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## Al in research and funding How is AI being used by researchers and in the funding process?

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## Agenda

- 1 Why is AI in research important?
- 2 AI behaviours in research
- 3 Al opportunities in funding

## In past 20 years R&D spending has increased by 0.9tn USD, or by 0.6 ppts to 2.6% of GDP

How could this investment drive a greater socio-economic impact?

- Focus on SDGs
- Balance of fundamental and translational research
- More effective research workflows

#### How can AI contribute?

- Invention
- Insight and policy
- Workflow and administration
- Dissemination and transfer



OECD (2022), Gross domestic spending on R&D (indicator). doi: 10.1787/d8b068b4-en (Accessed on 20 September 2022)

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### Can research management learn from how researchers use AI?



https://www.nature.com/articles/s41587-024-02143-0

## Common challenges faced by researchers and research managers

- Securing funding
- Publishing
- Collaborating (interdisciplinarily, internationally, equitably)
- Ensuring regulatory compliance (IP, GDPR, ethics)
- Accessing the required infrastructure and resources
- Assessing impact

AI tools are becoming increasingly common and could help address some of these challenges, freeing up valuable time.



This morning's workshop opportunities for AI in grant applications



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### Al in Research

- How is AI currently being used by researchers?
- What is its potential in helping researchers apply for funding?

## Anticipated utility of AI

A *Nature* survey of 1,659 researchers around the world found that:

- Very few researchers described AI tools as 'not at all useful'.
- Over 50% of researchers expected AI tools to become 'very useful' or 'essential' for their fields in the next decade.
- LLM tools (e.g., ChatGPT) were mentioned most often.

#### **AI ANTICIPATIONS**

Q: How useful do you think AI tools are for researchers in your field?

Essential	Very useful	📕 Useful	📕 Slightly useful	Not at all useful	
Respondents	who use AI in rese	earch			

#### Respondents who don't use AI in research

)	20	40	6 <sup>0</sup>	80	100%

Q: How useful do you think AI tools will become for researchers in your field in the next decade?

Respondents who use AI in research



#### Respondents who don't use AI in research



### **Generative AI is already being adopted by researchers** but those who use these tools regularly are still in the minority

- About 28% of those who study Al said they use generative Al tools every day or more than once a week.
- Only 1% of those who don't use Al in their research are using these tools on a weekly basis.

These numbers are likely to increase steadily, as researchers begin to use these tools more regularly at work.

#### **USING GENERATIVE AI**

Q: How often do you use generative AI tools (such as ChatGPT) at work?

I use them every day I use them more than once a week I use them occasionally I've used them only a few times Never Respondents who study AI Respondents who use AI in research Respondents who don't use AI in research 20 10 60 80 Ó 100% cnature https://www.nature.com/articles/d41586-023-02980-0

## Researchers have identified many benefits to using AI, including to apply for funding

According to the results of our *Nature* survey, researchers see many benefits in the use of generative AI for research.

1 in 6 researchers surveyed reported using generative AI tools to write funding proposals.

#### **BENEFITS OF GENERATIVE AI**

Q: What do you think are currently the biggest benefits of generative AI for research? (Choose all that apply.)



# Nearly half of ERC grantees have no AI support

- In a recent (Nov 23) ERC survey of grantees, 49% stated they had no AI support from their organisation
- Of the 51% who did have support, "Calls for interdisciplinary teams" was the most common type of support
- 51% of respondents stated it is highly likely that AI will accelerate the scientific process by 2030
- 69% of respondents said this would be with the support of ethical guidelines on the use of AI

Figure 3: Type of support offered by the researchers' organisation



Figure 4: Opportunities and benefits for the use of AI in science by 2030





## **AI in Funding**

- What guidelines have funders already put in place?
- How might AI affect future funding and proposal evaluation?
- How can research managers use AI?

