, immune and infectious diseases). Translational research is, in this context, of vital importance to bring concepts from a molecular level to human use.

Training programme

<table>
<thead>
<tr>
<th>Name of the activity</th>
<th>Frequency</th>
<th>Credits</th>
<th>Organizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI Introduction course</td>
<td>1x/yr</td>
<td>1.0</td>
<td>DI</td>
</tr>
<tr>
<td>Drug Delivery and Drug Targeting</td>
<td>1x/yr</td>
<td>2.0</td>
<td>DI/GUIDE* LACDR**</td>
</tr>
<tr>
<td>Biomolecular Mass Spectrometry</td>
<td>1x/yr</td>
<td>3.0</td>
<td>DI</td>
</tr>
<tr>
<td>Discovery Cycle</td>
<td>variable</td>
<td>2.0</td>
<td>TIPharma</td>
</tr>
<tr>
<td>GLP/GCP</td>
<td>1x/2 yr</td>
<td>3.0</td>
<td>GUIDE</td>
</tr>
<tr>
<td>GMP</td>
<td>1x/2 yr</td>
<td>1.0</td>
<td>GUIDE</td>
</tr>
</tbody>
</table>
Pharmaco-epidemiology & Drug Safety 1x/yr 1.5 DI
Pharmaceutical Policy Analysis 1x/yr 1.5 DI
Pharmaco-economics 1x/yr 1.5 DI
Advanced Pharmacology 1x/yr 7.5 DI
Advanced Organic Synthesis 1x/yr 7.5 Debye/ DI
PhD retreat 1x/yr 0.3 DI
Masterclasses/Symposia/PhD meetings regularly DI

* GUIDE: Groningen University Institute for Drug Exploration
** LACDR: Leiden Academic Centre for Drug Research

15.2.8 ENVIRONMENTAL BIOLOGY
Programme director: Prof.ir. Corné M.J. Pieterse, PhD
Programme coordinator: Saskia C.M. Van Wees, PhD
Contact: s.vanwees@uu.nl
Website: Environmental Biology

Research area
Plants play a key role in the sustainability of life on earth. They are the primary source of human and animal nutrition, dominate the natural landscape, and are key players in the cycling of elements on earth. Fundamental and applied plant studies are essential to address major questions of our grand societal challenges, such as: how can science feed the world, how to control the effects of global environmental change, and how to simultaneously ensure sustainable management of natural resources? Within the PhD programme Environmental Biology, fundamental life processes of plants are studied at different organisational levels, from molecules and cells to entire plants and ecosystems. Major disciplines are plant ecology, biodiversity, microbial ecology, plant ecophysiology, plant-microbe interactions, and molecular plant physiology. The goal of our studies is to understand how plants function in populations and ecosystems, how they benefit from microbes in the soil, and how they adapt to biotic and abiotic stress conditions in their environment. Research within this PhD programme often has a spin-off in applied sciences such as in plant breeding, biotechnology, or management of natural resources.

The PhD programme Environmental Biology participates in the Utrecht strategic themes Sustainability and Life Sciences and relates to major themes such as Water, Climate and Ecosystems and Food Security. Research groups are Plant-microbe interactions, Ecophysiology of plants, Molecular plant physiology, and Ecology & Biodiversity.

Associated research groups
All information regarding our researchers and research groups can be found at the following websites:
- Ecology & Biodiversity (Prof. George Kowalchuk)
- Plant Ecophysiology (Prof. Rens Voesenek)
- Plant-Microbe Interactions (Prof. Corné Pieterse)
- Molecular Plant Physiology (Prof. Sjef Smeekens)
Profile of prospective PhD candidates
Prospective PhD candidates have a MSc in the area of plant biology, ecology, molecular biology, or microbiology and are highly motivated to perform ground-breaking research at the international forefront of one of the above-mentioned research areas.

Mission of the training programme
The mission of the PhD programme is to organize and facilitate research and education for PhD candidates in the area of plant and environmental biology. The aim of the programme is to train PhD candidates in a multidisciplinary environment to become highly qualified, independent researchers. Central issues in the training programme are 1) the understanding of biological mechanisms that play a role in plant growth, development and adaptation to biotic and abiotic stress conditions and their role in plant survival; and 2) the understanding of ecological processes in plant and microbial ecosystem functioning and the effects of environmental change on this.

