GET AHEAD IN YOUR CAREER

GET A DOCTORATE

SUOMEN AKATEMIA
FINLANDS AKADEMI • ACADEMY OF FINLAND

CONTENTS

PROMOTING RESEARCH CAREERS

This brochure outlines the many and varied opportunities of a career in science and research. It describes the career paths that are open in different organisations, lists the funding opportunities available through the Academy of Finland, and presents some personal accounts from people at different stages of the research career.

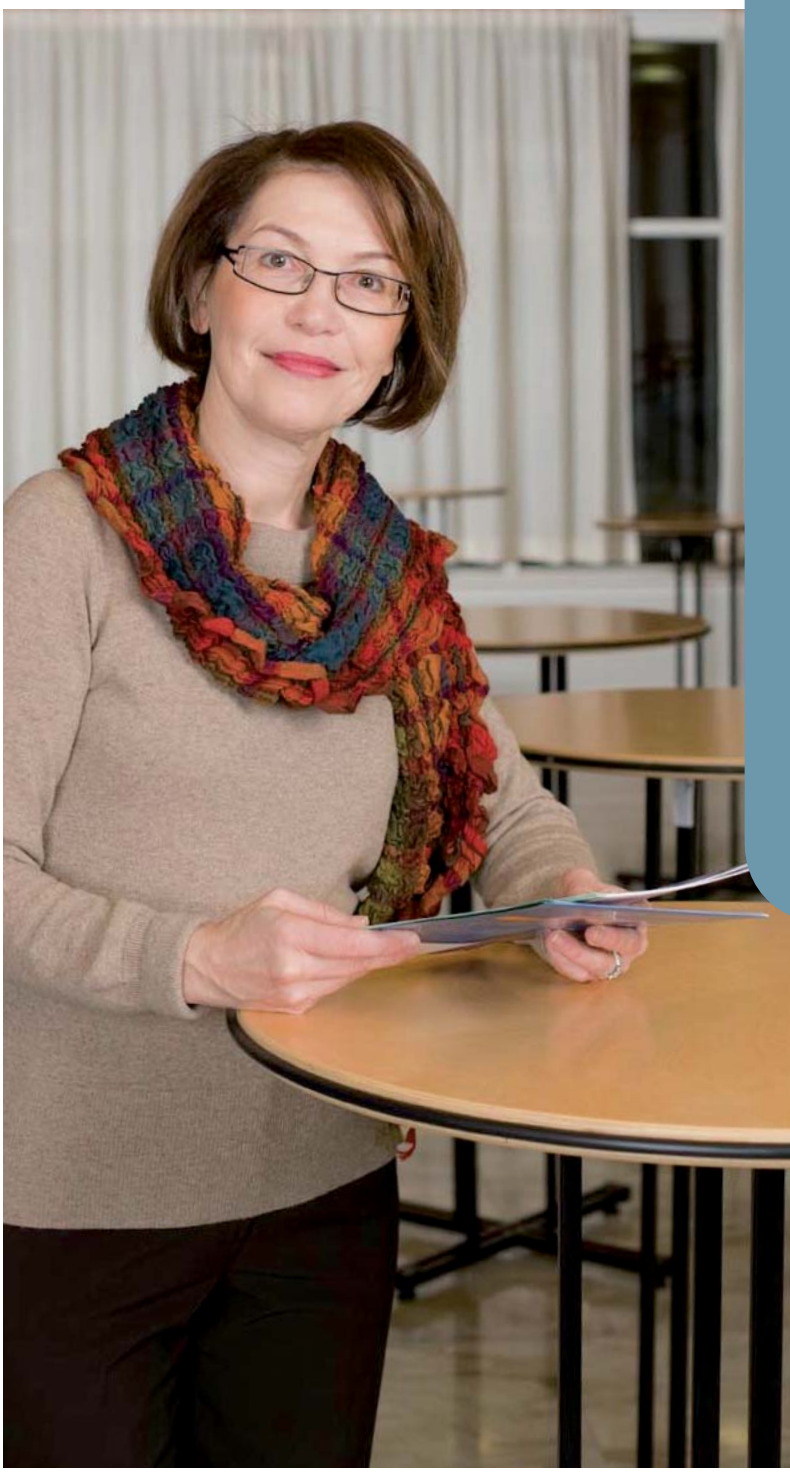
The Academy of Finland provides funding for science and research at the highest level. Each year some 5,000 researchers benefit from Academy funding, which represents an important springboard for the development of individual careers at every stage. Funding for younger researchers is crucial in enabling them to gain independence and to obtain the qualifications they need. For senior researchers, Academy funding allows them to concentrate on doing research.

"Academy funding is an important springboard for research careers."

In all its funding instruments the Academy places special emphasis on internationalisation and networking. Both are important criteria in the process of peer review. Support for mobility is designed to promote the independence of researchers.

The Academy also encourages employment in business and industry. Researcher training is particularly useful and valuable in advisory positions, because in all fields it provides the tools and skills that are needed to synthesise and critically analyse large bodies of information.

Dr Riitta Mustonen
Vice-President (Research)
Academy of Finland



RESEARCH – AN INTERNATIONAL ENTERPRISE

Research is characteristically an international enterprise. Most researchers work abroad at some point in their career, and international cooperation is an integral part of their job. New opportunities continue to unfold at each stage of the research career.

The European research career consists of a series of four steps, which provide the general structure for career advancement with the accumulation of experience, qualifications and merits. The main driving forces behind the development of this four-tiered career model have been the Academy of Finland, the European Commission and other research funding bodies.

The first stage of the research career is the completion of doctoral training and doctoral thesis. Doctoral training is increasingly organised through doctoral programmes. An important aspect of this training is the development of the practical skills and competencies that are needed in research jobs. This is followed by the postdoctoral stage, which lasts from two to five years.

