



# Redesigning Equality and Scientific Excellence Together



## Project Information

Topic:	SwafS-09-2018-2019-2020 Supporting research organisations to implement gender equality plans
Funding Scheme:	EU H2020 - Coordination and Support Action
GA Number:	101006560
Start date:	01/01/2021
Duration in months:	48
Project Coordinator:	UNIVERSITE DE BORDEAUX

RESET aims to address the challenge of Gender Equality in Research Institutions in a diversity perspective, with the objective to design and implement a user-centered, impact-driven and inclusive vision of scientific excellence.

## Consortium partners





Redesigning  
Equality and  
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Excellence  
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# **Toolbox: using our international networks of researchers to boost and mentor the young generations**

## Document Information

<b>Title</b>	Toolbox: using our international networks of researchers to boost and mentor the young generations
<b>Deliverable No.</b>	D6.3
<b>Version</b>	1.0
<b>Type</b>	<input type="checkbox"/> Report <input type="checkbox"/> Demonstrator <input type="checkbox"/> ORDP <input type="checkbox"/> Ethics <input checked="" type="checkbox"/> Other
<b>Work Package</b>	6
<b>Work Package Leader</b>	RUB
<b>Issued by</b>	RUB
<b>Issued date</b>	27.10.2023
<b>Due date</b>	31.10.2023 (revue due date)
<b>Dissemination Level</b>	<input checked="" type="checkbox"/> Public <input type="checkbox"/> Confidential <i>only for members of the consortium (including the EC)</i>

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## Abbreviations

<b>AUTH</b>	Aristotle University of Thessaloniki (GR)
<b>ECR</b>	Early Career Researcher
<b>EIGE</b>	European Institute for Gender Equality
<b>ERA</b>	European Research Area
<b>EU</b>	European Union
<b>FESTA</b>	Female Empowerment in Science and Technology Academia
<b>Gender-SMART</b>	Gender in Science Management of Agriculture & life sciences, including Research and Teaching
<b>GEP</b>	Gender Equality Plan
<b>GIL</b>	Gender Inclusive Language
<b>HEI</b>	Higher Education Institution
<b>PoC</b>	People of Colour
<b>RESET</b>	Redesigning Equality and Scientific Excellence Together
<b>RUB</b>	Ruhr University Bochum (DE)
<b>ScPo</b>	Fondation Nationale des Sciences Politiques (Sciences Po, FR)
<b>SUPERA</b>	Supporting the Promotion of Equality in Research and Academia
<b>UBx</b>	University of Bordeaux (FR)
<b>UOULU</b>	Oulu University (FIN)
<b>UL</b>	University of Łódź (PL)
<b>U.Porto</b>	University of Porto (PT)
<b>WP</b>	Work Package

## Executive Summary

This Toolbox on using our international networks of researchers to boost and mentor the young generations (D.6.3) has been submitted by RUB as part of Work Package 6 – *Act upon governance and upgrade existing excellence policy towards greater inclusiveness*. The purpose of WP6 is to foster institutional change in the RESET project. To support change, the tasks in WP6 address the institutional level of policy-making, the operational level of implementation and the personal level of decision making. Hereby, the project relies on the methodology of co-designing measures with stakeholders in the project and the RESET universities.

This toolbox is the output of Task 6.3 – *Attracting youth towards research careers and boosting young researchers' careers using the RESET network and its member universities' international connections*. The toolbox builds on the insights and achievements contributed by researchers and support services of RESET institutions, as well as early career researchers. Additionally, this toolbox enriches the focus on career development from an intersectional standpoint.

For this, the toolbox consists of a conceptual framework that has a purpose to provide valuable information and knowledge around intersectional perspectives on gender equality and diversity in HEIs in terms of scientific career promotion. To this end, we elaborate on the challenges that are connected to educational upward mobility. This is followed by an analysis of contributions from early career researchers in the RESET network on the occasion of the International Women's Day, in 2022, as well as interviews with advanced researchers from three RESET universities. The main aim here is to identify which factors the researchers perceive as helpful in their career path, and what role networks play in it. Based on this, the six tools of the toolbox are divided into two spotlights: Reflections towards an inclusive understanding of mentoring, and the promotion of networking in academic communities.

## Table of Contents

1. Introduction	5
<i>Central purposes of this document are to:</i>	5
Methodological Approach	7
Context	9
Glass ceilings and leaky pipelines	10
2. Intersectional Perspective on career development and Diversity in Higher Education Institutions	12
2.1 Educational inequality: First generation academics – gender and educational upward mobility	14
3. Voices and experiences from RESET communities	21
Category 1 personal factors: individual and intrinsic motivation and insecurities:	22
Category 2: Importance of personal relationships and networks	24
Category 3: Appreciation of Diversity	27
Category 4: Working Conditions and Work-Life Balance	28
Category 5: Contribution to Change	30
Category 6: Strains on Minorities	32
Focus on aspects of career development	33
Takeaway	35
4. Boosting the young generations - Tools	37
Spotlight 1: Towards an inclusive understanding of mentoring	37
TOOL #1: Recommendations and Checklists to boost an inclusive understanding of mentoring	40
TOOL #2: Peer and group mentoring for women in fields in which they are underrepresented	45
TOOL #3: Information for first generation academics: Best practice and checklist	50
Spotlight 2: Promotion of networking in academic communities	52
TOOL #4: Template for a diversity-sensitive welcome week for new PhD-students	54
TOOL #5: Digital networks in fields in which women are underrepresented. Best practice and guidelines	58



TOOL #6: Short guide: How to boost ECRs through event planning	62
<b>5. Inspiration – Interviews with experienced Scientist at RESET Universities on Career Development and Networking</b>	<b>66</b>
Interview with Eleonora Bielawska-Batorowicz, Professor at the Department of Clinical Psychology and Psychopathology at the University of Łódź, Poland	66
Interview with Sophie Duchesne, Head of the Centre Émile Durkheim, Director of Research at the CNRS, Teacher-Researcher, University of Bordeaux, France	69
Interview with Isabelle Dupin, Professor of Physiology at the College of Health Sciences of the University of Bordeaux, France	74
Interview with Anna-Liisa Kaasila-Pakanen, postdoctoral researcher, University of Oulu, Finland	78
Interview with Agnieszka Kurczewska, Vice-Rector for external relations and Associate Professor at the Faculty of Economics and Sociology of the University of Łódź, Poland	83
Interview with Alexandra Lopes, Professor at the Department of Sociology of the University of Porto, Portugal	86
Interview with Philippe Moretto, Professor of Nuclear Physics at the University of Bordeaux, France	88
Interview with Kirsi Ojutkangas, research funding specialist, University of Oulu, Finland	92
Sónia Pereira, Head of Research and Projects Office, University of Porto, Portugal	94
Interview with Taina Pihlajaniemi, vice president of research/professor of medical biochemistry, University of Oulu, Finland	96
Interview with Eleni Pontiki, assistant professor at the School of Pharmacy, Department of Pharmaceutical Chemistry, Aristotle University of Thessaloniki, Greece	101
Interview with Mar Rus-Calafell, professor of Clinical Psychology and Digital Psychotherapy, Ruhr University Bochum, Germany	105
<b>6. Outlook</b>	<b>108</b>
References	110

## List of figures

Figure 1: Overview of the Tools in this toolbox.....	7
Figure 2: Poster RESET-Event "Women in Science", 15.02.2023 .....	8
Figure 3: Poster RESET-Event "Science, Community, Diversity", 17.05.2023 .....	8
Figure 4: Proportion (%) of men and women in a typical academic career, students and academic staff, EU-27 & EU-28, 2015-2018 (She Figures, 2021).....	11
Figure 5: "Diversity wheel" (Gardenswartz & Rowe, 2003) .....	13
Figure 6: Parents-to-child transmission of higher education (Colagrossi et al., 2020).....	16
Figure 7: Key categories of the interviews with advanced researchers (2023), and video-contributions by ECRs for the International Day of Women (2022).....	22
Figure 8: "Mentoring Netzwerk – Von Studentin zu Studentin" Example for a peer and group mentoring initiative at RUB, 2019 .....	47
Figure 9: Definitions of Peer mentoring and of Group mentoring .....	48
Figure 10: Example of the Neuronexxt Network, a digital network for female scientists in Neuroscience, RUB.....	59

## 1. Introduction

RESET - Redesigning Equality and Scientific Excellence together is dedicated to developing an inclusive understanding of scientific excellence and promoting gender equality and diversity measures at European Higher Education Institutions (HEIs). To this end, Aristotle University Thessaloniki (AUTH), University of Bordeaux (UBx), University of Lodz (UL), and University of Porto (UPorto) cooperate in RESET as HEIs developing Gender Equality Plans (GEPs) in the project together with the Universities of Oulu (OULU) and Ruhr University Bochum (RUB) as mentor institutions, and Science Po Paris (Science Po) as internal evaluator. In Work Package 6, *Act upon governance and upgrade existing excellence policy towards greater inclusiveness*, RESET, led by RUB, addresses the career perspectives of early career researchers (ERCs) against the background of equal and fair participation (Task 6.3 "Attracting youth towards research careers and boosting young researchers' careers using the RESET network and its member universities' international connections"). To this end, we adopt an intersectional perspective to critically illuminate how HEIs can promote careers and break down structural barriers. This is crucial because despite more individuals qualifying for research-oriented careers due to the expansion of education throughout Europe, the system is lagging in providing adequate positions and career pathways. This document represents deliverable D6.3 - a toolbox whose purpose is to provide tools for promoting the careers of ECRs, with a view to promoting gender equality and diversity in European universities.

Also, in RESET's GEPs 1.0, promoting diversity and career development of ECRs (Early Career Researchers) plays a crucial role. For instance, AUTH's GEP 1.0 includes the following measure: "Form a network of female mentors comprising female AUTH teaching staff members, to guide new female researchers (PhD candidates, post-doctoral scholars)." At the University of Porto, the topic is addressed by developing measures aimed at raising "awareness of research careers (combating discrimination, recruitment, gender equality, etc.)." At the University of Bordeaux, there is also a dedicated action - "In connection with ENLIGHT Rise, and with the help of RESET, developing international networks of students and doctoral students."

### *Central purposes of this document are to:*

- ➔ Shed light on the responsibility of HEIs from an intersectional perspective in order to foster ECRs
- ➔ Point out the needs of ECRs based on experiences of PhD-students as well as advanced researchers from RESET-universities, and by comparing European research on these issues.





- Support HEIs in the development of diversity oriented measures for career development of ECRs
- Inspire HEIs in their endeavours to foster ECRs development with inclusive, community oriented tools

To achieve these goals, we will first highlight the situation of ECRs in the European Research Area in an intersectional perspective in the introductory part of the toolbox. We will focus on the linkage between the social categories gender, class and migration/race and thus ground our intersectional perspective on diversity and equality. In doing so, we emphasise the situation of first generation academics, as they have a large share among students due to the educational expansion at European universities, and at the same time are disadvantaged in their careers in academia. In order to reduce systemic and structural barriers, it is important to raise awareness at HEIs. Section 2 is dedicated to this aspect. In the toolbox, we will also consider the dimensions of sexual and gender identities, as well as ethnicity, especially in tool #1.

Although female students are the majority of students and graduates in bachelor and master programs across Europe (She Figures, 2021), they are the minority in later career stages. Therefore, we will also take a decided look at the situation of women in science in the context of career development in this toolbox. With this in mind, we will elaborate on the concepts of the Leaky Pipeline, as well as Glass Ceiling, in the context-section of the introduction.



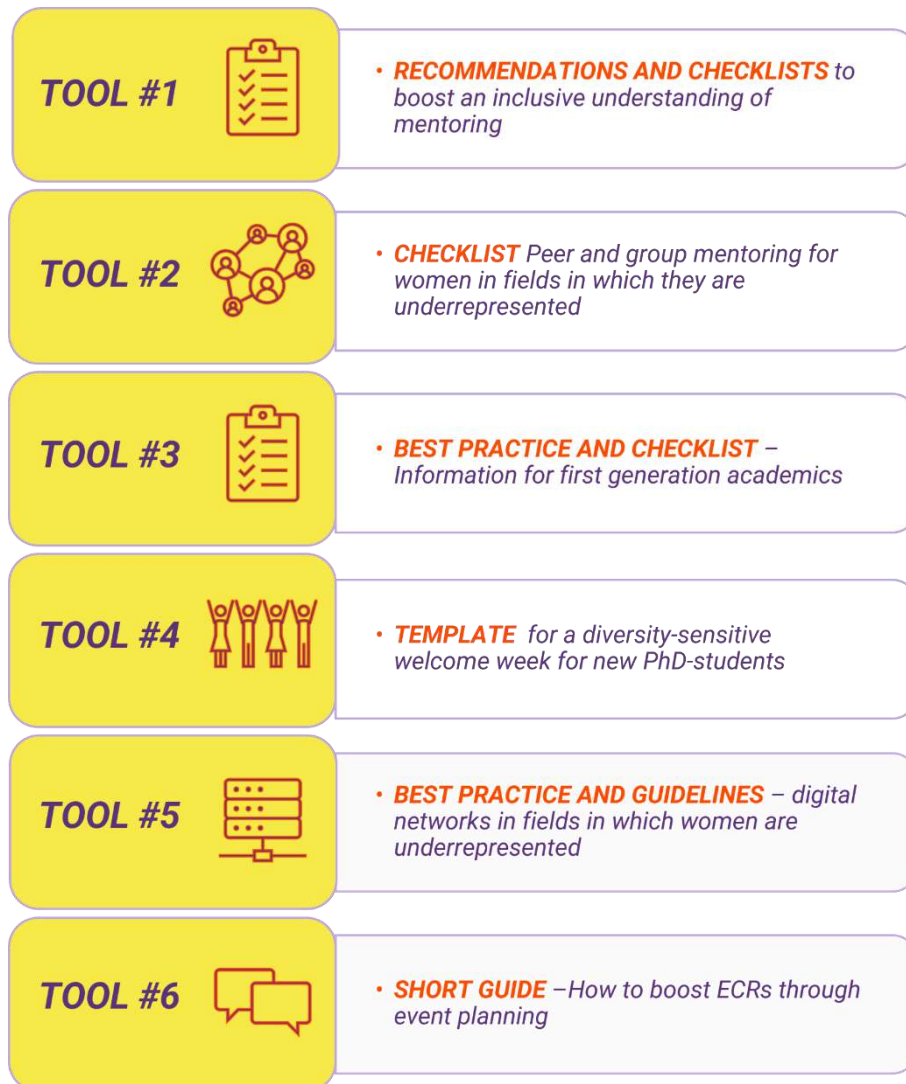


Figure 1: Overview of the Tools in this toolbox

## Methodological Approach

In RESET, the collaborative design of instruments, measures, and documentation is a key methodological element. Co-designing acknowledges the necessity to actively engage users or stakeholders in crafting solutions (Durall et al., 2023; livari, 2018; livari et al., 2023). For the creation of this toolbox, we've adopted the co-designing approach through interviews, by jointly crafting the measures and developing Task 6.3 with local RESET project teams, and by directly engaging local communities through the RESET webinars "Women in Science: intersectional & international perspectives on scientific careers" (15th of February 2023), and "Science. Community. Diversity" (17th of May 2023). Through the engagement of local communities in these events, we were able to

get to know their perspectives, ideas and wishes towards the development of more inclusive scientific communities.

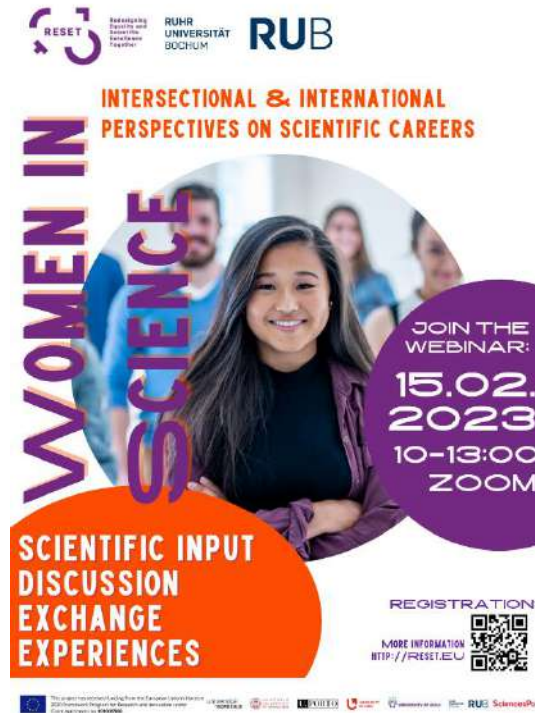


Figure 2: Poster RESET-Event "Women in Science", 15.02.2023



Figure 3: Poster RESET-Event "Science, Community, Diversity", 17.05.2023

Furthermore, this toolbox is the result of intertwining Grounded Theory Methodology (GTM: Corbin & Strauss, 2015) with Content Analysis (Flick, 2018). GTM is an explorative methodological approach in qualitative social research that allows to cluster findings in the data to categories through constant comparison of different sources, such as documents, interviews, discourses, or audio-visual material. Content analysis is a research technique in the qualitative social sciences for the systematic review and interpretation of various forms of text, visual, or audio data, examining these materials methodically to detect patterns, themes, and meanings within. We investigated patterns, connections, and ideas within the data, like interviews, discussions at RESET events, and early career researcher testimonials, without applying pre-established categories or hypotheses.

RESET organised different events and campaigns in 2022 and 2023 that initiated a discussion platform for the viewpoints of female Early Career Researchers (ECRs) at RESET universities. For the creation of this toolbox, we conducted interviews with advanced researchers regarding their career progress and experiences within scientific communities and academic systems. Twelve interviews with eleven female and one male participants from different scientific fields (STEM, psychology, economy, social sciences) at six RESET universities (AUTH, UBx, UPorto, UL, OULU, RUB) have been incorporated in this toolbox. Two experts work in science support services (UPorto, OULU), three have been or are vice presidents in their institutions (UBx, UL, OULU). Based on the principles of GTM and Content Analysis, we analysed these interviews with scientists and specialists from science support services to gain subjective insights into their professional experiences in the academic realm. The full interviews are incorporated into this toolbox in section 5.

In section 3, we delve into the outcomes of the analyses of these interviews, as they uncover urgent needs and experiences within the RESET communities, from which we infer best practices and tools. Here, we detail six core categories from the analysis of the interviews, as well as from 12 video submissions by female doctoral candidates who contributed with short testimonies about their experiences as female PhD-candidates in academia for the International Women's Day 2022<sup>1</sup>. The video contributions have been submitted by participants from the Universities of AUTH, UBx, UPorto and RUB and present struggles and strategies to overcome them from the perspectives of ECRs from different fields of Science and Humanities.

## Context

As Holzinger et al. (2019) point out, universities and the scientific system have had to adapt to global developments and challenges over the past few decades. They are deeply intertwined with globalisation processes, driven by market principles, and operate internationally. The rise in access to tertiary education, a side effect of educational expansion, has increased the number of individuals pursuing scientific careers worldwide and a diversification of profiles of potential candidates. At the same time, modes of operation of the scientific system and the production of scientific knowledge have also been adapted to market dynamics, reshaping the scientific landscape and changing the expectations of researchers. These changes have altered the profile of scientific work and scientists. Moreover, career paths have diversified: Transitions between academic and other careers have become more fluid, providing opportunities for pursuing advanced educational degrees and shaping and directing careers at different stages of life. These effects are also due to educational expansion, which provides access to tertiary education for more and more individuals across Europe, while at the same time

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<sup>1</sup> <https://www.youtube.com/channel/UCxgkukm9eSnzA9oMo1E-dog>

providing non-limited capacity in the academic enterprise. Linked to this, the occupational situation in the academic sector, especially at the interface between academic qualifications and professional engagement, is characterised by short-term and often part-time contracts. This precarious situation continues at the postdoctoral level, which is characterised by significant pressure to perform and responsibility, as well as competition and contention for a limited pool of positions and funds.

These circumstances not only affect the career trajectories of early career researchers, but also pose a challenge to the promotion of equality and diversity in the academic system. In 2005, the European Commission emphasised the need for better employment conditions with the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers. The European Commission stated that researchers' performance should not be undermined by unstable employment contracts. Therefore, institutions should work as much as possible to improve the stability of employment conditions for researchers (2005, p.17). More than 15 years later, the ECRs address unpredictable career paths and the instability of fixed-term contracts in the European Research Area (ERA). In 2016, the Bratislava Declaration for Young Researchers (2016) highlighted the obstacles faced by young researchers, noting that they often face "career uncertainties associated with opaque, unstructured career development" and unfavourable working conditions that exacerbate work-life conflicts (Holzinger et al., 2019, p. 214).

## Glass ceilings and leaky pipelines

The educational expansion is particularly noticeable in bachelor's degree programs. An increasing number of young people are starting a degree. At the same time, exclusion effects begin with the transition to the master's level, which fewer people seek, especially those who are first-generation students, meaning the first in their families to pursue a degree (more on this in section 2). From a gender perspective, it is evident that women constitute the majority of students in both the bachelor's and master's stages across Europe. Further along in the career trajectory within the academic system, bottleneck effects become apparent:

*"A young woman in Europe, for instance, can easily dream of embarking on a scientific career, regardless of the discipline. She will have the same if not slightly higher chances of obtaining a Master's degree than a male peer her age, although some disciplines still remain male strongholds. However, the probability of her going on to do a doctoral degree, pursuing a post-doctorate, accessing a permanent position and climbing the scientific and academic career ladder decreases from step to step." (Dubois-Shaik, Fusulier & Vinke, 2019, p. 178)*





Figure 4 illustrates the “scissors effect”: the gender proportions diverge as careers progress beyond the doctoral phase. The lack of diversity of women in grade B and grade A positions bears witness to a ‘glass ceiling’ (Laufer & Fouquet, 2001; Paultz & Wagner, 2020; Wagner et al., 2021) and marks the barriers to equal participation of qualified individuals in R&I. As we state in D6.2: Better representation of women in positions of power should encourage the involvement of women at all levels, including higher education institutions (RESET, 2023; D6.2 “Diversity in Gatekeeping Positions, Lessons learnt and Guidelines).

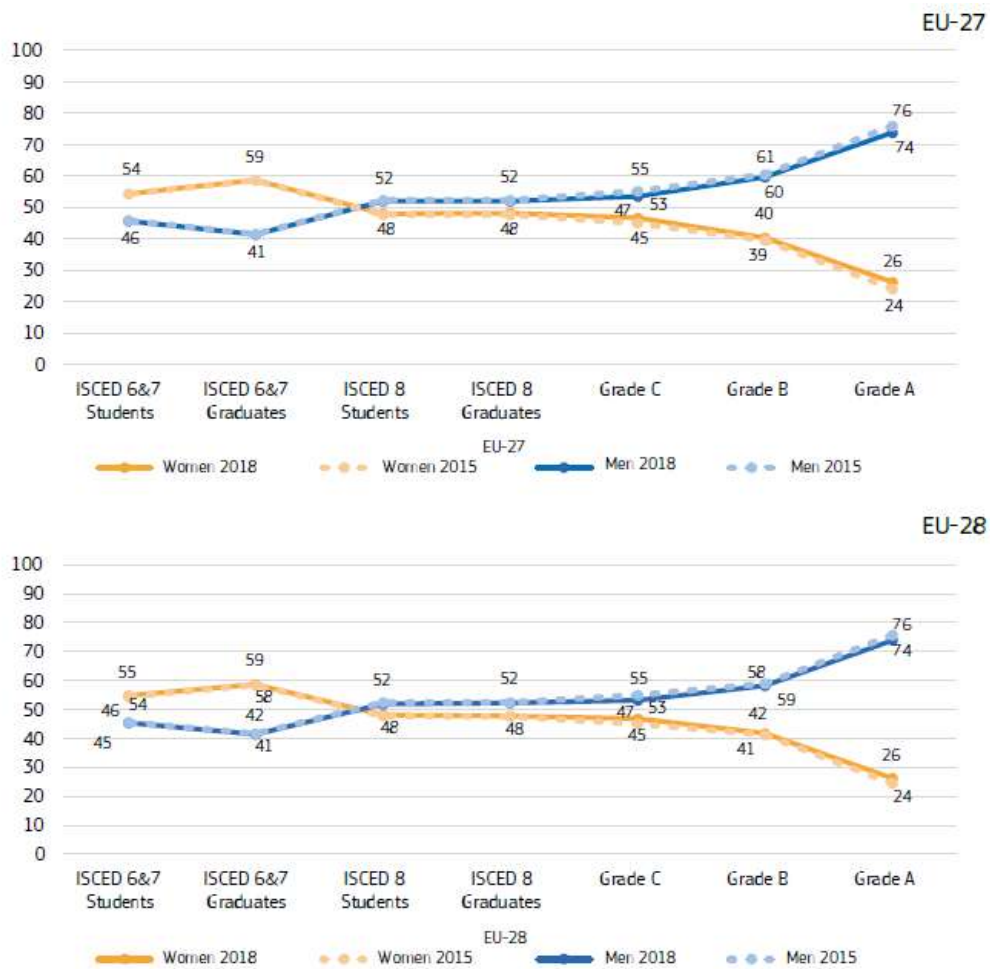


Figure 4: Proportion (%) of men and women in a typical academic career, students and academic staff, EU-27 & EU-28, 2015-2018 (She Figures, 2021).