Major objectives of the PhD programme are:
- to facilitate plant/ecological/microbial biological research of high international standard on all levels of integration (from molecules to cells; from cells to whole plants; from individual plants to ecosystems), resulting in a high-quality dissertation.
- to organize and facilitate high-quality training and education for PhD candidates in the research area of plant and environmental biology, bringing together different expertise areas and monitoring the progress of the PhD candidates.

Training programme
The Environmental Biology research groups not only participate in the Graduate School of Life Sciences of the UU, but also in the Dutch national graduate schools Experimental Plant Sciences (EPS) and Production Ecology & Resource Conservation (PE&RC). Researchers from the Utrecht Environmental Biology groups are actively involved in the organization of specific PhD courses that are organized by these graduate schools. All PhD courses that are organized by the mentioned national graduate schools are eligible for the PhD programme Environmental Biology. The national graduate schools offer an extensive range of research courses. For up-to-date lists of their specialized courses please visit the respective websites:
- Graduate School Experimental Plant Science
- Graduate School Plant Ecology & Resource Conservation

15.2.9 EPIDEMIOLOGY
Programme director: prof. D.E. Grobbee, MD, PhD
Programme coordinator: S.G. Uijl, PhD
Contact: msc-epidemiology@umcutrecht.nl
Website: Epidemiology

Research area
Epidemiology is the scientific discipline that studies patterns in space and time in the aetiology, diagnosis, prognosis, treatment, and prevention of diseases in populations, and identifies factors that contribute to or influence these phenomena. The word ‘population’ is key to this. In populations one can find descriptive or causal relations between factors on the one hand and disease occurrence and dynamics on the other. These patterns are essential for understanding, preventing and controlling diseases. Utrecht University has defined the focus area “Epidemiology” in which the research programme is embedded. The research is approached from a nationally and internationally unique multidisciplinary perspective, combining clinical, veterinary, pharmacological/pharmaceutical, environmental, occupational, and theoretical epidemiology, and medical statistics, in close interaction with medical, veterinary and pharmaceutical specialists. Based on real and
clinically relevant problems, we contribute through research, knowledge dissemination and education to an improved understanding of the aetiology, diagnosis, prognosis, treatment and prevention of disease. These diseases notably include cardiovascular diseases, cancer and infectious diseases, occurring both in humans and animals.

The PhD Programme is organised by the research groups of the Utrecht University focus area Epidemiology. These are: UMC Utrecht, Julius Centre for Health Sciences and Primary Care; Faculty of Veterinary Medicine: Department of Farm Animal Health and Institute for Risk Assessment Sciences; Faculty of Science: Utrecht Institute for Pharmaceutical Sciences, Pharmacoepidemiology and Pharmacotherapy. Research fields covered are therefore clinical epidemiology, epidemiology of infectious diseases, medical statistics, veterinary epidemiology, occupational and environmental epidemiology, and pharmacoepidemiology.

Associated research groups
All information regarding our researchers and research groups can be found at the following websites:
- UMC Utrecht, Julius Center for Health Sciences and Primary Care
- Veterinary Medicine, Department of Farm Animal Health
- Institute for Risk Assessment Sciences
- Utrecht Institute for Pharmaceutical Sciences, Pharmacoepidemiology and Pharmacotherapy

Profile of prospective PhD candidates
The PhD programme Epidemiology is accredited by the Dutch Epidemiology association as leading to a registration as Epidemiologist B. In order to qualify, the research must be epidemiological, and PhD candidates must either be theoretically trained as epidemiologist, or undergo this training during the PhD trajectory by following the Utrecht University MSc Epidemiology Postgraduate. Previous education must be either in (veterinary) medicine, or biomedical sciences.

Mission of the training programme
The PhD programme Epidemiology is aimed at optimal preparation of PhD fellows to become independent researchers, research consultants, or continue their career at an academic level in (non)governmental institutions or the pharmaceutical industry. The core of the educational programme consists of formal epidemiological training, with research methodology as its core knowledge area, offered by the participating research groups of the UU focus area Epidemiology. Collaborative educational activities are primarily aimed at providing PhD fellows with the required knowledge base and skills to conduct their current research and design future research. Simultaneously these interfaculty educational activities aid in the development of a shared view on concepts and terminology, and stimulate research collaboration.