It is typically at this stage that young researchers spend a period abroad, and for this reason almost all funding organisations have dedicated funding instruments for postdoctoral researchers. Statistics indicate that most young researchers want to work in countries and at universities that provide a sufficient degree of independence, supervision, encouragement, and a high-quality research environment. Attractive research environments depend most crucially on the availability of top-level infrastructure, i.e. facilities and collections.

"Researchers have numerous career options. And every one of them is rewarding."

Successful completion of the postdoctoral stage paves the way to the third step of the research career, i.e. the independent researcher. This is a fiercely competitive stage where the Academy's support is channelled in the form of research posts as Academy Research Fellow. Universities have many different job positions that often involve various teaching and administrative duties. Professors, Research Directors and Academy Professors represent the fourth step of the research career.

This academic research career path is just one example of how to build a successful career in research. Each year it is followed by some 150–200 of the country's 1,500 doctoral graduates, most of whom will at some stage of their career take up other research and advisory positions in research institutes, industry or public administration.

Professor Eero Vuorio
Director of Biocenter Finland

Eero Vuorio has previously served as Chancellor of the University of Turku, Chair of the Academy's Research Council for Health, and Chair of the European Molecular Biology Laboratory (EMBL) Council.

THE FOUR-STEP RESEARCH CAREER MODEL

4

Academy Professor/Professor/ Research Director

These positions involve extremely wide-ranging responsibilities and the most demanding research and teaching duties. Persons appointed are the scientific and academic leaders of the field concerned. Academy Professors are also expected to contribute to the advancement of science within their own discipline. Most professorship appointments are for an indefinite period.

3

Academy Research Fellow/Team leader

Academy Research Fellows are fully fledged professionals in research and education who are well prepared to take on academic leadership roles. They are expected to be able to work independently and successfully at the highest level of science. Appointments are for a fixed or indefinite term.

2

Postdoctoral Researcher

Successful candidates are required to have recently completed their doctorate. Appointments are usually for a fixed term (3–5 years) and they offer considerable independence.

1

Doctoral candidate/Researcher training

Successful candidates are usually required to hold a Master's degree. Appointments are for a fixed term (about 4 years), and most of the time will be dedicated to researching and writing the doctoral thesis.

"Once I've completed my doctorate I'm planning to go to the United States for a period as a postdoctoral researcher."

"My employer is extremely supportive of my research for the doctorate."

SIRU KORKALA'S CAREER HIGHLIGHTS

2008	CIMO; advisor
2008–2009	Academy of Finland grant for doctoral studies of employed persons
2004	Postgraduate studies started
1997–2007	University of Helsinki, Palmenia Centre for Continuing Education; researcher

ESA KUMPULAINEN'S CAREER HIGHLIGHTS

2005	Illinois Wesleyan University, Bloomington, IL, USA; visiting researcher
2004	TKK; doctoral studies, course assistant
2003–2002	Silecs Oy and Kemira Oyj, Espoo Research Centre; research assistant
2002	TKK; research assistant

SIRU KORKALA, MASTER OF POLITICAL SCIENCE (SOCIOLOGY), IS CURRENTLY EMPLOYED AS ADVISOR FOR CIMO'S INFORMATION, COUNSELLING AND RESEARCH TEAM

"I was still working with Palmenia at the University of Helsinki when my Academy grant first came through. I had just accepted my new job at CIMO, so I had to get back to the Academy and ask whether it would be possible to transfer the funds to my new employer," Siru Korkala explains.

At CIMO, Korkala is engaged in background study projects on the internationalisation of education. She also works to compile statistics on international mobility in vocational training and education.

CIMO (Centre for International Mobility) is a government agency that is responsible for international networking and exchange in the field of education. Siru Korkala was initially hired on a fixed-term basis, but she now has a regular full-time contract. Before moving to CIMO, Korkala held various research positions at the University of Helsinki Palmenia Centre for Continuing Education, where she worked for some ten years.

Korkala says her appointment was ultimately based on her strong background in research. "But I'm sure my knowledge of the education field was also a factor," she continues. In her current position Korkala needs a good command of different research methods coupled with fluent writing skills. Furthermore, the job requires extensive expertise on the internationalisation of education.

"Even though the theme of the research I'm now doing with Academy funding – my working title is 'The manifestation of trust in networks' – does not exactly coincide with CIMO's research interests, the methodological skills I've picked up during the course of this work has been a great asset in my current job."

"With the funding made available by the Academy, I've been able to dedicate periods of up to several months at a time to my research theme. I'm sure that if I hadn't been able to work on this project during working hours, it would have gone much more slowly. Academy funding has allowed me to organise my time more efficiently with a view to writing my thesis," Siru Korkala adds.

"I'm convinced that my thesis will help to strengthen my position as researcher in my current job."

ESA KUMPULAINEN, LICENTIATE OF SCIENCE (TECHNOLOGY), IS A POSTGRADUATE STUDENT IN ORGANIC CHEMISTRY AT AALTO UNIVERSITY SCHOOL OF SCIENCE AND TECHNOLOGY

Kumpulainen is currently conducting research related to his postgraduate studies, working as assistant teacher on organic chemistry courses and tutoring undergraduate students in their research projects. "I knew from the day that I decided to major in organic chemistry that I would go on to the postgraduate stage," he says.

Esa Kumpulainen says he has been quite clear of his choice of discipline since he was at school. "Our chemistry classes were really interesting. I took five courses and received the best grades in all. Originally it was my interest in medicine that drew me to this field: my main areas of interest were in medical substances and medical research rather than clinical treatment. This was based on my conviction that as a medical chemist, I would be in the position to help larger population groups."

