Research Careers - diversity and opportunities in and outside academia

Informational material for researchers from Romania & beyond

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Informational material regarding advantages of intersectoral mobility and of a wide diversity of careers in and outside academia

Result of a pilot activity implemented as part of the SECURE project

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1. Introduction

The way we do research now is different and will continue to change. As a result of digital transformations and beyond, it is becoming more open and collaborative, multidisciplinary, less linear and with a greater diversity of outcomes (European Commission, 2021). The entire research environment is also undergoing a profound transformation. Linear and traditional academic careers are no longer the only or main path for many researchers, with research expertise also needed in many other sectors.

Advances in technology, interdisciplinary collaboration and the growing need for evidence-based decision-making in public policy, industry and society are creating new opportunities for researchers to contribute even outside academia. As a result, research career paths have the potential of becoming increasingly dynamic and non-linear, allowing professionals to transition between academia, industry, international organisations, entrepreneurship and roles in government organisations.

In this context, this material aims to inform research communities about the variety of career options available to researchers today. **It highlights, on the one hand, the traditional career paths existing in the Romanian academic environment**, with the key roles and associated positions identified within the framework of Law no. 183/2024 on the status of research, development and innovation personnel, **and, on the other hand, the roles and career paths that can be adopted outside the academic environment - in industry, in governmental and international organizations, in entrepreneurship**, etc. Additionally, the document also addresses the topics of non-traditional roles, the importance of transferable skills and that of emerging interdisciplinary fields, relevant in the context of all the aforementioned sectors.

Through the included real-world examples and references to various other useful materials, this guide aims to provide practical information to all researchers, whether early-stage or advanced in their careers, on the evolving landscape of research careers, to **help them better navigate alternative career paths**.

2. Research careers in the academic and research environment

Academic research careers remain a key pathway for many researchers, offering opportunities to contribute to knowledge creation, mentor future generations, and engage in interdisciplinary collaborations. In Romania, research careers within academia are structured under the framework established by Law no. 183/2024[1], which defines key roles, responsibilities, and career progression for research and teaching staff.
According to it, in academia, research roles can be performed by both teaching staff and scientific researchers within the following types of research organizations: universities and research institutes, including those associated with the Romanian Academy.

Categories of RDI staff according to Romanian Law no.183/2024 (Art. 8)
- scientific researchers - university teachers - staff of institutions activating in the field of national security conducting certain research activities - support staff for RDI activities (with secondary or higher education)

Table 1: Categories of RDI staff according to Romanian Law no.183/2024

In this context, scientific researchers are further defined as '*professionals involved in the conception or creation of new scientific knowledge based on original concepts or hypotheses, who carry out research activities and improve or develop concepts, theories, models, techniques, instruments, software or operational methods*'.

And the types of activities mentioned in the Law as being carried out by RDI personnel (Article 7) are as follows:

- development of scientific knowledge;
- initiation and/or participation in scientific research, experimental development and innovation activities;
- participation in the transfer of knowledge and technologies in all areas of economic and social life;
- participation in the efficient exploitation of the results of RDI activity for the sustainable development of society, including by participating in the establishment of spin-offs/ start-ups;
- dissemination of the results obtained in the framework of scientific research activity through: publishing books and book chapters, articles in scientific journals or in the volumes of scientific events, patenting;
- submission of funding applications within national and international research project competitions;
- editing of specialized scientific publications or organizing scientific events;

[1] Law on the status of research, development and innovation personnel no. 183/2024

- participation in doctoral student training programs or other teaching activities in higher education;
- other specific activities, including artistic creation and sports performance.

Within the same Law, Article 9 specifies the types of professional positions and ranks that RDI personnel with higher education studies can occupy during different stages of their research careers. Here, a new element brought by the respective Law is the equivalence with the professional ranks provided for in the European Charter for Researchers (R1-4).

Positions	**Grades**
Senior researcher - Principal researcher (R4) - Consecrated researcher (R3)	 - Scientific researcher grade I - CS I - Scientific researcher grade II - CS II
Recognized researcher (R2)	- Scientific researcher grade III - CS III
Early stage researcher* (R1)	- Scientific researcher - CS
Scientific research assistant	- Scientific research assistant - ACS

*holding a doctorate or being a doctoral student

Table 2: Types of research positions and grades according to Romanian Law no.183/2024

Moreover, another novel element provided by Law no. 183/2024 consists of providing clear information regarding the equivalence of professional positions and ranks in RDI with university teaching positions. Below is a table illustrating the relationship between the two.