Training programme
Name of the activity: MSc Epidemiology Postgraduate
Frequency: start yearly in September
Credits: 90
Organizing entity: all research groups participating in the Utrecht University focus area ‘Epidemiology’

Name of the activity: PhD Seminar Epidemiology
Research area
The research programme Infection and Immunity has proven itself over the last decades. It connects immunologists, infectious disease physicians, paediatricians, bacteriologists, virologists, chemists and cell biologist to study and fight elements in infectious diseases and immunological disorders. It aims to develop novel treatments and fight resistance against existing drugs. Since Infection and Immunity are intertwined, it is our choice to integrate these two areas of research within a single research school. PhD candidates are trained in both areas of research in order to fully understand and appreciate this fundamental entanglement.

Therefore we have assembled groups that do outstanding research. Not only in basic microbiology and immunology, but also in the field where the two research areas meet. The latter is illustrated by research on immune evasion, vaccination and the balance between inflammation and infection. In order to study the molecular mechanism of this interplay one needs expertise and insight from both the infection perspective and the immunity standpoint.

University Medical Center Utrecht, Research programme ‘Infection and Immunity’
The programme focuses on the following themes:
1. Antimicrobial resistance 2. Infection prevention
3. Immune deficiencies 4. Acute & chronic inflammation. Head: Prof. Eric Hack, PhD; Management Team: Prof. Marc Bonten, MD, PhD, Prof. Lieke Sanders, MD, PhD, Prof. Jos van Strijp.

Faculty of Veterinary Sciences, Utrecht University, Strategic Infection Biology (SIB)
The programme is designed to discover principles of infection and associated pathobiology at the cellular, organ, host, and population level with the goal to develop novel infection intervention and prevention strategies. The focus is on principles of infection and intervention and prevention are investigated using infectious agents that have zoönotic potential and/or are of major (future) veterinary, public health or economic relevance. The research programme is divided into three coherent research lines that each target key steps in the infection process: 1. Cellular Infection 2. Host Defence 3. Infection Dynamics. Prof J. van Putten, PhD is programme coordinator.

New initiatives on campus will strengthen the I&I programme in the near future. Networking alliances, such as Immunovalley and Utrecht Life Sciences, focus strongly on Infection and Immu-
nity. Future investments like a zoönosis institute, a wild life institute and the move of Danone and the National Institutes of Public Health and the Environment (RIVM) to the Utrecht Science Park in the (near) future, will help to create an environment in which Infection and Immunity can flourish.

Associated research groups
All information regarding our researchers and research groups can be found at our website.

Profile of prospective PhD candidates
Prospective PhD candidates have a MSc in Biology, Biomedical Sciences, or a related field of study. They have a basic knowledge of infectious diseases and the immune system and are highly motivated to perform ground-breaking research at the international forefront of one of the above-mentioned research areas.

Mission of the training programme
The multi-disciplinary programme ‘Infection & Immunity’ aims to improve knowledge on inflammatory disease resulting from failing immunity and/or infection. The programme aims to host the full range of academic research needed to (1) understand the (molecular) epidemiology of infections and antimicrobial resistance, (2) understand the pathophysiology of infections and of failing or overreacting host responses, (3) develop highly innovative strategies to diagnose, treat and prevent infections, immune deficiency and inflammatory diseases, (4) improve health-care through applying (and evaluating) these ‘research products’ in patients and healthy subjects.

<table>
<thead>
<tr>
<th>Name of the activity</th>
<th>Frequency</th>
<th>Credits</th>
<th>Organizer</th>
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</thead>
<tbody>
<tr>
<td>Advanced course Immunology</td>
<td>1 x/yr</td>
<td>1.5</td>
<td>I&amp;I</td>
</tr>
<tr>
<td>Advanced course Infection biology</td>
<td>1 x/yr</td>
<td>1.5</td>
<td>I&amp;I</td>
</tr>
<tr>
<td>Spring Meeting</td>
<td>1 x/yr</td>
<td>0.15</td>
<td>I&amp;I</td>
</tr>
<tr>
<td>PhD Retreat</td>
<td>1 x/yr</td>
<td>0.3</td>
<td>I&amp;I</td>
</tr>
<tr>
<td>van Kinsbergen course</td>
<td>1 x/2yr</td>
<td>1.5</td>
<td>I&amp;I</td>
</tr>
<tr>
<td>Infection meets Immunity Summer School</td>
<td>1x/2yr</td>
<td>3.0</td>
<td>I&amp;I</td>
</tr>
<tr>
<td>Seminars</td>
<td>40x/yr</td>
<td>2.0</td>
<td>I&amp;I</td>
</tr>
<tr>
<td>Journal club</td>
<td>Continuous</td>
<td>0.5</td>
<td>I&amp;I</td>
</tr>
</tbody>
</table>

