Skills and training: Helping researchers develop the confidence to achieve their full potential

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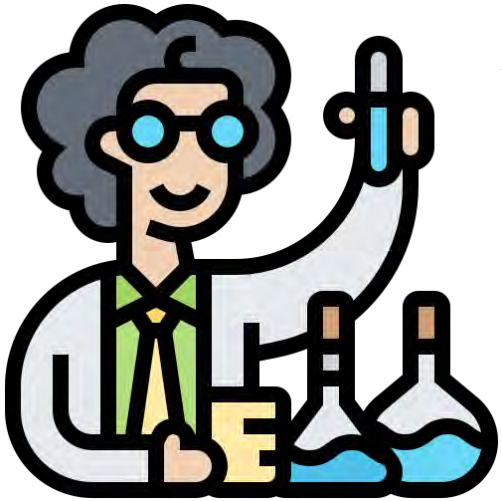
Springer Nature

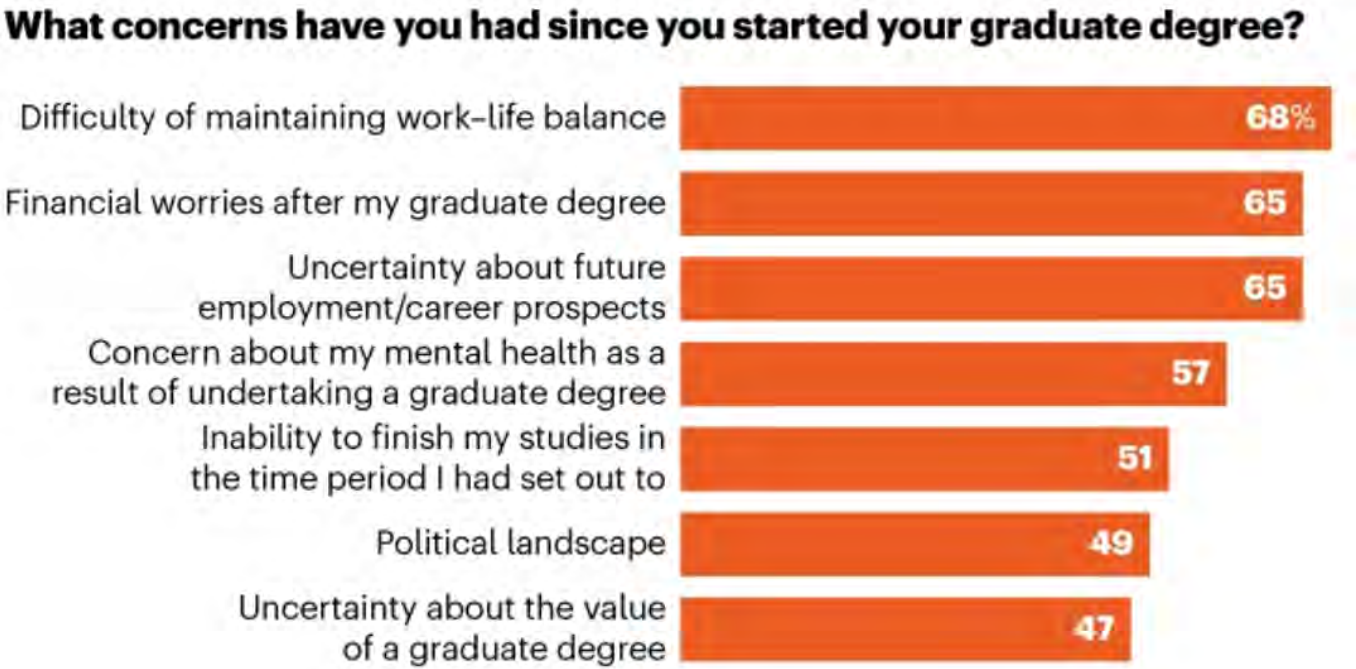
SPRINGER NATURE GROUP

Being a successful researcher is challenging



- Extreme competition
- Lack of job opportunities
- Funding issues
- Mounting job insecurity
- Publishing in high impact journals
- Work-life balance
- Mental health struggles
- Financial hardship

Challenges graduate students are facing



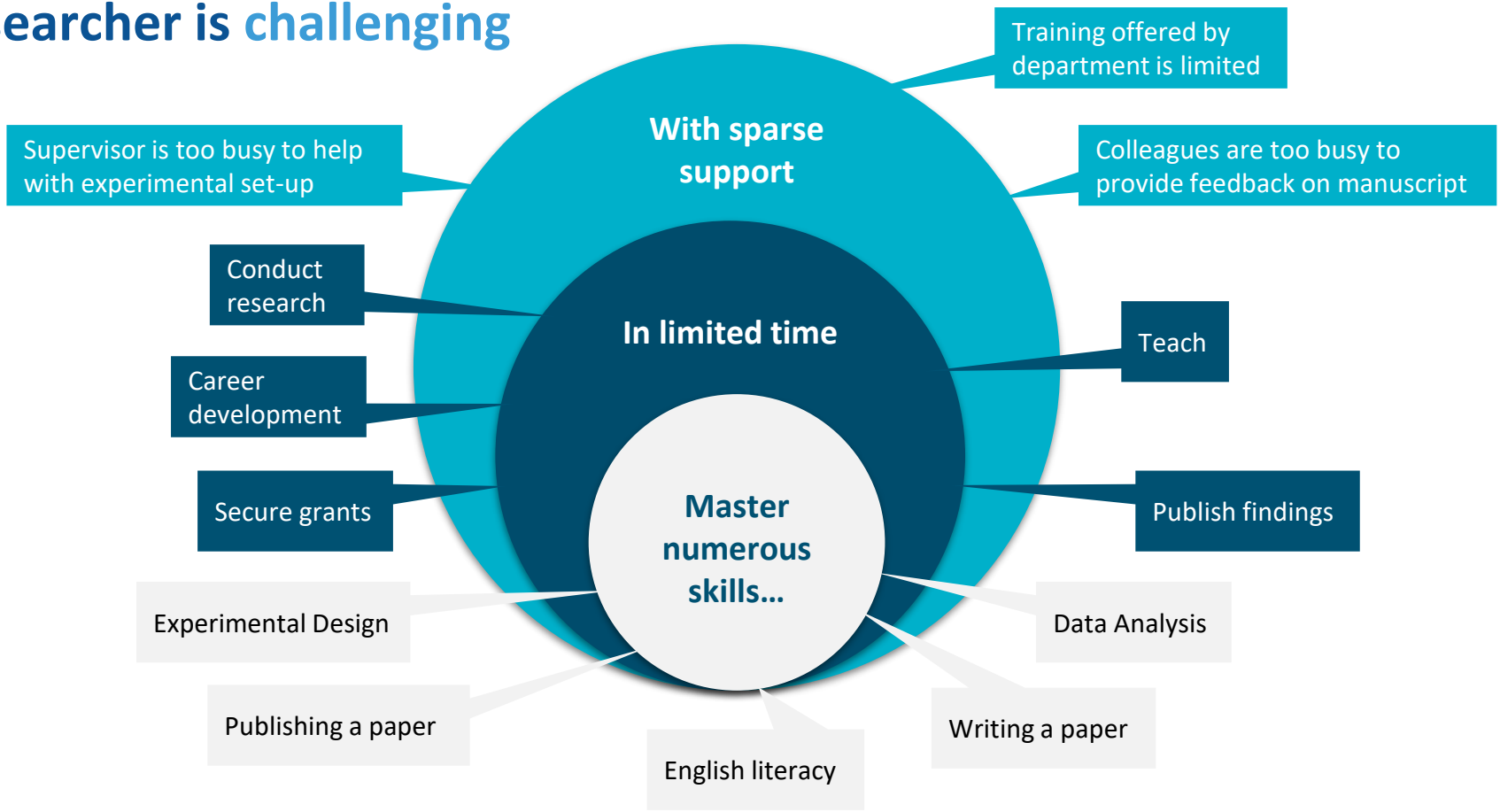
Data from *Nature*'s 2022 global survey of graduate students (*n* = 3253)