Kumpulainen says he is keen to get his doctorate because there are excellent job opportunities for PhDs in the pharmaceuticals industry. In his view one of the most important assets of a doctoral student and researcher is to be innovative. It is also important to have the ability to push through one's ideas, no matter how crazy they may seem. "My own work revolves very much around the laboratory. Research takes great patience. And when you're working with students day to day, you really need to have good interaction skills," Kumpulainen points out.

Esa Kumpulainen is in the process of writing his doctoral thesis. Once that project is over and done, he plans to go to the United States to work as a postdoctoral researcher in a world-leading research team. "Without the doctorate I would never have this opportunity. Besides, I don't think I really stand a chance of getting a research position in the field of organic chemistry without doctoral studies. In the international pharmaceuticals industry it is the rule rather than the exception that the researchers they hire must have not just a PhD, but also postdoctoral research experience."

"My researcher training has been a great asset to my career."

"My current job requires creativity and cooperation skills."

SOCIOLOGIST PASI MOISIO SPECIALISES IN QUESTIONS OF SOCIAL SECURITY AND INCOME DISTRIBUTION

Pasi Moisio earned his doctorate at the European University Institute (EUI) in Florence in 2004. His first appointment was as senior researcher at the National Institute for Health and Welfare (THL). He is currently on leave of absence and working at the Ministry of Social Affairs and Health as secretary to the committee for reforming social protection (SATA Committee).

After graduating from the Department of Sociology at the University of Turku, Moisio spent one year as a researcher in an EU-funded project. It was this that inspired him to start researching his doctoral thesis at the EUI. In the final stages of this project he was hired as a researcher at THL.

"I minored in statistics and learned about quantitative methods in sociology, which has definitely benefited my career. Another important career move for me was the decision to do my doctoral thesis abroad, which greatly helped my language skills and allowed me to make new contacts," Moisio explains. The third stage in his career path was the decision to accept a research post at a government research institute, where the focus of his work turned increasingly towards concrete social policy issues and applied research.

Pasi Moisio's current job requires the ability to assimilate large amounts of data within a short space of time, a good knowledge of quantitative methods and clear and succinct communication skills. He has no doubt that his training as a researcher has been beneficial to his career.

"My researcher training has provided a solid foundation for all the skills that I need in my job."

PASI MOISIO'S CAREER HIGHLIGHTS

2008–	Ministry of Social Affairs and Health; secretary to SATA Committee
2004–	Stakes (now THL); senior researcher
2002–2003	ISER, University of Essex (UK); visiting researcher
2000–2004	EUI, Florence; doctoral training programme

KATJA BARGUM, PhD (EVOLUTIONARY BIOLOGY) IS A SCIENCE JOURNALIST

Katja Bargum is a radio and TV journalist at the Finnish Broadcasting Company YLE and a freelance author. She started freelancing for newspapers while she was still studying.

At university, Katja Bargum completed the core course on science communication and in the final stages of her doctoral thesis co-authored a book with Professor Hanna Kokko on the subject of evolution. She obtained her doctorate in 2007, and subsequently spent one year in London as editor-in-chief of the *Trends in Ecology and Evolution* journal.

Since returning to Finland, Bargum has worked on her second book and at the same time continued to contribute to magazines, newspapers and YLE. She believes that the work she is doing now has been made possible by the knowledge she gained in her researcher training, by her extensive experience in both research and science communication and by the period she has spent abroad.

"My job requires creativity, cooperation skills, language skills, the ability to work and to learn new things quickly, public communication skills and a high tolerance of stress," she explains.

Katja Bargum has no hesitation in saying that her researcher training has benefited her career. "The skills I picked up in that training, such as working in a project format, talking about science in general terms and public communication skills are all important in my job. I think these aspects should be given even more attention in researcher training."

KATJA BARGUM'S CAREER HIGHLIGHTS

2008–	YLE, *Hufvudstadsbladet*, and other media; science journalist
2007–2008	*Trends in Ecology and Evolution*, London; editor-in-chief
2006–2007	Collection of essays 'The shrinking cod and other evolutionary marvels' (in Finnish), WSOY/Söderströms
2003–2007	University of Helsinki; doctoral researcher

ROBERT HERMANN, DOCTOR OF MEDICAL SCIENCE (CHILD ENDOCRINOLOGY), TOOK HIS MEDICAL DEGREE AT SEMMELWEIS UNIVERSITY IN BUDAPEST

In the early years of his medical career Robert Hermann was involved in a major genetic research project in the field of newborn diabetes and other hereditary childhood diseases. So keen was his interest in the role of genetic predisposition in type 1 diabetes and the aetiology of the disease that he went on to earn his doctorate in this field.

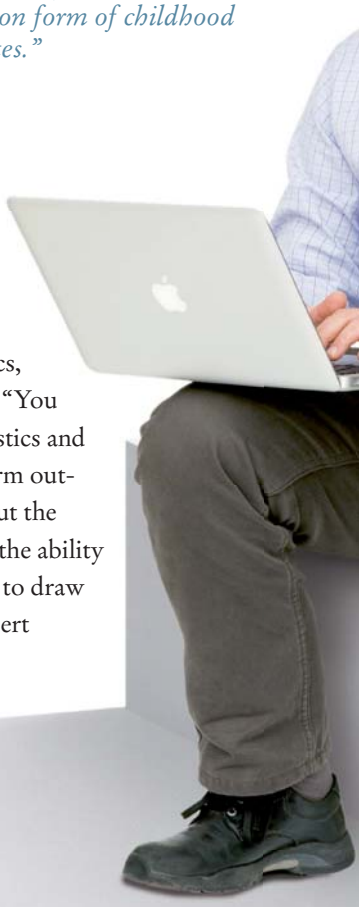
Currently employed as Academy Research Fellow, Hermann has carved a significant career in his field of expertise. He was the first medical scientist in Hungary to undertake systematic genetic and epidemiological studies into type 1 diabetes. At around the same time he also launched the HUNT1DGENES programme, which involved 27 paediatric diabetes care units and a Budapest-based genetic research laboratory. In 2001, Professor Jorma Ilonen and Professor Olli Simell invited Hermann to contribute to the Diabetes Prediction and Prevention project (DIPP). Using data obtained from the DIPP cohort, he has published several important studies dealing with beta cell autoimmunity and related genetic factors.