Moreover, it is crucial to understand the motivations behind scientists' decisions to leave the field. ECRs, in particular, often find themselves in precarious positions in a hierarchical system that makes them highly dependent on their supervisors. (Bourabain

& Verhaeghe, 2021, p. 543). Furthermore, while diversity initiatives at many universities have a strong focus on promoting gender equality, they often do not address the particular barriers faced by women from ethnic minorities. These individuals perceive a gap in which the barriers they face are not adequately addressed. (Bourabain & Verhaeghe, 2021, p. 553).

In the following chapter, we will specifically address challenges for ECRs from the standpoint of intersectionality and diversity.

## 2. Intersectional Perspective on career development and Diversity in Higher Education Institutions

The intersectional perspective on career development, as adopted by RESET, acknowledges the interconnected nature of various social categories such as gender, race, age, class, ability, religion, and sexual orientation. This perspective recognizes that inequalities and individual differences arise at the intersections of these categories and personal experiences. This approach follows the insights of scholars like Crenshaw (1989), who introduced the concept of intersectionality, and Jacobs and Fincher (1998), who refer to these interconnected categories as "axes of difference." Intersectionality plays a crucial role in understanding how these categories manifest in social inequality and individual experiences. "Structural racism means combined modes of oppression that stretch into every aspect of social life in the nation state, for example financial wealth, land rights, health, and education. Racism is, therefore, not a spontaneous phenomenon or merely rooted in attitudes or ignorances" (Müller, 2021, p.5) .

RESET aims to examine how intersecting power dynamics affect social relationships and individual experiences in universities, both institutionally and at the personal level. This approach aligns with the idea of higher education serving the goal of creating equitable societies by actively addressing inequities, as advocated by Nichols and Stahl (2019), with intersectionality being a core aspect of diversity work, as emphasised by Dill (2009).

Diversity has been a significant topic since the US Civil Rights Movement in the 1960s, and it has become important in institutions, including higher education institutions (HEIs). Diversity in HEIs is linked to achieving organisational goals and considering social and demographic factors while combating discrimination. At the same time, institutional engagement with diversity carries the danger of "window dressing." This means, in the words of Sara Ahmed, "diversity becomes a matter of rearranging things so that an organisation can appear in the best way" (Ahmed, 2012, p.107). HEIs have

their own mechanisms of inclusion and exclusion, often conflicting with the principle of equal opportunities, affecting not only gender but also people from low-income or migrant backgrounds and individuals with disabilities and/or stigmatised because of their sexuality or gender identification. Overcoming these systemic hurdles and biases is the responsibility of universities and education systems. With Vertovec (2012), we emphasise the dimensions of redistribution, recognition, and representation as central to promoting equal opportunities and diversity in HEIs. Redistribution seeks to redress historical discrimination against groups, as highlighted by Vertovec, especially in terms of economic harm. Diversity policies aim to help minorities gain access to jobs, equitable income, and positions. Recognition seeks to foster dignity and esteem among minorities, promote positive images, and facilitate their fuller participation in social and political processes, as outlined by Vertovec. The goal of recognition is to create institutions that reflect the population they serve, as articulated by Vertovec.

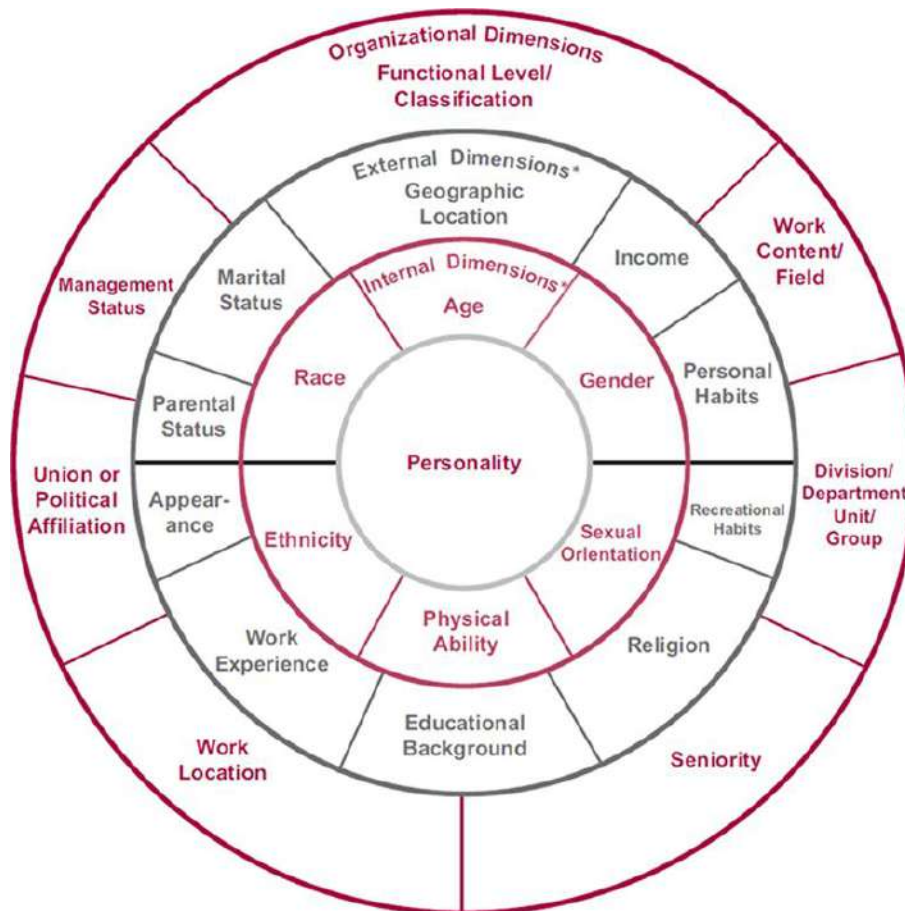


Figure 5: "Diversity wheel" (Gardenswartz & Rowe, 2003)

Dimensions of diversity can be illustrated with the model of the “diversity wheel” Figure 5 (Gardenswartz & Rowe, 2003). Here it becomes visible how various factors of social, cultural and individual identities as well as markers and positions in the social space can be grasped as facets of diversity in different life situations and experiences. These factors are linked to cultural and historical developments and are subject to norms and values (Straub & Niebel, 2021).

## 2.1 Educational inequality: First generation academics – gender and educational upward mobility

To understand the social inequalities that lead to a lack of diversity, representation, and participation in people’s careers in academia, it is necessary to look at this phenomenon in an intersectional perspective. In Section 1, we have already considered the gendered distribution of people in science along career trajectories. Going beyond this, it is also instructive to look at the horizontal distribution, i.e., the distribution of women and men within different subject groups, through which we can see that women are underrepresented in STEM in Europe. Since these are particularly high-funded research areas, these distributional differences also express different opportunities to benefit from funding.

This imbalance in itself already shows that science, the access to it and the willingness or the possibilities to stay in it are unequally distributed.

But besides the factor of gender, we in RESET intend to include other categories of inequality that add value to the consideration of this imbalance and possible ways of dealing with it, and more importantly, to decrease it. Forms of access and exclusion in our societies are not only distributed along the ascribed gender affiliations, but other factors are added, such as class, descent, ability, sexual orientation or ethnicity.

Accordingly, we focus in this toolbox on the intersection between gender and educational upward mobility. It needs to be emphasised that this is always accompanied by other social markers, in particular socio-economic, origin and migration, as well as ethnicity. By educational upward mobility, we mean the situation of people who, generationally speaking, are among the first in their family to have studied at universities (which are increasing in number as a result of the massification of higher education). They are referred to as *first generation academics*.

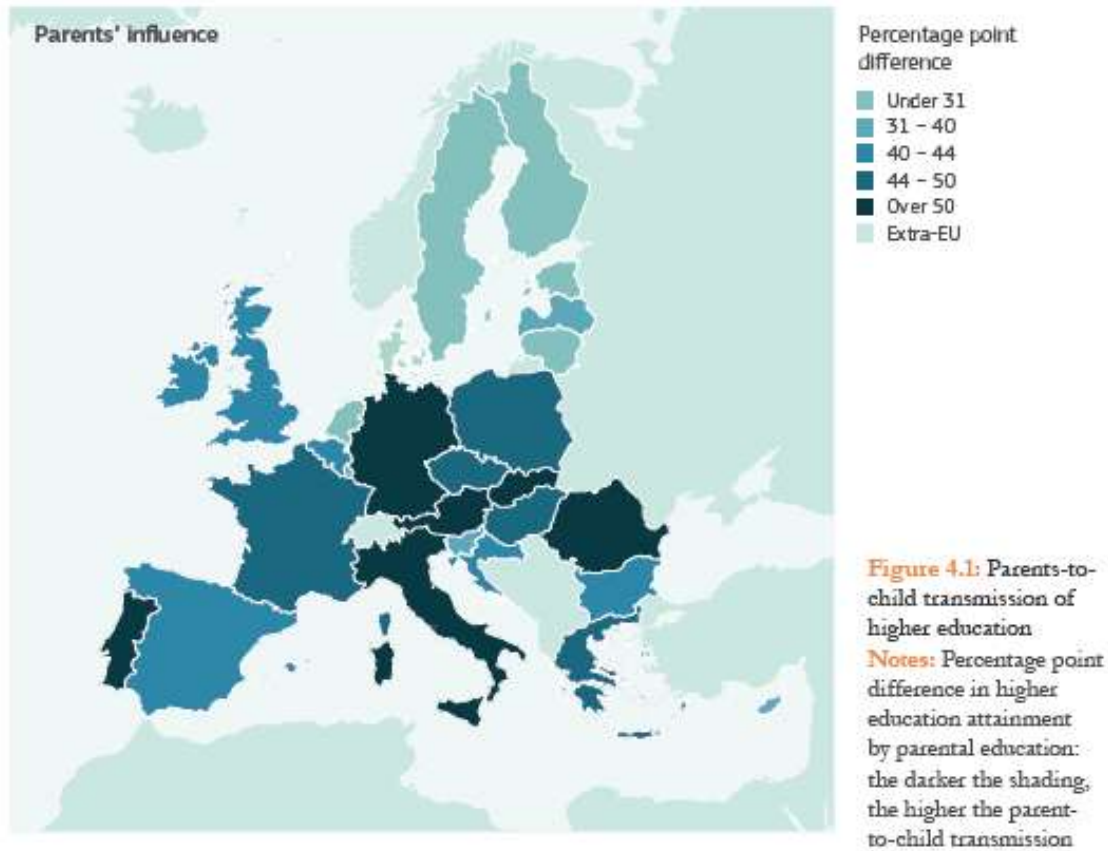
Individual careers cannot be reduced to social markers. Yet being aware of them is important because people sharing experiences based on their socioeconomical upbringings and revealing structural obstacles also face typical hurdles related to these systemic factors.

If we look at upward educational mobility in Europe, the following picture emerges in "Beyond averages - Fairness in an economy that works for people."

*"About 74 % of individuals with highly educated parents go on to complete higher education themselves, compared to only 28 % of those with less highly educated parents. Persistence in educational attainment increases by around 10 pp when also considering the influence of grandparents." (Colagrossi et al., 2020)*

The authors cluster the European Union in different regions and make clear that in Eastern, Western and Southern Europe, the persistence of educational attainment across generations is a lot larger than in Northern Europe and the Baltics (figure 6). Data also show that individuals who feel they moved up the social ladder as compared to their parents are less inclined to believe that success in life is a consequence of family circumstances and more likely to attribute it to individual effort.





of educational attainment. Percentage point categories refer to distribution quantiles. Results are based on the estimation of linear probability regression models. All estimates include gender and 10-year age cohort indicators. Higher education is defined as ISCED levels 4 (post-secondary non-tertiary education) to 8 (doctoral level). Survey weights account for population size and socio-demographic characteristics.  
 Source: Colagrossi et al. (2019a).

**Figure 6: Parents-to-child transmission of higher education (Colagrossi et al., 2020)**

Additionally, data from Germany suggest “that a higher share of first-generation students tend to choose subjects related to social sciences than continuing-generation students, whereas a higher share of continuing-generation students major in subjects like human medicine or psychology than first-generation students do” (Middendorff et al., 2017, p. 100). In the United States, first-generation students are associated with a higher share of the student population in subject areas like engineering and social sciences and a lower share in areas like arts and humanities (Trejo, 2016). A unique effect can be seen for “traditional study programs,” such as law, medicine, or pharmacology, that in Germany require students to pass a state exam to graduate: in these subjects compared to subjects without state exam, the proportion of first-generation students is particularly low (38%) compared to the proportion of their peers with parents who have academic backgrounds (Middendorff et al., 2017). An exception here is teacher

education, which also requires state exams but has usually higher shares of first-generation students – and is traditionally not followed up by a scientific career.

This trend aligns with research indicating that first-generation college students often select their fields of study based on practical considerations, favouring subjects that offer tangible applicability, direct career pathways, and enhanced job market prospects (Wright et al., 2023). However, these fields may sometimes be perceived as having less prestige and limited avenues for career advancement. And while these pragmatic choices facilitate immediate entry into the workforce post-graduation, they may also have long-term disadvantages, such as restricted upward mobility in their professional status over time. (Reinhold et al., 2022)

As Janke et al. (2017) emphasise, universities in North America and Europe have opened up to a wider range of individuals over the course of the 20th century. Educational expansions since the 1960s have made education in universities more accessible for people with different backgrounds. Within this framework, inclusion practices have sought to promote women and allow minorities access to universities. Although this policy appears to foster inclusivity, individuals from the recently incorporated groups frequently face significant hurdles, primarily due to insufficient financial resources and cultural capital, both of which are crucial for thriving in academic settings. Despite these challenges, the authors point out that there has been a notable increase in the number of students from lower socioeconomic backgrounds, those without an academic family history, and/or those belonging to ethnic groups different from the traditionally privileged ones over recent years (ibid). This trend suggests a reduction in institutionalised discrimination. Nonetheless, psychological studies indicate that, despite these advancements, students from demographics that have been historically and persistently underrepresented in higher education continue to grapple with a sense of alienation within university environments (e.g., Walton and Cohen, 2007, 2011). As the authors point out, this sensation is particularly prevalent among first-generation students (those without university-educated parents), who often find it more challenging to acclimate to the university's social milieu compared to their peers who have at least one parent with a university background (Stephens et al., 2012b; Janke et al., 2017)

These are important factors that affect personal trajectories within the academic system as well as the institutions that strive to provide that same educational access and equal participation for all.

### **Myth of Meritocracy**

Wilson & Kittleson (2013) highlight that it was precisely the conceptualization of science and universities as neutral spaces – both, neutral in terms of gender, but also of class, that reinforced a sense of not belonging. In their study, this sense was especially mentioned by female students, who were part of a minority group, and sensed a lack of space for the reflection of subjective experiences in relation to their structural elements.



The authors link these experiences of not belonging to the cultural narrative of meritocracy, that is central to academic culture.

Meritocracy represents the endeavour to advance individuals based on their achievements in environments that pursue excellence, like the scientific community, with the underlying principle being academic merit rather than social determinants such as socioeconomic status or gender. However, the disparities in educational accessibility and the presence of vertical segregation throughout academic career paths challenge the presumed impartiality of meritocracy, exposing its inherent limitations and biases (Hodgins, O'Connor, et al., 2022; Van den Brink, 2015; Van den Brink & Benschop, 2014).

Therefore, an understanding of science that recognizes the cultural dimension of the academic system becomes important. Accordingly, the difficulties for female -especially first-generation students, to get orientation in these cultures and to understand the rules of the game, gains attention. Here, research on social inequalities points at the tensions between abstract knowledge and individualised demands of the academic culture and the cultural norms and demands of the direct social environment of many first-generation academics, which is primarily characterised by practical knowledge and a focus on relationships. It is precisely such socio-cultural tensions that Lena Zimmer (2022) identifies in her study of junior professors and in reference to other studies.

### Habitus and social space

In order to grasp an understanding of the complex situations of individuals who are first generation academics, or members from minoritarian groups, French sociologist Pierre Bourdieu's concept of habitus is particularly useful for our discussion because habitus can be linked to both class and gender and bridges the gap between individual experience, the socioeconomic environment and cultural factors. This concerns the upbringing of people, as well as educational institutions with certain rules and norms. Habitus can be defined as a set of durable dispositions acquired during primary socialisation that can be transposed, particularly during professional socialisation.

Central to habitus is the principle of incorporation. This means that norms, values, ethical and moral principles, and forms of action manifest themselves in body and mind. They are not simply learned, but inscribed on a more subconscious level. And as Bourdieu demonstrated with his extensive studies of social milieus, these forms of inscription are deeply entangled with social class and culture. It also means that, for example, goals in life are interpreted differently in different social environments, and what is considered desirable can differ greatly. The habitus is not abstract here, but manifests itself very concretely in the way we speak, how we move in space, what forms of behaviour we regard as proper, and also what tastes we develop, for food, art or music, and how we spend our leisure time (Bourdieu, 1982; 2005).

This is also where gender and class intersect: for one thing, Bourdieu shows that social constructions of gender, also lead to the production of a gender habitus. The markers



of masculinity and femininity are in turn culturally shaped and vary in different social classes. This also shows the intersectionality that is significant for the consideration of our main topic and the positionality of gender in scientific cultures.

It is not primarily based on differences of interest that the representation of women in STEM is lower, but a question of socialisation in school, families and the social environment, by which scientific fields are marked with gendered attributions. Accordingly, Zimmer (2022), Lange-Vester (2015), and other authors show that first-generation academics often find themselves in the position of being confronted with very different expectations as women, in which, on the one hand, an orientation towards financial security and care, and, on the other hand, towards independent, scientific career development. Obstacles are not only related to the academic system, but also to the family and social environment, where, as many studies show, there is often little understanding for scientific achievements and academic aspirations. Breaking class boundaries therefore, can be attached to a lack of support and ignorance for the educational titles and the striving for a scientific career, based on the before mentioned divergence of values, norms and orientations in different social milieus (Böning/Möller 2019, p. 77f.).

Smolarek writes about her experiences of being a first-generation academic:

*"In addition to financial burdens, first-generation students also have to deal with navigating an unfamiliar system and unfamiliar socio-cultural norms. Throughout my many years in higher education, I have learned a lot. I have not only acquired a great deal of intellectual knowledge, but I have also acquired much of the social, cultural and institutional capital that comes along with the title of "Doctor." I blend in with my peers and have learned academicspeak -- I can ramble about the hegemonic practices of the neoliberal oligarchy until I am blue in the face.*

*But it was not always that way. And while a considerable amount of my ability to now "pass" in the academic world is due to my white privilege, much of it is also due to a great deal of social observation and imitation." (Smolarek, 2019)<sup>2</sup>*

In her statements, the significance for the understanding of habitus and social space, as we have highlighted so far, becomes clear. At the same time, the author expresses her relationship to the social and cultural space of the university in that disciplinary cultures are associated with a certain vocabulary. This emphasis on linguistic components is also something that Heike Kahlert (2016) highlights. She emphasises that "the

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<sup>2</sup> <https://www.insidehighered.com/advice/2019/10/09/first-generation-phd-student-describes-her-struggles-opinion>

importance of class in the context of academic careers is reflected in the fact that gatekeepers in the recruitment of doctoral students implicitly presuppose certain features in junior scholars, such as a distinct international orientation, knowledge in intellectual history, and/or linguistic aesthetics." These expectations are thus strongly interwoven with class and involve mechanisms of inclusion and exclusion.

Möller (2015), for example, highlights how doctoral degrees have become increasingly socially closed across all disciplines in recent decades, despite rising doctoral rates (Jaksztat, Lörz 2018). This closedness has been perpetuated into the professorship (Möller 2015). In Germany, for example, the following picture emerges: "that students from academic households are firstly more likely to start a doctorate, secondly more likely to complete it (24 to 7 percent), and thirdly three times more likely to take up a postdoctoral position (3 to 1 percent)" (Lörz, Schindler 2016, p. 23).

Lörz and Schindler state that social closure has shifted in Academia. So while it was initially assumed that selection was based on social origin at the upstream educational levels, this process has shifted to the transition to post-doctoral positions and thus to later career passages (Lörz, Schindler 2016). This also fits with the fact that about one in ten professorships in Germany is held by someone who is first-generation academic.

### Takeaway

We highlighted the complex dynamics of educational inequality, focusing on the intersectionality of social markers such as gender, class, ethnicity, and first-generation academic status in order to emphasise the need for institutional measures, to consider this intersectional nature of social dynamics in career progression. Hereby we underscored the systemic barriers faced by individuals from underrepresented groups, particularly women and first-generation academics, in scientific and academic fields. Despite educational expansions, these individuals often confront significant hurdles, including financial constraints and a lack of cultural capital, which are crucial for thriving in academic settings. By this, the notion of meritocracy in academia is questioned, revealing that opportunities and advancements are not solely based on merit but are influenced by social determinants.

Particularly in STEM fields, underrepresentation of women is not merely a matter of personal interest but a consequence of gendered socialization and expectations. First-generation academics often navigate divergent expectations between financial security and independent career development, compounded by a lack of understanding or support from their immediate social environments. These dynamics show that breaking class boundaries often involves overcoming not just academic but also familial and social obstacles.

We address these challenges at an institutional level by explicitly incorporating the dimension of educational advancement into our toolbox (section 4) in the following tools:

**Tool #1: Recommendations and Checklists to boost an inclusive understanding of mentoring**

**Tool #2: Peer and group mentoring for women in fields in which they are underrepresented**

**Tool #3: Information for first generation academics: Best practice and checklist**

### 3. Voices and experiences from RESET communities

To advance the topic of promoting ECRs and to tailor the design of this toolbox to the needs of our communities, we conducted interviews with scientists at the RESET universities. The aim of the interviews is to learn more about which factors and circumstances scientists have found to be helpful or hindering in their career paths, and what has motivated them to pursue academic careers. The full interviews are outlined in section 5 of this deliverable.

On the occasion of the International Women's Day, in 2022, RESET invited female early-career researchers to reflect on their experiences in science in short videos, targeting other female scientists in early career stages. These short videos thus relate to their own experiences as early-career scientists and address both challenges and helpful experiences and insights in their career paths. In total, 12 videos were published on RESET's YouTube channel from the universities AUTh, UBx, UPorto, and RUB, covering a wide range of different disciplines<sup>3</sup>.