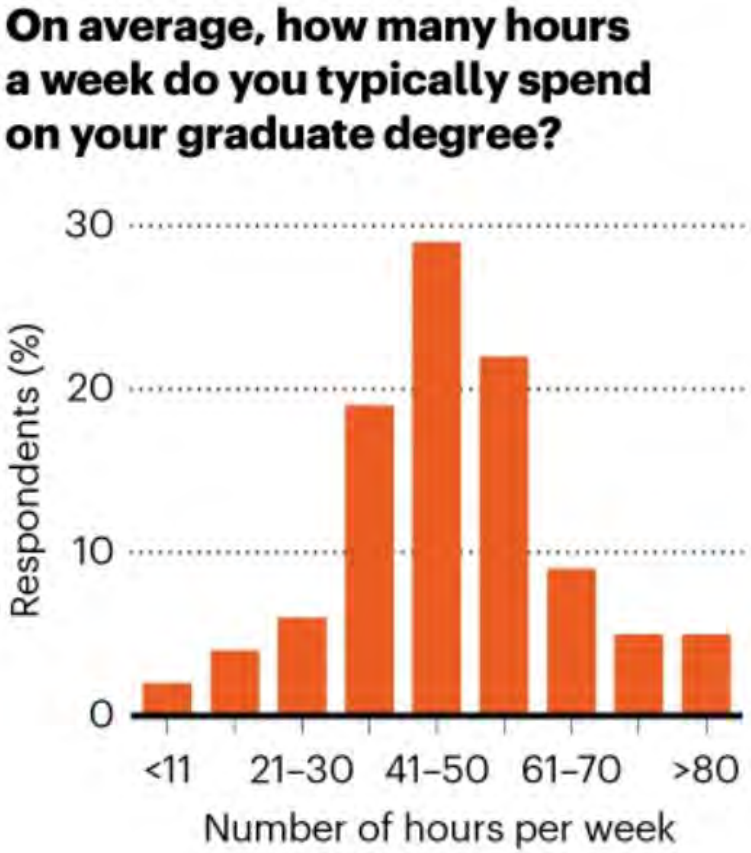
Researchers increasingly acknowledge the importance of their continuing professional development

88% take ownership of their own career development

Data from independent research for Springer Nature: CPD & Accreditation survey, 2021

Mastering the skills to be a successful researcher is challenging





Data from *Nature*'s 2022 global survey of graduate students (*n* = 3253)

“I don’t have time for training”