"In complex diseases such as type 1 diabetes, the interplay between genetic and environmental factors is so intricate that we need constantly to expand our studies into different ethnic groups with different population histories and socio-economic backgrounds," Hermann explains.

The main focus of his research is on the role of genetic variation and genotype and their interactions with triggering environmental factors in increasing type 1 diabetes morbidity. Hermann's primary research goal is to identify the role of diet or medication in suppressing autoimmune processes in childhood.

"The most important reason why I got into this job was to help find a cure for the most common form of childhood diabetes," Hermann says.

"I got into this job to help find a cure for the most common form of childhood diabetes."



One of the most important requirements of the job, according to Hermann, is the ability to assimilate information from the fields of genetics, diabetology and adjacent disciplines. "You also need a sound knowledge of statistics and bioinformatics, a patient and long-term outlook plus good multitasking skills. But the most important requirement of all is the ability to deliver quality results on time and to draw conclusions from those results," Robert Hermann adds.

ROBERT HERMANN'S CAREER HIGHLIGHTS

2007–	University of Turku; Academy Research Fellow
2004–2006 and 2001–2003	University of Turku, Immunogenetics Laboratory; senior research scientist and postdoctoral researcher
1993–1997	University of Pécs, Hungary; doctoral programme, researcher
1985–1990	Semmelweis University, Hungary; associate researcher, medical biochemistry

"A doctorate lends credibility when you're talking to researchers."

JANICA YLIKARJULA, DOCTOR OF SCIENCE (APPLIED MATHEMATICS) AND MASTER OF SCIENCE (MATHEMATICS), IS CURRENTLY EMPLOYED AS ADVISOR TO THE CONFEDERATION OF FINNISH INDUSTRIES EK

Prior to her current appointment Janica Ylikarjula served for many years as Science Advisor and Senior Science Advisor at the Academy of Finland Research Unit for Natural Sciences and Engineering. She says she has never really planned her career, but simply looked for interesting job opportunities.

"In fact, in my current job I'm not directly applying the special skills I learned in my doctoral training, but all the rest that I picked up has been extremely useful in the work I'm now doing. My knowledge of the academic world of research is also helpful. A doctorate lends credibility when you're talking to researchers," Ylikarjula says.

"Having a doctorate is also a definite plus internationally."

The main focus in Ylikarjula's current job is on improving business environments. "My primary area of responsibility covers business research, development and innovation as well as universities and research institutes," she says.

JANICA YLIKARJULA'S CAREER HIGHLIGHTS

2006–	Confederation of Finnish Industries EK; advisor
2000–2006	Academy of Finland; science advisor and senior science advisor
2000	TKK; doctoral thesis
1999–2000	International Institute for Applied Systems Analysis IIASA, Austria; researcher

ACADEMY PROFESSOR MAARIT KARPPINEN, DOCTOR OF SCIENCE (INORGANIC CHEMISTRY), IS HEAD OF THE CHEMISTRY DEPARTMENT AT AALTO UNIVERSITY SCHOOL OF SCIENCE AND TECHNOLOGY

Professor Maarit Karppinen is in charge of academic research, including developing the subject of inorganic chemistry, organising funding, teaching, and promoting greater awareness of science in society.

Professor Karppinen's research interests lie in new functional oxide materials. In her work she applies a diverse range of highly sophisticated experimental and theoretical methods in order to understand and describe the properties of synthesized materials. This is a particularly important and promising line of research, for it is expected that functional oxide materials will have a number of interesting and useful applications. Professor Karppinen has access to state-of-the-art research equipment and to the best expertise, and therefore she is well placed to achieve significant scientific breakthroughs in this modern field of research.

Professor Karppinen has published extensively, including almost 300 refereed articles in leading journals, some 100 other publications and around 300 abstracts. In recent years, her articles have received well over 200 citations a year. She has three significant awards in the chemistry fields.

The most significant markers along the path that have led Professor Karppinen to her current position are her doctorate as well as her extensive foreign experience and academic ambition. She says her job requires scientific and academic competence, organisation and management skills, pedagogic and language skills and, importantly, the ability to work with others on various scales and at international level.

MAARIT KARPPINEN'S CAREER HIGHLIGHTS

2009–2013	TKK; Academy Professor
2008–	TKK; Head of Department of Chemistry
2001–2006 and 1995–1996	Tokyo Institute of Technology, Japan; Visiting Professor and Associate Professor
1991–1992	International Superconductivity Technology Center, Superconductivity Research Laboratory, Japan; visiting researcher

ERKKI RUOSLAHTI, DOCTOR OF MEDICAL SCIENCE (CELL AND MOLECULAR BIOLOGY) AND ACADEMICIAN

Professor Erkki Ruoslahti, foreign Academician of Science, has spent most of his research career in the United States. He is one of the world's most cited researchers and one of the most eminent scientists to come from Finland. The main focus of Professor Ruoslahti's research has been on basic research in the field of cell and molecular biology. He has clarified key mechanisms of cell function and opened new insights into the aetiology and progression of cancer and its treatment.

"My interest in research was first kindled during a summer job I had at the Aurora Hospital laboratory. If my memory serves that was in 1961, after my second year at university. In the autumn I then went to the Department of Serobacteriology at the University of Helsinki to write my specialization thesis. This eventually led to my doctoral thesis and to a period as a postdoctoral researcher at the California Institute of Technology."