We conducted a comparative content analysis of the interviews as well as the video contributions to identify their attitudes towards the scientific system and work as scientists, what motivated them, and what set them back in their career progression. The interviews followed a guideline that was elaborated by the RUB team and could be adapted by local teams. Here we explicitly asked for the role that networks play in the scientific work of the interviewees, and in their perception of career development. Furthermore, we asked them, which elements they found supportive in their career development, which were hindering and what kind of advice they would give ECRs. The interviews and the video contributions were analysed through a content analysis following the principles of Grounded Theory Methodology, of comparing the data and building categories out of the data-comparison. By this, articulations and claims of our interview partners, and the testimonials in the videos can be clustered into central, recurrent cat-

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<sup>3</sup> <https://www.youtube.com/channel/UCxgkukm9eSnzA9oMo1E-dog>

egories, grouping themes that emerged in the interviews. These reveal the tensions between challenges and motivators. In this section, we want to highlight key elements from the interviews and the video contributions, following these categories (Figure 7):

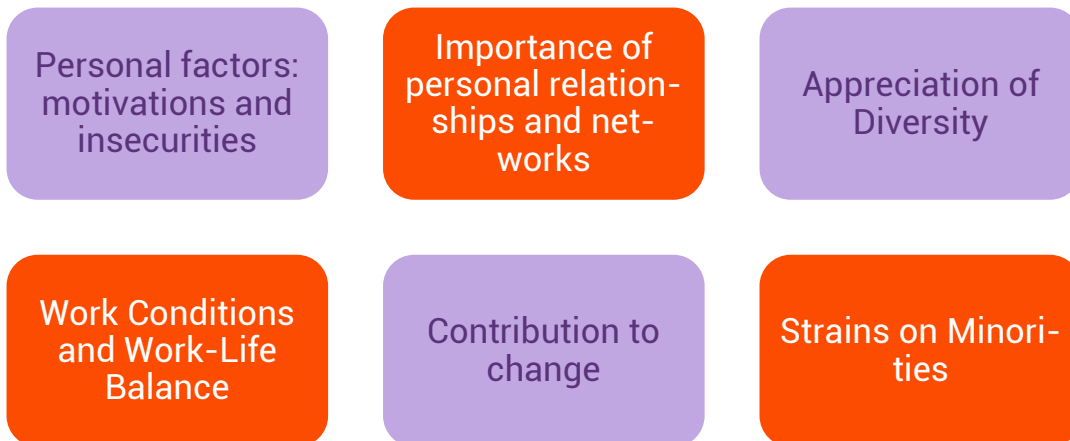


Figure 7: Key categories of the interviews with advanced researchers (2023), and video-contributions by ECRs for the International Day of Women (2022)

*Category 1 personal factors: individual and intrinsic motivation and insecurities:*

*"Building knowledge, solving problems, innovating, these are some of the driving forces of science and the forces that give me energy every day to keep going." (Alexandra Lopes, UPorto)*

Intrinsic motivation, to contribute to the creation of knowledge, as highlighted here by Alexandra Lopes, is an aspect that was emphasised in all interviews and is also reflected in the video contributions. It plays a significant role in persevering, continuing to pursue a scientific career despite obstacles and setbacks.

In terms of motivation, participants at the International Women's Day in 2022 (IDW2022) emphasise the importance to follow one's interest and not to get discouraged by fears<sup>4</sup>. Also the significance of finding enjoyment and purpose in one's chosen

<sup>4</sup> Video Contribution by Tiffanie Carlier, UBx:  
<https://www.youtube.com/watch?v=cKvDNHPoEMQ>

field of study or profession is highlighted<sup>5</sup>. This refers to the level of intrinsic motivation and passion that is often highlighted when working in the field of science, as highlighted above.

When it comes to personal qualities, the significance of patience is also quoted<sup>6</sup>. Patience is crucial when facing challenges or waiting for desired outcomes, as it helps individuals to stay focused and persistent.

Moreover the participants at the IDW2022, reflect a range of thoughts and emotions related to their experience and motivation in science. They not only speak about motivation, but also about self-doubts, insecurities, and strategies for overcoming challenges in academic and professional pursuits.

In addition to these qualities and motivations that drive one's scientific work forward, participants also discuss emotions that can be considered obstructive as they counteract motivational actions. For example, one participant highlights self-doubts and the fear of not being good enough<sup>7</sup>. This statement reflects the common experience of being afraid of not. This experience is mirrored in one of our interviews:

*"The issue of gender relations goes beyond the universities. It is in schools and families that little girls must learn to trust themselves. I waited until I became head of my research centre to start being confident in myself. That is to say, not to have a gut feeling when I present a paper; not to feel at fault all the time because I do not train my students well enough" (Sophie Duchesne, UBx).*

This statement points to the gendered influence of social dynamics on individual feelings, emotions and forms of self-perception, that hold someone back. Especially the fact that these feelings are experienced by so many women in similar situations and impact the assessment of their own abilities highlights how important it is to address these feelings of inadequacy and the resulting discomfort, even leading to avoidance behaviours. By this, the existence of gender biases and the impact they can have on women pursuing various endeavours is acknowledged.

Another participant highlights a proactive approach to overcoming discouragement and insecurities. She advises individuals to concentrate on positive experiences and achievements as a way to boost motivation and self-esteem<sup>8</sup>.

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<sup>5</sup> Video Contribution by Niami Nasr, UBx: <https://www.youtube.com/watch?v=oNGZ3YDQc1k>

<sup>6</sup> Video Contribution by Anna Antoniou, AUTH: <https://www.youtube.com/watch?v=SIXCca8sFBk>

<sup>7</sup> Video Contribution by Dilek Tepeli, RUB: [https://www.youtube.com/watch?v=EFp\\_Q2iNRBA](https://www.youtube.com/watch?v=EFp_Q2iNRBA)

<sup>8</sup> Video Contribution by Sara Ayhan, RUB: <https://www.youtube.com/watch?v=3pnD0Wtvn20>

### *Category 2: Importance of personal relationships and networks*

Closely related to the aspect of personal motivation is the concept of togetherness, as the following statement exemplarily illustrates:

*"The role of the people around me cannot be underestimated in shaping my academic career. I am grateful for the support and guidance I have received from those who have helped me to navigate the academic world. Their assistance has been in a great role in familiarising me with the academic environment and fostering my growth within it." (Anna-Liisa Kaasila-Pakanen, OULU)*

The significance of building and maintaining personal relationships and networks, particularly within the academic and research community but also on a personal, or intimate level, was highlighted by all interview partners as well as many video contributions. These statements emphasise the advantages of connecting with peers, learning from others, and the emotional support that can be gained through these connections. This category is strongly related with the first one, as the social dimension was highlighted by several participants in order to overcome professional obstacles, and hurdles.

*"In academia, it is crucial to have a strong support network that can provide guidance, advice, and encouragement during both the times of success and setbacks. Without such a network, academia can be isolating and lonely." (Anna-Liisa Kaasila-Pakanen, OULU)*

### **Strategic relevance of networks**

Networks also play a significant role in the context of research funding and strategic planning:

*"Networks are "the must" in the present world. A successful scientific career is impossible when one acts on one's own. Networks help to exchange ideas, to design and implement complicated research procedures, to have access to equipment too expensive for a single institution." (Eleonora Bielawska-Batorowicz)*

*"Networks are crucial. If you look from a research funding perspective, which is quite essential, you should have contacts around the world and with various stakeholders, not only researchers but also relevant other interest groups (third sectors, policymakers, regulatory bodies, etc.)" (Kirsi Ojutkangas, OULU)*





*"The research fields are like villages where everyone knows everyone, and gradually your networks help you carry out your research, give you new ideas, and provide a recruitment pool. Science is highly interactive, help and support by your colleagues is needed to carry out your work in an internationally competitive manner." (Taina Pihlajaniemi, OULU)*

### **Collaborative academic environments**

Furthermore, scientists put the stress on the fact that networks and collaborative work themselves are an essential component of scientific work and knowledge gain:

*Science is not done in a stand-alone way. Being part of networks allows better understanding of issues, global vision of research in a specific field, and benefiting from the advice/expertise/tools of people, who are competent on the subject. It can be a real booster for scientists' careers. (Isabelle Dupin, UBx)*

At the intersection of professional and personal relationships also lies the dimension of exchanging experiences on challenging emotions and situations. One participant acknowledged the potential loneliness in the research process but encourages individuals to overcome it by making friends, building a network, and engaging in international collaboration<sup>9</sup>. She highlights the benefits of having a strong and diverse network. Also the significance of opening up to peers, which can lead to the establishment of connections and a sense of security within the academic community was mentioned by one participant<sup>10</sup>.

According to our interviewees, attention should also be drawn to the importance of personal friendships, even within the field of science:

*It is certain that you need to have some support and friends in the field. I would say that strategically it is important to invest in the professional relationships with a few people you really trust to support you when things are not going well. (Sophie Duchesne, UBx)*

*"I believe in engaging in different events and connecting with like minded individuals, forging genuine friendships and maintaining meaningful contacts. I would encourage others not to focus on "networking" for its own sake, but rather on cultivating relationships*

<sup>9</sup> Video Contribution by Giuliana Casanova, UPorto:

[https://www.youtube.com/watch?v=YcRUV\\_QSEP4](https://www.youtube.com/watch?v=YcRUV_QSEP4)

<sup>10</sup> Video Contribution by Dilek Tepeli, RUB: [https://www.youtube.com/watch?v=EFp\\_Q2iNRBA](https://www.youtube.com/watch?v=EFp_Q2iNRBA)





*based on trust, solidarity, and reciprocity. Authentic encounters and building genuine connections can lead to lasting collaborations and mentorship opportunities, where experienced academics can share valuable lessons and provide guidance." (Anna-Liisa Kaasila-Pakaniemi, OULU)*

### Learning from others and supporting each other

The participants collectively emphasise the role of personal relationships and networks in academic and research success:

*"Building an academic career takes time and there are no shortcuts. Finding good co-authors, organisations or research networks to belong to takes time. It is good to be proactive in establishing relationships with more experienced researchers and not be afraid to ask questions. In general, academics are open to collaboration and conversation." (Agnieszka Kurczewska, University Lodz)*

Also the video contributions by ECRs highlight the importance of having an academic support system on the professional and academic level, and to learn from other researchers. One participant referred to the collaborative nature of academic and research work<sup>11</sup>. Another pointed to the dimension of international cooperation, underscoring the value of diversity in peer groups and how learning from individuals from various countries can enrich one's knowledge and perspectives<sup>12</sup>.

They mention the importance of learning from others, offering and receiving support, and building connections with peers from diverse backgrounds. Additionally, they underscore the value of emotional support and collaboration in overcoming challenges and making the academic journey more fulfilling and successful.

*"As an early career researcher myself, I believe it is essential for us to foster an environment of open sharing and discussion, where we not only highlight our successes but also openly share our experiences, including the challenges we face." (Anna-Liisa Kaasila-Pakaniemi, OULU)*

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<sup>11</sup> Video Contribution by Domitille Chalopin-Fillot, UBx:  
<https://www.youtube.com/watch?v=GyG6jqnoawI>

<sup>12</sup> Video Contribution by Tiffanie Carlier, UBx:  
<https://www.youtube.com/watch?v=cKvDNHPoeMQ>





*"What is certain is that one cannot do science or research on their own. Of course, you get ideas by writing and reading articles, but you get them mainly by talking to people, and you need help all the time, at all stages of your research. The tipping point where you go from being in demand all the time to being able to give to people who are in demand is when you start to breathe, when you realise that it worked." (Sophie Duchesne, UBx)*

### *Category 3: Appreciation of Diversity*

Diversity also held a high significance in the interviews and video contributions:

*"Research agendas, research methods, research topics are defined by researchers. If you have a human environment that is diverse, that diversity will spillover to all aspects of research." (Alexandra Lopes, UPorto)*

Hereby Alexandra Lopes refers to the human element in scientific exploration and decision-making. Encouraging and welcoming diversity in research and ways of doing research is a conscious choice. Furthermore, she suggests that the variety in backgrounds, experiences, perspectives, and ideas among researchers contributes to a broader range of considerations and innovations in research. Also Mar Rus-Calafell (RUB) points out the dimension of diversity:

*Research needs to be represented by all the members of our society, otherwise it is biased and not a true reflection of who we are. To be able to understand and overcome our challenges as a society, as a specie, and those challenges coming from the environment we live in, we must ensure we are all well represented within the scientific community." (Mar Rus-Calafell, RUB)*

*"An ingrained respect for different genders and other diversity must be the backbone of the university's operations. Consider broadly different persons for tasks of responsibility, not only the most obvious ones. Leadership at all levels is instrumental in securing a culture of gender equality. Active measures are needed, e.g. in securing a gender balance in committees and nominating candidates for various tasks. Bad practices and violations of gender and equality matters should not go unnoticed. Engage female mentors." (Taina Pihlajaniemi, Oulu University)*

Here, the need to integrate a profound respect for gender diversity and inclusivity into the fundamental practices of university operations is articulated. Taina Pihlajaniemi argues for a deliberate broadening of perspectives in assigning leadership roles and responsibilities, and encourages decision makers to consider a diverse pool of talent beyond the usual selection. She also stresses the importance of accountability, stating that instances of violations of the Gender Equality Policy must be addressed transparently and promptly. Furthermore, she highlights the importance of mentorship in promoting gender diversity, specifically calling for the engagement of female mentors who can empower underrepresented individuals through guidance, encouragement, and representation.

The participants of video contributions also express the importance of valuing diversity in various aspects of academic and research endeavours. One contributor highlights that diverse perspectives contribute to improved research outcomes by providing different points of view and insights<sup>13</sup>. Especially in fields in which women are underrepresented, the significance of achieving gender balance in academic and research environments has been pointed out by several contributions<sup>14</sup>. Moreover, diversity is also emphasised in terms of international collaboration and scientific exchange. In this regard, one participant<sup>15</sup> refers to her Erasmus exchange, through which she experienced a diverse environment and expresses that she felt "in place". This statement reflects the experience of diversity through mobility and international encounters, and the sense of belonging within a scientific field. It underlines the positive impact of international exchange programs on individuals. Reflecting on diversity as an aspect of knowledge production, another participant<sup>16</sup> highlights the connection between diversity in perspectives and the production of knowledge in science and how these elements contribute significantly to the advancement of science. These statements collectively stress the importance of diverse perspectives, gender balance, and the positive impact of experiences related to diversity on research and knowledge production. They recognize diversity as a valuable asset that enhances the quality and depth of academic and scientific work.

#### *Category 4: Working Conditions and Work-Life Balance*

In various contributions, challenges related to the field of science and the balance between work, leisure, and family were discussed. These statements shed light on the

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<sup>13</sup> Video Contribution by Niami Nasr, UBx: <https://www.youtube.com/watch?v=oNGZ3YDQc1k>

<sup>14</sup> Video Contributions by Anna Antoniou, AUTH; Sara Ayhan, RUB; and Meike Küssner, RUB: <https://www.youtube.com/watch?v=ACfgGQX8lSk>

<sup>15</sup> Video Contribution by Sofia Yfantidou, AUTH: <https://www.youtube.com/watch?v=JUCGc3SUXgM>

<sup>16</sup> Video Contribution by Carmo Cabral Gouveia, UPorto: <https://www.youtube.com/watch?v=xFh0tGhSbX4>

challenges related to navigating career and family decisions, and striving for flexibility to strike the right balance between work and personal life.

*"In terms of career progression, it seems that I am evaluated using the same criteria as my peers who have not experienced breaks from their professional lives as I am not aware of that our university would have a policy in place to consider or account for these breaks in evaluations." (Anna-Liisa Kaasila-Pakanen, OULU)*

This statement reflects concerns regarding the gender bias in evaluation practices in career progression, particularly for individuals who have taken breaks from their professional journeys due to parental leaves. The following article from AUTH also highlights the hurdles that women in particular face in terms of career development and motherhood in academia:

*"The academic system is very unjust and hostile for women having children. I think that there is no convenient time to have children for women in science. I had my child being a non-permanent assistant professor and due to my career advancement and evaluation from personal choice I did not get the nine month-maternity leave and got back to work when my little girl was four months. Being now five years old my little girl, I admit that it is still a difficult task having a balancing scientific career and being a mum achieving a good work-life balance." (Eleni Pontiki, AUTH)*

Also, ECRs expressed in their video contributions these issues based on their own experiences, while others looked at them in the context of their continued involvement in academic research, considering their own future as female researchers.

Not only the ways in which childcare and care work can result as an obstacle in career progression, but also the aspect of Work-Life Balance has been discussed, related to tendencies to overwork:

*"When you start there is this drive to do a lot, to embrace science almost as a mission. Don't let your research career colonise all aspects of your life and be invested in building a good balance and grow as a person while growing as a scientist." (Alexandra Lopes, UPorto)*

The high level of intrinsic motivation mentioned in Category 1 intersects with the precarious employment situations associated with fixed-term contracts and the unclear pathways to obtaining a professorship. This comes with a lack of security and high

competition pressure<sup>17</sup>. Another contributor reflects on the high workload between project work and thesis-related work. She raises the question of how to effectively combine various tasks and responsibilities, indicating the complexity of managing multiple roles and duties<sup>18</sup>.

Regarding the aspect of combining family-life and science, the potential challenges individuals may face when starting a family while pursuing their career or research work, are highlighted. It implies that navigating these challenges may require detours or adjustments in one's professional path<sup>19</sup>. The references to starting a family are also accompanied by uncertainties regarding the implications this has for one's career trajectory<sup>20</sup>. This is also a mentally challenging hurdle, especially for women, given the considerations of parental leave and publication pressure, which in turn are associated with precarious employment conditions.

### *Category 5: Contribution to Change*

"Contribution to Change" entails the idea that meaningful transformation requires collective and proactive efforts. One contributor<sup>21</sup> expresses the need to actively shape and redefine expectations in academia. This proactive sentiment is echoed by another contribution, demonstrating that to challenge and rectify injustice, everyone's engagement is necessary<sup>22</sup>. The idea of challenging established norms and procedures in academia is further amplified regarding that it is important to overcome in order to create an appreciative environment for everyone<sup>23</sup>. Collaboration is another significant theme, highlighting that for genuine change to take root, unity and cooperation are indispensable. This is further supported by a contribution that underlines the importance of inclusivity in future advancements<sup>24</sup>.

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<sup>17</sup> Video Contribution by Domitille Chalopin-Fillot, UBx: <https://www.youtube.com/watch?v=GyG6jqnoawl>

<sup>18</sup> Video Contribution by Anna Antoniou, AUTH: <https://www.youtube.com/watch?v=SIXCca8sFBk>

<sup>19</sup> Video Contribution by Johanna Rust, RUB: <https://www.youtube.com/watch?v=UoJDNgEX62I>

<sup>20</sup> Video Contribution by Sara Queiroga, UPorto: <https://www.youtube.com/watch?v=NshinflghHw>

<sup>21</sup> Video Contribution by Johanna Rust, RUB: <https://www.youtube.com/watch?v=UoJDNgEX62I>

<sup>22</sup> Video Contribution by Carmo Cabral Gouveia, UPorto: <https://www.youtube.com/watch?v=xFh0tGhSbX4>

<sup>23</sup> Video Contribution by Sara Ayhan, RUB: <https://www.youtube.com/watch?v=3pnD0Wtvn20>

<sup>24</sup> Video Contribution by Sofia Yfantidou, AUTH: <https://www.youtube.com/watch?v=JUCGc3SUXqM>

Also the importance of heightened awareness, especially within the research community has been pointed out by a video contribution<sup>25</sup>. Being informed and conscious of evolving paradigms is crucial for the community to be in sync with transformative ideals.

The following statement underscores the critical role of higher education institutions (HEIs) in fostering change, particularly in breaking the “glass ceiling” that many female scientists encounter:

*I notice on a daily basis that young brilliant and motivated female scientists are well represented among the students, so I am not worried about this. However, they need to be supported in finding their place. Despite their motivation and merits, some positions or functions are still difficult to access, as the famous “glass ceiling” is very real, namely at universities. Universities must be particularly attentive to certain key moments: entrance to the PhD programme, obtaining a tenured position and career progression. Maternity is another real issue. It is taken into account in certain grant applications (National Agency for Research, European Research Council) but this is not enough. (Isabelle Dupin, UBx)*

As it is pointed out, HEIs have the responsibility to facilitate this transition at various pivotal stages, including entry into PhD programs, attainment of tenured positions, and overall career advancement. Additionally, the acknowledgment of maternity as a significant factor in the academic trajectory of many women highlights a need for structural support.

*I believe women – regardless of their career stage – can be leading scientists in any field and be recognized as such through their research trajectories. I understand how this simple idea may be difficult in real life, especially for early career researchers, but I also believe that women scientists in general may play a key role in breaking barriers and overcoming cultural biases around scientific careers. (Sonia Pereira, UPorto)*

The statement reflects a strong belief in the capability of women, at any career stage, to be forefront scientists in any discipline, meriting recognition through the strength and impact of their research. However, it also acknowledges the complexities and challenges especially for early career researchers who face pronounced barriers. Furthermore the statement addresses women as active agents of change within the scientific

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<sup>25</sup> Video Contribution by Meike Küssner, RUB:  
<https://www.youtube.com/watch?v=ACfgQX8lSk>

community. They are seen as key players in shattering the status quo, challenging cultural biases, and reforming the norms within scientific careers. This means that their successes and struggles serve as both inspiration and practical pathways for others to follow, gradually forging an environment in science that is more inclusive, equitable, and supportive of diversity. Therefore, the emphasis here is not only on the individual achievements of female scientists but also on their collective impact in transforming the landscape of the scientific community.

### *Category 6: Strains on Minorities*

The video contributors also shed light on the challenges faced by women in academia, particularly in fields where they are underrepresented. Their experiences highlight the adversity that arises due to gender imbalances and societal perceptions. Female students in fields in which they are underrepresented face for example challenges regarding the feeling of being "out of place"<sup>26</sup>. This underscores the cultural and social barriers women face when they are a minority in their academic domain. The same contributor also points out that minority groups, including women in this context, frequently find themselves alone in their efforts to raise awareness about their challenges. By this, she points out that the burden of initiating change often rests on those most affected by the disparity. Another contributor<sup>27</sup> emphasises the crucial role of self-confidence for young women in STEM. To build more confidence in her experience is needed to pave one's own path, highlighting the importance of empowerment and self-belief in navigating a career in science. Hereby, she focuses on the individual contribution that people who are in minority positions in scientific fields can make in order to succeed in these fields. In contrast, another contributor focuses on systemic solutions to break down barriers and obstacles<sup>28</sup>. She discusses the persistence of stereotypes as obstacles that not only shape negative perceptions about women in science but also foster resistance towards initiatives aimed at achieving gender equality.

In summary, these statements offer a glimpse into the multifaceted struggles of women in science, highlighting the importance of understanding and addressing the strains faced by minorities in academia. The contributions demonstrate an urgent need for systemic changes that foster inclusivity and counteract gender biases.

<sup>26</sup> Video Contribution by Sofia Yfantidou, AUTH:  
<https://www.youtube.com/watch?v=JUCGc3SUXgM>

<sup>27</sup> Video Contribution by Meike Küssner, RUB:  
<https://www.youtube.com/watch?v=ACfgGQX8lSk>

<sup>28</sup> Video Contribution by Carmo Cabral Gouveia, UPorto:  
<https://www.youtube.com/watch?v=xFh0tGhSbX4>

### *Focus on aspects of career development*

The interview contributions also highlight aspects of career development within Higher Education Institutions (HEIs). They offer insights into systemic obstacles, and individual strategies to enrol a scientific career.

In this regard, the importance of self-assessment and the demands of a scientific career at the interface between personality and systemic characteristics, is mentioned.

*"In my opinion, one has to know that there are extremely competitive careers at HEIs. If you do not have a certain form of ego that can handle competition and reassessment well, it can be completely demolishing. If early career researchers are interested in research as a way of producing knowledge, this can be done outside the university, in places where, I think, the value is recognised in more objective and simpler terms than in the academia. (Sophie Duchesne, UBx)*

The statement underscores the highly competitive nature of careers within the academic system, suggesting a certain level of resilience and self-confidence is necessary to navigate this environment. Furthermore, the interviewee broadens the perspective of a research career, pointing out that the pursuit of knowledge production and scholarly inquiry is not exclusive to HEIs. There are alternative paths outside university settings, possibly in industry or independent research institutions, where contributions and achievements might be recognised and valued in more straightforward, less convoluted terms. This perspective serves as a reminder that academic institutions are not the sole venues for research and that professionals in the field should consider a variety of environments where their work, and perhaps their well-being, could be more nurtured and appreciated.

As the following statement points out, scientific careers are also characterised by the fact that they cannot be meticulously planned and timed:

*It doesn't seem to me that talking about career development strategies is a very rewarding approach. I prefer to talk about personal investment, participation in activities of collective interest, responsibility for collective structures and projects (teams, units, institutional components). All this naturally leads to recognition of one's activity and a legitimacy that contribute to career development. Perhaps it's a strategy in itself! (Phillippe Moretto, UBx)*

It suggests that true career advancement stems from a dedication to the larger collective and authentic engagement in one's field, which ultimately circles back to enhance one's own professional trajectory. This view encourages professionals to intertwine

their growth with the advancement of their communities, thus cultivating an environment of mutual support, shared success, and collective progress. Furthermore, taking initiative and gaining responsibility is identified as important:

*Don't hesitate to take the initiative, to gain in responsibility, while respecting the colleagues with whom you work. The legitimacy acquired through your commitment will always pay off in career terms. There's no need to ask yourself too many questions or draw up career plans: recognition will come naturally. (Phillippe Moretto, UBx)*

Here, the importance of proactive engagement and taking responsibility in one's professional environment, are pointed out in order to foster a successful career. Rather than strategizing or overanalysing career moves, individuals are encouraged to immerse themselves authentically and respectfully in their roles and collaborations.