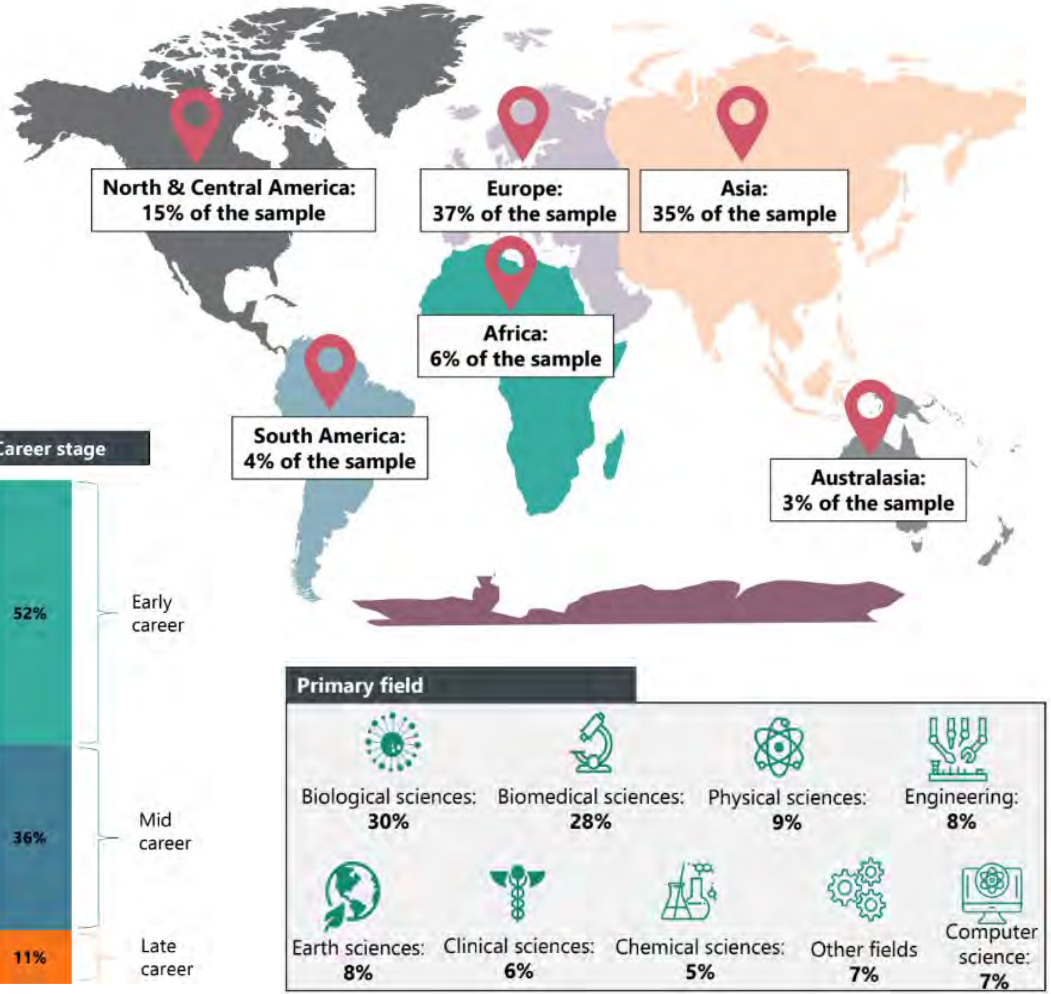
Our annual surveys

Market intelligence research

In-depth interviews
Number of participants (*n*) = 20

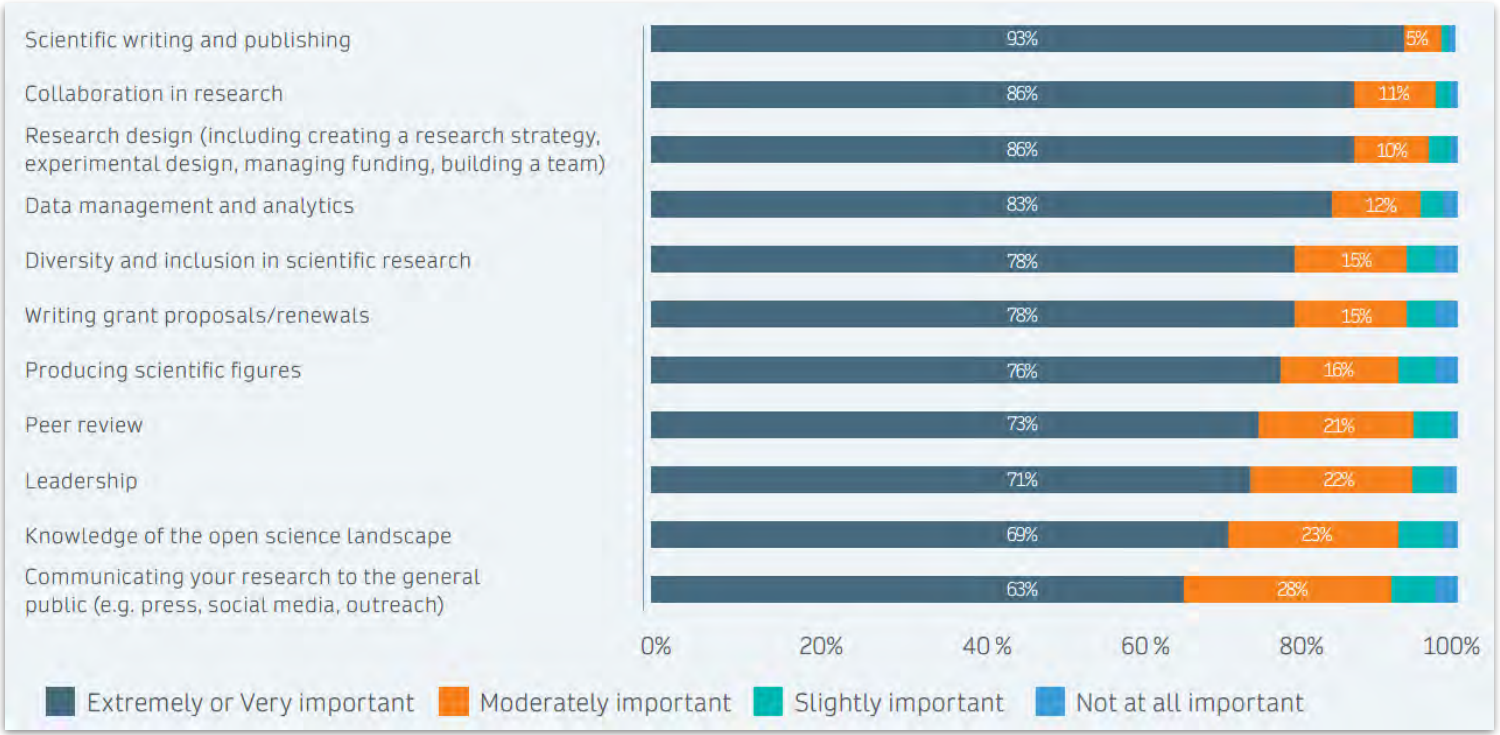
Online surveys
- Areas of interest
- Skills
- Jobs/pains/gains
- Number of participants (*n*) = 450 -700

Customer surveys



What are the key professional skills you need to develop your career?

Scientific writing and publishing is the key skill to develop a researcher's career



Data from independent research for Springer Nature: *Nature Masterclasses* and Nature Research Academies, 2021 (*n* = 1322)

How important are the following skills in order for you to be successful?

How important are the following skills in order for you to be successful?

94% Planning your research (e.g. ideation)

84% Experimental design

86% Writing grant proposals

92% Data management and analysis

85% Data visualisation

95% Scientific writing and publishing

82% Communicating to general public

88% Building a reputation and communicating impact of work

90% Networking skills

88% Identify and participate in collaborations

Data from independent research for Springer Nature: *Nature Masterclasses*, 2020 (*n* = 456)

How does North America compare?

	North or Central Americ	NET
Writing grant proposals	80%	86%
Writing grant reports	65%*	76%
Writing grant renewals	[illegible]	[illegible]
Communicating your findings to the academic community e.g. writing, publishing	95%	95%
Communicating your findings to the general public e.g. press, social media, outreach	77%	81%
Use of open data	71%	78%
Data visualisation	83%	85%
Identifying job opportunities	83%	86%
Networking skills	86%	90%
Application and interviewing skills (for job seeking)	78%	83%
Advancing your career in academia	75%	83%
Advancing your career outside of academia	75%	74%
Recruiting a team e.g. identifying, screening and interviewing applicants	65%	73%
Identifying and participating in collaborations	86%	90%
Skills to lead a collaboration	87%	89%
Ability to build a reputation e.g. promoting and communicating impact of your work	86%	89%
Planning your research e.g. ideation	95%	95%
Creating a bibliography	65%	76%
Experimental design	89%	86%
Data management and analysis	91%	92%
Reproducibility	86%	87%
Research ethics	91%	91%
Translational research	72%	74%
Clinical research	[illegible]	61%
Managing funding	69%*	81%
Managing and mentoring personnel / a team	[illegible]	83%
Supporting a team's mental health	78%	83%
Creating a research strategy	92%	92%

How important are the following skills for you to be successful? Data from independent research for Springer Nature: *Nature Masterclasses*, 2020 (*n* = 456)

Researchers recognise they need a broad skill set to be successful

What skills do you struggle with and would benefit from training on?

What skills do you struggle with and would benefit from training in?

Design research	Secure funding	Experiment and analyse	Write and publish	Share and disseminate	Develop your career
79% Planning your research (e.g. ideation)	**76%** Writing grant proposals	**78%** Data management and analysis	**81%** Communicating to the academic community	**77%** Communicating to general public	**78%** Networking skills
68% Experimental design		**81%** Data visualisation		**77%** Building a reputation and communicating impact of work	**76%** Identify and participate in collaborations

Data from independent research for Springer Nature: *Nature Masterclasses* survey, 2020 (*n* = 456)

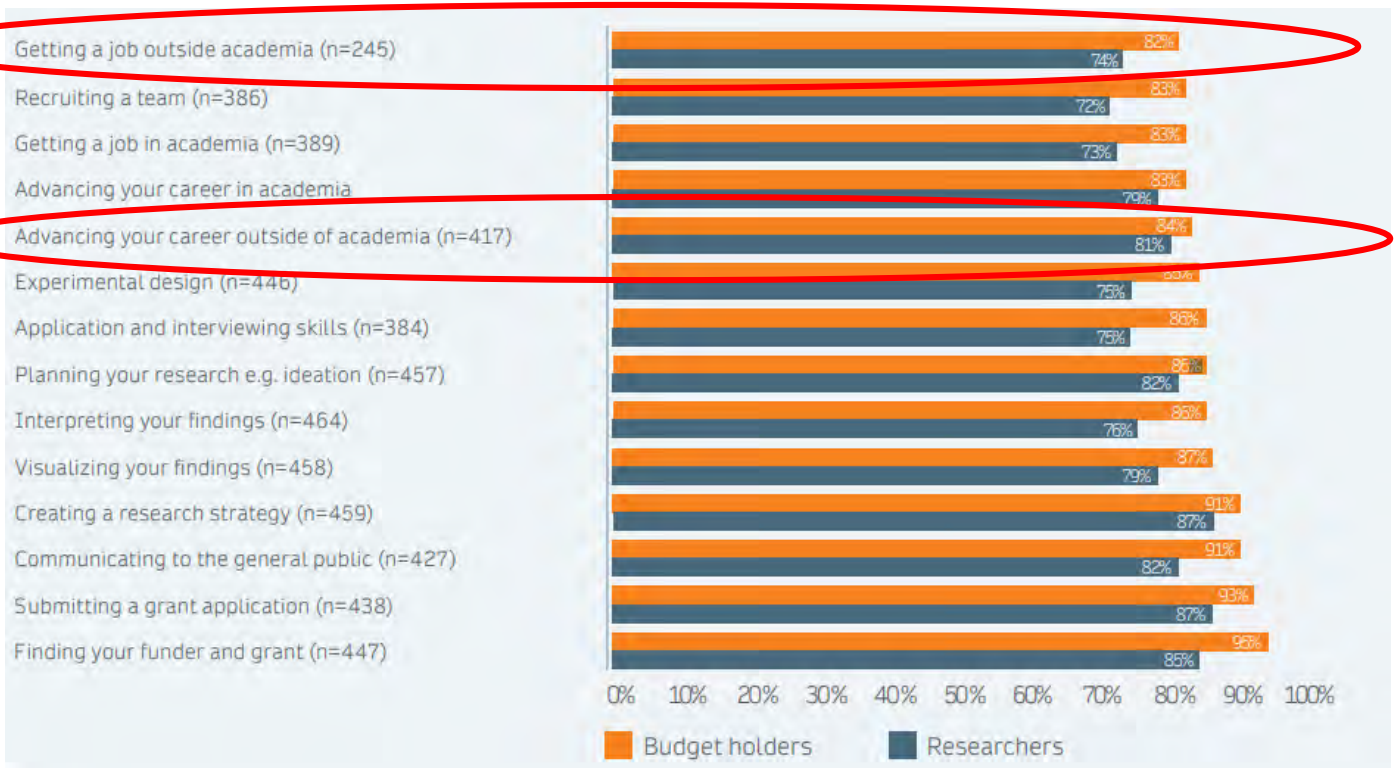
How does North America compare?

