INTEG-RNA

INTEGRATION OF RNA BIOLOGY FOR NEXT-GENERATION SCIENTISTS

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D3.4 A list of desirable skills based on self-reflection within postdoc peer groups

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Summary of Desirable Skills Survey

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CONTENT

OUTCOMES

To enhance readability, we begin by presenting the survey findings.

According to the results, there are two areas of skills that supervisors as well as PhD candidates and postdocs consider as very important in a successful career.

The first area covers personal effectiveness: time-management, problem-solving, and critical thinking. In these skills, the respondents (PhD candidates and postdocs) assess themselves as being rather strong. It means that in this area of skills, there is not such a big gap between preparedness and importance.

The second area of desirable skills includes project management and writing funding applications. As we can see, the respondents assess themselves as weaker in these skills in comparison with the first area.

Lastly, it's vital not to underestimate the significance of other identified skill weaknesses, including networking and work-life balance, as well as commercialization and patents.

Given this alignment, we would like to emphasize the current opportunities available within CEITEC MUNI or accessible online for free. The Information System courses at Masaryk University are primarily designed for undergraduate and doctoral students. However, if any postdocs are interested in enrolling in such courses, please don't hesitate to contact the PhD Studies Manager at michaela.fajkusova@ceitec.muni.cz. Additionally, the growth and progress of postdoctoral researchers fall under the purview of the HR Department. Consequently, the outcomes will be shared, along with other pertinent training opportunities that will be recommended.

Here is the list of training opportunities for enhancing the most desirable skills:

Name of the course	Skills	Supplier	Language
CORE029 Critical Thinking	critical thinking	Faculty of Science, MU	Czech (in the case of sufficient interest, we would try to arrange an English alternative)
Description: The student will be able to: - analyze a problem rationally, and find a formal logical error in rational reasoning - be aware of his/her own errors in reasoning (bias) and be able to work with it - understand bias in other people, and know how to work with it when it is necessary to convince them of something - be able to argue and persuade others effectively			
Kurz Kritické myšlení	critical thinking	Nostis platform	Czech
Description: We usually recognize when someone is trying to convince us of something. Exactly what arguments he gives us and what he actually says with them requires a little closer look. In this tutorial, we'll show you an easy way to shed light on such arguments!			
PV236 Time Management and Effectiveness	time-management	Faculty of Informatics, MU	English
Description: At the end of the course, the students should be able to: Actively keep in mind efficiency and effectiveness when dealing with day-to-day situations. Understand the importance of reputation and how to build a professional one that helps save time. Make responsive decisions taking into consideration prioritization criteria and task urgency/importance. Understand the psychology of forming habits. Understand the importance of planning, contingency, and expectations management. Get familiar with the most popular time management concepts. Have an overview of psychology of optimal experience, aka flow. Respect the rules of effective communication. Write concisely. Delegate. Confidently provide and accept feedback to prevent obstacles of cooperation. Understand the basic principles of communication in crisis.			
FR_p2023 FRESHERS: Skills for Research Career	writing funding applications, research ethics, communication	Rector's Office, MU	English
Description: After completion of the course students will be able to: • identify the opportunities for financing research in the academic sector on the national and international level • assess the standard principles used in the evaluation of funding applications, basic evaluation criteria, and determine what style of writing to use to impress the evaluators			

• know basic ethical aspects of research projects including field specifics and issues of personal data protection
• search in bibliographic databases and learn to make a basic analysis of their own publishing activities
• think behind the reasons for effective science communication, the value such work has, and ideas on how success in this field can be attained
• find out what intellectual property is, how it could be used for their benefit and when to attempt to protect it
• identify the various opportunities for international exchange within Ph.D. studies
• have insight into possibilities of the academic or professional careers after PhD

SOe200 Introduction to Project Management and Writing	project management	Faculty of Education, MU	English

Description: Students are introduced to project design and management, including managing project risks, needs analysis, definition of target groups, and ethnographic research design. Students also improve their writing skills for accuracy in communication in academic environments and research contexts with the perspective on culturally different academic and research situations.

XV004 From Ideas to Business	commercialization, entrepreneurship	Faculty of Science, MU	Czech

Description: The aim of the course is to introduce students to modern methods of working with ideas. By applying the Design Thinking method, students will come up with their own business idea and learn practical information in the areas of law, financing and marketing. In a safe environment, they will experience the first steps of developing a business idea and learn the entrepreneurial way of thinking. Participants in the course include MendelU students, allowing MUNI students to expand their network of contacts to include students from a wide range of disciplines. It also includes presentation of principles of research plan realization, protection of intellectual property and methods of transfer of technologies and knowledge out from the university environment. The whole course is taught by experienced business consultants with many years of experience, there is also an inspirational part in the form of discussions with Brno entrepreneurs.