RDI professional positions & ranks	**University teaching positions**
Principal researcher (CS I / R4)	University Professor
Consecrated researcher (CS II / R3)	University Associate Professor
Recognized researcher (CS III / R2)	University Lecturer
Early stage researcher** (CS / R1)	University Assistant

**In the case of RDI staff holding a doctorate degree.

Table 3: Equivalence between RDI professional positions & ranks and university teaching positions according to Romanian Law no.183/2024

Support staff for RDI activities, whether with secondary or higher education, can collaborate with scientific researchers in performing scientific and technical tasks. Their contributions include applying concepts and operational methods, using research equipment, conducting experimental programs and technologies, performing measurements and analyses, executing technical operations, and maintaining research equipment and facilities, along with other related activities.

With higher education studies	**With secondary education studies**
Senior Research Engineer - ICS	Senior Technician - TS
Recognized Research Engineer - ICR	Recognized Tehnician – TR
Early Career Research Engineer – ICD	Early Career Tehnician – TD

Table 4: Categories of RDI support staff according to Romanian Law no.183/2024

2.1. Emerging interdisciplinary fields and their impact on research careers

Interdisciplinary scientific fields are fields that emerge at the intersection of two or more scientific fields, sometimes as a result of the need to respond to complex (Okamura 2019) and pressing societal problems.

Examples of such fields are: cognitive science, which can be based on a combination of neurology, psychology, anthropology, linguistics and statistics; public health, which can combine medicine with sociology and psychology; materials science, which combines elements of physics, chemistry and biology; bioinformatics, which combines biology, chemistry, computer science and applied mathematics; biochemistry and molecular biology; data science (mathematics, statistics, computer science); environmental studies; etc.

Why are they relevant?

Their relevance comes from the fact that their development can impact the career paths of researchers. As they become increasingly important in addressing complex real-world problems and more frequent, the need for researchers to adapt to their specificity also increases (CRDS, 2009; Berkes E. et al. 2024). In this context, there are several implications for researchers and their career paths.

First of all, the emergence of interdisciplinary fields can require the acquisition of new and transversal skills, often beyond a researcher's initial expertise (Berkes E. et al. 2024). Examples in this sense are: computational techniques, data analysis, and the integration of different theoretical frameworks (CRDS, 2009). This adaptability enhances researchers' ability to work in diverse environments and increases their employability across sectors.

Interdisciplinary research also emphasizes **collaboration and communication**, as researchers must bridge disciplinary gaps, integrate multiple perspectives (CRDS, 2009), and work effectively within cross-sectoral teams (Science.gov). Additionally, it fosters a **problem-solving orientation**, equipping researchers to tackle complex societal challenges with innovative approaches.
While early-career interdisciplinary researchers may face challenges in traditional academic progression due to rigid disciplinary structures (Berkes E. et al. 2024, Ylijoki, O. 2021) , growing recognition of interdisciplinary work is gradually addressing these barriers. **Funding agencies increasingly prioritize interdisciplinary projects**, creating new research opportunities (Berkes E. et al. 2024). Ultimately, the ability to work across disciplines has the potential to drive **innovation and impact**, leading to solutions with far-reaching societal and economic benefits.

3. Research careers outside the academic environment

Research careers are not limited to the traditional academic path. Research positions and roles can be found in a variety of industries, in government and non-government organizations, international organizations, and beyond. This section explores some of these exciting career paths outside of academia.

Careers in Industry

Research and Development: In industry, researchers can participate in the development of new products, technologies, and solutions. From pharmaceuticals to engineering, research and development teams can be at the heart of innovation processes within industrial organizations.

Data Science: With the increasing importance of Big Data, researchers skilled in data analysis, machine learning, and data visualization are in high demand in sectors such as technology, finance, marketing, healthcare, and telecommunications.

Skills acquired in research such as critical thinking, problem solving, and domain expertise can open up opportunities beyond academia. Whether in industry, public policy, international organizations, or by adopting non-traditional roles, researchers can make contributions in diverse and meaningful ways.

Roles in Government Organizations

Scientific Advisors: They provide policymakers with evidence-based recommendations based on the latest scientific research. And they can play a key role in how societal challenges, such as climate change, public health, and technological innovation, are addressed.

Public Policy Analysts: They can work on evaluating the effectiveness of public policies and making proposals for improvement based on research findings. Their expertise can be useful to government organizations in developing effective, equitable, and high-impact public policies.

Examples of international organizations that work with and employ researchers, people with previous research experience, are:

- The United Nations and its specialized programs and agencies, such as UNESCO, UNDP, World Health Organization, Food and Agriculture Organization; WIPO - World Intellectual Property Organization, IPCC - the Intergovernmental Panel on Climate Change, and the World Bank;
- European institutions and agencies such as: Joint Research Centre of the European Commission (carries out research activities to support EU policy-making in various fields), European Space Agency, CERN - European Organization for Nuclear Research whose areas of interest expand beyond those related to nuclear physics - e.g. software engineering and IT, mechanical engineering, data science and data analytics, international relations, health, safety and environment, and other.
- International research organisations and think tanks such as: OECD - Organization for Economic Co-operation and Development, International Institute for Applied Systems

Analysis (IIASA focuses on research in systems analysis, climate change and sustainability), International Monetary Fund, etc.
- Other climate and environmental research organisations such as the World Resources Institute and the International Renewable Energy Agency.