	North or Central America	NET
Writing grant proposals	68%	76%
Writing grant reports	58%	66%
Writing grant renewals	54%	63%
Communicating your findings to the academic community e.g. writing, publishing	77%	81%
Communicating your findings to the general public e.g. press, social media, outreach	80%	77%
Use of open data	60%	70%
Data visualisation	71%	81%
Identifying job opportunities	75%	78%
Networking skills	77%	78%
Application and interviewing skills (for job seeking)	68%	73%
Advancing your career in academia	63%	72%
Advancing your career outside of academia	67%	74%
Recruiting a team e.g. identifying, screening and interviewing applicants	51%	61%
Identifying and participating in collaborations	63%	76%
Skills to lead a collaboration	66%	75%
Ability to build a reputation e.g. promoting and communicating impact of your work	75%	77%
Planning your research e.g. ideation	67%	79%
Creating a bibliography	31%↓	50%
Experimental design	51%↓	68%
Data management and analysis	73%	78%
Reproducibility	54%	65%
Research ethics	52%	63%
Translational research	52%	58%
Clinical research	44%	48%
Managing funding	42%↓	62%
Managing and mentoring personnel / a team	59%	66%
Supporting a team's mental health	64%	68%
Creating a research strategy	69%	81%

What skills do you struggle with and would benefit from training on? Data from independent research for Springer Nature: *Nature Masterclasses* survey, 2020 (*n* = 456)

Researchers are interested in support across the research cycle

What skills do you struggle with and would benefit from training in?



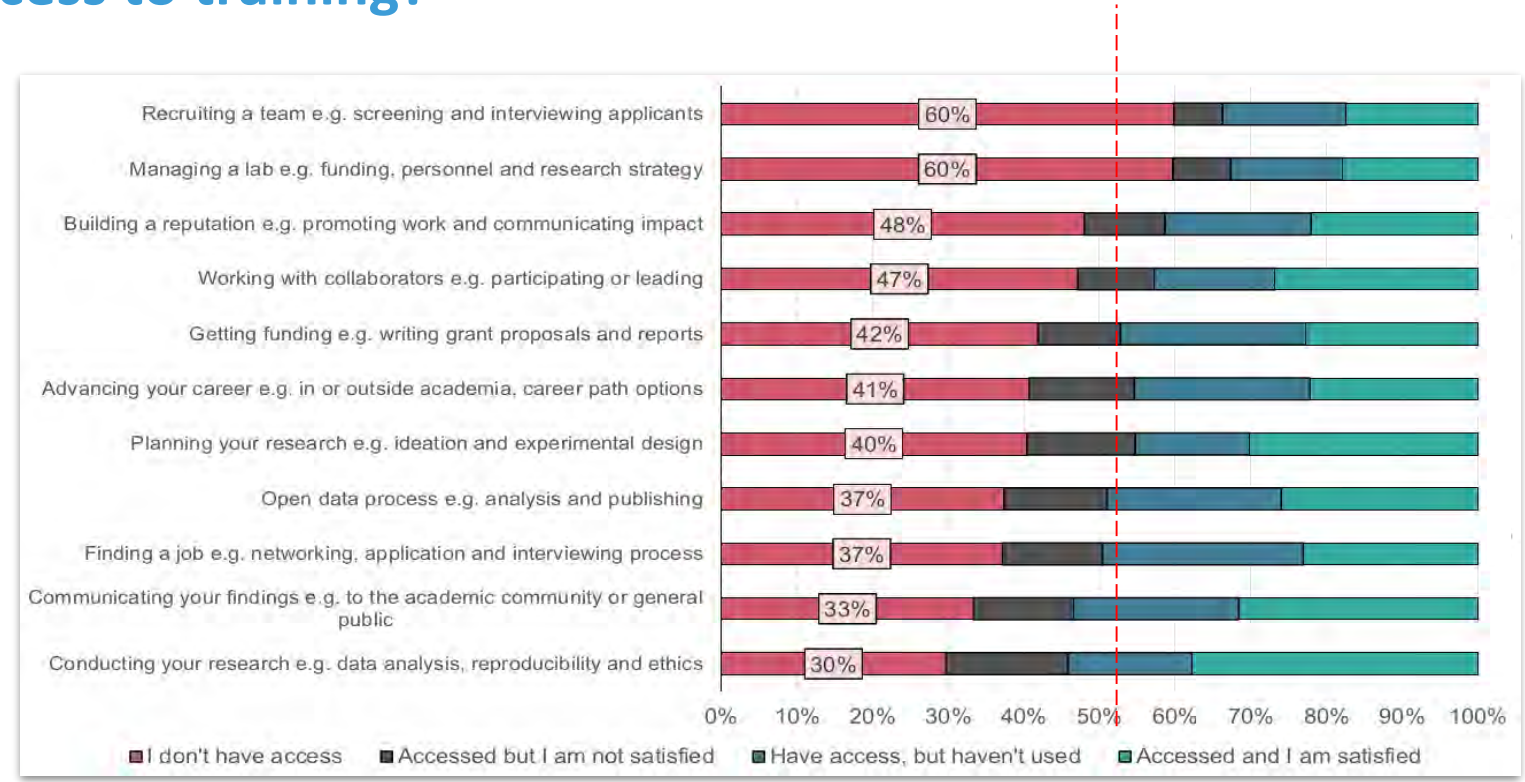
Data from independent research for Springer Nature: *Nature Masterclasses* survey, 2021 (*n* = 485)

Shifting aspirations

Career training for graduate students in science remains **focused on academia, less than half** (48%) would ultimately **prefer to work in academia***.

Nature's 2022 global survey of graduate students (*n* = 3253)

For which of these skills do you have access to training?



Data from independent research for Springer Nature: *Nature Masterclasses* survey, 2020 (*n* = 762)

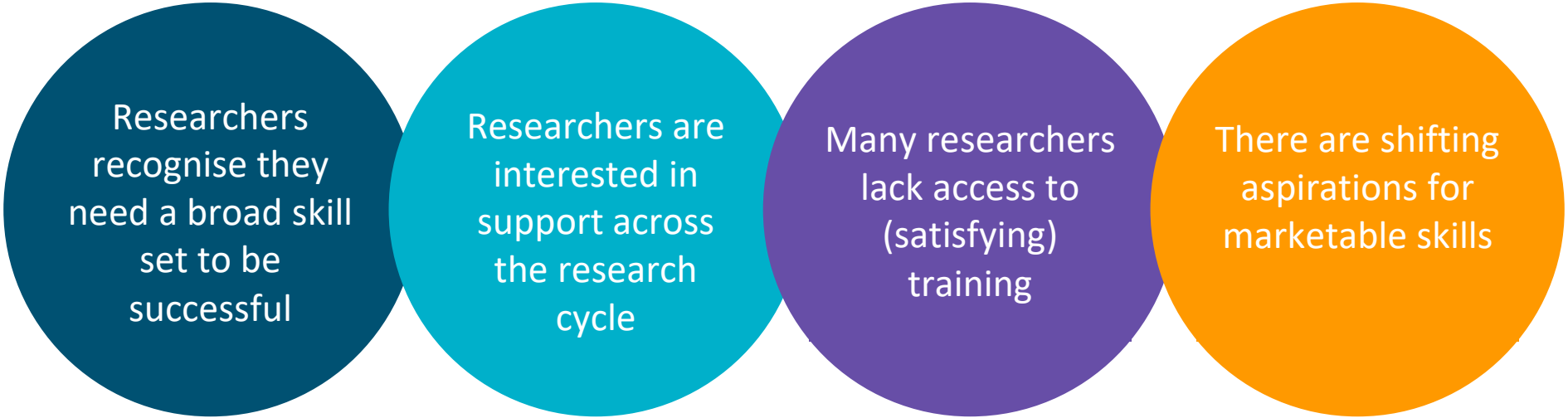
How does North America compare?