WHAT WAS THE GOAL?

This survey was conducted in the context of the INTEG-RNA Twinning project.

Our primary aim was to compile a list of desirable skills to tackle various career paths among postdoctoral researchers and early-stage researchers (i.e. PhD candidates). In addition, we sought to enhance the alignment between our course offerings and the evolving requirements of our burgeoning young researchers.

To broaden the scope of insights we could gather, we extended our reach to include supervisors. The shortened version of the questionnaire was addressed to them.

METHODOLOGY

Survey Platform: We conducted a quantitative analysis using the Survio software, a trusted tool for gathering structured data through online questionnaires.

Consultation: The survey's content was carefully crafted in collaboration with Mary O'Connell, the project coordinator, to ensure its relevance and effectiveness.
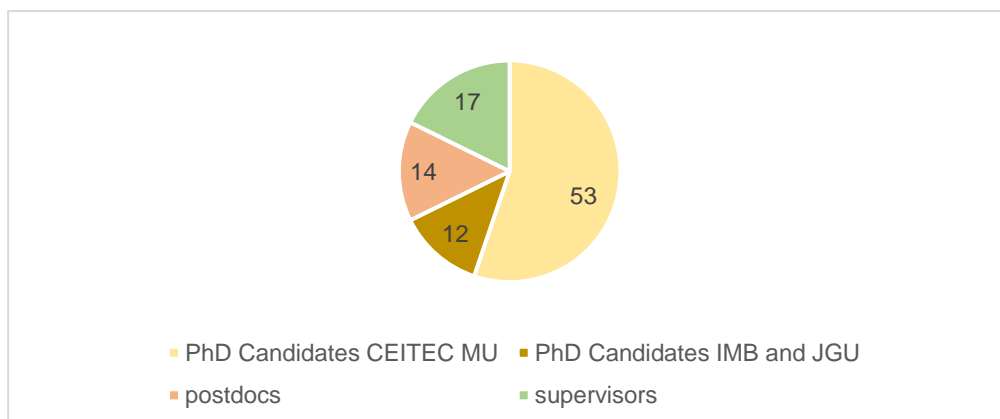
Survey Deployment Timeline:

- The initial call for respondents was issued in April 2023. We reached out to a diverse group of participants, including 230 PhD candidates, 29 postdocs, and 39 supervisors at CEITEC MU.
- In June 2023, we sent a reminder to PhD candidates and postdocs to maximize participation.
- We also extended the request to disseminate the survey to postdoc and PhD candidate groups within our Twinning partner institutions in June 2023.
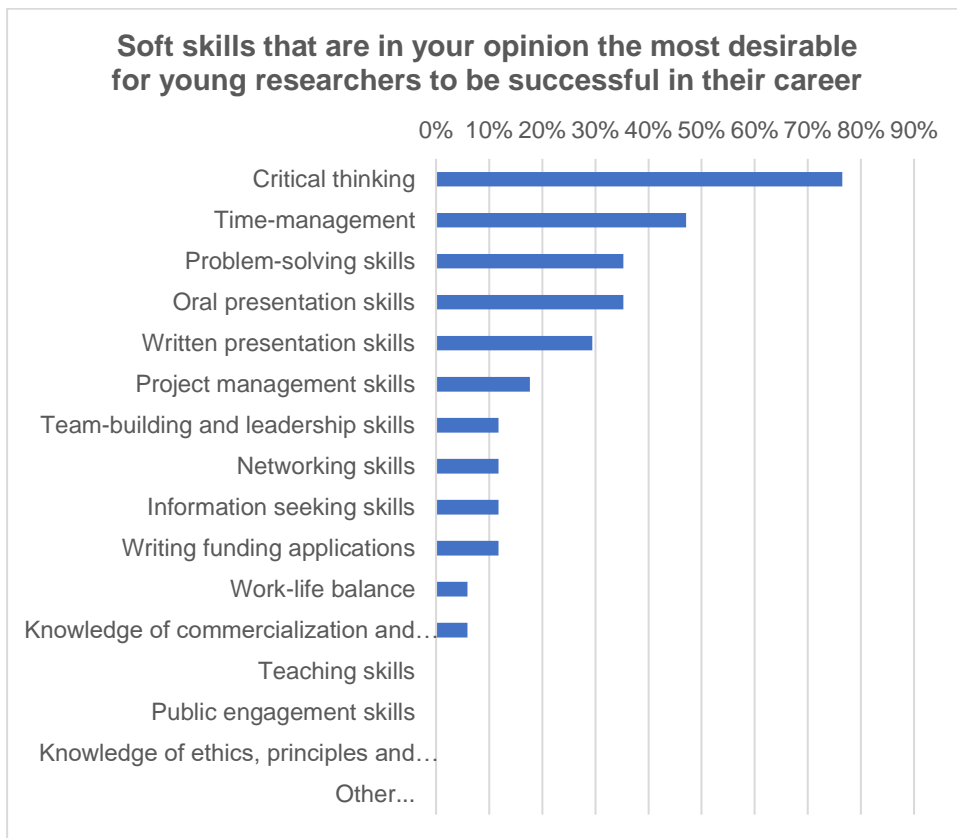
Response Summary:

Our survey generated a valuable response from a range of participants:

- **Supervisors** (CEITEC MU): Out of the 39 supervisors contacted, 17 completed the survey, providing crucial insights from within our organization.
- **PhD Candidates** (CEITEC MU): Among the 230 PhD candidates approached, 53 actively participated, sharing their perspectives and needs, contributing significantly to our research.
- **Postdoctoral Researchers** (CEITEC MU): From the pool of 29 postdocs at CEITEC MU, 14 willingly participated, offering insights into the experiences of researchers at this career stage.
- **PhD Candidates from Partner Institutions**: We also received responses from 12 PhD candidates from partner institutions, including 8 from the Institute of Molecular Biology, Mainz (IMB), and 5 from Johannes Gutenberg University Mainz (JGU) [1], which added valuable diversity to our dataset.

PhD Candidates CEITEC MU ■ PhD Candidates IMB and JGU
postdocs ■ supervisors

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[1] One respondent denoted two affiliations IMB and JGU.

RESULTS FROM SUPERVISORS

Soft skills that are in your opinion the most desirable for young researchers to be successful in their career


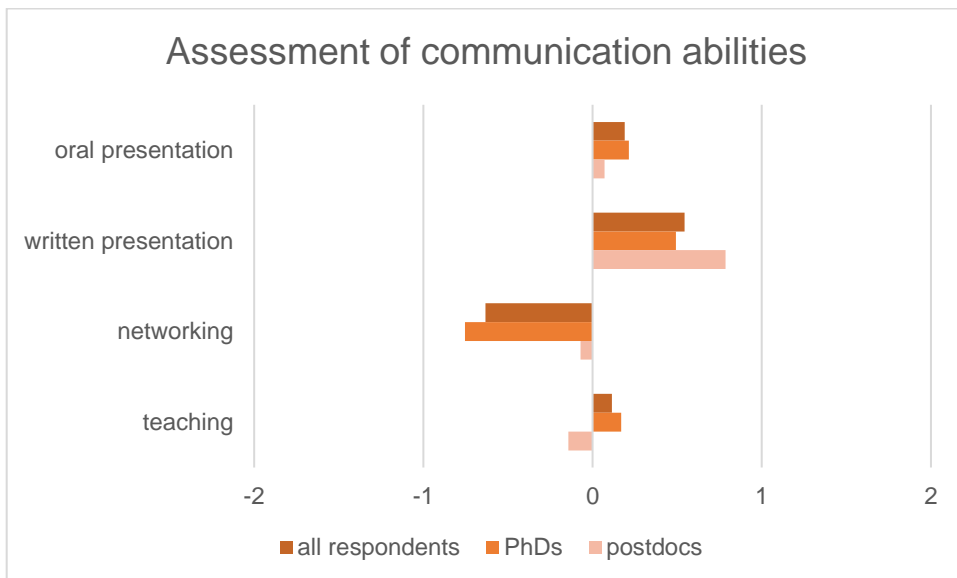Other comments and suggestions from respondents:

- wise using of AI-based applications;
- communicating research outside a group and to public, know ethics, prepare (not only grant) applications;
- commercial field including the funding of their own start-up companies.
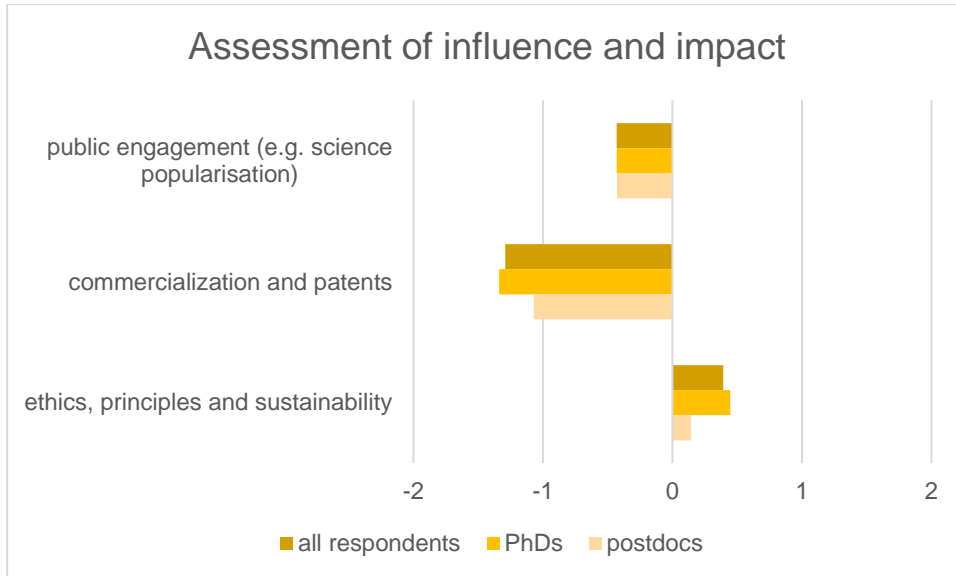
RESULTS FROM PHD CANDIDATES AND POSTDOCS

1) How do you assess your **personal effectiveness?** (-2 weak … 2 strong)
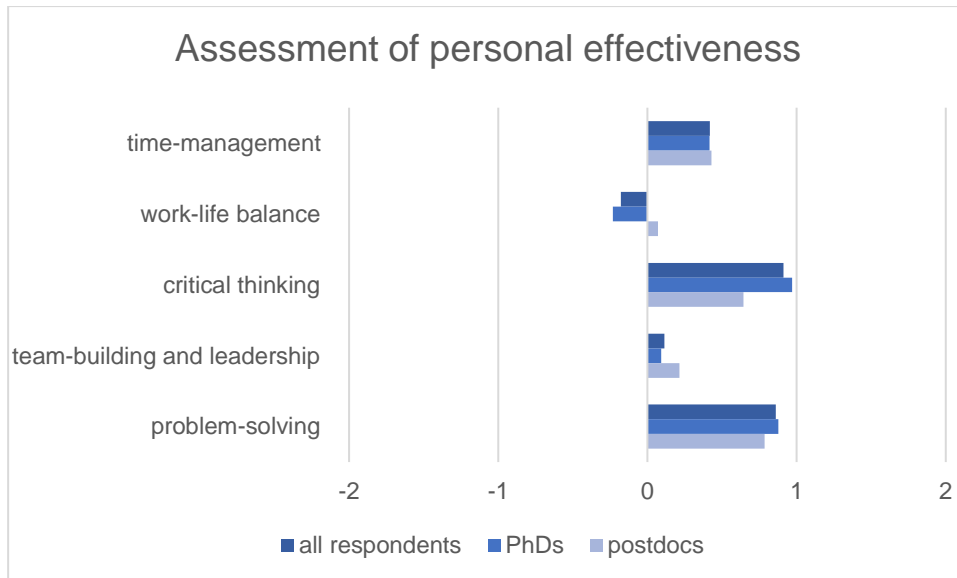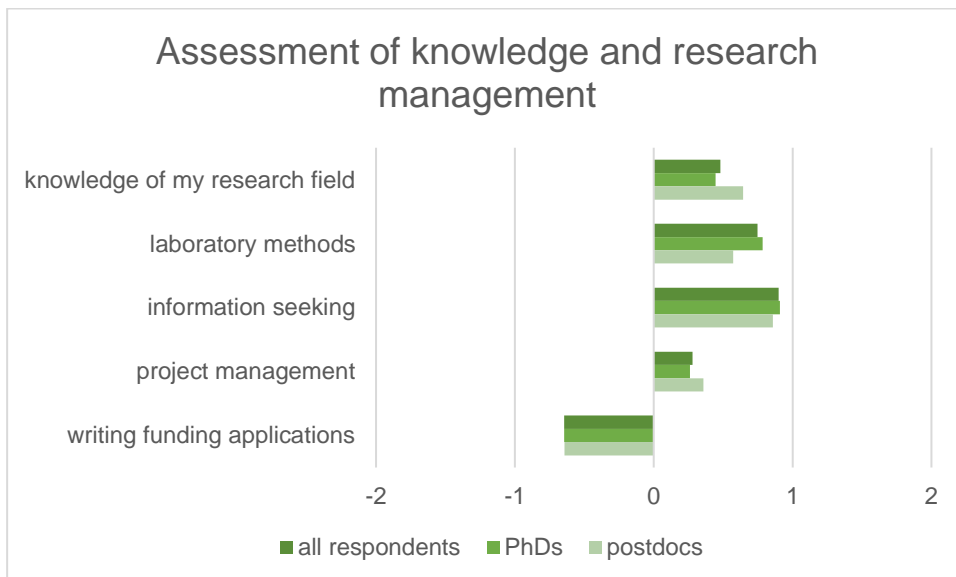

