

Growing Impact:

*How Research Becomes Knowledge
Becomes Meaning*

Plant Pathology seminar
September 9, 2024



RESEARCH

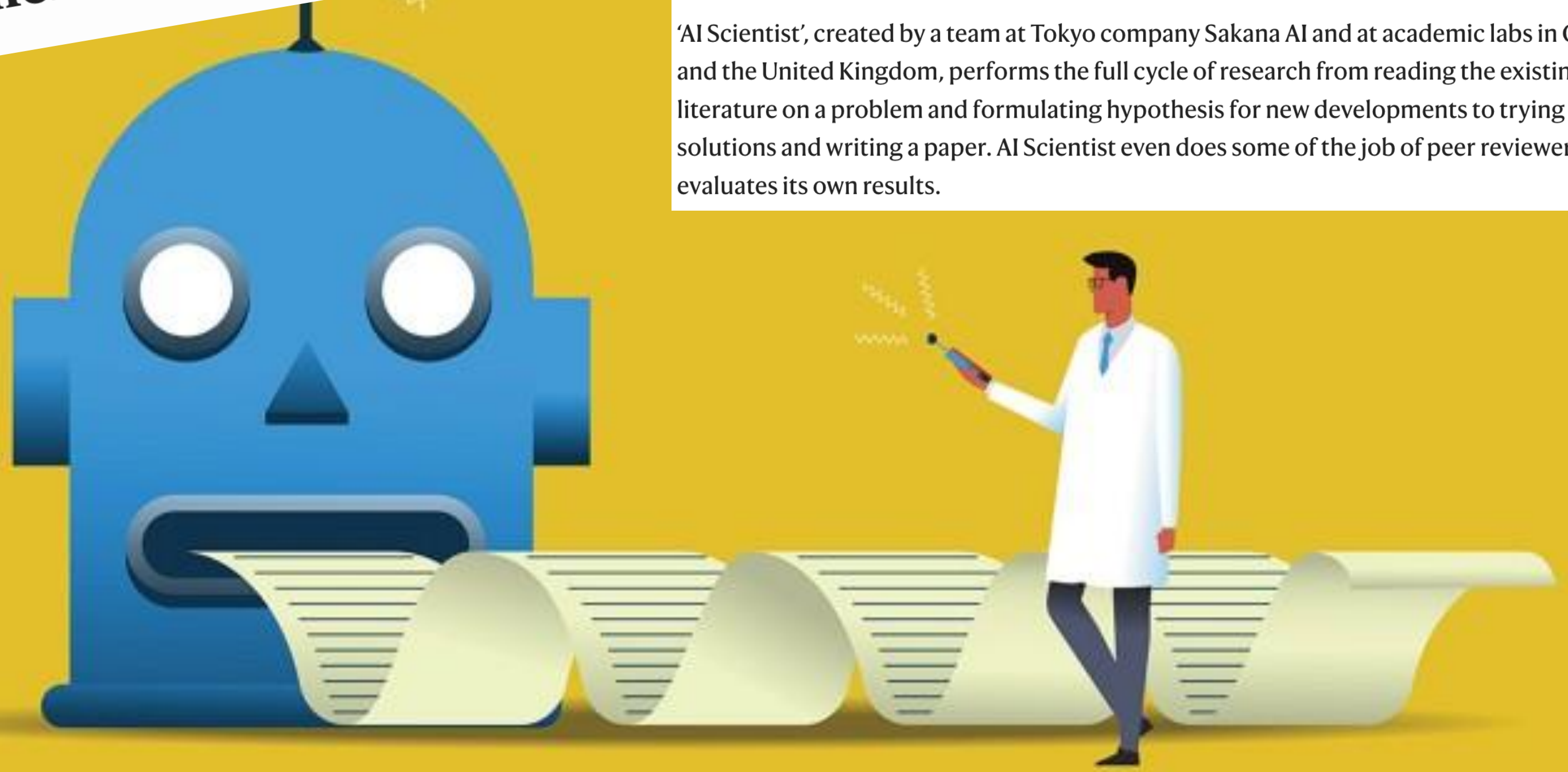
Jocelyn Bosley
Research Impact Coordinator