As another crucial factor, internationalisation has been highlighted:

*Moreover, today, internationalisation is obviously essential. So my main advice would be to be strategic and to spend a year or two in an English-speaking country at a very beginning of the career to be totally at ease with English. Moreover, mobility at the beginning of your career reinforces independence from the institution that contributes to "make" you. (Sophie Duchesne, UBx)*

The statement underscores the critical role of international exposure and proficiency in English in the globalised research environment, particularly for early career professionals. By advocating for strategic international experience, it highlights the necessity of linguistic fluency and cultural versatility in fostering a competitive edge in the scientific community. Benefits of internationalisation are also highlighted by the following statement:

*"One of the main things I would like them to know is that, despite of the sacrifices, working with other people outside your home country, visiting other labs, engaging in international collaborations and networks is, beyond academic purposes, one of the most enriching activities as a person (in my opinion). A unique opportunity to learn in many senses: not only from what others do, but to contribute to a marvelous synergy of new knowledge creation." (Mar Rus-Calafell, RUB)*

This early-career mobility is seen not just as a skill-enhancing move, but also as a means of cultivating professional independence. This advice reflects a broader understanding that today's scientific and academic fields are increasingly interconnected and global, valuing not just subject matter expertise, but also intercultural competence and independence.



### *Takeaway*

As we pointed out, personal and intrinsic motivation is paramount and shared among the more advanced interview partners, as well as the early-career researchers. The passion for contributing to knowledge creation keeps individuals persevering despite obstacles. However, this high level of motivation often intersects with precarious employment situations, creating a tension that can lead to overwork and challenges in work-life balance.

The importance of building personal relationships and professional networks is a recurrent theme in the interviews and video-contributions, emphasising the benefits of emotional support, learning from peers, and collaboration, particularly in international contexts. These networks not only offer professional support but also foster a sense of security and belonging within the academic community. The role of networks and networking emerges as a critical factor in the scientific community, particularly for early-career researchers navigating the complexities of academic progression. The interviews highlight the multifaceted benefits of establishing robust professional and personal connections within the academic sphere. They foster knowledge exchange, collaborative opportunities, and enhanced learning from diverse perspectives. The emphasis on international collaboration highlights an additional dimension, underlining the enrichment that comes from diverse cultural and intellectual exchanges, which not only broadens one's own knowledge base but also injects a variety of viewpoints into scientific discourse. Particularly for women and those in minority groups, networks serve as a source of empowerment, inspiration, and collective agency, vital for effecting systemic change and promoting inclusivity within the scientific fields.

Diversity and inclusivity have been emphasised as factors that enhance research quality and innovation. There is also a strong call for gender balance, especially in fields where women are underrepresented, and a need for environments that support diverse backgrounds and experiences, thus enriching scientific discovery. Concerning career progression, there is an acknowledgment of systemic obstacles that especially affect women, such as the impact of starting a family, gender biases in evaluation practices, and the pressure of publication during parental leave. These challenges call for a re-evaluation of academic norms and greater support for those navigating work requirements and work life balance.

Moreover, the contributions emphasise the necessity of proactive efforts in challenging established norms and fostering change. This involves a collective approach where inclusivity, collaboration, and heightened awareness within the research community for matters of diversity are crucial.

Overall, the experiences pointed to an urgent need for systemic changes that support diversity, inclusivity, and a more balanced approach to scientific careers.





We will highlight the key role of networks as a spotlight in the tools. Here we will highlight how faculties can design the entry phase of doctoral students in such a way that meaningful connections are created within their own professional community right at the beginning of the doctorate. We will continue this impulse by presenting the creation of networks for female academics, especially in fields in which they are underrepresented, and secondly by giving impulses for the organisation of events and conferences that promote ECRs. These objectives shape the following tools:

**Tool #4: Template for a diversity-sensitive welcome week for new PhD-students**

**Tool #5: Digital networks in fields in which women are underrepresented. Best practice and guidelines**

**Tool #6: Short guide: How to boost ECRs through event planning**



## 4. Boosting the young generations - Tools

### Spotlight 1: Towards an inclusive understanding of mentoring

Mentoring has increasingly gained significance in higher education, serving as a tool to foster students' personal and professional development and to facilitate their entry and progression within their academic careers (Christie, 2014, p.955). "Institutions with active mentoring are more likely to have productive employees, stronger organizational commitment, reduced turnover, a stronger record of developing junior talent, and a loyal group of alumni and faculty" (Johnson, 2016, p. 13). The advantages are obvious: engaged, experienced and successful faculty support those who have to find their way in a complex and highly challenging system in order to succeed in it, to go their own way and to make meaningful decisions.

A short definition of mentoring can be:

*"Mentoring is a personal and reciprocal relationship in which a more experienced (usually older) faculty member acts as a guide, role model, teacher, and sponsor of a less experienced (usually younger) student or faculty member. A mentor provides the mentee with knowledge, advice, counsel, challenge, and support in the mentee's pursuit of becoming a full member of a particular profession" (Johnson, 2016, p. 23).*

This definition illustrates a rather open and broad understanding of mentoring. It indicates that mentoring can take place from different functions and the relationship between mentor and mentee may be formalized to different degrees. Accordingly, mentoring can result from the constellation between faculty and students as well as among peers and staff, or within formalized programs organized by the university or faculty. Central to this definition is the reciprocal relationship, in that the focus is on encouraging and supporting a less experienced person in the academic system. At the same time, the relationship between mentors and mentees is hierarchically structured. Mentors have a lot of tacit knowledge and literacy in a system that mentees still need to explore (Christie, 2014, p. 960). It is both this knowledge advantage and the marking of mentors as the ones who know how the system works. They are considered to have the competence to assess in which way the behaviour of the mentees should be adapted to the circumstances, or which the promising characteristics are, that should be promoted. This implies a subjectivizing and shaping dimension of power, which can be intensified in an intersectional perspective when diversity categories are taken into account.



Especially against the background of the promotion of persons who are in minority positions in the system, i.e. women in fields in which they are underrepresented, or persons who belong to other minorities, the power dimension in individual-centred promotion is intensified. Efforts to promote women in fields in which they are underrepresented have often pursued individualistic approaches to developing women's talent. Success was claimed in this regard by developing masculine connotated behaviours. "These strategies are seen in mentorship efforts designed to help women learn to fit workplace norms; they are also seen in training designed to teach women how to negotiate and boost their confidence" (Diehl & Dzubinski, 2016, p.198). Women, and other people from minoritarian groups should be empowered with regard to their career development through mentoring, training formats and other measures. Critics argue that mentoring therefore requires women to adapt to male patterns of behaviour and actions, and perpetuate barriers in the system instead of changing practices of exclusion. Furthermore, persons belonging to minorities can be disadvantaged in the selection processes for entering mentoring programmes if the selection criteria are biased. This effect can result in favouring more privileged candidates and in fostering an 'elitist equality' (RESET, 2023; D6.2 "Diversity in gatekeeping positions. Lessons learnt and guidelines). This makes it important to adapt mentoring practices, and their accessibility (Davies et al., 2021).

Moreover, these forms of individual promotion can be beneficial for the career development of individuals. As critics emphasize, they do not show any substantial development at the structural level of institutions (Hodgins, O'Connor et al., 2022). Rather, but the gendered structures, modes of action, and barriers of the scientific system are neither be recognised as such, nor changed, nor dismantled. As a result, mentoring does not provide a more inclusive institutional culture, per se.

It is important to take this criticism seriously, as it points to the risk of perpetuating norms that are considered objective (Diehl & Dzubinski, 2016, pp.198f; Hodgins & O'Connor et al., 2022). This raises the prospect that success in the scientific system is tied to the fulfilment of norms that at the same time generate exclusion. RESET acknowledges these critical stances and builds on this challenge. On the one hand, we focus on the perspective of "fixing the institutions" (RESET, 2023, D6.2 "Diversity in gatekeeping positions. Lessons learnt and guidelines; RESET 2021, D1.2 "GE Survey Data Reports") and thus on the question of how institutions can change and design their practices at the structural level of the organisation in order to reduce the informal dimensions of barriers and obstacles for people who belong to minorities in the scientific system. On the other hand, especially in relation to the precarious conditions of students and early career researchers, we also see the benefits that mentoring relationships and programs can have. Especially when mentoring supports individuals who otherwise have a higher risk of falling out of the system, mentoring serves the purpose of promoting the participation of these individuals in academia and fulfils a contribution to sustainable change in the system. Furthermore, mentoring points to the dimension



Redesigning  
Equality and  
Scientific  
Excellence  
Together

## D6.3 Toolbox: using our international networks of researchers to boost and mentor the young generations

of appreciation and collaboration that a culture of science focused on togetherness needs.

At the same time, the criticisms highlighted underline the importance of inclusive and diversity-sensitive practices in mentoring. Peer mentoring and group mentoring can be possibilities in which a dialogue oriented and accessible offer can be facilitated for the integration into new stages of studies and doctoral studies (Christie, 2014).

*Tool#1 and Tool#2 will provide more information and easily adaptable steps to further develop diversity oriented mentoring practices at your institution and guidelines for mentors to reflect their practices. Tool #3 is designed in order to provide guidance and awareness for the needs of first generation academics at the beginning of their scientific careers.*



This project has received funding from the European Union's Horizon 2020 Framework Program for Research and Innovation under Grant Agreement no 101006560.

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## TOOL #1: Recommendations and Checklists to boost an inclusive understanding of mentoring

Mentoring is an essential element of the relationship between more experienced members of the scientific community and those who are new to this complex and demanding system. Be they undergraduates, graduate students, or ECRs. While mentoring itself refers to the reciprocal relationship between mentors and mentees, we would like to focus here, based on the recommendations and reflections of Johnson (2016), primarily on mentoring from the perspective of promoting diversity and the associated reduction of barriers.

**This tool is dedicated to provide insights on how categories of diversity, such as gender identity, sexual orientation and race/ethnicity need to be reflected in mentoring relationships and by those who design mentoring programs.**

### Reflection on obstacles:

*Mentoring does not take place in a vacuum, but requires awareness and sensitivity to different life situations and social factors that can complicate the experience in the academic system for mentees in different ways. In the following, we will elaborate on typical forms of these difficulties as well as make recommendations on how mentoring opportunities should be designed to help reduce these barriers and be helpful for mentees. In doing so, we refer to the remarks by Johnson (2016).*

### Focus on Gender - obstacles female mentees might face (Johnson, 2016, p. 182):

→ **Constant examination:** female mentees often feel pressured to constantly prove their abilities to a greater extent than their male counterparts. While men face

less rigor in fulfilling performance requirements, women are often subjected to close scrutiny. They frequently have to prove that their successes are not merely due to luck or chance.

- **A balancing act:** women face a dichotomy when it comes to their behaviour in the workplace. If they show traits that are traditionally feminine (e.g. being approachable and caring), they may be seen as likable but not competent, which reinforces the sense of constant scrutiny. However, if they exhibit more traditionally masculine behaviours (e.g. being determined in discussions, board meetings or negotiations), they run the risk of being perceived as socially incompetent and facing possible rejection.
- **Bias against mothers:** individuals in leadership positions may hold biased views about the commitment and effectiveness of women with children. Female workers are in a difficult position: they are expected to prioritize their families, but this may result in colleagues and supervisors doubting their professional commitment. The demands of academia combined with a rigid structure can make the environment particularly difficult for women.
- **Struggle for identity:** Based on the factors explained above, especially in male-dominated fields, mentors should recognize the challenges their female mentees face in balancing their personal and gender identities.

### Focus on gender and sexual identities -obstacles that LGBT mentees might face:

LGBT students in higher education regularly face various forms of prejudice and hostility.<sup>29</sup> They are among the groups on campus that have either recently faced or continue to face legal discrimination, depending on their college location. This includes such things as denial of health benefits to same-sex couples, marriage rights, and admission to certain religious academic programs. Many LGBT students also face widespread assumptions in academia that they are heterosexual and face negative comments from faculty and fellow students. For example, they may encounter inappropriate jokes, comments, or assumptions that reinforce heteronormative views, such as when an advisor presumptuously refers to a male student's "girlfriend" or a female student's "husband."

In addition, LGBT students frequently struggle with whether to disclose their sexual orientation to their mentors. Each new academic endeavour or mentoring relationship challenges them to weigh the potential social, political, and personal consequences of

<sup>29</sup> For example surveys from Germany and France point this out: Student Survey in Germany (2021) & ACADISCR1 (2018-2022), French context, see Hajjat et al. (2022); Moreover, UniSAFE show higher prevalence of sexual violence against LGBTI people (Lipinsky et al., 2022)

being open about their sexual orientation or gender identity. While disclosing one's true self can bring many psychological and physical benefits, the negative effects of such behaviour in an unsupportive environment could overshadow those benefits. It is important to recognize that many LGBT students accept and express their identities in their early years of higher education. For many, college and post-graduate study coincides with a time of personal realization and acceptance of their non-heterosexual or transgender identity. As a result, these students may not yet have fully integrated their orientation or identity into their personal or professional lives. Effective mentors of LGBT students should be well-versed in the typical stages of non-heterosexual identity development in order to provide the best possible support.

### ***Checklist for Supporting LGBT Mentees:***

- Use inclusive language in all communications, both written and spoken. Check RESET's Toolbox on Gender inclusive and diversity oriented language for helpful suggestions<sup>30</sup>.*
- Be aware of unique concerns LGBT mentees might have, such as deciding whether to be openly "out."*
- Continuously show respect, sensitivity, and unconditional acceptance.*
- Acknowledge and respect the individual comfort levels of LGBT mentees regarding their "outness."*
- Ensure a secure environment for discussing the intersections of gender, sexual orientation, and academic or professional experiences when disclosure occurs.*
- Address any sexual prejudice or discrimination in academia or the workplace and discuss coping strategies with your mentee.*
- Consistently express LGBT-positive attitudes in teaching materials, public comments, and mentoring sessions.*
- Consider displaying an LGBT-supportive symbol, like a rainbow, in your office.*

### **Focus on major struggles of racialized students and staff in Higher Education Institutions (HEIs):**

1. ***Isolation and Loneliness:*** Racialized faculty and students often report feelings of being isolated in predominantly White institutions.

<sup>30</sup> Niebel Viktoria. (2022). Toolbox for gender-neutral, diversity-oriented institutional communication (2.0). Zenodo. <https://doi.org/10.5281/zenodo.8095962>



2. **Unaddressed racism and encounters with racism:** Students of colour are more likely to face subtle or overt racism in such institutions, leading to a heightened sense of exclusion. Examples include being profiled by campus security, facing housing discrimination, or being disrespected in academic settings.
3. **Institutional climate:** Minority faculty might find institutions to be non-inclusive, with students sometimes showing dismissiveness or a lack of respect.
4. **Historical legacies of oppression:** The past histories of racial oppression can affect minority students, manifesting in internalized racism, resulting in reduced self-esteem and a rejection of one's cultural heritage.
5. **Reluctance to seek help:** Due to a culture emphasizing independence and self-reliance, minority students might struggle with seeking assistance in academic settings, leading to misconceptions of being disinterested or distant.
6. **Lack of representation in Academia:** Racialized students and faculty often find their perspectives and experiences underrepresented or undervalued in academic content and classroom instruction.
7. **Devaluation of culturally focused scholarship:** research centred on racial or cultural topics might be considered less significant or relevant compared to other fields.
8. **Identity suppression:** To integrate into the predominant academic culture, racialized individuals may feel pressured to suppress or change vital aspects of their racial or cultural identities. This can lead to feelings of personal diminishment, cultural alienation, and psychological distress.

A significant concern tied to cultural mistrust is the doubt many minorities feel about forming close relationships with mentors from the majority group. They might question the intentions of a faculty member or worry about being perceived as betraying their own cultural community. Furthermore, minority students often have heightened awareness of the paternalistic dynamics in mentoring relationships. The inherent power imbalance in academic mentoring relationships, especially in their initial stages, can become more pronounced in cross-racial mentorships due to societal and institutional hierarchies.

***Checklist for supporting diversity and inclusivity in mentoring programs:***

- Confirm that the student and new faculty groups considered for mentoring programs are compatible and that key assignments mirror the institution's diversity.*
- Openly support the significance of cross-race mentoring and exemplify initiating diverse mentorship relations.*

- ☒ *Uphold minority groups and networks both on campus and within your professional realm.*
- ☒ *Engage in discussions about the stresses and issues minority groups face with existing minority colleagues to enhance your comprehension of your mentees' challenges.*
- ☒ *Actively contest any implicit stereotypes and policies that may put minority mentees at a disadvantage.*
- ☒ *Dedicate time to address minority concerns within both the campus and wider academic community.*

To summarize, in establishing meaningful mentorships, mentors need to continually self-reflect, asking how the interaction serves the mentees' best interest. Johnson (2016, p. 71f.) recommends mentors to evaluate their own competencies for the role, taking into account their training, experience, and feedback from mentees. A blend of career guidance, empathy, approachability, and genuine concern for the mentee forms the foundation of a robust mentorship. The role of emotional intelligence, encompassing attributes like self-awareness, empathy, emotional self-regulation, and non defensiveness, is underscored as a vital component for solid mentorships. Effective mentoring is also characterized by the intentional practice of active listening, congruence, humility, and empathic regard. Importantly, the mentor should foster a trusting relationship, marked by respect, positive affect, and interpersonal warmth. Moreover, mentors should be conscious of building their mentees' relational abilities by exemplifying relational competencies.

In addition, it is recommended to assess candidates competence in the mentor role in the process of hiring new faculty members (Johnson, 2016, p. 72). For this, we recommend the following steps:

- ➔ Implement a structured screening process during the hiring of new faculty members in your department to assess candidates' competence in the mentor role. This could involve incorporating specific interview questions or scenarios related to mentorship, evaluating previous mentoring experiences, and possibly seeking feedback from their former mentees.
- ➔ Consider utilizing a defined set of criteria to evaluate their understanding, approach, and effectiveness in mentorship, ensuring they align with the department's values and objectives in fostering a supportive academic environment.



## TOOL #2: Peer and group mentoring for women in fields in which they are underrepresented

**Peer Mentoring** is a mentoring approach where individuals of similar age, status, or experience level provide guidance, support, and encouragement to one another. Unlike traditional mentoring, which typically involves a senior individual mentoring a junior person, peer mentoring is more collaborative and often features a mutual exchange of knowledge and insights.

**Group mentoring** connects a group of mentees, at similar career stages or with similar needs, with one or more experienced mentors. This approach allows mentees to learn not only from the mentor(s) but also from their peers.

Both approaches can be especially beneficial for people who belong to a minority group in a specific study field, such as female (PhD-)students in STEM-fields.

To make peer mentoring effective for female students in underrepresented fields, it's crucial to have proper training for mentors, structured programs, and continuous feedback mechanisms.

**This tool is dedicated to provide insights and a guideline on how to establish peer and group mentoring as inclusive mentoring approaches aiming at connecting women in fields in which they are underrepresented with each other.**

Implementing a successful peer mentoring program for female students in university departments where women are underrepresented requires careful planning, collaboration and evaluation. Seek endorsements from department heads or influential figures within the university such as faculty, administration, and student organizations to garner support for the initiative.

### Recommendations:

- **Define program objectives:** clearly articulate the goals of the peer mentoring program based on the needs assessment. For example, it might aim to increase retention rates, or enhance networking opportunities for female students.
- **Program design:** Decide on the format (one-on-one mentoring, group mentoring, or a combination). We recommend choosing group mentoring as the basis of exchange among each other, as it allows interaction with different persons in similar situations, as well as those with more experience. Furthermore, one-on-one mentoring offers the opportunity to interact on a more personal level and create a more confidential atmosphere from which participants can also benefit. Determine the duration and frequency of mentor-mentee interactions. Establish criteria for mentor selection and matching processes.
- **Mentor recruitment and training:** *"Mentoring competence involves the habitual and judicious use of care, communication, knowledge, technical skill, emotions, values, and reflection in daily practice for the benefit of the individual mentee and the academic community served" (Johnson, 2016, p. 60).* Promote the program to potential mentors, explaining the benefits of participation. Once mentors are selected, provide them with training on effective mentoring techniques, setting boundaries, understanding potential challenges faced by mentees, and other relevant topics.
- **Program launch and promotion:** organize a kick-off event to introduce participants and provide an overview of the program's objectives. Promote the program widely within the department and university to ensure that potential mentees are aware of the opportunity.
- **Provide resources:** offer resources such as meeting spaces, online platforms for communication, reading materials, or access to events that can benefit the mentor-mentee relationship.

Example from RUB:



In 2019, the team of the Equal Opportunities Officer at the Faculty of Electrical Engineering and Information Technology at RUB developed a peer and group mentoring network for female students in the department. The "From Student to Student" mentoring network aimed to connect the female students within the faculty.

The program was designed especially to assist first-semester students in transitioning into their studies. Moreover, the network is open to all female students in the department. In addition to personal mentoring by students in advanced semesters, the focus is on direct contact and exchange with students in the same semester and building relationships with other students.

Both the sharing of experiences and the development of self-confidence and support for entry into studies were of primary importance.

Figure 8: "Mentoring Netzwerk – Von Studentin zu Studentin" Example for a peer and group mentoring initiative at RUB, 2019

## Peer mentoring



Female students in male-dominated fields might sometimes feel isolated or misunderstood.

Peer mentors can provide emotional support, offering an understanding ear and helping mentees navigate challenges.

For female students from different cultural backgrounds, a peer mentor can help in acclimating to a new social or academic environment.

Seeing peers succeed or navigate challenges can serve as motivation and a clear model for newer students in the field.

## Group mentoring



Group mentoring creates a collaborative space where all members, both mentors and mentees, can learn from each other's experiences, insights, and questions.

For group mentoring to be effective, it requires a clear structure, including regular meetings, set agendas, and defined goals and outcomes for the group.

Mentees should feel comfortable sharing their concerns, asking questions, and discussing challenges.

Groups should ideally represent diverse backgrounds and perspectives to enrich discussions and foster broadened viewpoints. All members should feel their voices are heard and valued.

Figure 9: Definitions of Peer mentoring and of Group mentoring

It is important that the future mentors share the goals of the program and are also trained in gender and diversity competence. Accordingly, they should be prepared for their task in a short training program. Contents of these trainings should include concepts such as unconscious and implicit bias, as well as the possible structural barriers in academic careers in an intersectional perspective.



## RESET offers support to work on these topics in two further toolboxes:

### Input from RESET:

- The RESET project team at the University of Lodz has crafted a specialized training program under Work Package 4 ("Train communities towards equality and settle new standards".) This initiative has culminated in the creation of deliverable 4.2, a "Comprehensive gender equality/gender mainstreaming training toolbox," designed for adaptability across diverse trainee groups, national contexts, and varying institutional and socio-cultural environments. This resource, developed in 2022, is particularly tailored to meet the multifaceted requirements of RESET partners.
- The training program is based in the principles of intersectionality and co-design, promoting flexibility for both broad project applications and specific contextual needs. Its primary objective is the active engagement of university communities in establishing inclusive and diversity oriented academic cultures that underscore equality. This culture is envisaged to extend beyond just the groups directly affected, encouraging a holistic and inclusive approach. The Toolbox addresses a broad spectrum of gender and diversity competencies. These include strategies for the prevention of discrimination and unconscious bias, integration of the gender dimension in research methodologies, and the fostering of constructive relationships and attitudes appreciative of diversity within professional settings.
- RESET's "Toolbox for gender-neutral and diversity-conscious institutional communication" Niebel (2022), aims to enhance communication at universities in gender- and diversity oriented perspectives. Concentrating on verbal, written, and visual content, it encourages a comprehensive representation of gender and diversity. The toolbox's resources are curated to reassess and innovate established communication methodologies within academic institutions, promoting a shift toward inclusivity. In 2023, the toolbox expanded to integrate novel concepts and methodologies, reflecting the progressive practices and protocols that underscore inclusive communication at RESET-affiliated universities. This expansion introduced an innovative section dedicated to the nuances of diverse communication, underscoring the importance of an anti-discriminatory narrative, particularly in the spheres of anti-racism, disability, and LGBTQIA+ identities.





### **TOOL #3: Information for first generation academics: Best practice and checklist**

The University of Jena, Germany, on its websites on academic careers, explicitly lists information (in German and English) tailored to students who do not have an academic family background .

This includes information on financing the doctorates, where to find networking opportunities and how to overcome the feeling of alienation in the academic world.

In this way, the University addresses and recognizes the key economic, social, and psychological hurdles faced by doctoral students who come from non-academic backgrounds.