15.2.11 MEDICAL IMAGING
Programme director: Prof. Max A. Viergever, PhD
Programme coordinator: Renée Allebrand, Msc
Contact: imago@isi.uu.nl
Website: Medical Imaging

Research area
The PhD programme Medical Imaging (ImagO) is hosted by the Image Sciences Institute, which is part of the Imaging Division of the UMC Utrecht. With over 200 researchers, the Imaging Division is one of the largest concentrations of academic medical imaging research worldwide. The division comprises the Departments of Radiology (including Nuclear Medicine), Radiotherapy, and Medical Imaging (better known as the Image Sciences Institute). The division is internationally renowned for its research on MR image acquisition, image analysis (registration, quantification, computer-aided diagnosis), diagnostic imaging of brain disorders, cardiovascular diseases and oncology, and image-guided oncological
interventions. There is a longstanding close collaboration with industry, which has facilitated rapid translation of research concepts to image technology enabled healthcare solutions, for patient-tailored diagnosis, prognosis, and treatment. Medical Imaging combines expertise from different disciplines so as to offer a balanced educational programme and to perform high-level fundamental and applied research in the area of medical imaging. Both natural and clinical sciences are represented.

Associated research groups
All information regarding our researchers and research groups can be found at our [website](#).

Profile of prospective PhD candidates
Prospective PhD candidates should have a Dutch or equivalent foreign MSc degree in exact sciences (physics, mathematics, computer science, biomedical or electrical engineering) or life sciences (medicine, biomedical sciences).

We expect PhD candidates to be highly motivated, talented and capable of working independently as well as in groups.

Mission of the training programme
The main objectives of the graduate programme are:

- To establish and execute a coherent and internationally recognized research programme in medical imaging;
- To offer an advanced and balanced educational programme of lectures, courses, seminars and workshops to PhD candidates in this area;
- To train and supervise PhD candidates to attain the level of qualified and independent researchers by the highest international standards;

Training programme

<table>
<thead>
<tr>
<th>Name of the activity</th>
<th>Frequency</th>
<th>Credits</th>
<th>Organizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>ImagO introduction (mandatory)</td>
<td>4 x/yr</td>
<td>1.0</td>
<td>MI</td>
</tr>
<tr>
<td>Introduction Clinical &amp; Translational Oncology</td>
<td>1x/yr</td>
<td>1.0</td>
<td>MI**</td>
</tr>
<tr>
<td>Anatomy &amp; Physiology</td>
<td>1 x/yr</td>
<td>7.5</td>
<td>MI</td>
</tr>
<tr>
<td>Image Processing I</td>
<td>1 x/yr</td>
<td>7.5</td>
<td>MI</td>
</tr>
<tr>
<td>Image Processing II</td>
<td>1 x/yr</td>
<td>7.5</td>
<td>MI</td>
</tr>
<tr>
<td>Medical Image Formation</td>
<td>1 x/yr</td>
<td>7.5</td>
<td>MI</td>
</tr>
<tr>
<td>Medische Beeldvormende Technieken</td>
<td>1 x/yr</td>
<td>4.5</td>
<td>MI</td>
</tr>
<tr>
<td>MRI in Radiotherapy</td>
<td>1 x/yr</td>
<td>2.5</td>
<td>MI</td>
</tr>
<tr>
<td>Advanced in vivo NMR</td>
<td>1 x/yr</td>
<td>3.0</td>
<td>MI</td>
</tr>
<tr>
<td>Radiotherapy Physics, including Advanced Radiotherapy Physics</td>
<td>1 x/yr</td>
<td>7.5</td>
<td>MI</td>
</tr>
<tr>
<td>Advanced Radiotherapy Physics</td>
<td>1 x/yr</td>
<td>2.5</td>
<td>MI</td>
</tr>
<tr>
<td>Advanced MR Physics</td>
<td>1 x/yr</td>
<td>7.5</td>
<td>MI</td>
</tr>
<tr>
<td>Knowledge Driven Image Segmentation</td>
<td>1 x/2 yr</td>
<td>1.5</td>
<td>ASCI</td>
</tr>
<tr>
<td>Capita Selecta in Medical Imaging</td>
<td>1 x/yr</td>
<td>7.5</td>
<td>MI</td>
</tr>
<tr>
<td>Evidence-Based evaluation of new imaging Techniques</td>
<td>1 x/yr</td>
<td>1.5</td>
<td>MI</td>
</tr>
</tbody>
</table>

* In collaboration with universities of Wageningen, Nijmegen, and Eindhoven.