2) How do you assess your **communication abilities**? (-2 weak … 2 strong)

3) How do you assess your **influence and impact**? (-2 weak … 2 strong)

Assessment of influence and impact

4) How do you assess your **knowledge and research management**? (-2 weak … 2 strong)

Assessment of knowledge and research management

5) What is your **most preferred career goal**? (multiple choice)

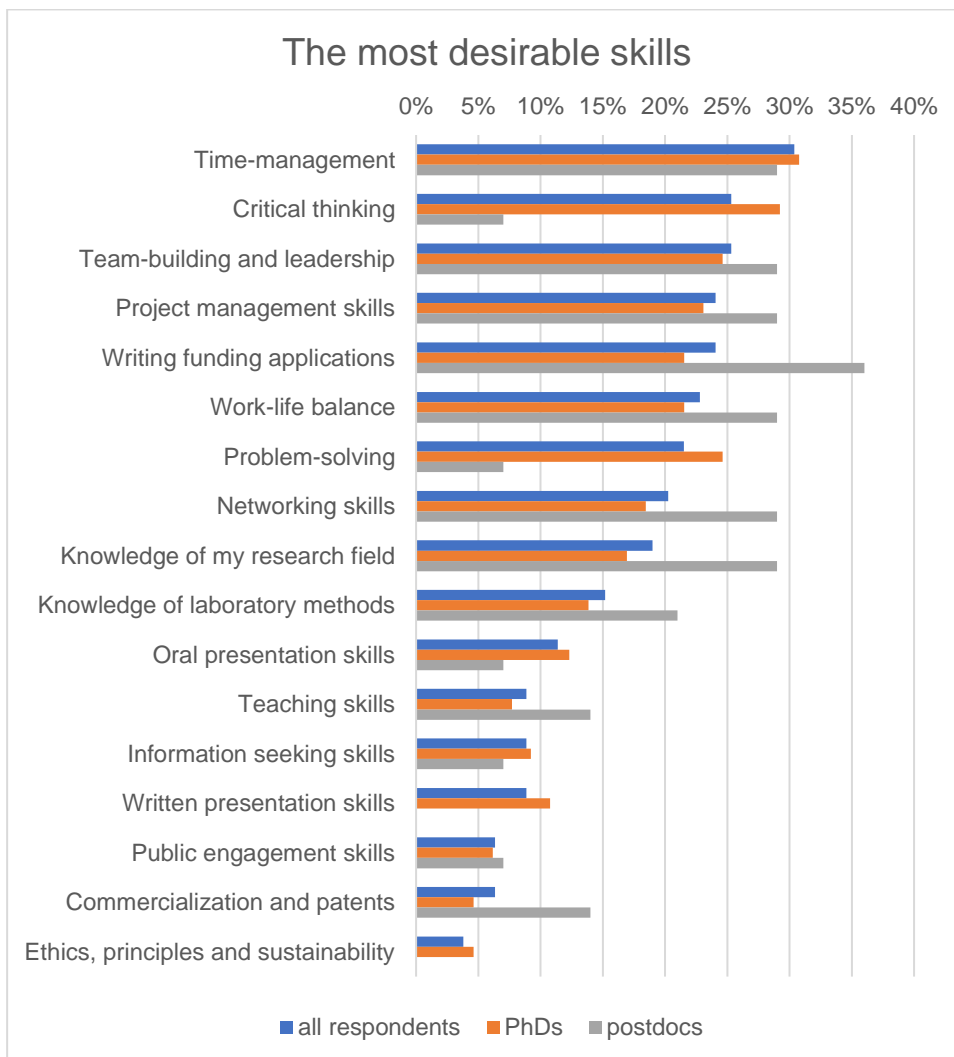## The most preferred career goal
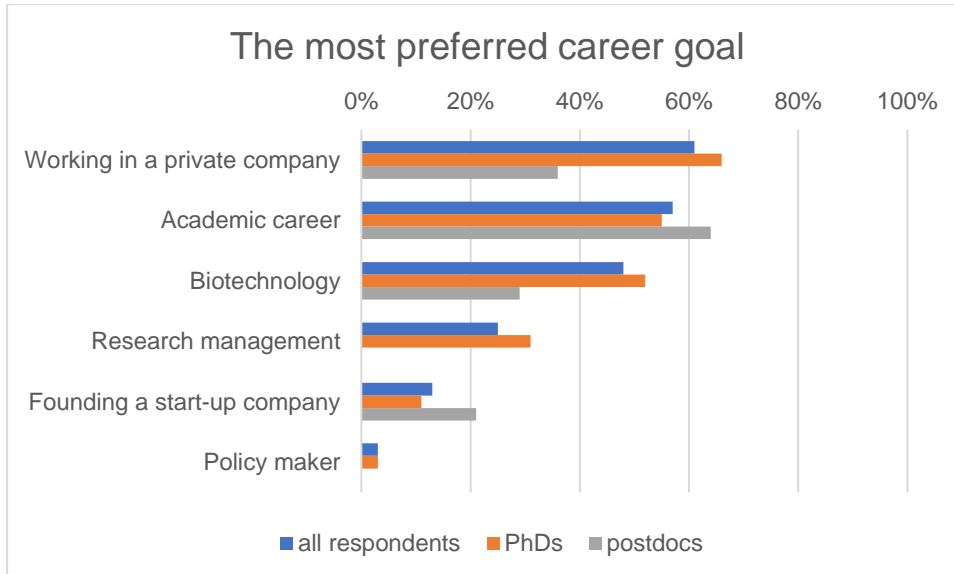
Other: clinical work (3x), core facility staff, data scientist, communication to society