**In the following checklists, we draw on the information provided by the University of Jena to provide inspiration and guidance for developing information for first generation academics in the doctoral phase.**

#### Checklists:

##### **1. Financing the doctoral phase:**

- Give detailed information about the different possibilities to finance the PhD phase. Be it staff positions, fellowships, participation in structured PhD pro-





grams, or even positions outside the university. Some employers decidedly support opportunities for their employees to pursue a doctorate. For each model, explain what the advantages and disadvantages are, and what the prospects are, including health insurance and pension contributions.

- ☒ Provide information on what the first steps might be in applying for specific jobs or fellowships.
- ☒ Link to additional information at the national or regional level about these opportunities.
- ☒ Applying for fellowships in particular can present hurdles, as people often wonder if you are actually "good enough" to apply. Many foundations also require personal recommendations of fellows by professors. Address these issues decisively and provide guidance on how to proceed strategically here.
- ☒ Link to additional places within the university where dedicated advice on applying for fellowships can be provided.
- ☒ Ensures that faculty who are able to apply for fellowships also elaborate and provide information for inquiring about personal recommendations and advising services in the process.

## 2. Psychosocial Obstacles:

- ☒ Openly addresses what hurdles, such as the feeling of "not belonging," are often perceived by researchers from non-academic families.
- ☒ Academic language can be a phenomenon through which social distinction is made in academia. Provide information on this phenomenon to lower associated attitudes of entitlement and to show that this phenomenon is recognized and has nothing to do with empowerment to participate in academic discourse.
- ☒ Also the so called *impostor syndrome* should be executed to inform about this phenomenon, and to offer reflection possibilities. This means "one believes that one's own achievements are not the result of one's own abilities, but rather of coincidences or special circumstances. It is therefore only a matter of time before one is exposed as an impostor by others."<sup>31</sup>
- ☒ What assistance and information does the university provide for PhDs? At this point, further contact possibilities for the discussion of difficult circumstances, as well as for the development of professional skills (e.g. scientific presentations, scientific writing) should be explained.

<sup>31</sup> <https://www.uni-jena.de/en/first-generation-phd>

## Spotlight 2: Promotion of networking in academic communities

*"Networks enable the intergenerational and inter-institutional transfer of experience and knowledge. They ensure continuity of the academy and provide a sense of belonging. Personally, being part of networks, gave me a lot satisfaction and energy to follow my research ideas."*

*(Agnieszka Kurczewska, vice rector, University Lodz)*

*"Networking plays a key role in science (including science management) as it fosters the establishment of synergies and expansion of (new) relationships, as well as exchanges between researchers who share the same research interests, regardless of their career stages. Networking triggers (new) collaborations amongst peers and researchers, from the same or other scientific fields, which may take many forms – e.g. from co-authoring papers to joint projects."*

*(Sónia Pereira, UPorto)*

Networking practices are described as the active, socio-political processes involved in establishing, preserving, and utilizing workplace connections for individual, professional, and organizational gains. These practices can range from keeping in touch with associates, engaging in social activities, establishing alliances, negotiating terms, to strategically sharing or retaining information (van den Brink & Benschop, 2013, p. 463). As it has been pointed out in the introduction of this toolbox, the academic landscape

is undergoing significant transformations, with factors such as globalization, burgeoning diversity in educational institutions, the necessity for high-impact publishing, intense expectations of new faculty members, and heightened faculty movement. These changes have shifted academic careers from being straightforward trajectories to sequences of experiential cycles. As Ansmann et al. (2014) point out, the traditional dyadic mentor-mentee relationships are becoming less feasible and less preferable. Instead, there is a growing necessity for academics, particularly those in early stages of their careers, to accumulate experiences and forge networks with several individuals. In this regard, networking becomes increasingly important.

Networking can be understood as "defined as building, maintaining, and using relationships to enhance career success" (Ansmann et al, 2014). Here, this version of networking represents a strong focus on intentional influence on career progression. Beyond this, it is important to consider networking as an integral part of scientific work, and the scientific community. As our interviews with experts in science have emphasized (see section 3 and 5), networks are essential for sharing experiences in scientific work, for generating new and creative ideas and solutions, and for dealing with difficult situations or decisions. They represent a source of motivation that cannot be underestimated and can include people who are inspiring for one's own career path, as well as for setting the course for one's own future.

In the following, we present 3 tools that highlight networking for ECRs under different focal points. On the one hand, we will establish the cornerstone at the beginning of the PhD with the onboarding into one's own, and close-knit community of one's own department, where all colleagues have the potential to become part of one's own network, and to take on mentoring functions (Tool #4). Second, in Tool #5, we will focus attention on the best practice example of a Digital Network for advancing women in a STEM discipline to make women more visible in this field. Lastly, in Tool #6, we will present ways to promote ECRs in the event planning of scientific conferences and events.





## TOOL #4: Template for a diversity-sensitive welcome week for new PhD-students

The period starting with the doctorate is an exciting phase that combines study and science, allowing doctoral students to find their new roles in the academic system. A **welcome week** for new PhD candidates is an excellent opportunity to set the tone for an inclusive and diverse academic experience. It allows for the transition into this new phase to be undertaken together with colleagues and to make contacts in one's own department beyond the closest circle.

This makes it possible to create a sense of community and to meet the uncertainties at the beginning of this new phase with information and empathy, marking the start.

**With this tool, we would like to provide suggestions for designing such a sort of welcome week. They can be adapted to the respective disciplines.**

*What can universities do to encourage female scientists?*

*"One of the solutions could be promoting female role models, for example by highlighting the achievements of female academics through seminars or workshops. I do believe that visible role models can inspire and motivate younger or less experienced colleagues."*

*(Agnieszka Kurczewska, vice rector, University Lodz)*

### Recommendations:

The Welcome Week should provide a variety of activities, alternating between active parts for exchange and networking, as well as elements where professional exchange and content are discussed, with the opportunity for participants to learn about the main topics of their colleagues. Attention should be paid to the diversity of the speakers so that various role models are given a voice, can be met, and are able to present their work. Continually review and adapt the welcome week program to reflect the changing needs and make-ups of new cohorts.

### Elements contributing to an inclusive and diversity oriented welcome week:

- **Discussion panels:** Interdisciplinary exchanges between different units of the institute or faculty can take the form of panel discussions in which a phenomenon is negotiated from various perspectives.
- Organize panels in which senior faculty members, advanced PhD candidates, and postdocs share their experiences, challenges, and advice. These sessions should offer an open atmosphere and space for discussion with the participants.
- Strive for diversity among speakers, panellists, and facilitators, ensuring representation across gender, race, ethnicity, and ability.

#### IDEAS FOR INPUT

- ☑ A good thematic focus that can be examined from various perspectives is the **gender dimension in research**. With this in mind, panelists can discuss to what extent gender is considered in their research, what potential it holds for further research.
- ☑ Also, questions of **diversity** in terms of perspectives, representation or the variety of methods can be a starting point that speaks to a broad academic audience and can inspire new doctoral candidates.
- ☑ Furthermore, questions of **sustainability** in research can also provide a good interdisciplinary bridge that is relevant to the interests of doctoral candidates and sets perspectives and developments in the research field considering the challenges of the present.

- ➔ **Networking sessions:** these allow candidates to meet a wide array of peers, faculty, and administrators, and to exchange with them on thematic interests, experiences and motivations.
- ➔ **Diversity and inclusion training:** start with mandatory workshops on cultural awareness, implicit biases, microaggressions, and the value of diversity in research. This creates a foundation for mutual respect and understanding.

#### Measures to foster an inclusive academic environment:

- ➔ **Accessibility:** ensure all events are accessible to everyone, including those with physical disabilities. This might mean choosing certain venues, offering sign language interpreters, or providing materials in Braille.
- ➔ **Information on resources:** provide information about resources and support available for various groups, such as counseling services, LGBTQ+ communities, international student offices, and women's centers, as well as anti-discrimination measures.



- **Feedback mechanism:** create possibilities for candidates to provide feedback on the welcome week. This can highlight areas for improvement and ensure inclusivity remains a priority.
- **Inclusive communication:** use gender-inclusive and diversity oriented (visual) language in all communications. Ensure that any promotional materials reflect the diversity of the community.

*"Every year we invite four doctors to come and talk about their early careers and what they would have done otherwise. That way, new doctoral students can see different trajectories, and they can think about how to get involved in their thesis. Indeed, one does not do their thesis in the same way in social sciences depending if they want to become a university professor, a researcher or if they would like to work in NGOs and administrations."*

*(Sophie Duchesne, UBx)*





## TOOL #5: Digital networks in fields in which women are underrepresented. Best practice and guidelines

In many scientific fields, women are underrepresented. This is not only reflected in the proportions of male and female researchers in faculties and departments, but also at conferences, in panel discussions, in scientific publications and on the applicant market for job advertisements and newly advertised positions.

Using the example of the network "Neuronexxt", which was established within the framework of a collaborative research centre at RUB, we would like to illustrate how very effectively a digital space can be created that can serve as a network for women in subjects in which they are underrepresented.

**This tool is dedicated to provide inspiration on how to establish digital networks as a measure to make women visible and represented in fields in which they are underrepresented.**

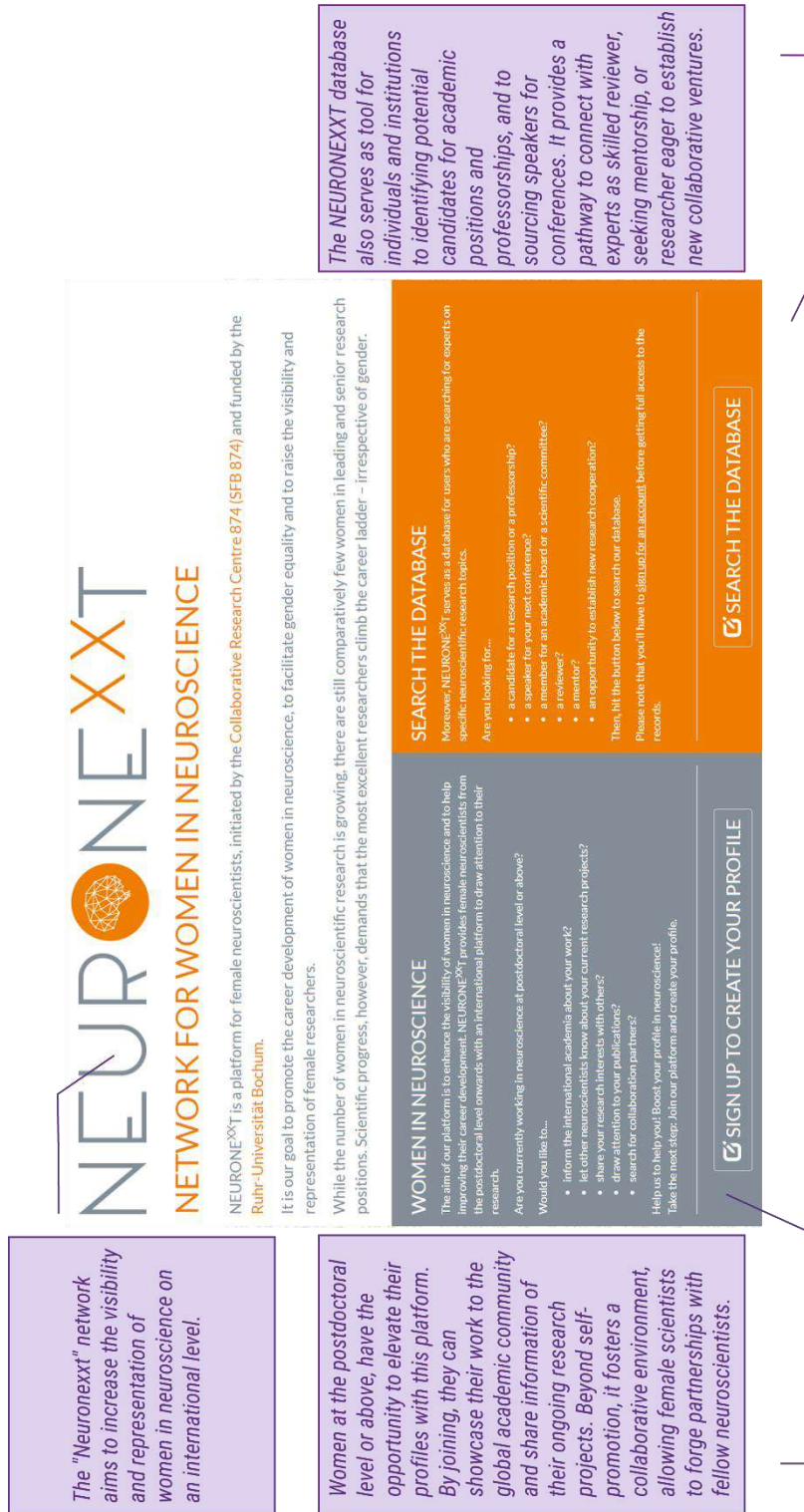
Women are underrepresented in science in many fields. This is especially true in the STEM sciences. However, also in the Humanities and Social Sciences, the proportion of women decreases significantly from the PostDoc phase onwards across Europe. Nevertheless, in order to strengthen the representation and visibility, as well as the networking of female scientists, it makes sense to create networks on an international level, as pools of female experts in the field. This has the goal of promoting one's own research and interests, and on the other hand, it offers those who are looking for talent the opportunity to request decidedly female scientists for positions, for contributions at conferences or in panels, as experts for committees or reviewers.

We first introduce the network "Neuronexxt",<sup>32</sup> which emerged from the Collaborative Research Centre 874 ("Integration and Representation of Sensory Processes"). It was funded by the German Research Foundation (DFG) between 2010 and 2022. Collaborative research projects and collaborative research centres are often required to provide services that promote diversity and equality. Also in this respect, Neuronexxt is a good

<sup>32</sup> <https://www.nexxt.ruhr-uni-bochum.de/>



example of how resources can be used effectively and sustainably to promote scientific careers with regard to diversity.



**NEURONEXXT**  
**NETWORK FOR WOMEN IN NEUROSCIENCE**

NEURONEXXT is a platform for female neuroscientists, initiated by the Collaborative Research Centre 874 (SFB 874) and funded by the Ruhr-Universität Bochum.

It is our goal to promote the career development of women in neuroscience, to facilitate gender equality and to raise the visibility and representation of female researchers.

While the number of women in neuroscientific research is growing, there are still comparatively few women in leading and senior research positions. Scientific progress, however, demands that the most excellent researchers climb the career ladder – irrespective of gender.

**WOMEN IN NEUROSCIENCE**  
The aim of our platform is to enhance the visibility of women in neuroscience and to help improve their career development. NEURONEXXT provides female neuroscientists from the postdoctoral level onwards with an international platform to draw attention to their research.

Are you currently working in neuroscience at postdoctoral level or above?  
Would you like to:...

- inform the international academia about your work?
- let other neuroscientists know about your current research projects?
- share your research interests with others?
- draw attention to your publications?
- search for collaboration partners?

Help us to help you! Boost your profile in neuroscience! Take the next step: Join our platform and create your profile.

**SIGN UP TO CREATE YOUR PROFILE**

**SEARCH THE DATABASE**  
Moreover, NEURONEXXT serves as a database for users who are searching for experts on specific neuroscientific research topics.

Are you looking for:...

- a candidate for a research position or a professorship?
- a speaker for your next conference?
- a member for an academic board or a scientific committee?
- a reviewer?
- a mentor?
- an opportunity to establish new research cooperation?

Then, hit the button below to search our database.

Please note that you'll have to sign up for an account before getting full access to the records.

**SEARCH THE DATABASE**

The "Neuronexxt" network aims to increase the visibility and representation of women in neuroscience on an international level.

Women at the postdoctoral level or above, have the opportunity to elevate their profiles with this platform. By joining, they can showcase their work to the global academic community and share information of their ongoing research projects. Beyond self-promotion, it fosters a collaborative environment, allowing female scientists to forge partnerships with fellow neuroscientists.

The NEURONEXXT database also serves as tool for individuals and institutions to identifying potential candidates for academic positions and to sourcing speakers for conferences. It provides a pathway to connect with experts as skilled reviewer, seeking mentorship, or researcher eager to establish new collaborative ventures.

Figure 10: Example of the Neuronexxt Network, a digital network for female scientists in Neuroscience, RUB

## Guideline for designing a database/digital network to boost careers of women in underrepresented scientific fields:

- **Define the purpose and scope:** determine the primary goals of your database. Ideally, it will serve as a platform for women to showcase their work, and act as a search tool for institutions and researchers. Identify the fields or specialties you aim to cover. Start with those where women are notably underrepresented.
- **User-centric design:** ensure easy navigation for both profile creators and searchers. Implement a user-friendly interface with clear categories and filters to aid search processes.
- **Profile creation features:** allow users to highlight their academic qualifications, research projects, and publications. Provide options for users to share their specific research interests, areas of expertise, and professional milestones. Enable multimedia integration for more engaging profiles (videos, podcasts, or slideshows of their work), and allow users to set links to their profiles at other profession-related platforms.
- **Collaborative features:** Implement tools that allow users to seek mentorship or offer mentoring services. Offer a feature to broadcast collaboration interests or opportunities for joint research ventures. If possible, provide networking opportunities, such as forums for real-time collaboration or discussion.
- **Search and match features:** incorporate advanced search options that cater to various needs: from hiring, to seeking conference speakers, to finding reviewers or mentors.
- **Engagement and outreach:** regularly spotlight notable contributions and achievements of women on the platform to inspire others. Collaborate with scientific conferences, seminars, and institutions to promote the platform and increase its credibility.
- **Security and privacy:** ensure user data is encrypted and the platform adheres to data protection regulations. Allow users to control the visibility of their profiles, giving them the option to share with everyone, registered users only, or keep certain elements private.
- **Feedback and continuous improvement:** solicit regular feedback from users about their experiences and any additional features they might find beneficial. Regularly update the platform based on technological advancements and user needs.



Redesigning  
Equality and  
Scientific  
Excellence  
Together

### D6.3 Toolbox: using our international networks of researchers to boost and mentor the young generations

- **Promotion and partnerships:** collaborate with institutions, academic boards, and scientific committees to endorse and promote the platform. Engage in partnerships with minority associations on campuses and within the broader profession.
- **Education and resources:** offer resources that educate visitors about the challenges faced by women in the fields covered. Provide materials or workshops on combating implicit biases and stereotypes.



This project has received funding from the European Union's Horizon 2020 Framework Program for Research and Innovation under Grant Agreement no 101006560.





## **TOOL #6: Short guide: How to boost ECRs through event planning**

Universities play a critical role in shaping the trajectory of Early Career Researchers (ECRs), and one of the potent ways they can promote these careers in early stages through strategic event planning.

Therefore, scientific conferences can be pivotal in advancing the careers of young researchers. However, they need to have certain features and opportunities specifically designed to nurture the growth and visibility of these early-career scientists.

**With this tool, we collect recommendations on how to plan events in ways that booster ECRs visibility and networking in diversity sensitive ways.**

Creating an inclusive environment at scientific events for women, people of colour (PoC), and individuals with disabilities involves proactive planning, a commitment to diversity, and a comprehensive understanding of accessibility and equity.

Inclusivity in scientific events already starts with its planning phase. Here, the formation of a diverse organizing committee is essential, and needs to involve women, people of colour, and individuals with disabilities. Their inclusion is crucial for embedding a variety of perspectives from the planning stages themselves, ensuring that the event's structure and content are representative and considerate of diverse needs and viewpoints.



Concurrently, it's important to establish a comprehensive code of conduct that underscores the principles of respect, equity, and safety for all participants. This code should not only set clear behavioural expectations but also outline transparent, accessible procedures for reporting and promptly addressing any incidents of harassment or discrimination. Such proactive measures affirm the event's commitment to creating an environment where all attendees can engage comfortably and confidently.

*"An early career scientist must actively participate in international conferences and become noticed as an aspiring scientist. The "big names" in the field are keeping a keen eye on the newcomers in the fields – hence you should not be too shy or prioritize your summer vacation if you are invited to give a talk in a conference. In addition to the postdoctoral period, this is a way to become a player in the field of your research."*

*(Taina Pihlajaniemi, Oulu University)*

***Recommendations for inclusive representation, diversity, and digital inclusivity in academic conferences:***

- ➔ Strive for diversity among speakers, panellists, and facilitators, ensuring representation across gender, race, ethnicity, and ability.
- ➔ Ensure that the event venue is fully accessible to people with physical disabilities (e.g., wheelchair-accessible, providing sign language interpreters). Provide conference materials in formats accessible to all, including braille, large print, or easy-to-read formats, and offer assistive listening devices.
- ➔ For virtual components or events, use platforms that accommodate attendees with various disabilities, including features like captioning for the deaf or hard of hearing.
- ➔ Include sessions where only early-career researchers present, ensuring they have a platform to showcase their work. Poster sessions dedicated to them can also encourage more extensive networking and feedback.



- Beyond that, the perspectives of Early Career Researchers should also be represented in all panels and discussions. Advanced Researchers should be encouraged to involve their employees in earlier career stages in the development of contributions.
- Strive for diversity in keynote speakers and panellists, not only in terms of gender and ethnicity but also in career stages.
- Offer digital participation options for those who might not be able to travel due to financial, visa, or other constraints. This ensures wider participation and diversity.

#### ***Provide childcare and support:***

- Offer onsite childcare services, or provide information about nearby childcare providers, to make it easier for parents, especially mothers who are often primary caregivers, to attend.

#### ***Set networking events as part of conferences:***

- Hosting networking events where ECRs can meet professionals, experienced researchers, and academics in their field can open doors for collaboration, mentorship, and future job opportunities.
- Organize "meet the expert" sessions or mentoring events where young researchers can interact with and seek advice from established scientists in their field.
- These events should take place preferably in a relaxed environment to encourage open communication, and planned as integral parts of the conference.
- Moreover, structured networking events can facilitate interactions with potential collaborators, mentors, and employers.

#### ***Integrate professional development workshops in the conference program:***

- Conduct workshops on research related skills, such as grant writing, publishing, effective communication, job search strategies. These sessions may also take the form of research workshops directly related to the research subjects, data, and initial findings of the researchers.
- Especially sessions on skills such as academic writing and science communication can also take place in the form of research workshops directly related to the research subjects, data, and initial results of the researchers.
- Sessions on mental health, work-life balance, and dealing with impostor syndrome can also be beneficial.





- Host workshops or sessions on diversity, equity, inclusion, and anti-discrimination to inform participants and foster a more inclusive environment.

***Integrate sessions and panels related to career perspectives in Science and beyond:***

- Sessions with a focus on areas relevant to ECRs can introduce them to potential employers, learn about the job market, and what skills they need to work on.
- That can also be a contribution to showing career perspectives outside the university system at an early stage.
- Career panels with experienced researchers who can share their journey, the challenges they faced, and how they overcame them can be incredibly inspiring and informative, and foster the dialogue about expectations and strategies in working as a researcher.



## 5. Inspiration – Interviews with experienced Scientist at RESET Universities on Career Development and Networking

In the following section, we present interviews with experienced scientists, and experts from the science support field, focused on advancing scientific careers. These interviews provide insights into reflecting on one's own professional journey and contain information and guidance for early career researchers (ECRs) and those aspiring to enter the world of science, or want to support individuals pursuing scientific career paths. Furthermore, these interviews offer a glimpse into a variety of different experiences in various scientific cultures and academic environments.

**We thank all our interview partners who helped us contribute to the content of this toolbox with these insights!**

### Interview with Eleonora Bielawska-Batorowicz, Professor at the Department of Clinical Psychology and Psychopathology at the University of Łódź, Poland



*Eleonora Bielawska-Batorowicz is a professor at the Department of Clinical Psychology and Psychopathology at the University of Łódź. Her research area is reproductive psychology and clinical psychology. She teaches doctoral and masters seminars as well as lectures and tutorials on clinical psychology, Professional ethics in psychology, Reproductive psychology, and Psychological interviewing. She is the rector's representative of international exchange programs and the head of the Gender Equality Board at the University of Łódź.*

#### 1. What motivated you to become a scientist? - What encouraged you to keep going?

As my study period was successful, I've started to consider the research career. Research activity that I'd started to be involved during master's seminar was satisfactory and I started to think "why not science". However I was not sure whether more experienced scientists would think positively of my capabilities for such work. Fortunately



they were and my Master's thesis supervisor proposed me to join his department what I accepted. I always liked to learn new skills and to expand my knowledge. Being honest in that time salaries in academia were slightly higher than in medical sector what was my other possible area of interest. Thus it was the positive mixture of two factors.

