From: Rampal S. Etienne
Subject: 12 PhD Scholarship positions in Evolutionary Life Sciences @ University of Groningen, The Netherlands

12 PhD Scholarship positions in Evolutionary Life Sciences

Host organization

The University of Groningen has an international reputation as a dynamic and innovative institution of higher education, offering high-quality teaching and research. Balanced study and career paths in a wide variety of disciplines encourage the 30,000 students and researchers to develop their own individual talents. The University of Groningen is proud to be among the global elite with a classification in the top 100 of the Shanghai ARWU, the QS World University Rankings, and the THE World University Rankings. It marks the 24th place in the global ranking of Best Places to Work in Academia, scoring 3rd best in Europe and 5th non-US university. Joining forces with prestigious partner universities and networks, the University of Groningen is truly an international place of knowledge.

The Groningen Institute for Evolutionary Life Sciences (GELIFES)

GELIFES, the largest institute of the Faculty of Mathematics and Natural Sciences (FMNS) fills a special niche in the life sciences by covering and integrating mechanistic, evolutionary and ecological approaches, aiming to understand adaptation on all levels of biological organisation. Researchers pursue fundamental questions while collaborating with partners from industry, medicine and other realms of society. For its new research programme, called Adaptive Life, which is one of the four focus themes of the FMNS, the institute received a large university grant.

Our research fields include behavioural biology, chronobiology, ecology, evolutionary biology, genetics and genomics, neurobiology, physiology and theoretical modelling, using a wide array of research tools. Research levels range from molecular and organismal to population and community, performed under laboratory, semi-natural and field conditions. Studying mechanisms within the framework of evolutionary adaptation allows for a large diversity of model organisms, for which we have extensive facilities. A wide array of species are studied, from microbes, algae, plants and insects to vertebrates such as fish, birds, rodents, marine mammals and humans. We are currently searching for candidates to fill a substantial number of open PhD positions within our Adaptive Life programme.

PhD project description

GELIFES offers 12 four-year scholarship PhD positions for the most talented and motivated national and international students, starting between May and September 2017. All PhD positions are integrative by nature, spanning across different expertise groups and being strengthened by complementary PhD projects already in progress and in preparation.

PhD candidates are invited to approach potential supervisors (PIs; 2 minimum) within GELIFES (a 3rd supervisor may be attracted externally) with a draft research proposal (500 words) within the scope of the integrative topics listed below and submit their personal files. PI teams will select three candidates at most based on their information and research plans and invite them to write a full research proposal. All final proposals will be reviewed by an external committee and ranked according to scientific quality, feasibility as well as fit to the adaptive Life programme and integrative potential. Only the 12 highest ranking proposals will be eligible for funding.

Upon selection, PhD candidates will receive expert supervision and mentoring, and excellent training through cutting-edge research projects, advanced courses and training opportunities, complemented by workshops on generic research, transferable skills and teaching. The home base for GELIFES' research is the new spectacular Linnaeusborg at Zernike Campus. Research is performed with state of the art equipment and in well-equipped facilities.

As a PhD candidate, you are committed to conduct independent and original scientific research, to report on this research in international publications and presentations, and to present the results of the research in a PhD dissertation, to be completed within four years. After thesis completion, many of GELIFES' PhD students move on to top positions in academia or industry.

Integrative topics

PhD candidates are invited to develop their own research proposal within the frame work of one of four integrative topics of the Adaptive Life Programme listed below, or more specifically within a proposed research theme as indicated on our Adaptive Life vacancy website: https://urldefense.proofpoint.com/v2/url?u=http-3A__www.rug.nl_research_fmns_themes_adaptive-2Dlife_research_vacancies&d=CwIF-g&c=Ngd-ta5yRYsqeUsEDgxhcqsYYY1Xs5ogLxWPA_2Wlc4&r=e2OJ1azRFn8ihJzb2HxZT0AqoiqLvxfeeaTyN59ZLoI&m=zfdOACPCh_tvD-COCIztRkD03g9cuwtlhGOOFUhlWUw&s=asyJBIeNyI5IpuSLiDqPP0VF5w4-2v-5a6-pxv7KGgs&e=

1. Causes and consequences of consistent individual differences

GELIFES is renowned for its research on 'animal personalities', i.e., systematic individual differences in physiology or behaviour that are stable in time and consistent across contexts. The study of such individual differences is currently a hot topic in the animal and human behavioural sciences, in ecology and evolution, in the medical and pharmaceutical sciences, and also in fields like microbiology or robotics. Individual differences can be viewed from an evolutionary perspective (When and why does selection lead to the coexistence of different behavioural types? How are behavioural syndromes shaped by selection? What are the evolutionary implications of consistent individual variation within populations?) and from a mechanistic perspective (Which developmental and physiological processes give rise to consistent individual differences? How are behavioural syndromes shaped by these processes? What are the implications of these differences, e.g. for understanding individual vulnerability for disease and sensitivity for treatment?). In line with the general mission of the Adaptive Life initiative, all these questions will be approached from an integrative perspective that strives to synthesize evolutionary and mechanistic approaches in an overarching framework. Keywords for this topic: animal personalities, behavioural syndromes, personalized medicine, diversifying selection, phenotypic plasticity, bet-hedging.