	Don't have access North or Central America	Have access but I'm not satisfied North or Central America	Have access but haven't used North or Central America
Getting funding e.g. writing grant proposals and reports	31%	8%	36%
Communicating your findings e.g. to the academic community or general public	29%	15%	30%
Open data process e.g. analysis and publishing	36%	18%	29%
Finding a job e.g. networking, application and interviewing process	31%	15%	34%
Recruiting a team e.g. screening and interviewing applicants	71%	5%	16%
Advancing your career e.g. in or outside academia, career path options	31%	20%	29%
Working with collaborators e.g. participating or leading	49%	10%	22%
Building a reputation e.g. promoting work and communicating impact	55%	8%	27%
Planning your research e.g. ideation and experimental design	48%	15%	13%
Conducting your research e.g. data analysis, reproducibility and ethics	27%	18%	12%
Managing a lab e.g. funding, personnel and research strategy	74%	3%	15%

For which of these skills do you have access to training? Data from independent research for Springer Nature: *Nature Masterclasses* survey, 2020 (*n* = 456)

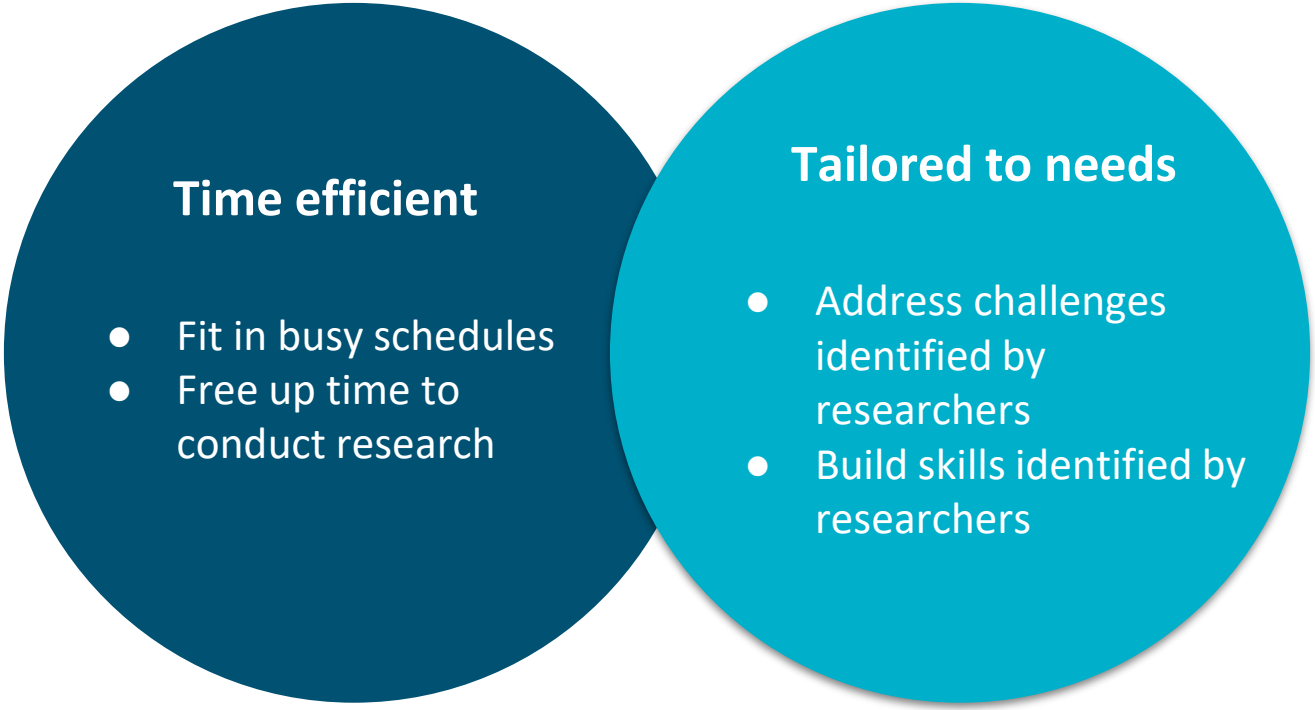
Many researchers lack access to (satisfying) training

A summary of our main findings



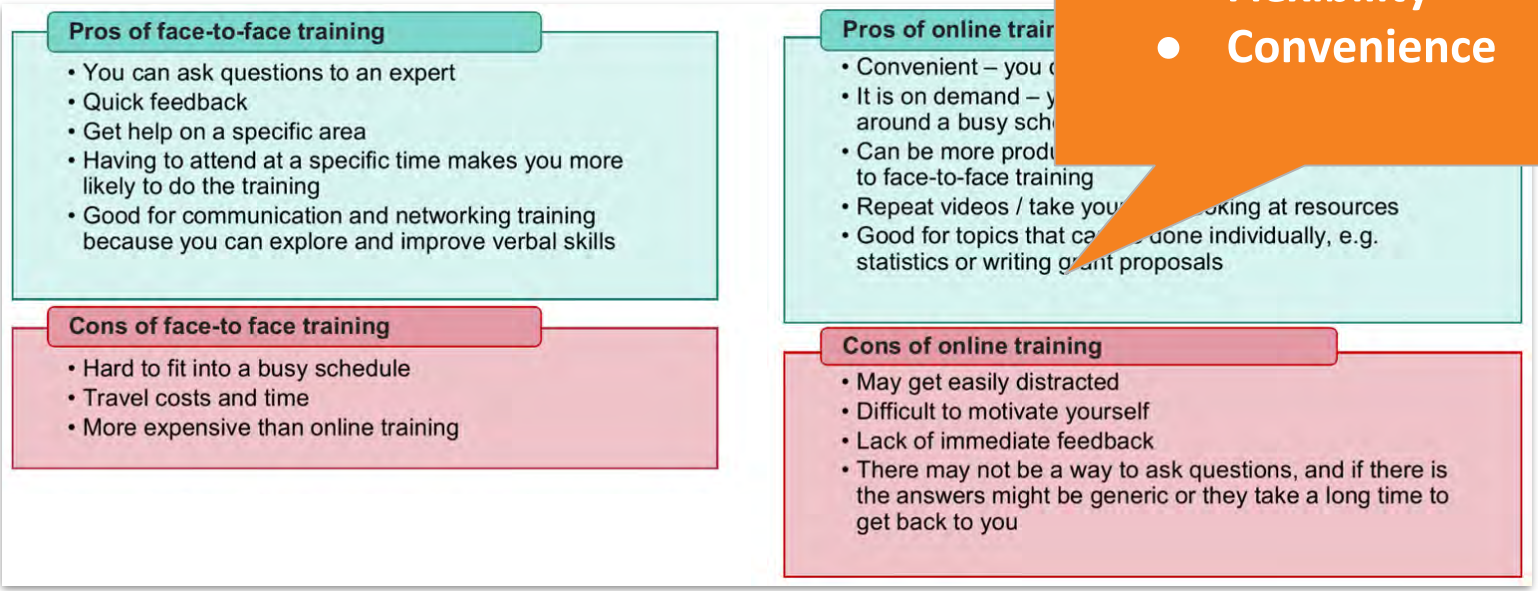
How do we meet the specific training needs of early career researchers?