## 2. Which factors were helpful to your career?

Two groups of factors: 1) personal and 2) professional. The first is related to the fact that my family always accepted my academic plans and encouraged me to get involved in an academic career. That included such support as sharing household and family tasks, accepting the fact that costs like conference fees, or research books were covered from family budget, and constant presentation of the supportive attitude towards my academic work and understanding that such a career might need extra time.

The second factor is related to the positive and friendly atmosphere in my department, the fact that I could get help and advice whenever I needed it.

## 3. Which factors did you find hindering or difficult?

It is time pressure and changing conditions – I mean by that often changes of legal regulations, set time periods for one's work to be evaluated, limited financial resources, extra teaching hours due to limited number of academic staff.

### Sharing experiences:

## 4. Based on the experience you have now: What advice would you give to your younger self? Is there something you would have done differently?

Yes, knowing what I know now I would advise myself to be more courageous. The opinions of my superiors were not always encouraging enough and I should have ignored them and went on with my plans without hesitation.

Another option – I might decide to pursue career in psychological practice instead of becoming an academic. Initially I've started both, but gave up the practice to concentrate more on research and academic teaching.

## 5. What do you wish, early career researchers should know in terms of planning their careers?



I am sure they should know about the following: 1) constant time pressure, 2) constant focus on achievements such as publication records and grants, 3) limited financial resources for research projects, 4) a lot of satisfaction when research results are coming.

**6. Which strategic matters do you consider to be particularly important in the development of an academic career?**

The following: 1) for the particular person it should be a well thought through decision to choose such a career, 2) in a more general context it is the allocation of appropriate resources by the authorities.

**Focussing networks:**

**7. What is the importance of networks in your understanding of science? What role do they play in the development of scientific careers?**

Networks are "the must" in the present world. A successful scientific career is impossible when one acts on one's own. Networks help to exchange ideas, to design and implement complicated research procedures, to have access to equipment too expensive for a single institution.

**8. What kind of networking-elements are essential for you?**

These are personal contacts and exchange of ideas.

**About the institutions and the system:**

**9. What can universities do to encourage female scientists?**

The universities can introduce some important changes. Firstly, they should consider the fact that although pregnancy/childbirth is not an illness, but it is on the other hand not the time that can be entirely devoted to academic work. Thus becoming a mother should be considered a factor in the periodical evaluation of academic achievements. Secondly, encourage work-life balance. Thirdly, organise child care facilities. Fourthly, to educate the general public about equal gender abilities and thus equal opportunities.

**10. What do you consider to be particularly important in promoting diversity in research?**

In my views: the understanding that diversity is an added value and not a burden imposed by external authorities.

## Interview with Sophie Duchesne, Head of the Centre Émile Durkheim, Director of Research at the CNRS, Teacher-Researcher, University of Bordeaux, France



**Sophie Duchesne** is director of research at the Centre national de la recherche scientifique (CNRS) and director of the Centre Emile Durkheim (a joint research centre of the CNRS, Sciences Po and the University of Bordeaux). She co-edits the BMS (Bulletin de méthodologie sociologique). She is currently studying banal nationalism and heading the ETPAF project (Enquête sur la transmission des appartenances au sein de la famille), having previously worked on citizenship, political identities and the relationship between citizens and the construction of Europe. As far as research methods are concerned, she specialises in qualitative interviews, focus groups and the re-analysis and archiving of qualitative surveys.

### 1. What motivated you to become a scientist?

I never thought of starting a scientific career. I started by studying social sciences, and I followed on my PhD very easily. I studied at Sciences Po in Paris. I did it "like a middle-class heiress" with cultural resources, as in my family it was ordinary to study at Sciences Po. I was interested in social sciences, but I did not call it "social science" at that time, rather political science and sociology. I was a good student and it all came together. So I ended up with a thesis grant without having really thought about it, though once I started the PhD I really enjoyed what I was doing. Then, I was recruited by the CNRS - the National Scientific Research Council. I think that in social sciences, we are often more related to humanities, so I was thinking more about having a reflection on society than a scientific career. Since then, I have learnt that I have been doing science, and it is now important to me. So at the beginning, I was not eager to make a scientific career, but I found myself doing one.

### 2. What encouraged you to keep going?

I find a lot of sociological predisposition to be where I am. What encouraged me was that I really enjoyed it. I think I was lucky enough to be in a laboratory where at the time, there was a very family-like team, I enjoyed the relations between people there, I made

some good friends and I had the impression of being welcomed. Thus, I was encouraged to continue thanks to the personal relationships with a number of colleagues, and because I was passionate about it from the beginning. Thinking about society, about why we believe that things happen by chance, when in reality we have all means to understand why people do what they do and to what extent they are governed by other forces: I find that fascinating.

### 3. Which factors were helpful to your career?

It is mainly thanks to people who have been welcoming. In particular thanks to Guy Michelat, my mentor. I was lucky enough to have a prize created in his name. François Platone - who acted as a mentor to the younger generation and Annick Percheron – a great woman who, at the time, directed the laboratory and gave it its more modern aspect, also supported me. Also, friends from the union and some doctoral students were a great help. Additionally, I think I was encouraged by my mother's interest in this career. She was a bookseller, so she gave me a passion for books, writing, and a great curiosity. I think I found myself at the crossroads of a family heritage and kind people.

### 4. Which factors did you find hindering or difficult?

This type of career is completely absorbing. I had children quite early: the first one at 26 and the second one at 28, both during my PhD thesis. I truly consider this profession as a passion. I know that younger generations contest this, saying that it ties our hands and feet to all the demands of our employers, but I think all the time about this job and the great difficulty is to arbitrate between it and family life. I got divorced about ten years ago, and I think that my ex-husband did not support well the fact that that my job took this place in our lives.

#### 4.a. Was it complicated to have children during your PhD thesis?

These are periods when you do not sleep well, in any case, my son used to wake up every night till three years old, and so I used to write at night. Thus, I did not sleep much, but one trains themselves to do that. For 20 to 30 years of my life, I was able to sleep less than 6 hours a night, thanks to that period where I had to look after him anyway. Afterwards, it became a strength for me, since the disadvantage of this job is that it does not fit into 35 hours per week and family life requires a presence, so it was on sleeping time that I compensated it.

#### Sharing experiences:

### 5. Based on the experience you have now: What advice would you give to your younger self? Is there something you would have done differently?

I have set up the welcome days at my laboratory for new doctoral students. My lab is quite large, with 70 doctoral students in total, and 5 to 10 new-comers every year. During these days, we try to get them to think about what they are doing a thesis for. I think

that the scientific approach that one learns during the thesis is an incredible capital of skills and resources, but one has to make a distinction between it and the academic career. I think that today knowledge is shifting: HEIs produce knowledge, but it is no longer the only source of knowledge production, if it ever was. Civil society in all its forms creates knowledge that is at least as important as that of the university. When you do a thesis and you like research, is the university the only place that you should go to? Are not there many other ways of doing research in society, which are more useful? Nowadays, I can see that, given the university's appalling job market, at least in France, we need to get doctoral students to think about these questions - something I did not do at all. I went into the CNRS without any plan B, without thinking about how I wanted to make the most of my life and my skills. What is certain is that today I would like younger generations to choose their efforts better, because it is a very tough and competitive career. I am surrounded by many colleagues who are suffering because of this competition and this harshness. My advice would be to think carefully before engaging in a scientific career.

Every year we invite four doctors to come and talk about their early careers and what they would have done otherwise. That way, new doctoral students can see different trajectories, and they can think about how to get involved in their thesis. Indeed, one does not do their thesis in the same way in social sciences depending if they want to become a university professor, a researcher or if they would like to work in NGOs and administrations.

## 6. What do you wish early career researchers should know?

It is necessary to come back to the question "what is a scientific career?". That is to say, I tend to think of an academic career, and I am not sure to what extent my colleagues from physics, biology or maths fields put the same meaning behind the word 'scientist'. In my opinion, one has to know that there are extremely competitive careers at HEIs. If you do not have a certain form of ego that can handle competition and reassessment well, it can be completely demolishing. If early career researchers are interested in research as a way of producing knowledge, this can be done outside the university, in places where, I think, the value is recognised in more objective and simpler terms than in the academia. University has this characteristic that your peers assess you, this is both very positive, and at the same time difficult, because it is your competitors, who evaluate you. Then, we are always worrying about the evaluation, which I do not think people do if they move towards other forms of recognition of social usefulness (research in NGOs, in associations, at the interface of the public and private sectors).

## 7. Which strategic matters do you consider to be particularly important in the development of an academic career?

It is certain that you need to have some support and friends in the field. I would say that strategically it is important to invest in the professional relationships with a few people

you really trust to support you when things are not going well. Moreover, today, internationalisation is obviously essential. So my main advice would be to be strategic and to spend a year or two in an English-speaking country at a very beginning of the career to be totally at ease with English. Moreover, mobility at the beginning of your career reinforces independence from the institution that contributes to “make” you.

Comparison in science is essential to understand the world around us, but it is also essential to understand yourself and your career. It is important not to do everything in one place (Master degree, PhD, the rest of career).

As it is expensive to move abroad, it becomes very difficult to do once you have started a family, when you have a spouse, children. It is very complicated except in the glorious conditions offered by the CNRS (with expatriation). I think it is worth doing this mobility at the very beginning of your career, to absorb English, see the world differently and come back with lungs full of oxygen, ready to take the blows, and knowing that things can go differently elsewhere.

#### Focussing on networks:

#### 8. Do you feel you have important networks / collaborations for your career?

I was very lucky since I started my career at the Sciences Po Paris and very quickly, I joined the CNRS. Two years later, I left to spend four years in Oxford as an expatriate. But Sciences Po Paris is obviously a phenomenal resource for networking and I was lucky enough to benefit from it. It is very difficult to explain to younger generations what a network is.

It does not have anything to do with simply talking with people at cocktail parties. It is about being able to have a scientific conversation with people, who remember who you are scientifically, and when you ask them for help or collaboration, you are recognised as being a solid person, and conversely people give you that back.

Of course, this whole series of little relationships of trust is established on the evidence that you work well. It is easier where people have resources, like the big institutions in Paris, because when you are rich, you are solid. Whereas if you do not have anything, it is harder to give, and that is normal. I was lucky enough to start out in a well-resourced institution and to have come across many quality people, who assisted me in my career, and now I can try to give this to younger generations.

#### 9. What is the importance of networks in your understanding of science? What role do they play in the development of scientific careers?

What is certain is that one cannot do science or research on their own. Of course, you get ideas by writing and reading articles, but you get them mainly by talking to people, and you need help all the time, at all stages of your research. The tipping point where

you go from being in demand all the time to being able to give to people who are in demand is when you start to breathe, when you realise that it worked. I think it is much more than Google Scholar which tells you that you have a successful career: the day you get emails from people asking, "could you do that?" "would you be interested in visiting us and doing that with us?" There is absolutely no science without the collective; it is the heart of everything. Moreover, in science, the collective is not local. People with different scientific interests are so mixed that the ones you are interested in are all over the world, and the wider the network, the more interesting it is.

### 10. What kind of networking-elements are essential for you?

Trust. One of the things I say to the young people I bring together during these welcome days is to believe in themselves and to trust other researchers, to send in their articles, to give their ideas, I think it is essential. From time to time, you get the impression that people have used/stolen your ideas, but so much the better, they come back to you nourished and developed. I think science also works on trust and generosity. That is what makes the human networks (on which science is based) work.

#### About the institutions and the system:

### 11. What can universities do to encourage female scientists?

Universities alone cannot do much. The issue of gender relations goes beyond the universities. It is in schools and families that little girls must learn to trust themselves. I waited until I became head of my research centre to start being confident in myself. That is to say, not to have a gut feeling when I present a paper; not to feel at fault all the time because I do not train my students well enough. I have a son and a daughter, and I can see that my son is also very nervous about many things, so I am not saying that it is always easier for boys. However, in general, boys are taught to speak even when they're scared, whereas girls are not taught to speak when they're scared, they're taught to cry, and to make a career out of it, that's a real handicap. Therefore, I think that nowadays, universities systematically make women aware of the fact that it is primarily them who cut themselves off; it is them who do not present themselves for prizes, for promotions. So it is mainly a matter of making them aware of this, of the fact that they have been socialised differently, but also that their form of socialisation has advantages. Indeed, there are also advantages of having relationships based on benevolence and trust rather than on competition - which is everywhere in the university. They also should become aware that what they think are personal flaws are not in fact personal, but rather sociologically based. I think that is the best thing you can do: to open up spaces like you are doing with RESET, so that women can talk about it, so that everyone realises that they share the same experience as others, and by talking about it, it already does some good.

### 12. What do you consider to be particularly important in promoting diversity in research?



We must also talk about the diversity of origin, ethnic diversity, because our universities are very white. It is incredible, in such a multicultural world. Of course, the equality and diversity between women and men is important, but the diversity of skin colour, origin and religion seems also very important to me. I believe a lot in affirmative action, in everything that is done in English-speaking countries, where they put quotas to recruit minorities. Nevertheless, in France we do not even have the right to talk about that, it is unconstitutional, so.... I think we are extremely far from being able to catch up this default. At Sciences Po Bordeaux, every time we do a recruitment, we hand out a series of documents to raise awareness of the systematic biases we may have in the evaluation of applications, and I find this very useful. We need a regular monitoring of what our scientific community looks like, its homogenisations, its deformations. After that, it also means reviewing our entire teaching system so that it becomes less standardised and more open to different ways of thinking and more diverse cultural ways.

### Interview with Isabelle Dupin, Professor of Physiology at the College of Health Sciences of the University of Bordeaux, France



**Isabelle Dupin** is a professor of physiology at the College of Health Sciences of the University of Bordeaux. She studied both biology and chemistry at the Ecole Normale Supérieure in Paris. She currently leads a research group composed of scientists, physicians and pharmacists working on chronic respiratory diseases at the Cardio-Thoracic Research Centre of Bordeaux (U1045 INSERM). She coordinates a project funded by the National Agency of Research (ANR) "Jeune chercheur Jeune chercheuse (JCJC)" aiming to develop new three-dimensional lung models. She collaborates actively with teams in biophysics/chemistry and mathematics.

Isabelle Dupin was a member of the steering committee for the reform of the first cycle of health studies (R1C) and, in particular, worked on the evaluation of the first year of the Specific Health Access Course (Parcours Accès Santé Spécifique - PASS) as well as the identification of factors of students' success. Within the PASS, she is the director of studies and co-coordinates and teaches physiology. In 2017, she created (with ME. Lafon and T. Bienvenu) an "Ecole Santé Sciences" (School of Health Sciences) - a double health and science curriculum designed to train medical, pharmaceutical and dental students in research. She represents this programme within the National Network of Medicine-Sciences fields.





## About you:

### 1. What motivated you to become a scientist?

I really liked scientific subjects in high school and much less - the literary ones, so the choice of a scientific career was natural for me. In high school, I had a fascinating teacher of life sciences. It was a trigger that made me want to be a researcher in this field. Looking back, I think that I probably had a very distant idea of the reality of things!

A bit later, in the preparatory class, I was captivated by courses of biology, physics and chemistry. I began drawing links between the subjects. I understood that knowledge of laws of physics and chemistry allows a better comprehension of the living. I was fascinated by the infinitely small. When I entered the *Ecole Normale Supérieure*, I had an opportunity to complete a dual chemistry and biology course, taking advantage of the school's strong tradition in the interdisciplinarity. I did several short research internships, which reinforced my desire to do research.

### 2. What encouraged you to keep going?

The freedom to create projects, test hypotheses without too many limits. This is clearly a very specific point of the profession of researchers. It is the guarantee that your daily life is constantly changing. I am completely unable to predict where precisely my research will be in a few years', and this is part of its charm.

Additionally, this job is meaningful. Even if you do not make 'great' discoveries every day, we move forward in small steps, and the pleasure of passing on knowledge to students is another real source of joy.

### 3. Which factors were helpful for your career?

Research can be tough and there are difficult and frustrating times. The support of people around me is important at these moments.

In my current laboratory, I have also been lucky enough to be surrounded by enthusiastic and dynamic colleagues, who have not only encouraged me to follow up on some crazy ideas, but have helped me to implement some of these projects, which were a bit off the track. I am very grateful to them and I am very happy to work with such colleagues on a daily basis.

In terms of teaching, I had real freedom and strong support from the College of Health. The latter has supported a project of the "Ecole Santé Sciences" (Ma-PhD program) since its very beginning. This strong support enabled setting up the programme in less than a year and opening of the course in 2017. We are currently welcoming our sixth generation of students. Some of the students are currently doing their PhDs in science and their feedback is great to hear.

### 4. Which factors did you find hindering or difficult?



I made a thematic mobility, moving from fundamental cell biology/biophysics to respiratory physiology/physiopathology. I do not regret this change at all, but it was undeniably difficult to re-construct a network in a new field.

#### Sharing experiences:

##### **5. Based on the experience you have now: What advice would you give to your younger self? Is there something you would have done differently?**

You should follow your ideas, even (and especially) if they seem a bit crazy and out of the box. At the same time, and without any paradox, one should listen to advice and be able to admit a mistake. Science advances by trial, errors and corrections.

On the other hand, knowing how to surround yourself with people is crucial in this profession - to find an environment in which one feels at ease, but also with benevolent and interesting colleagues. One has to manage to keep a balance between personal and professional life, even if it is easier said than done.

##### **6. What do you wish early career researchers should know?**

Scientific research is like a game, which comes with a set of rules that are both explicit and implicit. The game is a bit particular, since it requires to invest a lot at the beginning in order then to be able to choose. Like in any game, you will "lose" and "win", except that you "lose" a lot at the beginning of the career. Losing is, therefore, a part of the process, and when you look at it in this way, failures become easier to accept, since they are an intrinsic part of the process. It is actually quite beneficial, because it allows to question oneself regularly. Once you have overcome this stage, you become a master of the game. Having all necessary to succeed, you start to enjoy and really take pleasure in being a researcher.

##### **7. Which strategic matters do you consider to be particularly important in the development of an academic career?**

The choice of a hosting laboratory and of the thesis supervisor is crucial at the beginning of a career. The chances to succeed are clearly not the same depending on the environment in which you are. The environment of the University of Bordeaux is very conducive to success, due to its dynamism and international visibility.

#### Focussing networks:

##### **8. Do you feel you have important networks / collaborations for your career?**

In terms of research, I collaborate actively with several teams, mainly locally and nationally, and I am starting to get involved in the European networks. It took me much longer to get into these networks, partly because of the change of a scientific field, but

also because of family constraints, since I did not go to conferences as often as I would have liked.

In terms of teaching, the program of the *Ecole Santé Sciences* has successfully applied to join the National Network of the Medical-Science courses, including the *Inserm Lili-ane Bettencourt School* and the *Ecoles Normales Supérieures*. This is essential, since it provides an overview of the national training for clinician-researchers, and helps it to move in a common direction. It also opens up opportunities for students, notably in terms of internships, contacts, but also for funding (contracts after thesis completion - to finance students' return to health studies).

### **9. What is the importance of networks in your understanding of science? What role do they play in the development of scientific careers?**

Science is not done in a stand-alone way. Being part of networks allows better understanding of issues, global vision of research in a specific field, and benefiting from the advice/expertise/tools of people, who are competent on the subject. It can be a real booster for scientists' careers.

### **10. What kind of networking-elements are essential for you?**

Meeting researchers in person at conferences and scientific events is what worked best for me. One should also not hesitate to contact scientists on some specific questions. A possibility of having a videoconference has greatly facilitated this type of contact.

**About the institutions and the system:**

### **11. What can universities do to encourage female scientists?**

I notice on a daily basis that young brilliant and motivated female scientists are well represented among the students, so I am not worried about this. However, they need to be supported in finding their place. Despite their motivation and merits, some positions or functions are still difficult to access, as the famous "glass ceiling" is very real, namely at universities.

Universities must be particularly attentive to certain key moments: entrance to the PhD programme, obtaining a tenured position and career progression. Maternity is another real issue. It is taken into account in certain grant applications (National Agency for Research, European Research Council) but this is not enough. It also seems important to me to encourage female leadership, which goes hand in hand with identifying and mentoring young women with a potential. Finally, requiring parity at all levels of the university (composition and management of councils, commissions, units etc.) could accelerate these changes.

### **12. What do you consider to be particularly important in promoting diversity in research?**



Promoting diversity in research is absolutely crucial. A research team works better when it includes members with different backgrounds.

An educational and awareness-raising work has to be definitely done on the issue of stereotypes and cognitive biases and target in priority the staff/teachers in charge of recruitment/selection at the university. It also seems necessary to me to reflect on the selection processes and criteria (ParcourSup<sup>33</sup>, competitive exams etc.) with the help of educational sciences.

Another lever for action is to raise awareness of research careers and their diversity in high schools. These are often poorly known, if at all, by young people. On this point, I believe that it is up to us - the researchers, to go and meet high school students and to promote these exciting careers. There are some interesting initiatives, including the one of the Declics association, which organises this type of events in high schools. If we manage to convince at least one young person, it is already a victory.

Finally, I think it is also important to promote immersion in laboratories during studies at the earliest possible stage. Doing science is also a human adventure, which we do not necessarily realise until we set foot in a research laboratory.

### Interview with Anna-Liisa Kaasila-Pakanen, postdoctoral researcher, University of Oulu, Finland



**Anna-Liisa Kaasila-Pakanen** is a postdoctoral researcher at the University of Oulu Business School. Her research draws on postcolonial and feminist theories to address questions of difference, diversity, ethics and embodiment in various organizational and entrepreneurial contexts. Currently, her writings can be found in *The Oxford Handbook of Diversity in Organizations*, *The Routledge Series on Rethinking Entrepreneurship Research*, and *Gender, Work and Organization*.

#### 1. What motivated you to become a scientist? - What encouraged you to keep going?

My motivation for pursuing a career in science stems from my passion for writing. Alongside the desire for

<sup>33</sup> ParcourSup is the national platform for pre-registration in the first year of higher education in France.

a meaningful job that allows me to work on topics and social issues close to my heart, I have found myself on this career path without a specific intentional decision. Instead, I have been following what I enjoy and exploring where it leads me. What keeps me going is the unwavering support, encouragement, and motivation from the people around me. The academic community's social network, solidarity, and support inspire me to push forward. I have been fortunate to receive significant support from individuals within this network, especially during times of obstacles, setbacks, and moments of self-doubt regarding my research. It is the collective strength of the academic community and the individuals within it that provide the foundation for my own motivation. Their guidance and encouragement remind me that I am not alone in this journey.

## 2. Which factors were helpful to your career?

The role of the people around me cannot be underestimated in shaping my academic career. I am grateful for the support and guidance I have received from those who have helped me to navigate the academic world. Their assistance has been in a great role in familiarizing me with the academic environment and fostering my growth within it. Maintaining motivation and a deep passion for my research has also played a significant role in my academic efforts. The drive to explore and learn new things keeps me engaged and committed to my work. I recognize that I have been privileged in my doctoral studies. The opportunity to receive a four-year doctoral scholarship early on relieved the constant pressure of seeking funding to support my PhD work. Additionally, my involvement in various departmental tasks, such as teaching and administrative roles, has provided valuable perspective on different aspects and roles within the faculty. Attending conferences and courses has been immensely beneficial for my career. These experiences have not only broadened my knowledge but also allowed me to connect with like-minded individuals in the academic world. Finding my place and establishing connections within the academic community has been facilitated by these opportune ties. However, it is important to acknowledge that the availability of resources remains a considerable issue. Access to resources, both financial and otherwise, can impact the extent to which one can fully engage in research, and thus professional development.

## 3. Which factors did you find hindering or difficult?

Paradoxically, some of the challenges I mentioned earlier have contributed to difficulties in managing my workload. Non-research-related tasks have consumed my time but also my wide range of research interests has led me to engage in numerous projects. As a result, this combination, along with other responsibilities, has occasionally become burdensome and overwhelming. In addition, my career has been impacted by two extended parental leaves, which have interrupted the flow of my research and hindered my ability to secure research funding. I lost a grant specifically allocated for travel expenses and data gathering due to the changes I had to make to my research plan to accommodate my parental responsibilities. Furthermore, due to institutional changes, my prospects for future employment would have been more favorable had I completed

my studies earlier and not taken time off. In terms of career progression, it seems that I am evaluated using the same criteria as my peers who have not experienced breaks from their professional lives as I am not aware of that our university would have a policy in place to consider or account for these breaks in evaluations. Balancing an academic career with the responsibilities of raising children can be immensely challenging, as it necessitates striking a balance between work demands and caregiving responsibilities. Moreover, it significantly limits flexibility when it comes to work schedules, adding an additional layer of complexity to the juggling act.