2. Adaptive diversity and eco-evolutionary dynamics

Organismal evolution is shaped by ecological processes, which in turn are influenced by evolutionary change. Therefore, understanding adaptation - or the lack thereof - requires the integration of evolutionary and ecological perspectives. The mechanisms underlying biological diversity at different levels of organisation are investigated: from the molecular mechanisms that generate phenotypic variation, to species interactions in ecological communities and the macro-evolutionary patterns of species diversity. Causes, consequences and maintenance of biodiversity are studied for a variety of organisms including bacteria, plants and (in)vertebrate animals, and using

approaches ranging from theoretical modelling and comparative analysis to experimental evolution and field ecology.

Key patterns & processes: adaptive radiation, cognition, competition, cultural evolution, ecology of fear, facilitation, herbivory, host-parasite interactions, natural selection, niche construction, self-organisation, sexual selection, speciation.

Focal disciplines & approaches: behavioural ecology, biogeography, bioinformatics, community ecology, comparative genomics, conservation ecology, ecosystem dynamics, evolutionary systems biology, experimental ecology, experimental evolution, molecular evolution, phylogenetics, population genetics & genomics, sensory ecology, theoretical biology.

3. The role of the microbiome in physiological, behavioral and community functioning

Most eukaryotes live in close interaction with micro-organisms (the microbiome) and together they form a meta-organism in which natural selection occurs (hologenome theory of evolution). Given the high microbial diversity, as well as the high plasticity and rates of evolution at the population level, the host can adapt much faster to changes in environmental condition simply by altering its microbiome. Similar responses are observed in soils, where the interaction between soil microbes and plants might be modulated in response to stress conditions. For example, the bacteria that become endophytes in plants are recruited from the rhizosphere bacteria, which in turn are a subset of bulk soil. As these three environments impose very different demands on the bacteria involved, often requiring distinct metabolic adaptations, this theme could prove to be a model for fast genetic adaptation (or even speciation) and for the evolution of symbiotic interactions as termite-protist, ruminant-gut bacteria, etc. When in association with hosts, the microbiome is involved in the development and regulation of the immune response. It also plays a role in disease protection and in controlling host nutrition, which might lead to changes in host behaviour. When free-living, microbes regulate biogeochemical cycles, recycling the nutrients essential for life on earth. Soils harbour the greatest diversity of micro-organisms and the functioning of this microbiome, either as free-living microbial communities or in association with other soil organisms and plants, determines soil health.

4. Evolutionary medicine

Evolutionary Medicine is a fast growing new research field within the life sciences that applies modern evolution theory to the study of health and disease. It aims at understanding not only how people become sick (based on molecular, physiological and neurobiological mechanisms), but especially why people become sick, based on our evolutionary history and general evolutionary principles. It uses key concepts in evolutionary research, such as trade-offs between different optimal solutions, different modes of Darwinian selection, our limits to adaptation, both in the past and in our currently rapidly changing world. It has yielded important progress in cancer research and immunology, but has also great potential for understanding other aspects of human biology including ageing, vulnerability to infections, cardio-metabolic diseases and psychological disorders.

Qualifications

Successful candidates will have completed a Master's degree (or equivalent) in Biology or another field of science relevant for the position by the time they would start. They have good command of English (oral and written), are enthusiastic and have the ability to work in an interdisciplinary team, have a passion for science, are highly motivated to work within the life sciences, integrating evolutionary and mechanistic approaches, and possess excellent communication skills indicated by the ability to write scientific papers and deliver presentations. In addition to these general qualifications, specific research projects may require specific qualifications, to be discussed with the intended supervisors.

Conditions

The PhD training programme

GELIFES offers 12 scholarships for a period of 4 years. The PhD student will participate in the Faculty's Graduate School of Science training programme for PhD students and will draw up a personal training and supervision plan. The Graduate School also provides a progress monitoring programme to ensure an efficient PhD process resulting in a PhD thesis within 4 years. A Career Perspectives curriculum is part of the training, which aims to prepare students for their (academic or non-academic) careers after the PhD trajectory.