** In collaboration with Clinical & Translational Oncology
PhD candidates can also attend courses from other PhD programmes of the Graduate School of Life Sciences, the Graduate School of Natural Sciences as well as courses from Graduate Schools from other universities, e.g. ASCI or NIHES.

15.2.12 MOLECULAR LIFE SCIENCES
Programme director: Prof. Piet Gros, PhD
Programme coordinator: Reinout Raijmakers, PhD
Contact: Science.Bijvoet@uu.nl
Website: Molecular Life Sciences

Research area
The Molecular Life Sciences programme, organised by the Bijvoet Centre for Biomolecular Research, aims to provide PhD candidates with a solid and broad knowledge of structural biochemistry. The programme provides research and training opportunities for PhD candidates interested in many areas of structural biology X-ray diffraction, mass spectrometry, proteomics, solid-state and liquid-state NMR, protein folding and biomembranes. The programme is coordinated by the Bijvoet Centre for Biomolecular Research, which aims to gain insight into the relation, at the molecular level, between the structure and the function and activity of biomolecules that are involved in recognition, interaction, and regulatory processes.

Associated research
The Molecular Life Science PhD programme is organized by the Bijvoet Center, which consists of the following groups and staff members at Utrecht University:
- Biomolecular Mass Spectrometry & Proteomics (BMS)
- Cellular Protein Chemistry (CPC)
- Membrane Biochemistry and Biophysics (MBB)
- Crystal and Structural Chemistry (CSC)
- Medicinal Chemistry & Chemical Biology (MC)
- NMR spectroscopy (NMR)

Associated members at the University Medical Center Utrecht
- Molecular Cancer Research
- Cell Microscopy Center

Profile of prospective PhD candidates
PhD candidates are expected to be highly motivated, talented, capable of working independently and are generally expected to have an educational background with an emphasis on exact sciences (chemistry, physics, biology) and related fields (e.g. biomedical sciences).

Mission of the training programme
We aim to provide high-quality research training programs for young scientists with an interest in the relationship, at the
molecular level, between structure and function/activity of biomolecules that are involved in recognition, interaction, and regulatory processes.

### Training programme

<table>
<thead>
<tr>
<th>Name of the activity</th>
<th>Frequency</th>
<th>Credits</th>
<th>Organizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomolecular Mass Spectrometry course</td>
<td>1x/yr</td>
<td>3.0</td>
<td>MLS</td>
</tr>
<tr>
<td>Advanced NMR spectroscopy course</td>
<td>1x/yr</td>
<td>3.0</td>
<td>MLS</td>
</tr>
<tr>
<td>Advanced Protein Crystallography course</td>
<td>1x/yr</td>
<td>3.0</td>
<td>MLS</td>
</tr>
<tr>
<td>Scientific Writing &amp; Presenting course</td>
<td>1x/2yr</td>
<td>1.5</td>
<td>MLS</td>
</tr>
<tr>
<td>Bijvoet Symposium</td>
<td>1x/yr</td>
<td>0.5</td>
<td>MLS</td>
</tr>
<tr>
<td>Seminars</td>
<td>± 10/yr</td>
<td>2.0</td>
<td>MLS</td>
</tr>
</tbody>
</table>

**15.2.13 REGENERATIVE MEDICINE**

Programme director: Prof. Wouter Dhert, MD, PhD & Prof. Paul Coffer, PhD
Programme coordinator: Sarah Opitz
Contact: RMU@umcutrecht.nl
Website: Regenerative Medicine

### Research area

The PhD Programme in Regenerative Medicine (RMUtrecht) is interdisciplinary and cross-faculty. It is organized by Utrecht University, together with the University Medical Center Utrecht and Hubrecht Institute.