#### **4. Based on the experience you have now: What advice would you give to your younger self? Is there something, you would have done differently?**

I would have approached my PhD thesis with a more pragmatic mindset, viewing it as a necessary step towards being able to do what I want. I would have been kinder to myself, allowing for a greater acceptance of "this is good enough" thinking and embracing the feeling of not knowing everything. This approach would have prevented me from dwelling excessively on my thesis and enabled me to progress faster.

#### **5. What do you wish, early career researchers would know?**

As an early career researcher myself, I believe it is essential for us to foster an environment of open sharing and discussion, where we not only highlight our successes but also openly share our experiences, including the challenges we face. By encouraging honest conversations about the difficulties encountered in our academic journeys, we can create a space where valuable information and insights are exchanged. I strongly advocate for the active participation of early career researchers in conferences, workshops, and other similar activities. These opportunities not only allow us to present and discuss our work but also provide a platform for networking and building a support system. In academia, it is crucial to have a strong support network that can provide guidance, advice, and encouragement during both the times of success and setbacks. Without such a network, academia can be isolating and lonely. By promoting a culture of openness, sharing, and actively engaging in academic events, we can cultivate an inclusive and supportive academic community that empowers early career researchers to navigate the challenges and thrive in their pursuits.

#### **6. Which strategic matters do you consider to be particularly important in the development of an academic career?**

- ➔ Research focus and results, building up your specific expertise
- ➔ Equality: diversity, inclusion and belonging, accessibility
- ➔ Institutional policies addressing structural issues that hinder career development for some and make it easier for others
- ➔ Self-care and work-life balance
- ➔ Availability of resources



- Person's motivation
- Quality of previous education
- Collaborations and support networks
- Skills for acquiring funding
- Teaching experience

### **7. What is the importance of networks in your understanding of science? What role do they play in the development of scientific careers?**

In my perspective, the significance of networks and collaboration cannot be overstated. Networks provide avenues for sharing support, ideas, knowledge, and even accessing resources and information about various opportunities such as funding, job openings, and meaningful projects that can advance one's career. They also facilitate the dissemination of research and offer opportunities for receiving constructive feedback, whether it be through conferences or informal friendly reviews prior to submission. Moreover, networks foster a sense of community, and becoming part of these communities strengthens one's sense of belonging in academia.

However, I personally don't resonate with the term "networking" as it often implies a self-serving, transactional approach. Instead, I believe in engaging in different events and connecting with likeminded individuals, forging genuine friendships and maintaining meaningful contacts. I would encourage others not to focus on "networking" for its own sake, but rather on cultivating relationships based on trust, solidarity, and reciprocity. Authentic encounters and building genuine connections can lead to lasting collaborations and mentorship opportunities, where experienced academics can share valuable lessons and provide guidance.

### **8. What kind of networking-elements are essential for you?**

- Collaborative projects and co-authoring publications
- Conferences and workshops
- Online events and communities (reading circles, workshops, lectures, social media)

### **9. What can universities do to encourage female scientists?**

- Universities should guarantee equal pay and evaluation for all. They should commit to dismantling
- institutional policies that keep up inequality and focus on practices that enhance equal opportunities
- and well-being of all students and staff. In particular, they could focus on f.e. implementing family-friendly policies and taking into consideration the parental leaves taken
- when filling positions





- making salaries and performance evaluations more transparent
- promoting diversity and inclusion (in practice)
- addressing unconscious bias and stereotyping: esp. in relation to hiring, promotion, and
- recognition of female scientists
  - providing mentorship programs for early career female scientists
  - recognizing achievements and contributions of female scientists
  - supporting the career development of early career female scientists by offering training and
- resources for skills development
  - encouraging networking and collaboration with adequate resources

#### 10. What do you consider to be particularly important in promoting diversity in research?

- Addressing systemic barriers (first paying interest to recognize them)
- Enhancing the access of currently under-represented groups (e.g. racial/ethnic/linguistic minorities, indigenous people, LGBTQ+ people, persons with a low income or socioeconomic status, persons with different disabilities) to university education and through that to science career and science makers instead of only participants, although diversity among participants is also important
- Thinking about equity, diversity and inclusion in building research environments (recruiting, team building..), training and development opportunities (who gets it and who does not), and in actual research designs – fostering a culture of inclusion and belonging
- Advancing diversity esp. in high-level positions
- Paying attention to citation practices. Who we cite matters.
- Paying attention to questions of responsibility and representation and speaking on behalf of other groups
- Supporting research that actually addresses questions of inequality, diversity and inclusion as it can create social change Addressing more funds to DEI research, requiring diversity plans for all grant proposals, special support for research conducted by underrepresented groups etc.





## Interview with Agnieszka Kurczewska, Vice-Rector for external relations and Associate Professor at the Faculty of Economics and Sociology of the University of Łódź, Poland



**Agnieszka Kurczewska** is an Associate Professor of entrepreneurship at the Faculty of Economics and Sociology at University of Łódź (Poland) and a visiting professor at Norwegian University of Science and Technology (Norway). At the University of Lodz, she also holds a position of vice-rector, responsible for external relations. Agnieszka is a president-elect of the European Council for Small Business & Entrepreneurship. Her academic experience includes work at

Aalto University, research stays at the University of Tampa and Lund University. Agnieszka has previously completed internships at the European Commission and the Council of Europe. She has created the regional entrepreneurship competition Eksoc StartUP! and the Academy of Entrepreneurship of the University of Łódź.

### 1. What motivated you to become a scientist? - What encouraged you to keep going?

It was not an obvious choice. Although I had some role models in my family, for long time I have not considered myself as a researcher. I had to mature into a decision that was preceded by experiences of working with international organisations. It was a conscious decision. The specific lifestyle, the internationalisation of the work and its non-routine nature suited me. At the moment, I am motivated by collaborating with others, but also by the subject matter of the research I am undertaking. As in any job, there are better and worse moments, but the work in academia is broad enough to redefine oneself many times over.

### 2. Which factors were helpful to your career?

There is no single magic formula. I believe in my case it was a combination of many factors. My curiosity about the world (including the academic world) and openness to collaboration helped me. Consistency of choices and working for international scientific organisations were also significant. Consistency of choices and acting for international scientific organisations were meaningful. Co-authors of publications have also had a huge impact on my scientific development as a jointly developed research practice but also trust that is built up over years are crucial. However, a little bit of luck should certainly also be added to the mix of all these factors.

### 3. Which factors did you find hindering or difficult?

Patience in the research process and even more patience and humility in the publication process. My generation of researchers in Poland had to learn a lot on their own how to publish and function in the international arena. It had to learn from its own mistakes, accompanied at times by disappointment.

#### Sharing experiences:

4. **Based on the experience you have now: What advice would you give to your younger self? Is there something you would have done differently?**

I am quite happy with all my choices. I would only encourage myself more to reach out more boldly. Although I have had the opportunity to spend a lot of time at universities abroad, I would still multiply that. Perhaps I would have had the audacity to apply to better research centres?

5. **What do you wish, early career researchers should know in terms of planning their careers?**

Building an academic career takes time and there are no shortcuts. Finding good co-authors, organisations or research networks to belong to takes time. It is good to be proactive in establishing relationships with more experienced researchers and not be afraid to ask questions. In general, academics are open to collaboration and conversation.

6. **Which strategic matters do you consider to be particularly important in the development of an academic career?**

A good knowledge of the research area a person is in – starting from the scientific output side of course, but also the research community that makes it up, the research outlets and conferences where the scientific discussion takes place.

#### Focussing networks:

7. **What is the importance of networks in your understanding of science? What role do they play in the development of scientific careers?**

It is crucial. I am part of at least two scientific networks which helped me a lot in building my research identity. They formed me. Firstly, I only benefited from being part of them, later on I also started to share with others what I have learned. Networks enable the intergenerational and inter-institutional transfer of experience and knowledge. They

ensure continuity of the academy and provide a sense of belonging. Personally, being part of networks, gave me a lot satisfaction and energy to follow my research ideas.

### 8. What kind of networking-elements are essential for you?

Time is a key aspect of networking. You must invest a lot of time to understand the nature and aims of a particular network and to build it further. Secondly, I would mention the awareness of the different roles in the network - from learner to teacher, from novice to expert, etc. You need to be aware of your role and how it is changing.

#### About the institutions and the system:

### 9. What can universities do to encourage female scientists?

One of the solutions could be promoting female role models, for example by highlighting the achievements of female academics through seminars or workshops. I do believe that visible role models can inspire and motivate younger or less experienced colleagues. On more general level, promoting gender equality policies seems to be efficient – implementing policies that promote gender equality across all academic disciplines.

### 10. What do you consider to be particularly important in promoting diversity in research?

Creating inclusive environment and an atmosphere of respect to all individuals from diverse backgrounds. The first step is to ensure diverse representation at different levels of research, faculty, leadership positions. Words should turn into actions. Therefore, policies should be accompanied by informed decisions.

## Interview with Alexandra Lopes, Professor at the Department of Sociology of the University of Porto, Portugal



**Alexandra Lopes**, Professor at the Department of Sociology of the University of Porto. She holds a PhD in Social Policy from the London School of Economics and Habilitation in Sociology from the University of Porto. Her research interests are primarily focused on LTC and institutional care arrangements. She works since 2019 as an expert for the European Commission advising on topics related to LTC, institutional care and disability services. She is the main scientific evaluator of the Portuguese branch of the Social Observatory of La Caixa Foundation. She has authored more than 60 scientific publications and has coordinated several research projects nationally and internationally in the field of ageing studies. She is currently the director of the Iberian PhD Programme in Social Sciences and Ageing.

### 1. What motivated you to become a scientist? - What encouraged you to keep going?

It was not a totally mindful decision. The opportunity was there, and I went for it. It was only after I started that I began realizing the full extent of what being a scientist involved and realized it was the career for me. Building knowledge, solving problems, innovating, these are some of the driving forces of science and the forces that give me energy every day to keep going.

### 2. Which factors were helpful to your career?

One main factor made all the difference: I started my career in the mid-nineties when the country was making big investments in science, namely in competence-building of scientists. I was given the opportunity to pursue my doctoral education outside, in one of the leading universities in the world, in my field, and that made all the difference.

### 3. Which factors did you find hindering or difficult?

Coming back to Portugal after my overseas stay was very hard. I struggled with a conservative approach in my institution that was not open to innovation, that saw debate of ideas as a threat and that was very averse to women taking a leading role.

### Sharing experiences:

### 4. Based on the experience you have now: What advice would you give to your younger self? Is there something you would have done differently?

I am not sure if I could have done anything differently. I do look back and realize how naïve I was when I believed that my path was solely dependent on my competence and willingness to embrace challenges and add value. Sometimes I wish I was not that naïve, but maybe if it wasn't for that naiveness I would have left.

### 5. What do you wish, early career researchers should know in terms of planning their careers?

It is not so much a question of what you should know but more a question of being aware that planning the career is fundamental to improve your chances of success, while securing your well-being in all aspects of life. When you start there is this drive to do a lot, to embrace science almost as a mission. Don't let your research career colonize all aspects of your life and be invested in building a good balance and grow as a person while growing as a scientist.

### 6. Which strategic matters do you consider to be particularly important in the development of an academic career?

Academic careers can be overwhelming, and they will wear you out, especially if you work solo. Integrating research teams that perform at a high level is strategic to secure longevity in your academic career.

#### Focussing networks:

### 7. What is the importance of networks in your understanding of science? What role do they play in the development of scientific careers?

Science is about teamwork, exchanges, debating ideas. On a more practical level, integrating networks increases substantially the chances of securing conditions to perform at a high level: better chances of accessing funding, more opportunities to get in touch with innovative elements.

#### About the institutions and the system:

### 8. What can universities do to encourage female scientists?

Important steps have been implemented to encourage female scientists in aspects concerning legal dispositions, communication, organisational protocols, but the strongest obstacle is very resilient as it involves institutionalised cultures in science. Acknowledging this important layer is essential to initiate change, although knowing it will take quite some time.

## 9. What do you consider to be particularly important in promoting diversity in research?

It all starts with securing diversity in research teams. Research agendas, research methods, research topics are defined by researchers. If you have a human environment that is diverse, that diversity will spillover to all aspects of research.

### Interview with Philippe Moretto, Professor of Nuclear Physics at the University of Bordeaux, France



**Philippe Moretto** studied Physics at the University of Bordeaux until his thesis in 1987 and his position as lecturer a year later. Philippe Moretto has been in charge of various university facilities and training components, both in the field of training and research.

In the field of teaching, he was in charge of the Master degrees and created a professional training course in nuclear instrumentation, which is now an integral part of the training programmes offered by the University of Bordeaux. He was in charge of the Master degree in physics from 2003 to 2011.

In terms of research, he joined the Centre of Nuclear Studies of Bordeaux-Gradignan in 1987 - a laboratory, which he further directed from 2011 to 2017. He left this position to take up the position of Vice-President for Research at the University of Bordeaux in February 2018. Formerly, he set up a "physics-biology interface" research team and the AIFIRA platform in 2006, which has since been accredited by the University of Bordeaux. He was also director of the umbrella structure that brought together all the physics research units of University Bordeaux 1 (Institute of Fundamental Physics - IPF) from 2008 to 2011.

#### 1. What motivated you to become a scientist?

Attractiveness of research and interest in the thesis topic that I was introduced to. The subject was at the interface of Physics-Biology and was totally interdisciplinary, under the direction of a radiochemist, who was also a doctor, and consisted in developing a new quantitative micro-imaging method applied to the biomedical field.

Scientific curiosity and the opportunity to explore new techniques and horizons. Meeting people from different backgrounds and cultures, without being confined to a microcosm.

## 2. What encouraged you to keep going?

The appeal of a research topic that was part of a national and, above all, international community (see below). A great deal of autonomy in choosing my collaborations. I had to reach out to communities other than physics, find common research topics and build a common language. I had to find areas of application for the methods I was developing. It was all very motivating.

The teaching aspect was new to me, as nothing had prepared me for being in front of students. This very complementary aspect of the research activity gave me a great level of open-mindedness. In those days, we didn't have the constraints on curriculum management that we do now...

## 3. Which factors were helpful for your career?

As mentioned above, I've always been very autonomous in managing my activities. Early on, I became accustomed to taking on the inherent responsibilities and seeking funding, whether from European programs or from dermo-cosmetics manufacturers, with contracts that helped me to develop innovative applied research topics as well as funding my own research.

I was soon integrated into a well-structured international community, which opened the doors to European projects.

I had no difficulty in advancing my career as soon as my research activity was recognized and I was deeply involved in teaching. I suppose I was also helped by the fact that among my generation there were few teacher-researchers joining the University, so there was less competition that could lead to career delays.

## 4. Which factors did you find hindering or difficult?

Starting with the budgetary aspects, interdisciplinarity had little support at the time (the 80s and 90s). I've always had to find budgets on my own.

The consequence of the low number of university entrants for my generation: I had to take on responsibilities very early on in the teaching, which I certainly don't regret, but which took up a lot of my time, increasing my weekly working hours by what were certainly unreasonable proportions!

### Sharing experiences:

## 5. Based on the experience you have now: What advice would you give to your younger self? Is there something you would have done differently?



Don't hesitate to take the initiative, to gain in responsibility, while respecting the colleagues with whom you work. The legitimacy acquired through your commitment will always pay off in career terms. There's no need to ask yourself too many questions or draw up career plans: recognition will come naturally.

Of course, always try to keep a reasonable balance between the time devoted to your professional activity and your private life. Not an easy task... Would I have managed it differently with hindsight today? Perhaps!

## **6. What do you wish early career researchers should know?**

It's a day-to-day investment. No interest in getting involved as a dilettante. It's a tough road, and you have to be highly motivated, because places are hard to come by. You won't make your fortune in these careers! Academic freedom remains fundamental, even if the highly constrained context is pushing us more and more towards economic models that we have to accept and that reduce our room for manoeuvre.

## **7. Which strategic matters do you consider to be particularly important in the development of an academic career?**

It doesn't seem to me that talking about career development strategies is a very rewarding approach. I prefer to talk about personal investment, participation in activities of collective interest, responsibility for collective structures and projects (teams, units, institutional components). All this naturally leads to recognition of one's activity and a legitimacy that contribute to career development. Perhaps it's a strategy in itself!

### **Focussing networks:**

## **8. Do you feel you have important networks / collaborations for your career?**

As mentioned above, collaborations have played a decisive role in my research. Interdisciplinarity has enabled me to enrich my activities by opening up new applications for my research. I'd also like to emphasize the collaborations with industrialists, who are always ready to invest in cutting-edge methodologies. This last point has been very enriching.

## **9. What is the importance of networks in your understanding of science? What role do they play in the development of scientific careers?**

I was fortunate to be recognized in an international community, thanks to the specificity of my research activity. With regular communications at recurring international conferences (I organized one in Bordeaux in 2000), this visibility enabled me to join a European network in the 90s. After that, our network enabled us to apply for other European programs, as we were already pre-structured to respond to calls. I ended up taking part in 6 European projects (FP5 - FP6 - FP7 - H2020), which were an excellent



growth accelerator for my activity and enabled me to run the platform I created in 2006 with contributions from European budgets (trans-national access for example).

### **10. What kind of networking-elements are essential for you?**

Joining a network of European teams inevitably enriches activity, at the cost of sometimes tedious reporting and project set-up. However, today's establishments are better equipped to help project leaders.

Networks foster interdisciplinarity and the sharing of scientific culture, not to mention human relationships. One example is, of course, the Marie Skłodowska-Curie ITNs, which benefit young scientists by offering them excellent opportunities for theses or post-docs abroad.

#### **About the institutions and the system:**

### **11. What can universities do to encourage female scientists?**

Put in place the material conditions to ensure that they have the same opportunities as men, by erasing inequalities in treatment, such as time off work due to pregnancy, by providing teaching leave for female teacher-researchers when they return to work, or specific compensation for the time devoted to their parental activities.

Introduce acculturation/training in personal development, project management and team and structure management, and specific coaching to help them to break through the glass ceiling by erasing the harmful effects of the unconscious pre-conditioning of young girls throughout their studies, which has too often tended to confine them to secondary roles. Put in place all the preferential actions that could push them towards entrepreneurship, starting at Master's level.

### **12. What do you consider to be particularly important in promoting diversity in research?**

Promote science among young people, especially by reaching out to those who are far removed from our academic microcosms, our major university centers, our large metropolises, those who come from underprivileged neighborhoods, whether or not they have an immigrant background. Show young girls that anything is possible, by presenting them with some excellent examples of careers in science, not just at the highest level of research, but also in teams (engineers, technicians, managers, etc.).

## Interview with Kirsi Ojutkangas, research funding specialist, University of Oulu, Finland



**Kirsi Ojutkangas** works as research funding specialist in University of Oulu's research and project services. She is responsible for organizing support for Horizon Europe Pillar II (consortium projects) proposal coordinators. She is especially interested in research impact and the linkages between research and sustainable development. She has worked at the University of Oulu since 2008 and has been involved in numerous FP7, H2020 and Horizon Europe funding applications. She is one of the authors of the Impact Helper online guide. Ojutkangas graduated with a Master of Arts (German Philology) from the University of Tampere in 2002.

### 1. What motivated you to become a scientist? -

#### What encouraged you to keep going?

I am not a scientist but a research funding specialist, supporting scientists in their research funding proposals. I ended up in this field of work by accident, but I soon realized that I really enjoy it. In my current position, supporting coordinators of Horizon Europe Pillar II (large consortium projects) proposals I have the chance to work with researchers from across the university and that is super interesting. My motivation stems from the feeling of being able to help and from being able to deepen my own skills and expertise. I develop useful tools and offer guidance that enables the researchers to concentrate on what they do best (research) and let me help them in what I do best (proposal writing). The process itself is motivating because it is always a mutual learning experience. But of course, winning grants motivates me too.

### 2. Which factors were helpful to your career?

The fact that I have been able to do things that interest me has been helpful. I have been able (to a certain extent) to influence what I do. I started my career in a research centre and was given the opportunity to participate in many different tasks ranging from HR to project management. I got to see what researchers struggle with without being a researcher myself and could see the big picture of how the university works. Before I started my current task in central administration, I had worked for four faculties, so I got a good overall picture of the research conducted at my university. I have also always had the opportunity to participate in training to build up skills and expertise. The fact that I have had superiors who have trusted me and heard my ideas has also helped me in my career. I have also found that the flexibility offered by the university has helped me to combine work with personal life.

### 3. Which factors did you find hindering or difficult?

Very often career advancement in research administration means leading a team. There are not many chances to advance in your career horizontally unless you change the organization or the unit. And doing the same thing year in and year out can become frustrating. I also think that not having a PhD can be a barrier to me to advance in my career path. Even though it would not really give any additional value to my expertise at this point of my career. Also I think that the amount of work can be overwhelming and there are no guidelines on how to do my job, everybody does it with their own style. It has been difficult at times to set boundaries and not overdo things.

#### Sharing experiences:

### 4. Based on the experience you have now: What advice would you give to your younger self? Is there something, you would have done differently?

Looking back, I might have chosen a totally different field of study, nevertheless, I am here now and very much enjoy my job, so I guess everything was for a reason.

### 5. What do you wish, early career researchers would know?

From my current perspective, I wish they knew what sort of support is available for acquiring research funding and that they would take every opportunity to use it. At the end, we are there to help them and interested in their success.

### 6. Which strategic matters do you consider to be particularly important in the development of an academic career?

Employment contracts should enable researchers to do actual research and not have to work on 10 different projects to get a salary for 1 year. Also, the work for advancing societal impact of research should be incentivised.

#### Focussing networks:

### 7. What is the importance of networks in your understanding of science? What role do they play in the development of scientific careers?

Networks are crucial. If you look from a research funding perspective, which is quite essential, you should have contacts around the world and with various stakeholders, not only researchers but also relevant other interest groups (third sectors, policymakers, regulatory bodies etc.). This will not only help you to build the best possible teams for research endeavours but also to maximise the impact of your research.

### 8. What kind of networking-elements are essential for you?

For me having contacts to colleagues working in similar positions in Finland but also in Europe is important. It is good to be able to benchmark how things are done in other universities and whether they struggle with similar things.

## About the institutions and the system:

### 9. What can universities do to encourage female scientists?

It is striking that in many fields students are predominantly female, but the professors male. It should be studied why this is so, and what happens to female students after their graduation. These problems should then be tackled. Obviously, also the demands should be reasonable, working all evenings and weekends might not be what female scientists can do, or even want to do.

### 10. What do you consider to be particularly important in promoting diversity in research?

The university is still very hierarchical and not all decision-making is visible. There is a lot of bad management and dominant leaders, which can prevent promoting diversity. Having guidelines and bringing up good examples might help.

## Sónia Pereira, Head of Research and Projects Office, University of Porto, Portugal



*After working as a project manager at an innovation consultancy company, **Sónia Pereira** joined the University of Porto in 2007 as R&D funding manager at the KTO - U.Porto Inovação. Between 2013 and 2016, she was in charge of the International Projects Unit at the Project Management Office (U.Porto Shared Services). She is the director of the Research and Projects Office (Vice-Rectorate Research and Innovation). Her work revolves around research management and administration, including fundraising activities for research. She has been involved in several national and international projects.*

### 1. How does your service contribute to promoting issues related to the research careers of women scientists?

The Research and Projects Office (*SIP*) is the central structure with the mission to support U.Porto's overall research policy and strategy. Our two units – Research Support (*UAI*) / Projects Support (*UAP*) – interact and provide support to our scientific community in a myriad of research-related activities. 47% of our lecturers and researchers are female (U.Porto, 2022). I cannot say we have a particular focus or take any specific

action pertaining to the professional career of women scientists (nor men), simply because our philosophy is guided by the principle of providing the best support possible to each member of our community - be it a male or a female, a lecturer or a researcher. In that sense, I would say that the career development of women scientists is implicitly *at the back of our minds*.

## 2. What kind of requests do you get?

SIP takes no action in career management and development plans for researchers. We work closely with the research community – lecturers, researchers, and students – throughout the implementation of R&D-related initiatives and activities. Occasionally, we are questioned about research support structures, resources and tools, regulations in place (internal and/or national), etc. We do our best to provide answers/support ourselves at SIP. Sometimes this means looking for and articulating with other teams within U.Porto who may provide the most suitable support to researchers. We follow an 'internal networking' logic (articulation of central/local research support teams, legal, HR, IT services, etc.), if applicable and as deemed necessary.