6) Select three **skills** that are the **most desirable** for you to be successful in your career.

The most desirable skills

Other: curiosity and enthusiasm, programming, data-analysis

Other comments and suggestions from respondents:

„The PIs should be the personification of what CEITEC aims to be (in terms of values and soft skills management). In this way, the students, PhD candidates and postdocs will receive the message daily by diffusion."

„There are many great courses outside CEITEC and MU, but usually paid. I would definitely appreciate also some sources for PhDs and Postdocs to enable them to visit and use these often paid sources."
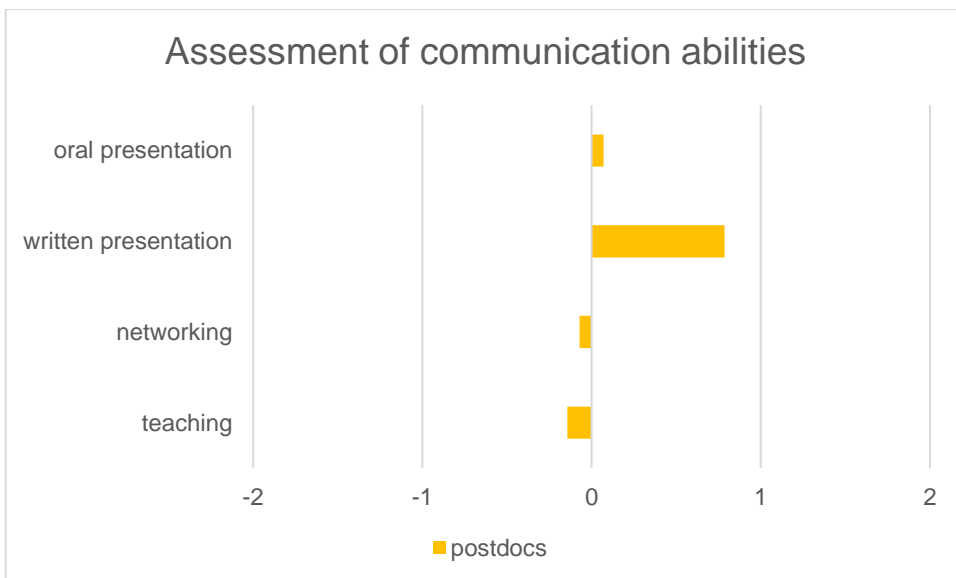
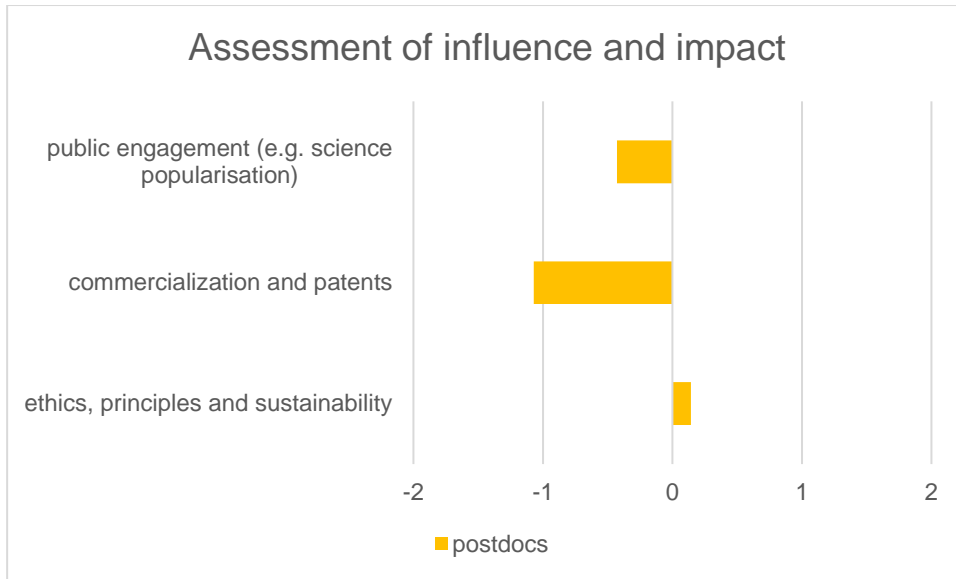# RESULTS FROM POSTDOCS