### Some funders already have guidelines on the use of AI, but we should expect to see more announcements in the near future

	<b>Permitted</b> Al use in applications	<b>Prohibited</b> Al use in the evaluation of applications
The Research Funders Policy Group (UK) e.g., Wellcome, UKRI, CRUK, BHF	<ul> <li>Generative AI tools can be used in funding applications, but this must be clearly acknowledged.</li> <li>Applicants must ensure generative AI tools are used responsibly and in accordance with relevant legal and ethical standards.</li> </ul>	<ul> <li>Generative AI tools cannot be used by peer reviewers to input content from confidential funding applications or reviews, nor to develop peer review critiques.</li> <li>Applicants must also not use AI tools to draft responses to their peer reviewers.</li> </ul>
Swedish Research Council	<ul> <li>Generative AI or other tools can be used when preparing funding applications, and this does not need to be acknowledged.</li> <li>Applicants are responsible for ensuring their application contents are correct and implementable, and must comply with good research practices.</li> </ul>	<ul> <li>Generative AI tools must not be used in the assessment of funding applications.</li> <li>AI tools can, however, be used to improve the language in written reviews, as long as this does not entail factual contents or the applicant's personal data.</li> </ul>

<u>https://wellcome.org/what-we-do/our-work/joint-statement-generative-ai</u> | September 2023 <u>https://www.vr.se/english/applying-for-funding/how-applications-are-assessed/guidelines-for-the-use-of-ai-tools.html</u> | January 2024

## Issues and risks faced by current AI tools are surmountable obstacles rather than critical flaws

Transparency & interpretability	Lack of transparency in how AI models arrive at their conclusions, making it difficult to understand and trust the results.
Accuracy & verifiability	Concerns about the accuracy of the information provided by AI, including incorrect data, fabricated references, and the inability to differentiate between opinion and factual content.
Ethical & bias concerns	Ethical dilemmas around authorship when using AI to write text and concerns about biases in AI that could affect the quality and integrity of research.
Reduced critical thinking & creativity	Over-reliance on AI may diminish natural intelligence and critical thinking skills, while compromising creativity and innovation.

# AI tools can help researchers and research managers apply for funding



#### **Ideation phase**

- Identify funding opportunities
- Brainstorm and develop new research ideas
- Generate research hypotheses
- Use as a 'sounding board'

#### **Development phase**

- Identify potential collaborators
- Search and summarize the literature
- Identify gaps in existing research



#### **Implementation phase**

- Draft and refine grant applications
- Ensure consistent and compelling style
- Support non-native English speakers
- Adapt the same research idea to different funder requirements



#### **Evaluation phase**

- Prepare for interview committees
- Respond to peer reviewer comments
- Draft responses to funders

## How might funders respond to AI-generated proposals?

Funders are likely to start seeing a **surge in the number of applications submitted.** This will require a **rethinking of evaluation strategies to manage the increased volume.** 

We may, therefore, start to see the use (or increased use) of:



Reflective, contextual and personalised questions



Partially randomised funding (or 'lottery') processes



Interactive relationships b/w funder and applicant



AI tools to support funders in running more streamlined processes

### **Research Managers can lead on creating AI best practices**

Explore the possibilities

- Learn how your organisation is using AI
- Write and share case studies
- Run Al workshops
- Try out new AI enabled solutions

**Create best practices** 

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 Enable people by addressing how to mitigate AI risks

- Create AI cheat sheets for researchers
- Influence funder and wider policy making discussions
- Develop an approach to responsible AI usage, development and deployment

Develop your capability

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- Ensure the benefits of AI are evenly distributed
- Train all teams, particularly those who are wary of AI, in how to gain benefits
- Provide teams with recommended AI tools

### Springer Nature's AI solutions support the funding process



Using AI to landscape and identify funding opportunities Identifying appropriate experts: collaborators and proposal reviewers Running grant award programs Growing impact through Nature's reach and ability to convene Emerging opportunities: AI training, AI workshops, research integrity, generative text

#### Summary

- Al is of great benefit in research
- Researchers are using AI for many parts of the research process, including funding
- Research managers can use AI, and help researchers apply best practices
- Springer Nature is supporting many researchers with AI and would like to support more research managers

## Discover how NRI can help you

- Register to use <u>Nature Navigator</u> to view the Norwegian research topics (free access)
- Benchmark your organisation with our <u>Al in</u> research report
- Explore contributions to high quality research with <u>Nature Index</u>
- Engage our consulting services in writing reports or running workshop
- Visit our website and complete an enquiry form
- Reach out directly or follow on LinkedIn
  - <u>daren.howell@springernature.com</u>
  - <u>https://www.linkedin.com/in/darenhowe/ll/</u>