### Sharing experiences:

## 3. What do you wish, early career researchers should know in terms of planning their careers?

Putting myself in the shoes of a young female researcher (as a Doctoral student), I think I would like to hear a clear and simple message: It does not matter who you are (male or female); what matters is the knowledge and contributions to science through your meaningful and impactful research (my own statement). I believe women – regardless of their career stage – can be leading scientists in any field and be recognized as such through their research trajectories. I understand how this simple idea may be difficult in real life, especially for early career researchers, but I also believe that women scientists in general may play a key role in breaking barriers and overcoming cultural biases around scientific careers.

### Focussing networks:

## 4. What is the importance of networks in your understanding of science? What role do they play in the development of scientific careers?

Networking plays a key role in science (including science management) as it fosters the establishment of synergies and expansion of (new) relationships, as well as exchanges between researchers who share the same research interests, regardless of their career stages. Networking triggers (new) collaborations amongst peers and researchers, from the same or other scientific fields, which may take many forms – e.g. from co-authoring papers to joint projects. In my view, it occurs on two levels – external and internal. We tend to pursue and value *external networking*, yet there is also a large potential waiting

to be unleashed in relation to internal networking and research collaborations within universities and other research performing organisations themselves. For instance, U.Porto has a comprehensive and highly diverse research ecosystem – 14 schools, 11 associated research institutes, 48 research units, etc. – covering almost every scientific field and a large scientific community in all career stages. I am totally convinced that it is possible to develop relevant research activity through increased internal collaboration/networking.

### About the institutions and the system:

#### 5. What can universities do to encourage female scientists?

According to the She Figures 2021 publication (European Commission, 2021), "since 2012, 'gender equality and gender mainstreaming in research' has been one of the priorities in achieving the European Research Area (ERA)". Yet, data show that women remain widely underrepresented in science, their contributions are still often less visible than men's and there are fewer women in leading positions. I believe higher education institutions may and shall encourage women scientists in different ways. Two potential actions at the universities' reach would be, in my view, the improvement of working conditions (balance male/female conditions) and increased participation of female researchers in decision-making positions.

### Interview with Taina Pihlajaniemi, vice president of research/professor of medical biochemistry, University of Oulu, Finland

**Taina Pihlajaniemi** is the vice president of research (since 2010) and professor of medical biochemistry (since 1990) at the University of Oulu, Finland. She trained as a medical doctor at the University of Oulu. Her research focuses on collagens, she spent 3 years as a postdoc at Rutgers Medical School, and she has led Academy of Finland Centre of Excellences in matrix biology. She was scientific co-founder of FibroGen Inc., a US biopharmaceutical company valued at over \$1 billion, which targets various chronic medical conditions. Pihlajaniemi has been involved in various science policy tasks in Finland, including serving on the Science and Innovation Council chaired by the Prime Minister. Currently, she leads the Finnish National Steering Group of Open Science and Research. She played a key role in establishing Biocenter Finland, a distributed national research infrastructure network consisting of six universities. Additionally, she directed the Finnish node of ESFRI's Infrafrontier's EMMA operation in Finland.





*Pihlajaniemi has contributed to the European Research Infrastructure Roadmap and served on evaluation panels for the European Research Council, and in Sweden, Denmark, Iceland, and Switzerland. She has also served on scientific advisory boards in Germany, Denmark, and Lithuania.*

**1. What motivated you to become a scientist? - What encouraged you to keep going?**

I started Medical School directly after high school matriculation with the goal to become a clinical doctor. During the second year of studies, we had an extensive course in medical biochemistry. This was preceded by anatomy and cell biology and by physiology. I liked all these pre-medical subjects. The medical biochemistry course was headed by professor Kari Kivirikko, an inspiring lecturer and also known as a

world-class scientist. During this course it was announced that those interested could apply to start PhD work along their medical studies. Happily, I was one of those selected to start research work, and consequently in the second summer of my studies I was able to use the brake in studies for learning laboratory work, which I then continued along medical courses and during holidays.

So, my inspiration was an outstanding teacher and scientist and the group working with him along with the whole department with its different groups and strong high-level science culture.

My research project was not altogether straight forward but rather required implementation of new molecular biological techniques, which is why I went to do a post-doctoral period to learn the at time new recombinant DNA methods in the laboratory of Darwin Prockop at Rutgers Medical School in USA. My supervisor Kari Kivirikko had a strong connection with Prockop and several of us Finnish students did their postdoc with Prockop, including e.g., Leena and Aarno Palotie. They had returned from their visit to the Prockop laboratory some months before I went there. My plan was to stay in USA for a year but on account of the hectic and interesting work in cloning collagen genes, I stayed for three years.

When I returned to Oulu, I was able to establish many new techniques in Oulu as well as my own little research group and continue projects that I had started in USA. This led to identification of previously undiscovered collagen genes, and in collaboration with Kivirikko to cloning of enzymes involved in the biosynthesis of collagens. I received competitive funding from the Academy of Finland, and in view of the highly interesting

research that I was able to do, I changed my original plan of specializing in internal medicine of pediatrics and decided to concentrate on molecular science.

## 2. Which factors were helpful to your career?

Having an enthusiastic and internationally highly respected thesis mentor who gave the impetus to go abroad for postdoctoral work in one of the leading places in the world in my field of extracellular matrix research. This experience in USA allowed me to become known in the field and gave me a large network of scientists that I still interact with after several tens of years.

I returned from my postdoc to my original home department, where I was warmly welcomed by my former mentor and encouraged to start my own research group. I felt excited about my research line and convinced of finding interesting new things. Optimism and encouragement were in the "air".

I became professor early on, which brought with it departmental leadership duties and after a few years becoming director of the bioinstitute of the University of Oulu, Biocenter Oulu. In carrying out these tasks, I was able to consult several experienced persons around me, both men and women, which was very helpful in my early years of leadership. Now, being a seasoned scientific leader, I still constantly consult others in various matters – I find that this leads to better decisions from my part.

I also was appointed to several national committees, which was very educational, broadening my view of research policies and on scientific fields other than my own. An even broader view was gained through participation in various international expert tasks.

Participation in institutional and policy task naturally takes time, but on the other hand, helps to understand better the prerequisites and international level of research. This has served me well in my current task as vice rector responsible for research activities at the University of Oulu.

## 3. Which factors did you find hindering or difficult?

Together with my husband we have three children. When the children were small, coordinating work and family life was naturally demanding. However, I have been lucky in having a spouse that has shared fully these tasks with me. At the time when I was a young female professor and department head, I may have been overlooked by more established colleagues. This, however, has never bothered me, as my focus has been on my work and my family and decidedly not on "internal politics". In my opinion, you may be asked into committees etc. to establish a gender balance, but you will be asked for the second time based on your performance. I have been happy to have been selected to committees as a female representative and simultaneously representing Northern Finland – this has given me possibilities to provide my viewpoint and influence national and even international policies.



### Sharing experiences:

#### 4. Based on the experience you have now: What advice would you give to your younger self? Is there something, you would have done differently?

Not really. I have integrated my work and family life and my only hobbies are such that I can sustain at home. To be able to do my various tasks, I have not had proper vacations, but this I do not regret. Academic work has certain freedom which suits me.

#### 5. What do you wish, early career researchers would know?

Do not sacrifice family life on account of your research career, try to manage both. Do not shy away from opportunities that may suddenly be presented – seize the moment – rigid career planning may not be a good idea.

#### 6. Which strategic matters do you consider to be particularly important in the development of an academic career?

It is of paramount importance to seek for a successful postdoc period abroad; this is the real turning point and accelerator of a scientific career in many ways. Completing the PhD thesis is only a steppingstone for the work as a trained postdoctoral scientist, and eventually further career prospects. After the postdoc period comes a critical time for establishing independence, especially gaining external funding and becoming responsible funding your own group.

Consider also inter-sectorial mobility as a possible career path. Engage in reviewing, editorial boards, grant committees, societal boards – science is an international community where we all have numerous tasks, and you learn tricks of the trade by reading the best efforts of others. When you write grant applications, ask for colleagues to review them and give feedback on them in order to improve your application. Prepare important grant applications well in advance so that you have time to improve them and make them polished scientifically and in writing.

### Focussing networks:

#### 7. What is the importance of networks in your understanding of science? What role do they play in the development of scientific careers?

An early career scientist must actively participate in international conferences and become noticed as an aspiring scientist. The “big names” in the field are keeping a keen eye on the newcomers in the fields – hence you should not be too shy or prioritize your summer vacation if you are invited to give a talk in a conference. In addition to the post-doctoral period, this a way to become a player in the field of your research.

The research fields are like villages where everyone knows everyone, and gradually your networks help you carry out your research, give you new ideas, and provide a recruitment pool. Science is highly interactive, help and support by your colleagues is needed to carry out your work in an internationally competitive manner.

### **8. What kind of networking-elements are essential for you?**

The central networks are the colleagues directly in my field throughout the world. There are also more peripheral networks that are formed e.g., through joint science policy tasks, reviewing, societies and other such activities.

#### **About the institutions and the system:**

### **9. What can universities do to encourage female scientists?**

An ingrained respect for different genders and other diversity must be the backbone of the university's operations. Consider broadly different persons for tasks of responsibility, not only the most obvious ones. Leadership at all levels is instrumental in securing a culture of gender equality. Active measures are needed, e.g. in securing a gender balance in committees and nominating candidates for various tasks. Bad practices and violations of gender and equality matters should not go unnoticed. Engage female mentors. Informal and trustful discussion may provide great support at critical times. Understanding the demands of family life on women and encourage men to shoulder their equal part in these tasks.

### **10. What do you consider to be particularly important in promoting diversity in research?**

A comprehensive equality and diversity policy is in place at the university, and it is updated bi-annually. There must be continuous follow up of gender and diversity policies and breaches of these policies must be corrected. I promote actively measures that aim for a 50:50 gender balance in all that is done. A "wait-and-see" attitude is not sufficient to achieve the gender changes that are needed.

## Interview with Eleni Pontiki, assistant professor at the School of Pharmacy, Department of Pharmaceutical Chemistry, Aristotle University of Thessaloniki, Greece



**Eleni Pontiki** has been working as an assistant professor at School of Pharmacy, Department of Pharmaceutical Chemistry, Aristotle University of Thessaloniki, since 2018. She has received a degree and a PhD in Pharmacy from the same University. She has a master degree in "Management in Health Care Organizations" from the National School of Public Health in Athens and a master degree entitled "Development and Analysis of Pharmaceutical Products" from the School of Pharmacy, Department of Pharmaceutical Chemistry, National & Kapodistrian University of Athens. She was awarded two honorary awards from the Research Committee of Aristotle University of Thessaloniki for PhD and Postdoctoral studies accordingly. She has done postdoctoral studies at the Department of Chemistry in University College London, United Kingdom with a postdoctoral fellowship of the Onassis Public Benefit Foundation and at the Dipartimento Farmaco-Chimico, School of Pharmacy, University of Bari School of Pharmacy and the Department of Pharmaceutical Chemistry, Aristotle University of Thessaloniki with a fellowship from the "Foundation for Education and European Culture". She has 63 publications in peer reviewed journals with 3435 citations and an h-index of 24 (Scopus, 27 October 2023) and 4 book chapters. Her research interests combine the design and synthesis of novel biologically active compounds, their biological evaluation and in silico studies (QSAR analysis and molecular docking studies).

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### About you:

#### 1. What motivated you to become a scientist? - What encouraged you to keep going?

As far as I can remember from my childhood I was always encouraged to study and go forward. The family environment used to support and provide knowledge. Moreover, I was always being interested to study, asking and exploring. So, after obtaining the pharmacy degree I proceed to a master degree. It all started then as part of my master and then PhD thesis, when my supervisor an eminent scientist in the field of medicinal chemistry has been my biggest inspiration and mentor. She was very supportive in scientific everyday laboratory work and everyday life. It has been more than fifteen years since I got my PhD, we still collaborate, work together in the same laboratory and she is the one I turn to for advice.

## 2. Which factors were helpful to your career?

I believe at the beginning that upper secondary education has helped me gaining basic but important skills at the same time and the pharmacy degree a multidisciplinary degree combining different scientific fields such as organic chemistry, chemical biology and pharmacology. Moreover, scholarships during my PhD studies gave me the opportunity to attend conferences and summer schools. Finally, PostDoc fellowships mobilised me to visit and work in laboratories in different countries gaining knowledge and collaborating with colleagues of diverse ethnic and scientific backgrounds.

## 3. Which factors did you find hindering or difficult?

I believe that although having clear personal and scientific interests what was difficult for me was studying-doing a PhD for example and working at the same time in a different pharmacist job outside the University. PhDs in pharmacy in Greece are not funded so students are obliged to work and spend valuable time important for their PhD studies.

According to me another crucial factor is motherhood. The academic system is very unjust and hostile for women having children. I think that there is no convenient time to have children for women in science. I had my child being a non-permanent assistant professor and due to my career advancement and evaluation from personal choice I did not get the nine month-maternity leave and got back to work when my little girl was four months. Being now five years old my little girl, I admit that it is still a difficult task having a balancing scientific career and being a mum achieving a good work-life balance.

### Sharing experiences:

## 4. Based on the experience you have now: What advice would you give to your younger self? Is there something you would have done differently?

Based on my experience I believe that I would advise my younger self to get the maternity leave and spend more time with the baby. I know that it is easy to give advises but not to implement them when working in a competitive environment such academia. The dilemma of career development and motherhood remains although I am trying to do my best for my five years old girl.

## 5. What do you wish, early career researchers should know in terms of planning their careers?



Early career researchers should be flexible and patient and focus on their goal. Work hard, write and publish research papers, participate in international networks, embrace diversity collaborating and communicating with multicultural scientists. Additionally, developing leadership skills and assisting in the supervision of postgraduate students will be important. For me building excellent communication, leadership and interpersonal skills is necessary in addition to the traditional metrics such as papers produced, h-index, citations etc.

## **6. Which strategic matters do you consider to be particularly important in the development of an academic career?**

Planning a career is totally a new experience for young people and sometimes can be very confusing. I suggest that early career researchers should have clear and well organised plan, one step at a time starting from pursuing a degree, then master thesis, PhD and PostDoc. Early career scientists interested in academia should build a curriculum vitae showing research impact and leadership capacity. They should try to acquire all the skills and experience essential for their scientific field. Moreover, it is imperative to participate in multiple seminars and international conferences. Mobility in various laboratories in different countries is also indispensable, gaining knowledge and collaborating with colleagues of diverse ethnic and scientific backgrounds is valuable.

### **Focussing networks:**

## **7. What is the importance of networks in your understanding of science? What role do they play in the development of scientific careers?**

Networking plays a key role in career development by enhancing collaborations and solving problems. Collaboration is critical for scientific advancement since new technologies require increased multifunctional work between researchers of different scientific backgrounds. For me networking can be mutually beneficial providing knowledge in science and optimising the results. I do not support the "motto" working alone or conducting my own experiment since collaborations can provide new knowledge in science. Networking is important for the development of scientific careers, exchanging ideas, achieving high goals (results and publications) and help grow scientifically and personally.

## **8. What kind of networking-elements are essential for you?**

According to my opinion networking-elements depend on the person itself. First of all, participants of a network should learn to listen, discuss, having humour and respect other's opinion. Development of interpersonal and communication skills is the key element.

### About the institutions and the system:

#### 9. What can universities do to encourage female scientists?

Last years a great progress was made for increasing female participation in science to cover the scientific gender gap persisting all over the world. I believe that universities in order to encourage young girls to choose higher education and continue with scientific studies (STEM) should start from rewarding young scientists and promoting successful women scientists. It should be clarified that scientific qualifications are an attractive choice for female students. Moreover, universities can create work experience placements for young female scientists to motivate them to pursue an academic career.

#### 10. What do you consider to be particularly important in promoting diversity in research?

Diversity in research is very important. Researchers reflect the diversity of their culture and conditions such as race, ethnicity, gender, age, etc. Collaborating with people with diverse scientific disciplines helps taking rational decisions, solving problems and provides opportunities for creativity and scientific development. Moreover, cultural diversity reflects the culture that a person grew up, people from different cultures have different aspects in understanding and classifying phenomena, which can affect the scientific conclusions and theories. Concerning the gender, different research studies have shown that women stay a minority in science although they have greater social sensitivity, ability to collaborate and are more democratic. This is due perhaps to the fact that women do not usually choose science due to lack of opportunities and the difficulty to combine science with family. From all the above it can be concluded that diversity is beneficial for research promoting innovation and advancing scientific understanding.



## Interview with Mar Rus-Calafell, professor of Clinical Psychology and Digital Psychotherapy, Ruhr University Bochum, Germany



**Mar Rus-Calafell** is a Professor of Clinical Psychology and Digital Psychotherapy at the Faculty of Psychology of the Ruhr University Bochum, and a licensed clinical psychologist. Mar completed her undergraduate studies in psychology at the University of the Balearic Islands and received her doctoral degree in Clinical Psychology at the University of Barcelona, awarded with the highest possible grade (Summa Cum Laude) and Best Thesis Award of that year. She complemented her PhD studies with a scholarship from the League of European Research Universities (LERU), to attend the distinguished training

on Development of Leadership Skills for Employment in Enterprise, Government and Academia at the Sorbonne University in Paris (France). She then started as a post-doc and clinical psychologist at the Institute of Psychiatry, Psychology & Neuroscience (IoPPN), King's College London (UK), where she coordinated a large clinical trial to test the efficacy of AVATAR therapy (a novel digital intervention for auditory hallucinations in psychosis). In 2016, she was awarded the National Institute Health Research (NIHR) Independent Researcher Award to continue her clinical research in psychosis. In 2017, she started working as a clinical psychologist and research fellow with the Oxford-Cognitive Approaches to Psychosis (O-CAP) team at the Department of Psychiatry, University of Oxford.

In 2020, she was awarded the prestigious Sofja Kovalevskaja Award (Alexander von Humboldt Foundation and Ministry of Education and Research, Germany) and she became the independent research group leader of the Young VOices Research and Interventions (YVORI) research group, which is based at the Mental Health Research and Treatment Centre (MHRTC, Ruhr-Universität Bochum). Her research focus through her clinical and research career is the understanding and treatment of mental health disorders, and psychosis specifically, and the application of digital technologies to improve assessment and treatment of these disorders. She is also an invited lecturer at other European universities and is a reviewer of more than 30 journals and science organisations.

### 1. What motivated you to become a scientist? - What encouraged you to keep going?

One of the main things that motivated me to become a scientist was having great professors during my studies that highlighted the importance of research/science to sup-



port evidence-based treatments that help people who suffer from mental health problems (my field of work is clinical psychology and mental health). From basic understanding of mechanisms underlying mental health problems, to proper implementation of treatments, science have a crucial role. They really helped me to understand that there is no progress in society without science! Finding inspiring people along the way, as well as keeping my curiosity about how mental health disorders develop awake, were important factors to keep going. Of course, being successful in getting fellowships and grants ensured my work stability.

## 2. Which factors were helpful to your career?

Mainly having other scientists around me who were committed to what they were doing, but also saw the importance of supporting early career researchers to ensure good science and innovation. In my case, it was key in my perseverance to find my path in science to have excellent female scientists around me, who acted as reference and helped me understand how important it is to fight for equality and equity. Those other female scientists were not always in the university or center I was working in; often I met them in conferences or through international working groups and networks I am affiliated to. Definitely, my award with the Alexander von Humboldt Foundation (AvH, Germany) has also been key to establish myself as an independent researcher and professor. Not only because of the funds I was awarded with, but also because it is an institution that has as a key values internationalization and gender equality.

## 3. Which factors did you find hindering or difficult?

Beside the well-known difficulty in science of getting your own funding or fellowships, I guess the fact that there was little support, sometimes, from universities on helping you to change countries, get settled and allow some time for you to adapt to the system, add more challenges to your already busy working schedule. Once you also have a family, there are additional difficulties related to maternity leave, childcare and work-life balance that can really have an impact on your scientific work. There are still lots to do in this regard, in my opinion.

### Sharing experiences:

## 4. Based on the experience you have now: What advice would you give to your younger self? Is there something, you would have done differently?

I believe I am lucky enough to answer “no, not really” to this question. However, I feel that somehow, I would have liked to have more information earlier in my career about specific strategies, policies, or even funding schemas that aim to improve equality and diversity in science which I could contribute to and benefit from.





## 5. What do you wish, early career researchers would know?

One of the main things I would like them to know is that, despite of the sacrifices, working with other people outside your home country, visiting other labs, engaging in international collaborations and networks is, beyond academic purposes, one of the most enriching activities as a person (in my opinion). A unique opportunity to learn in many senses: not only from what others do, but to contribute to a marvelous synergy of new knowledge creation.

### Focussing networks:

## 6. What is the importance of networks in your understanding of science? What role do they play in the development of scientific careers?

They really play a crucial role, in my opinion. National and international networks allow us to keep growing as scientists and to exponentially improve the science we do. They are also very important to define a clear agenda for policymakers, to try to minimise biases in science and to guarantee the production of better and fair policy outcomes for science and scientists. Two of the most recent networks that I have joined that have provided me with a great level of development, also as a female scientist, are the Young Academy of Europe and Academia.net (a database of profiles of excellent female researchers from all disciplines)

### About the institutions and the system:

## 7. What can universities do to encourage female scientists?

It is crucial that all members of the universities are aware of the disadvantages that female scientists face in academia (and society in general). Different actions are still needed: from raising awareness campaigns to clear guidelines and operational procedures, which include all the possible measures that should be put in place at the workplace to support the female scientist, her career and her development (e.g., gender pay equality, access to same resources, support during pregnancy, maternity leave, and afterwards).

## 8. What do you consider to be particularly important in promoting diversity in research?

Research needs to be represented by all the members of our society, otherwise it is biased and not a true reflection of who we are. To be able to understand and overcome our challenges as a society, as a specie, and those challenges coming from the environment we live in, we must ensure we are all well represented within the scientific community.

## 6. Outlook

The aim of this document is to point out the responsibility of HEIs in order to foster early-career researchers. Six tools focusing measures around inclusive mentoring and networking practices that target ECRs, especially during their PhD-phase, were created in order to inspire and support HEIs in the design of measures for diversity-oriented career development. The tools were developed taking into account the social context of ECRs in the European Research Area in an intersectional perspective. In this regard, it was necessary to focus on the linkage between the social categories gender, class and migration/race as well as sexual orientation in order to foster diversity and equity in academic career development. Hereby we highlighted the complex dynamics of educational inequality, that shapes the reality of academic cultures, and emphasises the need for institutional measures that consider the intersectional nature of social dynamics in career progression. As it has been shown, it is paramount to question the notion of meritocracy in academia and to point out that opportunities and advancements are not solely based on merit but are also influenced by social determinants.

As a second focus, we looked at the experiences and perspectives of scientists themselves. What do they perceive as beneficial to career development, and what do they consider a hindrance? What role do networks and other forms of support play in this regard? We pointed out the needs of ECRs based on the testimonials of female PhD-students on behalf of the International Women's Day 2022, and interviews with advanced researchers from the RESET network.

We were able to show that the professional field of science is strongly characterised by intrinsically motivated individuals. Curiosity about new insights and findings, as well as the further advancement of knowledge is a defining factor here. The interviewees and the video testimonials particularly emphasised the supportive role of togetherness and cooperation in their career development. They highlighted the importance of emotional support, learning from peers, and working in a cooperative environment. The role of networking was not only perceived as a mode of professional support but also in regard to a sense of belonging within the academic community, and of establishing robust professional and personal connections within the academic sphere. Furthermore, diversity and inclusivity have been highlighted as factors that enhance research quality and innovation. With regard to career progression, there is an acknowledgment of systemic obstacles that especially affect women, such as gender biases, or the impact of family life, as well as the pressure of publication during parental leave. Moreover, the precarious employment situations for ECR create a tension that can lead to overwork,



challenges in work-life balance, and the “leaky pipeline”, that make highly qualified researchers leave the academic system.

These challenges make it visible that the commitment of top management is essential for achieving goals related to the promotion of gender equality and diversity. They call for a reevaluation of academic norms and greater support for those navigating work requirements and work life balance.



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Zimmer, Lena M. (2022). "Bildungsaufstiege in der Wissenschaft. Zur Nicht-Reproduktion sozialer Ungleichheit beim Übergang von der Junior- auf die Lebenszeitprofessur" Zeitschrift für Soziologie, vol. 50, no. 6, 2021, pp. 415-433. <https://doi.org/10.1515/zfsoz-2021-0025>



This project has received funding from the European Union's Horizon 2020 Framework Program for Research and Innovation under Grant Agreement no 101006560.

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