Professor Ruoslahti's international research career started in 1968 when he was appointed visiting researcher at the California Institute of Technology. In 1976, he moved to work permanently in the United States. Four years later he moved on to become Vice President for Research at La Jolla Cancer Research Foundation (now the Burnham Institute for Medical Research), where he was later appointed Director of Research and eventually President and CEO. He is currently a professor at the Burnham Institute at Santa Barbara University of California.

"My job requires the skills of a researcher, above all perhaps the drive and the courage to discover something new. One skill that has taken on increasing importance is knowing how and where to apply for funding. You need to have grants in order to do academic research, and to get those grants you must know how to write clear and well thought out funding applications."

Professor Ruoslahti is keen to point out that the world continues to need researchers and engineers because the only way we can maintain and improve our standard of living and quality of life is through research. He also wants to stress the independence and diversity of the researcher's occupation.

"Academy Professors not only do their own independent research, but also manage their own research teams and teach and supervise young researchers."

"The only way to maintain and improve our standard of living and quality of life is through research."

"There are lots of good sides to a career in research. Perhaps the best of all is the independence of the job: you get to decide what you want to do and when. There are not many jobs where this is possible and where you get paid for it. It's a good idea to apply for a job in a research laboratory to see if you're really interested in a research career. I myself might never have become a researcher without my summer job at the hospital laboratory. I'd also encourage reading books about research: *Microbe Hunters*, for instance, is a real classic."

ERKKI RUOSLAHTI'S CAREER HIGHLIGHTS

2002–	University of California, Burnham Institute for Medical Research, Santa Barbara, USA; Professor
1979–1980	La Jolla Cancer Research Foundation, California, USA; Vice President for Research
1970–1975	University of Helsinki, Department of Serobacteriology; Associate Professor
1968-1970	California Institute of Technology, California, USA; visiting researcher

PhDs IN ACADEMIA

In 2008, the University of Helsinki had a staff of around 8,100, of whom roughly one-quarter or 1,960 had completed a doctorate degree.

According to Vice Rector Johanna Björkroth the universities' PhDs are employed in research, teaching, administration and other positions. Administrative job titles include director of development, head of research administration, research liaison officer, planning officer, lawyer and coordinator. The most common research and teaching titles are doctoral student, postdoctoral researcher, university lecturer, professor and research director.

"The PhDs we hire are expected to demonstrate initiative, basic management and other workplace skills, and they should have a proven track record of independent work in science," Björkroth says.

"The University of Helsinki is a multidisciplinary, research-oriented university that provides every facility to conduct research of international significance. We have several outstanding researchers, including scholars coming from other countries. Importantly, too, we have a sound research infrastructure in place."

Björkroth is keen to stress that while people with a doctorate are well-respected in the academic workplace, a doctoral degree is in fact a minimum requirement for many job positions. The situation is completely different from the private business sector.

The University of Eastern Finland has an overall staff of around 2,800, of whom 700 are researchers. In addition, around 450 teaching staff at the university have a doctorate degree, and according to Päivi Nerg, the number is rising all the time.

Päivi Nerg was recently appointed Director for Administration and Development at the Ministry of Finance. Prior to this appointment, she was Director of Administrative Affairs at the University of Kuopio, where she oversaw the merger of two universities into the University of Eastern Finland.

"Academia provides an opportunity for PhDs to conduct research at the cutting edge, but that requires great tenacity, ambition, networking, public communication skills and language skills. Secondly, teaching jobs in academia require pedagogic skills, public communication skills, and an understanding of how the world of research works, good social and networking skills and an attitude of flexibility. Thirdly, administrative jobs require a close familiarity with the laws that govern the world of research and education, a combination of flexibility and determination, plus the ability to get on with all kinds of people and to speak in public," Nerg continues.

"For PhDs universities are a great place to work because there they are given every possible respect and support. At the University of Eastern Finland, PhDs can carve an international career for themselves and also move from one career path to another within the same organisation."

"Ideally, PhDs are people who are driven and enthusiastic, who have a strong sense of self-esteem and strong language skills, and who are open-minded and good at working with others," Nerg explains. Björkroth further adds to this list good teaching skills.

PhDs AT POLYTECHNICS

Helsinki Metropolia University of Applied Science has a staff of 1,066, of whom 309 have a postgraduate degree: 12 per cent have a doctorate degree and 12 per cent a licentiate.

"There are no traditional research posts at Metropolia, nor do we have separate research units. Instead our research and development projects are organised under the umbrella of training programmes and clusters, where they are closely tied in with our curricula," says Vice Rector Lea Ryynänen-Karjalainen.

The Decree on the qualification requirements for polytechnics staff says that rectors and senior teachers shall have a licentiate or doctorate degree. For other positions at polytechnics (also known as universities of applied science) there are no specified requirements of postgraduate qualifications.

Three of Helsinki Metropolia's current seven cluster directors hold a doctorate degree. A postgraduate degree may be required for specific appointments. Directors for research and development, for instance, are required to have a doctorate.

The duties of teaching staff at polytechnics are defined as comprising research and development related tasks as separately specified by the organisation in question. Those tasks are assigned on a step-by-step basis in the personal work plans prepared for each teaching staff member.

The skills requirements for PhDs are defined separately for each job assignment, but nonetheless within the broader legal framework governing the mission of polytechnics, which is to provide teaching and education that supports the needs of industry and regional development, and to conduct applied R&D that supports the local industrial structure. PhDs hired are expected to possess good basic research skills, practical experience on the integration of education and R&D, as well as an innovative, development-minded, cooperative and analytical way of thinking.