Researchers need time-efficient support that is tailored to address their needs



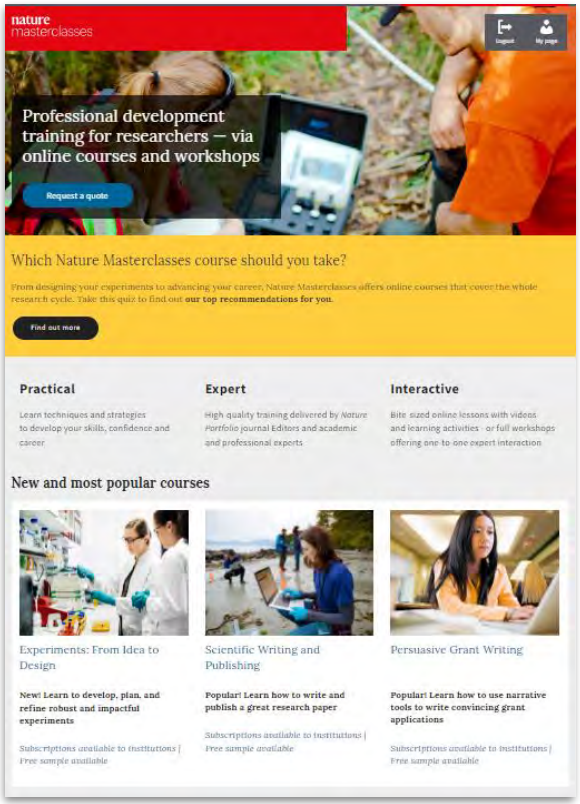
There is a shift towards online learning

Would you prefer face-to-face or online training?



Data from independent research for Springer Nature: *Nature Masterclasses* survey, 2020 (*n* = 20)

Nature Masterclasses on-demand



Nature Masterclasses is a **professional development training platform** with online, on-demand courses across the research cycle.

Our goal is to **empower researchers** and research organisations across the globe to advance discovery by supporting researchers to **develop the skills and confidence** they need to **thrive** in their careers.

Nature Masterclasses on-demand is tailored to researchers' needs

Tailored to researchers

Our courses are designed and developed using a **client-centric** and **data-driven** approach to understand and fulfill researchers' specific needs

Designed for busy researchers

To accommodate researchers' busy schedule, our training is **self-paced**, **bite-sized** and in a **dip in and out** format, so they don't have to study the course in one go

Expert training

We draw on the expertise of ***Nature Portfolio*** **journal Editors** and **leading international experts** from academia and industry

Practical learning

Researchers learn **techniques, strategies and tools** to develop their **skills**, **confidence** and **careers**

We provide training across the research cycle

Design research	Secure funding	Experiment and analyse	Write and publish	Share and disseminate	Develop your career
Experiments: From idea to design	Persuasive grant writing	Managing research data	Scientific writing	Narrative tools for researchers	Networking for researchers
	Finding funding opportunities	Data analysis: Planning and preparing	Scientific publishing	Advancing your scientific presentations	Effective collaboration in research
		Data analysis: Conducting and troubleshooting	Writing and publishing a review paper		
		Interpreting scientific results	Focus on peer review		

Professional development is more than offering training

Widening the scope of our professional development solutions

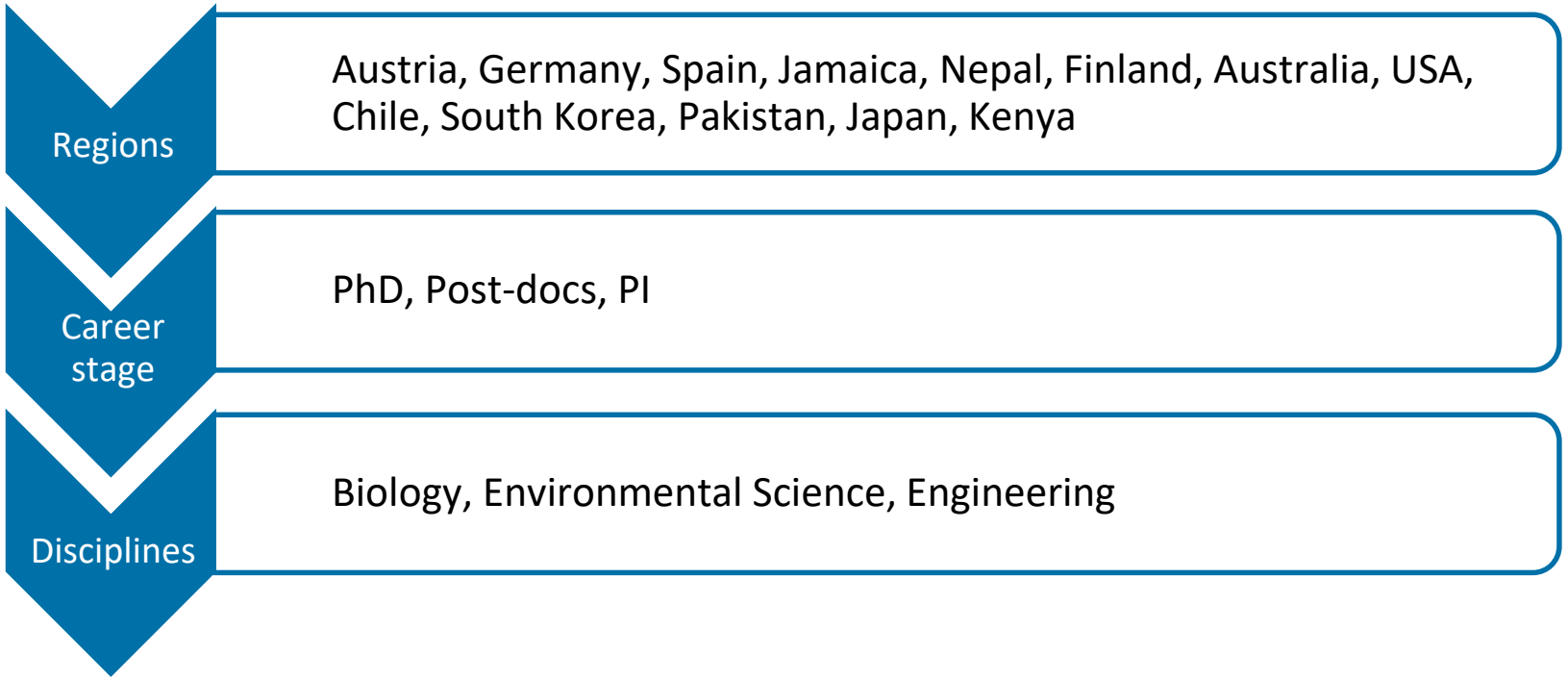
Over the last 18 months, we have been speaking to researchers and key stakeholders in institutions around the world about their skills and career development