Regenerative Medicine is a dynamic field that brings together fundamental and clinical scientists from many disciplines with the aim of developing novel therapeutic strategies for a wide variety of diseases. The multidisciplinary nature of this field accounts for the involvement of several institutes, and covers a variety of enabling technologies and clinical application areas, such as stem cell-based treatment and regeneration of tissue types and organs.

Growth and differentiation of stem and progenitor cells is critical for understanding both normal development and disease progression, with an ultimate aim to use these cells for the transplantation and development of novel approaches for the treatment of disease. There is much progress in the clinical aspect of regenerative medicine: new insights from fundamental work on the degeneration and injury of bones and joints are already being applied to the treatment of spine and knee lesions; new stem cell-based treatments for inherited diseases are being developed; and stem cell-based treatments for cardiovascular and renal disease are investigated in the lab and patients.

In this truly multidisciplinary field, stem cell characterization, intracellular signalling, the formation of new blood vessels, the use of biomaterials as scaffold or controlled release systems, and tissue homeostasis are central elements, providing connections to other research programs. The ultimate aim of regenerative medicine is to mobilise the body to heal itself.

RMUtrecht is directly linked with the Regenerative Medicine & Stem Cells strategic research programme of the UMC Utrecht. By definition, this places RMUtrecht in all of the six strategic research programs at the UMC Utrecht; the five others are:
- Brain
− Child Health
− Circulatory Health
− Infection and Immunity
− Personalized Cancer Care

In addition, RMUtrecht has research and education connections with other faculties and departments at Utrecht University, including:
− Faculty of Veterinary Medicine;
− Biomedical Sciences programs (bachelor and master);
− Medical sciences;
− Faculty of Sciences (in particular, with Pharmacy).

It also has close ties with Hubrecht Institute; Technical University Eindhoven (joint RM & Technology master’s program); Erasmus Medical Center; and Delft University of Technology.

Associated research groups
All information regarding our researchers and research groups can be found at our website.

Profile of prospective PhD candidates
Prospective PhD candidates should have a Dutch or equivalent foreign Bachelor’s and/or Master’s degree in the life sciences, medicine, veterinary medicine or technical areas (such as engineering or computational sciences). We expect PhD candidates to be highly motivated, talented and capable of working independently as well as in groups. As this is a broad diverse field, we also expect PhD candidates to be open to interacting and learning about areas of regenerative medicine that may be outside of their specific research topic.

The topic of a PhD candidate’s research must lie within the field of regenerative medicine; the RM Executive Programme Committee relies on the judgment of the (daily) supervisor. In cases of doubt, the decision of the Executive Committee will be final. Students from other universities are also able to follow courses within in the PhD program, based upon availability, and provided that they have adequate background as mentioned above. Again, in case of doubt, the decision of the executive programme committee will be final.

The PhD candidate must be able to communicate in English; all courses are given in English.

Mission of the training programme
A unique hallmark of RMUtrecht is the integrated approach in which basic scientists and clinicians from both human and veterinary medicine work side-by-side. The main objectives of the RM PhD Programme are:
− To provide an inspiring and high level multidisciplinary and translational education programme in RM;
− To continuously develop a coherent and internationally recognized training and education programme in RM;
− To facilitate a stimulating high-quality scientific climate for PhD candidates to “mature” in the world of Regenerative Medicine whilst developing state-of-the-art practical and theoretical skills;
− To effectively train PhD candidates in the field of Regenerative Medicine over the broad range, from fundamental research to translational application, i.e. from bench to bedside;
− To teach and facilitate communication and interaction with colleagues and peers within this highly multidisciplinary field such that PhD candidates become acquainted with the international perspective of the RM field;
− To strengthen the national and international position of the research by cooperation with
related academic and industrial institutes;
– To share and transfer knowledge, methodology, software and technology.