"Metropolia Helsinki is Finland's largest university of applied science and as such is excellently placed to contribute to regional development in the area. It has close working contact with business and industry. We are constantly working to develop our curricula and learning environments in such a way that they support both self-development and the creation of new knowledge and skills that have practical application in the workplace. We have a forward-looking attitude and the courage to do things differently. Besides, the pay we offer is highly competitive compared to the public sector," Lea Ryynänen-Karjalainen points out.

PhDs AT RESEARCH INSTITUTES

Some 10 per cent of staff members at the National Institute for Health and Welfare (THL) have a doctorate degree. Assistant Director General Juhani Eskola says that THL offers exciting, challenging and rewarding jobs for PhDs.

PhD staff at THL are engaged in research as well as in advisory and management positions. They need to have strong expertise and competence in their field of specialisation, and their skills must be compatible with the organisation's objectives. Furthermore, it is important that at some stage a practical application is discovered for those skills and competencies.

"The ideal PhD is driven and motivated and has an overall understanding of the organisation's goals. Communications skills are also essential, as is a solid experience and strong researcher training. PhDs are expected to have the ability to develop methods and to formulate research problems, for instance in laboratory work," Eskola says.

PhDs IN THE LIFE SCIENCES SECTOR

Innomedica is a business consulting company that specialises in the life sciences. Innomedica has a staff of nine, three of whom have a doctorate degree. Newly appointed PhDs who do not yet have any business experience are hired as junior consultants under the job title of project manager, says Tanja Dowe. Project managers are responsible for conducting industry market analyses, R&D projects as well as for project management of major research programmes as well as various EU projects.

"PhDs must have a passion to continue to learn. It's useful if during your studies you've also taken some course on business fundamentals. And it certainly pays to follow not just the research literature in your field, but also to keep an eye on what's happening in the world of business," Dowe says.

The career move from a leading science expert to a novice in the business world is not a direct step forward, but a leap into a completely new world. Dowe believes that in this situation it is good to show a trace of humility.

"Doctoral graduates have every reason to take pride in the completion of their doctoral project. Not only do they conduct independent scientific research, but they plan the whole project, present its results on various forums and possibly secure their own funding. Long-term planning and project management skills of this kind are extremely valuable in the workplace."

Innomedica puts all its newly recruited PhDs through a rigorous training programme. This allows them to put all the knowledge and skills they have learned to new use and to combine their scientific expertise with business skills. The in-depth knowledge that PhDs bring into the company is particularly valuable in weighing the commercial potential of academic innovations.

"Besides, no one understands a researcher better than another researcher. Our PhD researchers give us increased credibility as an expert organisation in the life sciences sector," Tanja Dowe concludes.

Gaia Consulting Oy has a staff of almost 30 people, seven of whom have completed a doctorate degree. A further three are currently undertaking their doctoral studies. The fields of expertise covered are engineering, natural sciences, economics and political sciences.

"Our PhDs work in a wide range of consultancy and analytical projects and assignments. Apart from consultancy we take up various other assignments from highly demanding analytical and computational projects to extensive reviews and strategic consultation," says Managing Director Mari Hjelt.

"Our knowledge and skills requirements for PhDs are the exact same as for all other new recruits: we want to have people with excellent written and oral communication skills, who have a keen analytical mind and who are comfortable in an international environment."

"PhDs and others with a background in research often stand apart in terms of their analytical thinking and international experience. On the other hand, they often have less practical experience and weaker oral skills."

"We don't require that everyone who comes to work with us has a doctorate, nor does a doctorate automatically guarantee that one will get ahead in the recruitment process, but it certainly won't count against you – quite the contrary," Hjelt adds.

"I'm confident that we are in the position to offer lots of genuinely interesting challenges and projects for PhDs where they can give their researcher's creativity free reign. Instead of having researchers work in the proverbial ivory towers, we offer a dynamic working environment and fast-changing challenges. We've also been able to provide the necessary flexibility that researchers need if they want to pursue their own research interests. Our policy of hiring people on a permanent full-time basis instead of offering short-term contracts has also received much praise.

Mari Hjelt says that PhDs are leading experts in their fields and people who have been taught to fight for the quality of their work. Her definition of an ideal PhD is a person who seeks clarity of communication, who is a team worker and socially talented, who has a genuine interest in social issues and a curious mind, who is always willing to learn new things, who knows their own field inside out and who is committed to develop that field further, and who is well networked with various organisations and people.

PhDs IN GOVERNMENT MINISTRIES

Leena Vestala, PhD and Director at the Ministry of Education Division for Higher Education and Science, is among the staff members at the Ministry who have a doctorate degree.

The Ministry of Education has a staff of 349, of whom 30 have a researcher training. PhDs could in practice work in any Ministry job, but their qualifications are best suited to the requirements of high-level advisory and management positions.

Vestala says that the specific qualification requirements for people hired by the Ministry of Education depend largely on the position to be filled. Newly hired experts need to have a higher academic degree as well as a close familiarity with some area of Ministry responsibility, i.e. education, science, culture or youth policy. Applicants with prior experience of public administration will have an added advantage. Good language skills are essential. Good skills of cooperation and working independently are basic requirements for all positions.

Applicants to senior advisory positions at the Ministry are required to have in-depth knowledge of the subject area in question, networks and managerial experience.

"Ministry advisors need first of all to have an attitude of flexibility. Decision-making within the Ministry's hierarchy differs from the university model which places more emphasis on academic freedom. Decisions are often made on a political basis, which has to be accepted and understood," Leena Vestala says.

"The Ministry offers varied and interesting jobs that require in-depth expertise and that therefore are well-suited to PhDs. Completing a doctorate takes time and persistence as well as a high degree of initiative. PhDs have a deep knowledge of their subject area, but often of other areas as well such as university and science policy, and that is a definite asset."