Information about the PhD-training programme and scholarship can be found via:

https://urldefense.proofpoint.com/v2/url?u=https-3A__www.rug.nl_education_phd-2Dprogrammes_phd-2Dscholarship-2Dprogramme_&d=CwIF-g&c=Ngd-ta5yRYsqeUsEDgxhcqsYYY1Xs5ogLxWPA_2Wlc4&r=e2OJ1azRFn8ihJzb2HxZT0AqoiqLvxfeeaTyN59ZLoI&m=zfdOACPCh_tvD-COCIztRkD03g9cuwtlhGOOFUhlWUw&s=tB8QK1FTrgnZgPl5owAJxIvn7smRwE24Rois5CrcN-I&e=

How to apply
PhD candidates with an excellent integrative research idea, who wish to develop this own idea into a PhD project are invited to have a look at GELIFES' webpages on Adaptive Life (https://urldefense.proofpoint.com/v2/url?u=http-3A__www.rug.nl_research_fmns_themes_adaptive-2Dlife&d=CwIF-g&c=Ngd-ta5yRYsqeUsEDgxhcqsYYY1Xs5ogLxWPA_2Wlc4&r=e2OJ1azRFn8ihJzb2HxZT0AqoiqLvxfeeaTyN59ZLoI&m=zfdOACPCh_tvD-COCIztRkD03g9cuwtlhGOOFUhlWUw&s=-x0ZsoYVmG7gXtPpjOpyPe-hqBDm3m5ggQF5xmc2PKg&e=)

and staff (https://urldefense.proofpoint.com/v2/url?u=http-3A__www.rug.nl_research_gelifes_organisation_scientific-2D&d=CwIF-g&c=Ngd-ta5yRYsqeUsEDgxhcqsYYY1Xs5ogLxWPA_2Wlc4&r=e2OJ1azRFn8ihJzb2HxZT0AqoiqLvxfeeaTyN59ZLoI&m=zfdOACPCh_tvD-COCIztRkD03g9cuwtlhGOOFUhlWUw&s=ESwCJRfaaBzXiCZS08VGpaIvbVbSh5SE3NtVyjVeSGE&e=
staff).

Please contact the supervisor(s) of your choice to discuss your idea and see if there is mutual interest to develop your ideas further.

Please send your complete application in English as a single PDF-file before January 22nd 2017, 23:59 Dutch local time. Please upload your entire application as "letter of motivation" by means of the application form (click on 'Apply' below on the advertisement on the university website).

The submission should contain the following:

1. a cover letter introducing yourself, describing your motivation and qualifications to conduct scientific research and your 500 word research idea.

2. a full CV demonstrating academic excellence, including publications and presentations (if applicable), and a copy of your passport/ID card

3. a certified copy or scan of your MSc diploma (or equivalent) and academic records

4. Proof of sufficient competence in English

5. Names and contact details of two academic references

After the initial selection, only top candidates will be invited to fully develop their ideas and write a research proposal in the context of the indicated research direction as listed above. The proposal should focus on the central research question, the proposed method of approaching and answering this question, as well as the project planning.

Timeline

Publication of the call: 28 November 2016

Deadline for application: 22 January 2017, 23:59 CET

Notification on shortlist selection: By 5 February 2017

Writing final research proposals by top candidates: Before 1 March 2017

Announcement of selected/rejected candidates: before 1 April 2017

Unsolicited marketing is not appreciated.

Information

For information on GELIFES, the Adaptive Life programme and your research opportunities, please contact the supervisor(s) of your choice. For general information on the AL and/or PhD Programme, contact: Dr. C.M. Eising, administrative coordinator Adaptive Life Programme / GELIFES PhD coordinator, +31 50 3639140, c.m.eising@rug.nl. More information on GELIFES and the Adaptive Life programme can also be found on the respective websites: https://urldefense.proofpoint.com/v2/url?u=http-3A__www.rug.nl_research_gelifes_&d=CwIF-g&c=Ngd-ta5yRYsqeUsEDgxhcqsYYY1Xs5ogLxWPA_2Wlc4&r=e2OJ1azRFn8ihJzb2HxZT0AqoiqLvxfeeaTyN59ZLoI&m=zfdOACPCh_tvD-COCIztRkD03g9cuwtlhGOOFUhlWUw&s=_2M-AVss04MNa6sir3n1kqvcQMZ0KT5LQ1RP8qX7tLY&e= and https://urldefense.proofpoint.com/v2/url?u=http-3A__www.rug.nl_research_fmns_themes_adaptive-2Dlife_&d=CwIF-g&c=Ngd-ta5yRYsqeUsEDgxhcqsYYY1Xs5ogLxWPA_2Wlc4&r=e2OJ1azRFn8ihJzb2HxZT0AqoiqLvxfeeaTyN59ZLoI&m=zfdOACPCh_tvD-COCIztRkD03g9cuwtlhGOOFUhlWUw&s=gIotg75aejCHHH_pB3njMH44Ne8fq6wiIGQoz-WKAgg&e=