Pain points

Challenges

Areas where they lack confidence

The interviews with researchers have been in-depth and revealing



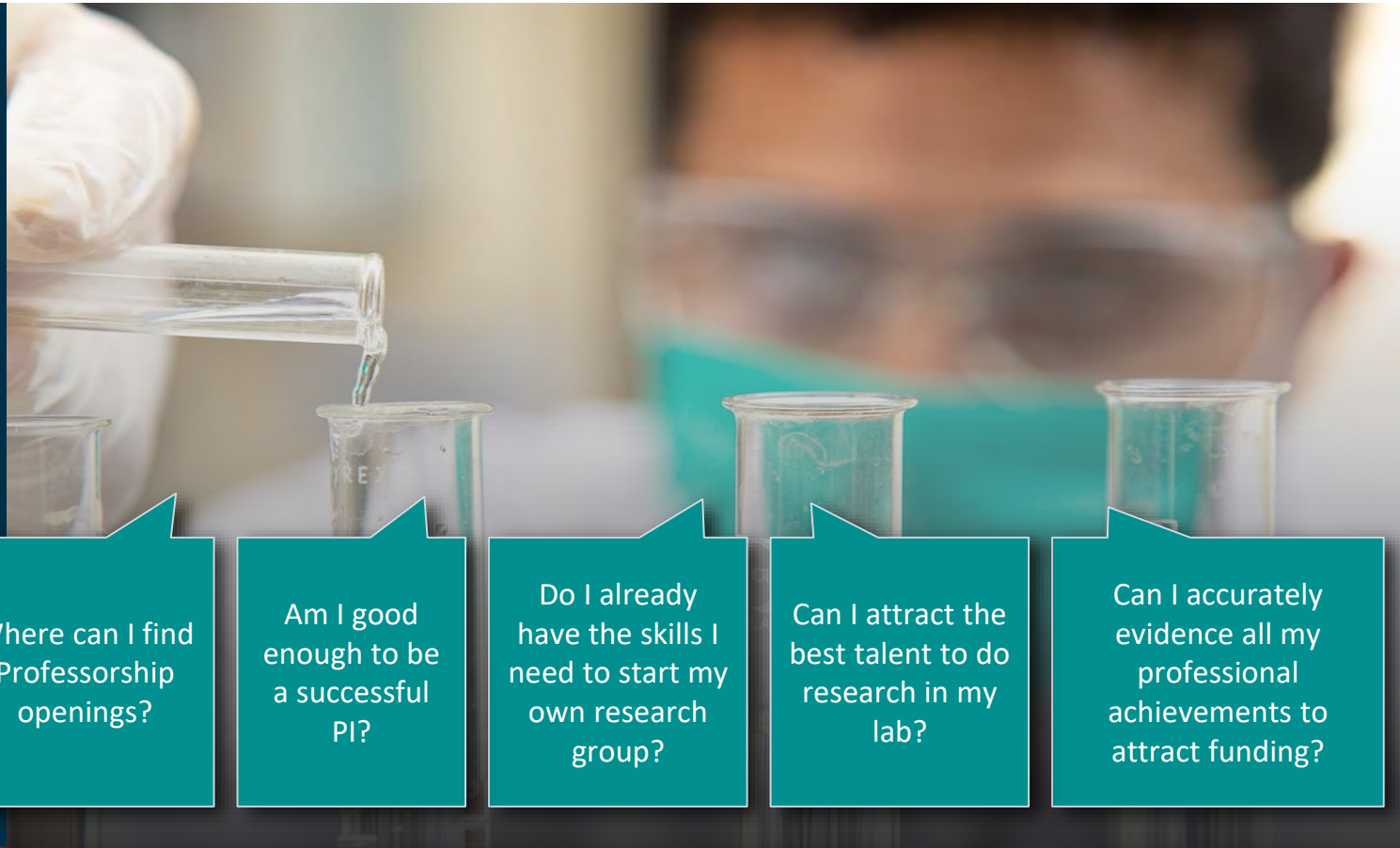
And the interviews with key stakeholders in institutions have been invaluable

Regions	Australia, Japan, South Korea, India, Spain, UK, USA
Career stage	Manager: Office of Research, PI, Professor, Associate Professor, Director of Researcher career development

Julio wants to become a professor

Julio's experience:

- Bachelor in Chemistry in Chile (4 years)
- Master in Organic Chemistry in Spain (2 years)
- PhD in Organic Chemistry in UK (4 years)
- Postdoc in Chemical Biology in Sweden (5 years)
- Postdoc in Computational Chemistry in Chile (4 years)



Where can I find Professorship openings?

Am I good enough to be a successful PI?

Do I already have the skills I need to start my own research group?

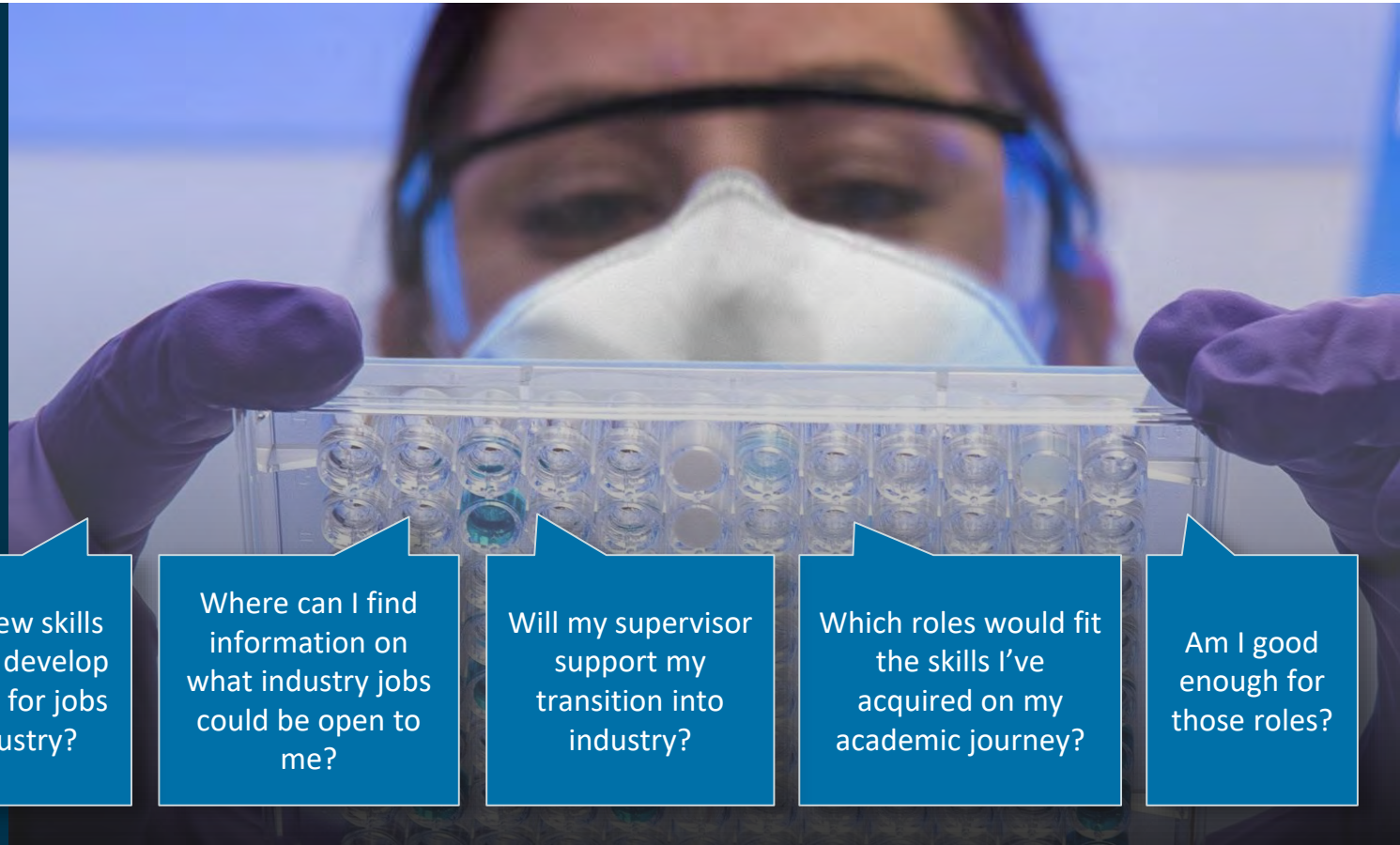
Can I attract the best talent to do research in my lab?

Can I accurately evidence all my professional achievements to attract funding?

Eta is thinking about leaving academia

Eta's experience:

- Bachelor in Biotechnology in India (4 years)
- Master in Molecular Biosciences in Germany (2 years)
- PhD in Developmental Biology in Austria (4 years)
- Postdoc in Cancer biology in US (3 years)



What new skills should I develop to apply for jobs in industry?

Where can I find information on what industry jobs could be open to me?

Will my supervisor support my transition into industry?