Total completed survey visits: 14 postdocs

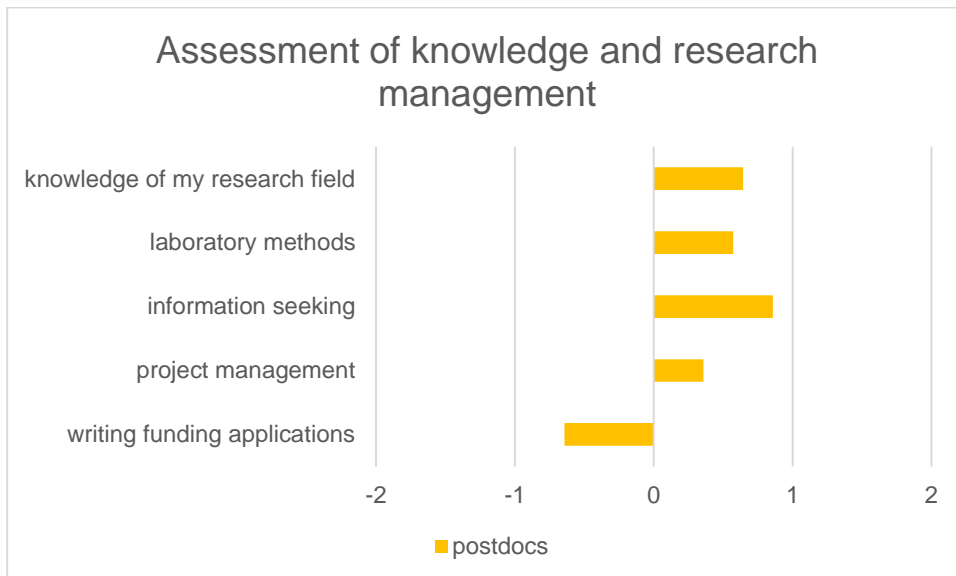1) How do you assess your **personal effectiveness?** (-2 weak … 2 strong)
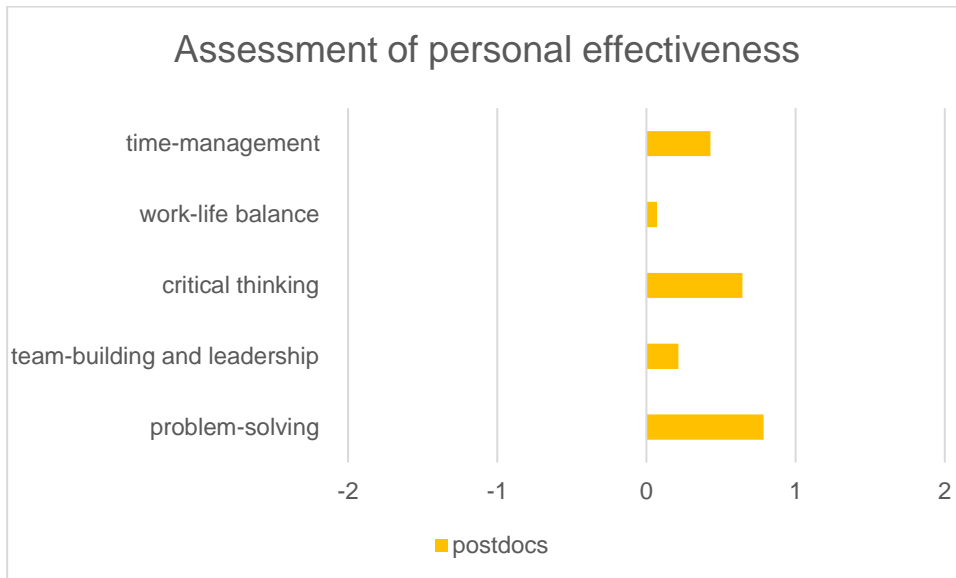
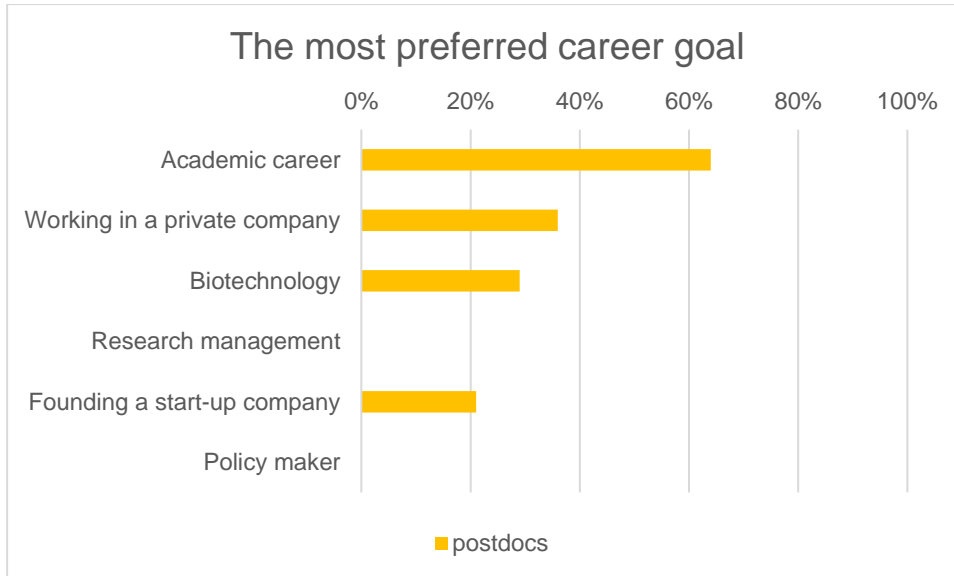2) How do you assess your **communication abilities**? (-2 weak … 2 strong)

3) How do you assess your **influence and impact**? (-2 weak … 2 strong)

Assessment of influence and impact

Category	postdocs
public engagement (e.g. science popularisation)	-0.4
commercialization and patents	-1.0
ethics, principles and sustainability	0.2

-2 -1 0 1 2

■ postdocs

4) How do you assess your **knowledge and research management**? (-2 weak … 2 strong)

Assessment of knowledge and research management

Category	postdocs
knowledge of my research field	0.6
laboratory methods	0.5
information seeking	0.85
project management	0.3
writing funding applications	-0.6

-2 -1 0 1 2

■ postdocs

5) What is your **most preferred career goal**? (multiple choice)

The most preferred career goal

Other: core facility staff, data scientist

6) Select three **skills t**hat are the **most desirable** for you to be successful in your career.

The most desirable skills