PhDs AT THE ACADEMY OF FINLAND

The Academy of Finland has a staff of approximately 160 people. Pirjo Hiidenmaa, PhD and adjunct professor, is in charge of the Research Unit for Culture and Society.

The Academy's PhDs are employed as science advisers, programme managers, unit directors, or at the organisation's highest management level. Hiidenmaa says that the doctoral degree offers important skills and experience of conducting research. Researchers usually have excellent information retrieval skills and a thorough understanding of how universities and research institutes work, and the operating environment more generally.

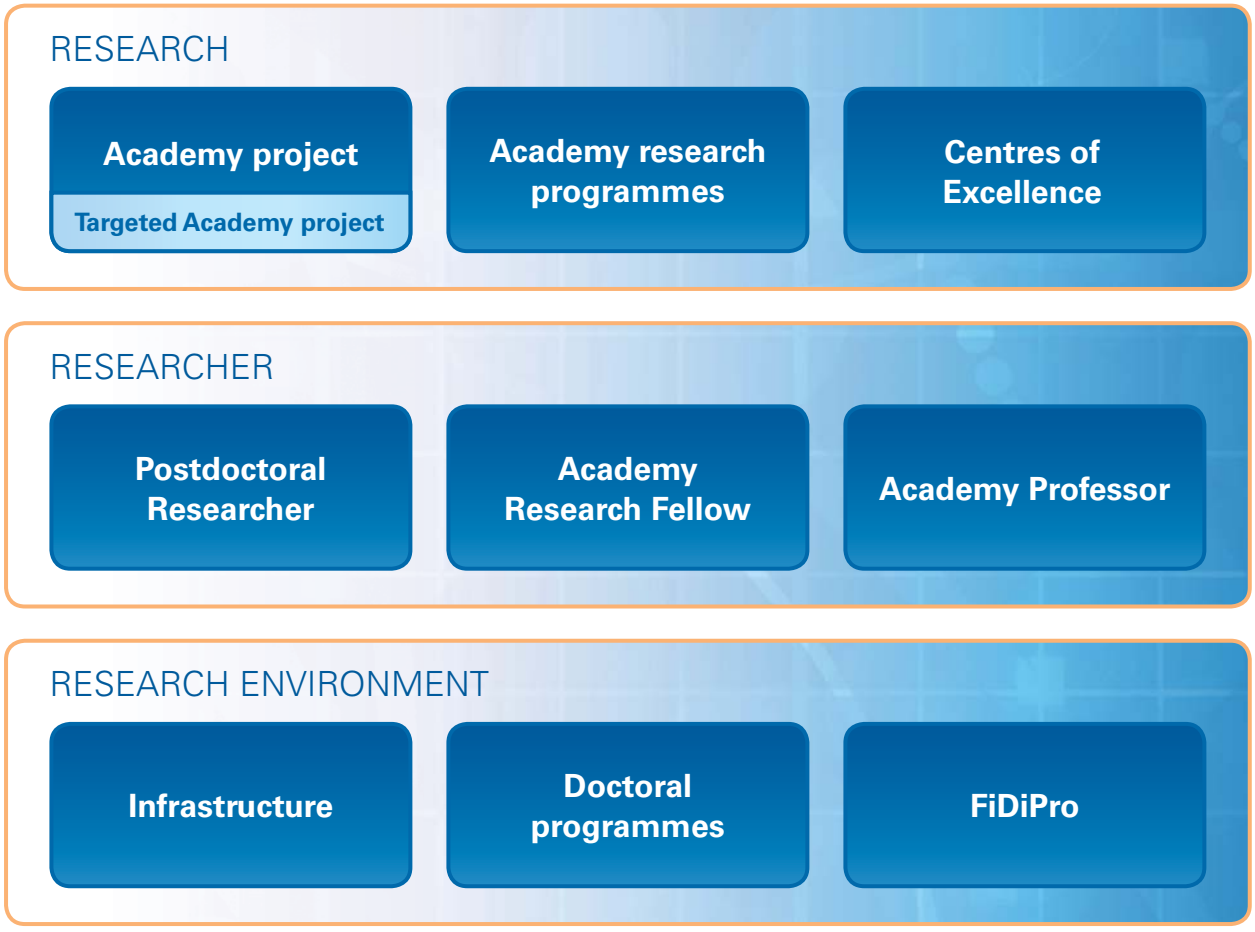
"In addition to hands-on experience of research, people who want to work with us will in many cases need to have administrative experience and a sound knowledge of science policy. Working at the Academy provides a ringside view on the world of science and research, although opportunities to conduct your own research are very limited. At the same time, PhDs here have a great chance to work internationally and to see how other funding agencies work. The jobs as such are highly challenging, and they often provide the opportunity to contribute to designing and implementing major reforms," Hiidenmaa explains.

"PhDs certainly add to our credibility. We have people drafting funding decisions and science policy who have first-hand experience of doing research. Of course, it's possible to advance to these positions with a Master's degree as well. By virtue of their training and competencies, PhDs have a genuine interest in this field and the ability to form an overview of researchers' situation and of the field of research and research environments more broadly."

"The ideal PhD is a qualified expert in the field, but at the same time takes a broader interest in other subject areas and disciplines. The ideal PhD is also familiar with the process of doing research and is not restricted to any one single research approach. The ideal PhD contributes with an open mind to cross-disciplinary debate and at the same time is critical and aware of the limits of their own knowledge."

Pirjo Hiidenmaa says it is useful for the PhD to have a special area of science policy interest: methods development, teaching, publishing practices, the history of science, the contents of researcher training, the interactions of science with society, datasets or research infrastructures.