Training programme

<table>
<thead>
<tr>
<th>Name of the activity</th>
<th>Frequency</th>
<th>Credits</th>
<th>Organizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to RM (mandatory)</td>
<td>1x/yr</td>
<td>1.0</td>
<td>RMUtrecht</td>
</tr>
<tr>
<td>Introduction to Stem Cells</td>
<td>1x/yr</td>
<td>1.0</td>
<td>RMUtrecht</td>
</tr>
<tr>
<td>Perspectives in RM (mandatory)</td>
<td>1x/yr</td>
<td>1.0</td>
<td>RMUtrecht</td>
</tr>
<tr>
<td>Bench to Bedside</td>
<td>1x/3yr</td>
<td>2.0</td>
<td>RMUtrecht*</td>
</tr>
<tr>
<td>Cardiovascular RM</td>
<td>1x/2yr</td>
<td>1.2</td>
<td>RMUtrecht</td>
</tr>
<tr>
<td>Enabling Technologies</td>
<td>1x/2yr</td>
<td>1.5</td>
<td>RMUtrecht</td>
</tr>
<tr>
<td>Theme Day: Musculoskeletal</td>
<td>1x/2yr</td>
<td>0.3</td>
<td>RMUtrecht</td>
</tr>
<tr>
<td>Theme Day: Cardiovascular</td>
<td>1x/2yr</td>
<td>0.3</td>
<td>RMUtrecht</td>
</tr>
<tr>
<td>Theme Day: Stem Cell-based Therapies</td>
<td>1x/2yr</td>
<td>0.3</td>
<td>RMUtrecht</td>
</tr>
<tr>
<td>RM Lunch Seminar Series</td>
<td>10x/yr</td>
<td>0.6/yr</td>
<td>RMUtrecht</td>
</tr>
<tr>
<td>PhD retreat</td>
<td>1x/yr</td>
<td>0.5</td>
<td>RMUtrecht</td>
</tr>
</tbody>
</table>

* In collaboration with the Dutch National RM PhD Programme.

15.2.14 TOXICOLOGY & ENVIRONMENTAL HEALTH

Programme director: Prof. Bert Brunekreef, PhD
Programme coordinator: Mieke Lumens, PhD
Contact: education.iras@uu.nl
Website: Toxicology & Environmental Health

Research area

Risk is an integral part of life. We take, perceive, ignore and experience risks every day. The research area studied in this programme investigates risks related to chemical, biological and physical agents in the environment, the work place and the food chain from a multidisciplinary perspective. The focus of the PhD programme is on the three main approaches used in environmental risk assessment: exposure assessment, toxicology and environmental epidemiology.

In order to facilitate and support risk assessment knowledge is needed on the bioavailability and hazards associated with toxic substances. Within risk assessment epidemiological research aims at establishing relationships between environmental and occupational exposures to chemical, biological and physical factors and health. To reliably and quantitatively measure exposure of human beings to all sorts of agents is a complex endeavour, which requires rigorous methods and method development and validation. Combining the information gathered by the three approaches mentioned above will contribute to an improved understanding of environmental risks and more thorough environmental (health) risk assessments.

Associated research groups
All information regarding our researchers and research groups can be found at our website.

Profile of prospective PhD candidates
In the past we have attracted PhD candidates from all over the world and with various scientific backgrounds, such as toxicology, environmental and occupational epidemiology and hygiene, and exposure assessment.

The basic requirement for admission is a relevant and sufficient scientific background in Life Sciences (e.g. Biological, Biomedical, Environmental, Chemical Sciences), and financial support to pay for the PhD position. Because of the interdisciplinary nature of our PhD programme the admission criteria will have to be flexible and individualized. Students that have completed the master programme Toxicology and Environmental Health will be well suited as candidates for the PhD programme. The PhD programme committee will decide about admission of PhD candidates proposed by the supervising professors of the research groups involved. Depending on the research project the PhD candidate is entering, he/she should have the required theoretical and lab-skill background. When necessary, PhD candidates should remedy any education deficiencies on the advice of his/her supervisor.

Mission of the training programme
The programme educates PhD candidates to become independent researchers in the area of environmental risk assessment. In a multidisciplinary setting the PhD candidates participate in research and in meetings, symposia and courses, covering different areas of toxicology, environmental and occupational epidemiology, exposure assessment and (veterinary) public health.

Objectives
After completion of the programme, the PhD candidate:
− has profound knowledge of toxicology and environmental health and their application in risk assessment
− is able to communicate and to collaborate with peers and other scientists in the Netherlands and abroad;
− can perform scientific research independently;
− can formulate new research questions and write grant proposals
− is able to communicate with stakeholders in the society, and with the general public about his or her area of research;
− has insight into the various possibilities to develop his/her career according to personal interests.