IN OUR GRIT, OUR GLORY™

Researchers built an AI scientist

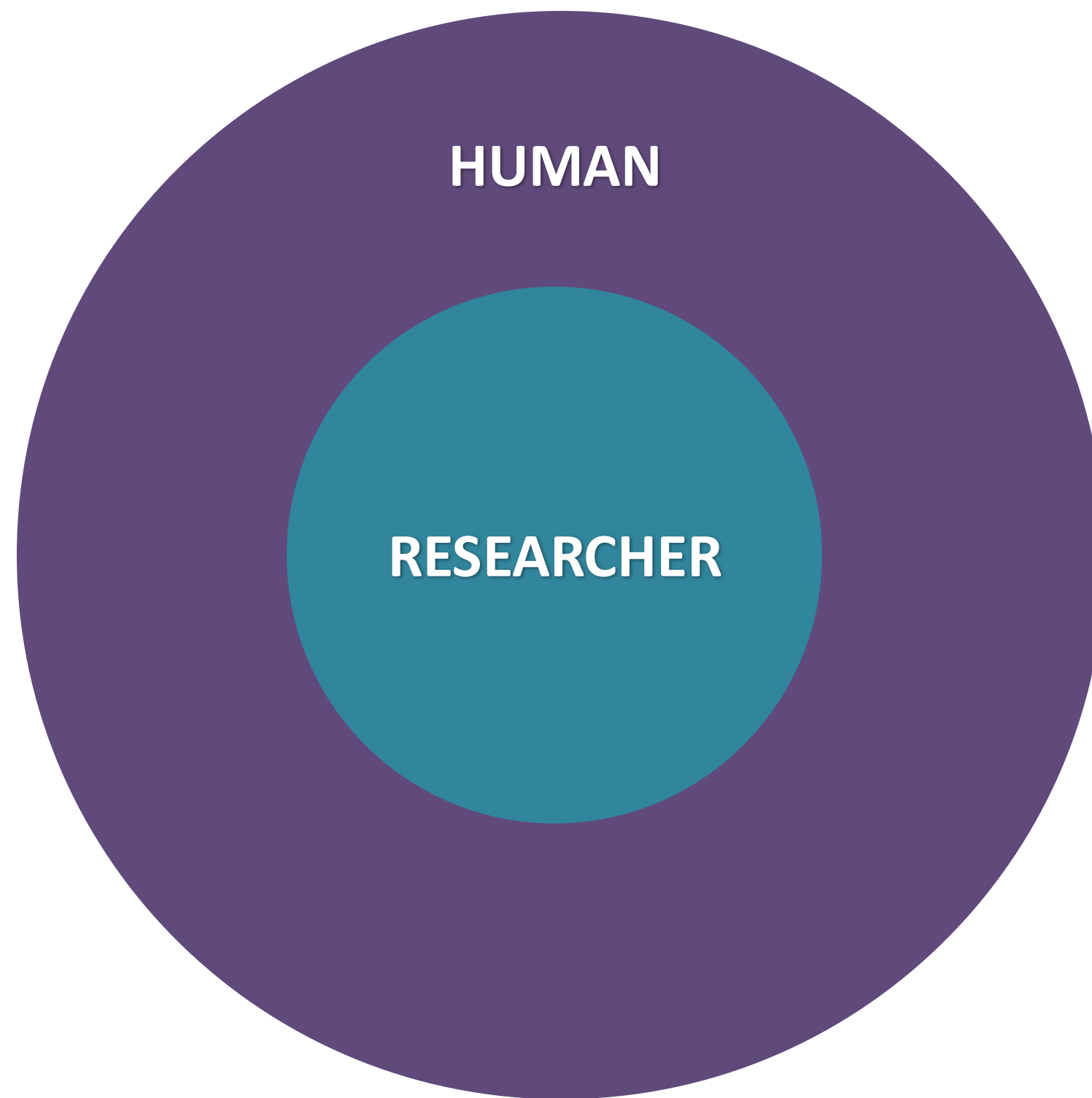
Could science be fully automated? A team of machine-learning researchers has now tried.