All these examples of organizations can offer positions for different career stages, starting from paid internships, traineeships and up to positions for senior experts with a high level of expertise, for a wide variety of roles, such as: researcher roles, advisory and consultancy roles (Science Advisor, Consultant, Policy advisor, Innovation & Technology Specialist, Foresight and Strategic Planning Expert, Program Officer, etc.), research coordination and management roles (e.g. Project Coordinator/Manager), science communication roles (Science Officer, Science Communicator, Public Engagement Specialist), technical and specialist roles (AI & Big Data Expert, Sustainability and Climate Change Specialist, Health Economist, Epidemiologist, Engineer).

3.1. Non-traditional roles

In addition to traditional roles in academia and research, researchers today have diverse career opportunities in different fields such as science communication, publishing, consultancy, research and innovation management, entrepreneurship, international cooperation, research data and AI, etc. Some of these roles have already been mentioned above, and they can be found both within academia and research and outside it, in various other sectors.

Research is fundamental for progress in all sectors of activity, stimulating innovation, improving decision-making and contributing to solving complex global challenges.

Examples of non-traditional roles, both within and outside academia and research, are:
- Science Communicator / Public Engagement Specialist,
- Science Journalist / Writer
- Policy Advisor
- Scientific Editor
- Policy Consultant
- Business Intelligence / Market Research Analyst
- Research Impact / Evaluation Specialist
- Research Manager
- Technology Transfer Officer
- Intellectual Property and Patent Specialist
- Policy Analyst
- Research Ethics and Integrity Officer
- Startup Founder / Entrepreneur
- R&D Product Developer
- Innovation Investment Specialist

- Data Scientist
- AI and Machine Learning Researcher
- Open Science and FAIR Data Expert
- STEM Outreach Coordinator
- Learning Experience Designer

Table 5: Examples of non-traditional roles, both within and outside academia and research

3.2. Benefits of exploring different career paths

Venturing into different career paths encourages the researchers to engage into a continuous learning and skill development process. By doing so, one can often gain transferable skills, such as critical thinking, problem-solving, and data analysis, which are applicable across various sectors. This flexibility not only expands career options but also builds resilience in adapting to an evolving job market. Furthermore, exploring various roles can create more networking opportunities, facilitating connections with professionals from different fields and promoting collaborative potential (Indeed, 2025; Vitae, n.d.). Overall, this exploration enables researchers to make informed career decisions, supporting their personal and professional growth.

3.3. Successful examples of transitions from academia to other sectors

– From academia to industry

This is the case for Dr. WeiQi Lin, who began her career as a clinician and researcher specializing in hematology. Later, she moved to the pharmaceutical industry, where in 2024 she holds the position of Executive Vice President of Research and Development and Principal Investigator at DURECT Corporation. Her transition is the result of a desire to have a greater impact for her research, through access to resources and collaborations with industry. Her example is detailed in an article on the Xtalks website. (Rashid, 2020)

– From academia to government

Such a transition may be of interest especially to those researchers who want to influence public policies more closely and generate impact. For them, such a role can bring many professional satisfactions. In this regard, an article on the opinion platform BioSpace tells the story of Chris Cvitanovic, a transdisciplinary researcher working both at the University of New South Wales and the Australian Government Department of the Environment, whose first role within a government organization came through a climate-focused company. The company needed a knowledge broker to mediate the relationship between the research community and those who developed public policy. In the interview, Cvitanovic recommends that those who want to make similar transitions take advantage of available training opportunities, including those that are seemingly outside their field of interest, in order to diversify their skills. (Whitlock, 2023)

– From academia to a Data Scientist position

Jorge Abreu preferred, after completing his doctorate at the Max Planck Institute for Astronomy, to take a Data Science Consultant position in a private organization instead of applying for post-doctoral positions. In a context where his daughter had just been born, he wanted more financial stability, as well as more schedule flexibility, in a position that would allow him to spend more time with his family. The interview with Jorge, as well as interviews with other researchers who have chosen to move from academia to other sectors, are featured in an episode of the Nature Careers Podcast. (Gould, 2022)

4. Conclusions

The ever-evolving research environment offers numerous opportunities for researchers beyond the traditional academic path. As interdisciplinary fields develop, the industry sector increasingly requires specialized expertise, and global societal challenges require complex skills to solve them, researchers have the opportunity to contribute in the context of increasingly diverse environments.

A successful transition to new career paths requires actions to recognize and capitalize on transversal skills, adapt to different professional environments, and be open to continuous learning. Researchers who adopt a flexible, non-linear approach to their careers can make significant contributions to society, whether through scientific advances, influencing public policies, or identifying innovative solutions in the business environment.

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