Training programme

<table>
<thead>
<tr>
<th>Name of the activity</th>
<th>Frequency</th>
<th>Credits</th>
<th>Organizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure assessment in epidemiology</td>
<td>1x/yr</td>
<td>3.0</td>
<td>IRAS</td>
</tr>
<tr>
<td>Exposure assessment in toxicology</td>
<td>1x/yr</td>
<td>3.0</td>
<td>IRAS</td>
</tr>
<tr>
<td>Effects assessment in toxicology and environmental epidemiology</td>
<td>1x/yr</td>
<td>6.0</td>
<td>IRAS</td>
</tr>
<tr>
<td>Risk assessment and risk management</td>
<td>1x/yr</td>
<td>3.0</td>
<td>IRAS</td>
</tr>
<tr>
<td>Environmental and occupational epidemiology</td>
<td>1x/yr</td>
<td>3.0</td>
<td>IRAS</td>
</tr>
<tr>
<td>Advanced exposure assessment</td>
<td>1x/yr</td>
<td>1.5</td>
<td>IRAS</td>
</tr>
<tr>
<td>Exposure measurements</td>
<td>1x/2yr</td>
<td>1.5</td>
<td>IRAS</td>
</tr>
<tr>
<td>Molecular Epidemiology of Chronic Disease and the Exposome</td>
<td>1x/yr</td>
<td>1.5</td>
<td>IRAS</td>
</tr>
<tr>
<td>Biological Agents: Environmental Exposure Assessment and Human Health Risk Analyses</td>
<td>1x/yr</td>
<td>1.5</td>
<td>IRAS</td>
</tr>
<tr>
<td>Journal club on environmental and occupational epidemiology</td>
<td>Continuous</td>
<td>0.5/yr</td>
<td>IRAS</td>
</tr>
<tr>
<td>Magnetic field exposure in the workplace</td>
<td>1x/yr</td>
<td>1.0</td>
<td>IRAS</td>
</tr>
<tr>
<td>Specialization courses in toxicology</td>
<td>1x/1-2yr</td>
<td>1.5-3.0</td>
<td>PET courses</td>
</tr>
</tbody>
</table>
16 Facts & Figures

16.1 UTRECHT UNIVERSITY
- Founded in 1636
- 7 Faculties:
  - Geosciences
  - Humanities
  - Law, Economics and Governance
  - Medicine
  - Science
  - Social and Behavioural Sciences
  - Veterinary Medicine
- 6 Graduate Schools
- 4 Campuses
- Total number of staff members 6,300 (excluding Faculty of Medicine)
- Member of the League of European Research Universities (LERU), a partnership of Europe’s top research universities including, inter alia, the universities of Oxford, Cambridge, Imperial College London, Heidelberg and Sorbonne-Paris

16.2 EDUCATION
- 30,000 students
- 2,500 international students
- 130 nationalities
- 2,000 PhD candidates
- Over 200 English taught courses
- The widest range of English-taught graduate programmes in the Netherlands
- Europe’s largest academic summer school
16.3 RESEARCH IN LIFE SCIENCES
- > 220 full professors
- 15 thematic programmes
- 130 nationalities
- ± 1,700 PhD candidates, of which 20% international

16.4 INTERNATIONAL RANKINGS
According to 2013 Academic Ranking of World Universities (Shanghai Jiao Tong):
- 52nd in the world
- 13th in Europe
- 1st in the Netherlands

17  Living in Utrecht and The Netherlands

17.1 UTRECHT UNIVERSITY
Information about Utrecht University can be found at its official website. The International Neighbour Group organizes social activities for international staff at Utrecht University and is also a good source for information about living in the Netherlands.

17.2 UTRECHT
Information about the City of Utrecht can be found at the official websites of the City of Utrecht or The Netherlands.

17.3 THE NETHERLANDS
The names The Netherlands and Holland are synonymous. Information about the characteristics of the country can be found at the official website of Holland.
ACKNOWLEDGMENTS

The Graduate School of Life Sciences would like to thank the programme coordinators for their contribution and master students Teresa Haider, Birgit Goversen, Renata Martins Cardoso and Lieke Guinée and the PhD candidates Paola Carillo Bustamante, Meng Wang, Fatemeh Saberi and Alejandro Dorado Garcia for their critical comments and helpful suggestions. This document is partially based on the Nuffic flyer ‘Obtaining a PhD’.

Editor
Saskia Ebeling, PhD
Administrative Secretary to the Board of Studies & Coordinator of Doctoral Education
Utrecht University Graduate School of Life Sciences

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Faculty of Science, Communication

Photography

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Twitter: @UU_GSLS