Which roles would fit the skills I've acquired on my academic journey?

Am I good enough for those roles?

Eta and Julio represent researchers who are struggling with challenges in these key areas

… career planning

Uncertainty / negativity about job **prospects**

Understanding career **trajectories**

Lack of career **development support**

Lack of training to identify job **opportunities**

Identifying job **matches**

Finding a **mentor**

… career building

Lack of guidance on **which skills** to acquire

Lack of training in **non-technical skills** such as financial management; project management; collaboration

Lack of understanding the **requirements** of a job

… evidencing achievement

Failure to **keep records** of training courses

Highlighting skills on a **CV**

Need for a CV which will **distinguish them** from their competition

Experiencing **imposter syndrome**

The Springer Nature Researcher Skills Framework©

SPRINGER NATURE

The Springer Nature Researcher Skills Framework©
has been created to categorise and classify the skills that researchers need in their careers

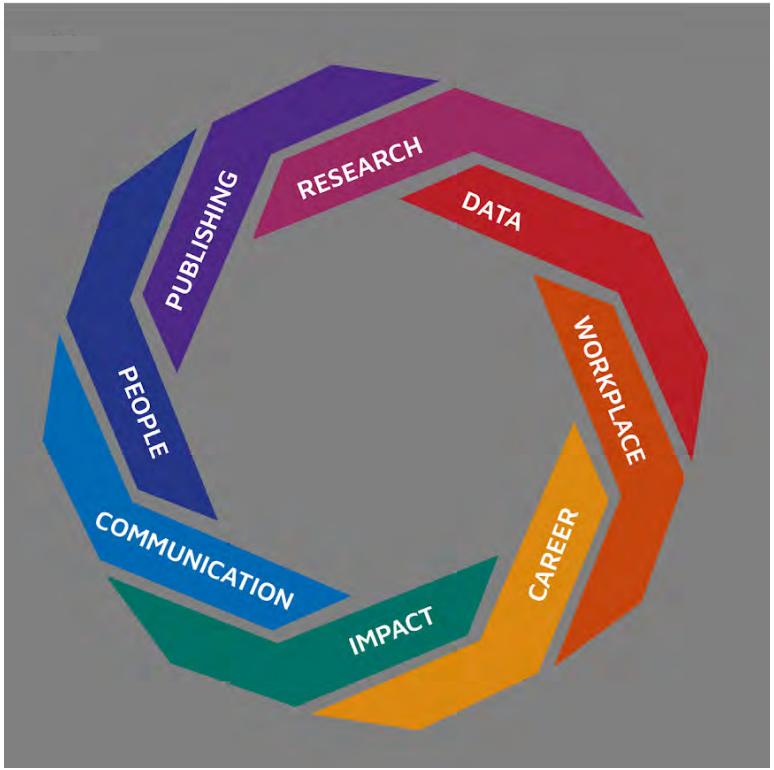
The Researcher Skills Framework©

- Maps the skills researchers need in both academia and in industry so we can help researchers develop in the areas they most need
- Is applicable to researchers in both academia and industry
- Is relevant to all researchers, particularly ECRs
- Helps researchers leaving academia to identify transferable skills
- Is global in its application

The Researcher Skills Framework©

- The framework has been created over a period of 18 months
- We have undergone three rounds of intensive review and modification with subject matter experts, researchers and ex-researchers, skills framework experts and institutional stakeholders worldwide
- We continue to review and iterate

The Researcher Skills Framework©

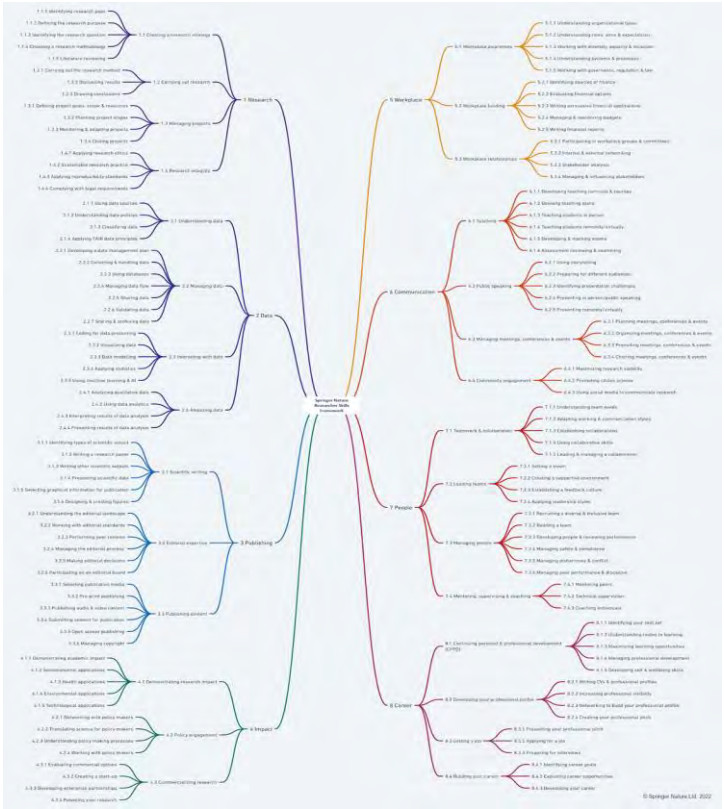


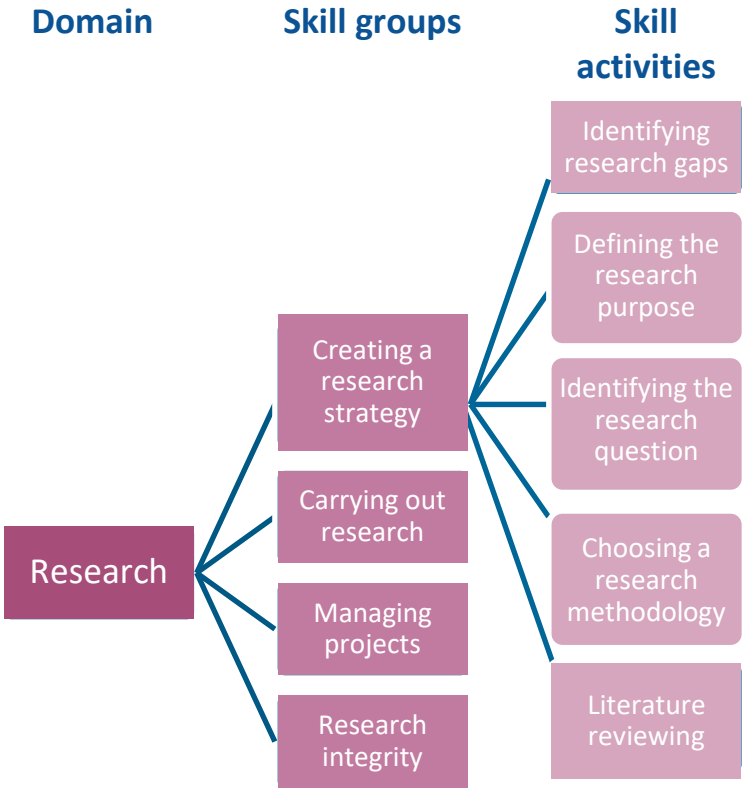
Eight domains

- Research
- Data
- Workplace
- Career
- Impact
- Communication
- People
- Publishing

Each domain is subdivided into ‘Skills groups’ and then into its ‘Skills activities’.

The ‘Research’ domain, for example, defines the following skills





Next steps

- **Develop a solution** based on the Skills Framework to help researchers **plan and build their careers** and **evidence their achievements**

- Keep talking to researchers, institutions, funders and employers to understand their perspectives - **we invite feedback from the audience**!

- Ensure the solution links to our *Nature Masterclasses* on-demand training to provide comprehensive upskilling in all aspects of the researcher lifecycle.

Get in touch!

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THANK YOU

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