THE ACADEMY'S RESEARCH FUNDING INSTRUMENTS



The Academy of Finland has nine types of research funding instruments for different purposes. These instruments are divided into three groups:

Funding for general research purposes is awarded for high-level scientific research that contributes to strengthening the competitiveness of the national economy. Funding is made available to research teams and projects to cover wage and salary expenses, direct and indirect research costs, researcher mobility costs, etc.

Funding to support the individual researcher's training and research is staggered by research experience based on the four-step research career model. The amount of funding increases with movement up the career ladder. Postdoctoral Researchers can only apply for funding to cover their own costs. Academy Research Fellows can apply for the costs of a small research team, and Academy Professors for the costs of larger teams.

Funding for the development of research environments is awarded to the host organisation where the research is taking place for purposes of improving its research structures.

ACADEMY FUNDING OPPORTUNITIES: THE RESEARCHER'S PERSPECTIVE

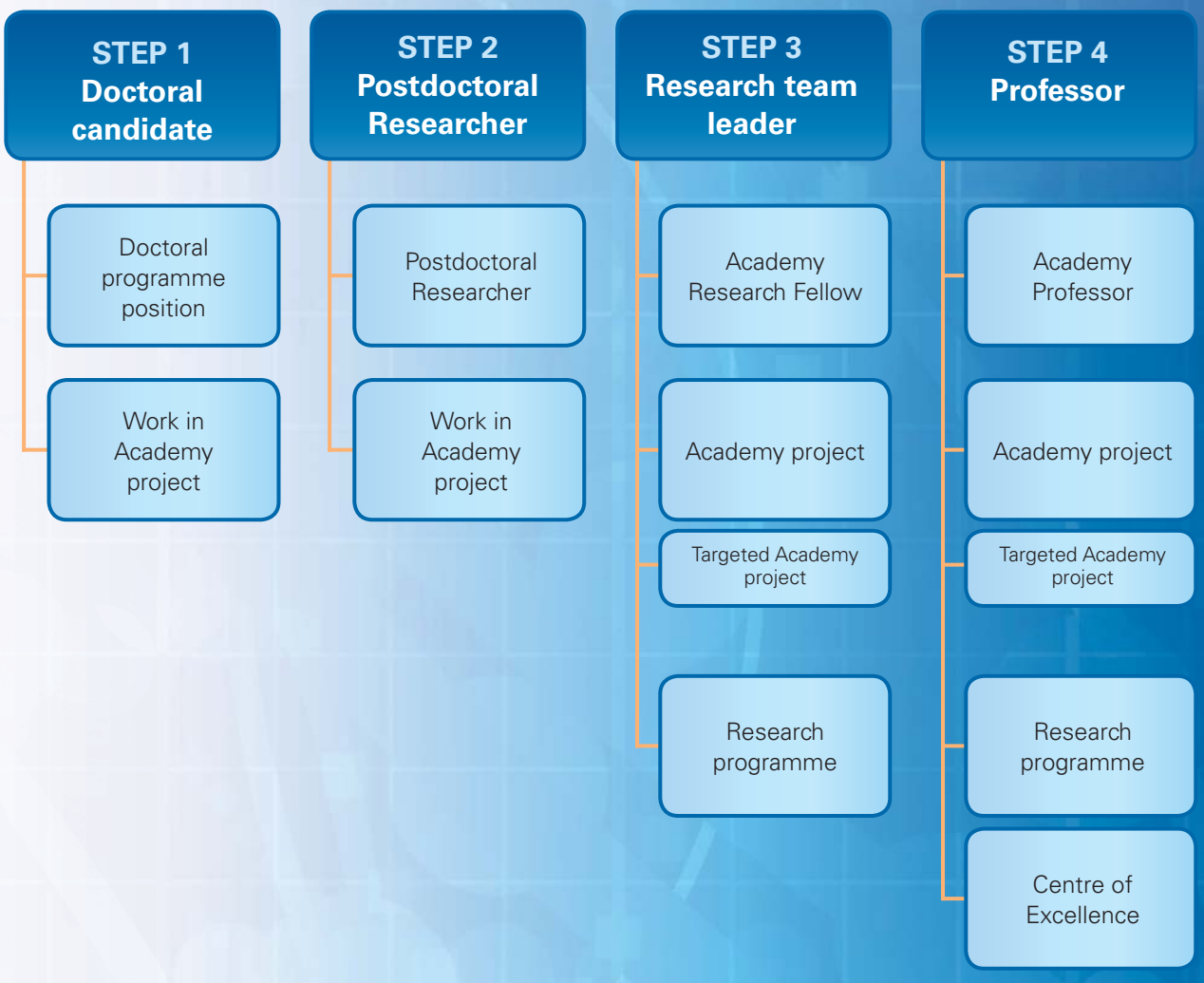
A doctoral student can work either in a doctoral programme or in some other project, e.g. an Academy project. This is the first training step on the path to a future career in research or other advisory positions.

Upon completion of the doctorate it is possible to apply for Postdoctoral Researcher funding with a view to gaining independence as a researcher, or to move on to work in an Academy project.

After a successful period as a Postdoctoral Researcher, Academy funding provides the opportunity to start up as an independent research team leader. Research posts as Academy Research Fellow are intended as career development opportunities for the best research talents.

Established researchers, professors or research directors are eligible to apply for the research post as Academy Professor. It is expected that the Academy Professor is at the international cutting edge of research and thereby contributes to the development of a creative research environment.

Further information: www.aka.fi/eng > For researchers



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Researchers in motion: http://ec.europa.eu/euraxess/

The European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers:
ec.europa.eu/eracareers/pdf/am509774CEE_EN_E4.pdf

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NORDIC ENVIRONMENTAL LABEL
Printed matter
441 032

ISBN 978-951-715-775-9 (print)
978-951-715-776-6 (pdf)