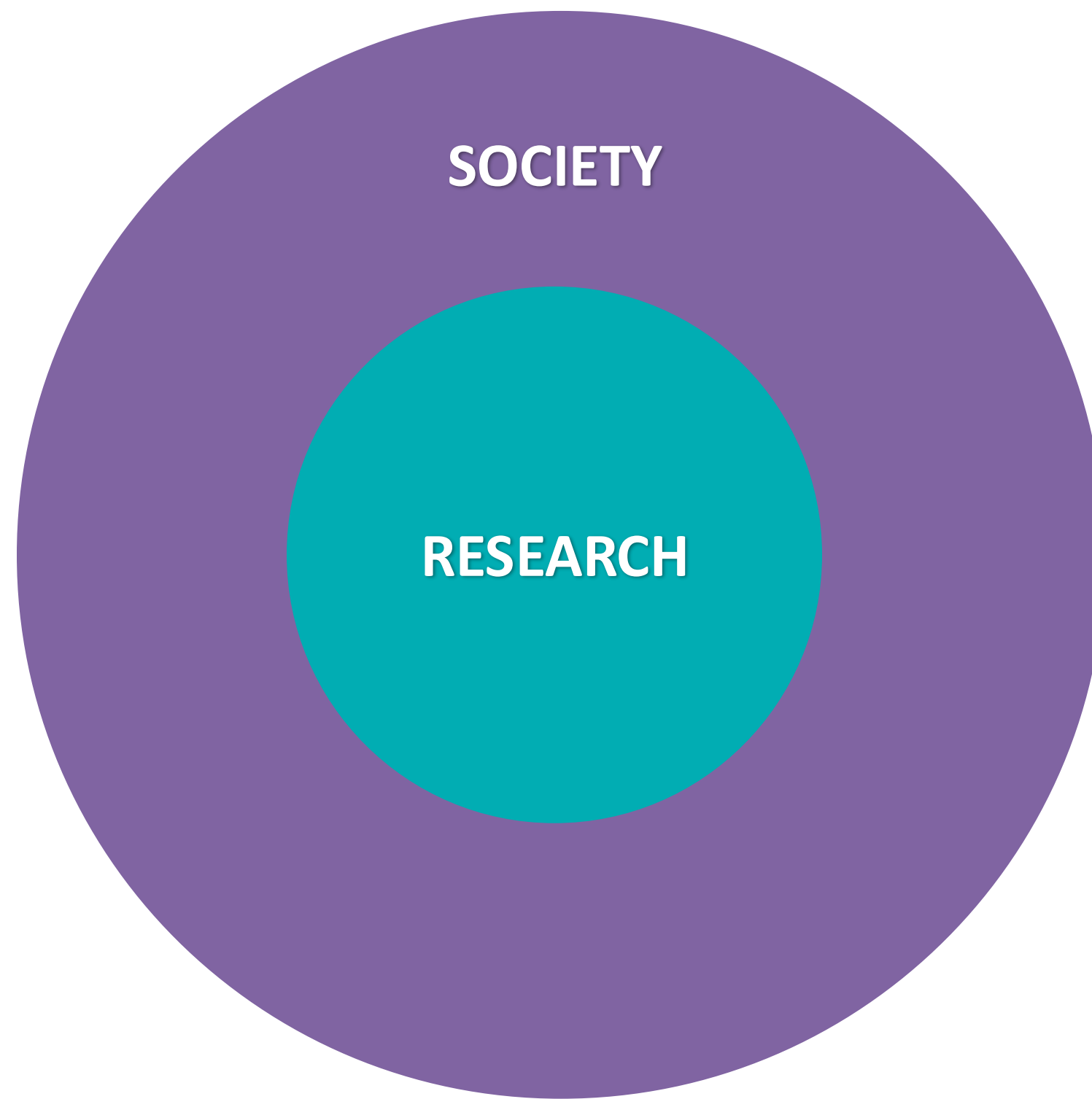
'AI Scientist', created by a team at Tokyo company Sakana AI and at academic labs in Canada and the United Kingdom, performs the full cycle of research from reading the existing literature on a problem and formulating hypothesis for new developments to trying out solutions and writing a paper. AI Scientist even does some of the job of peer reviewers and evaluates its own results.

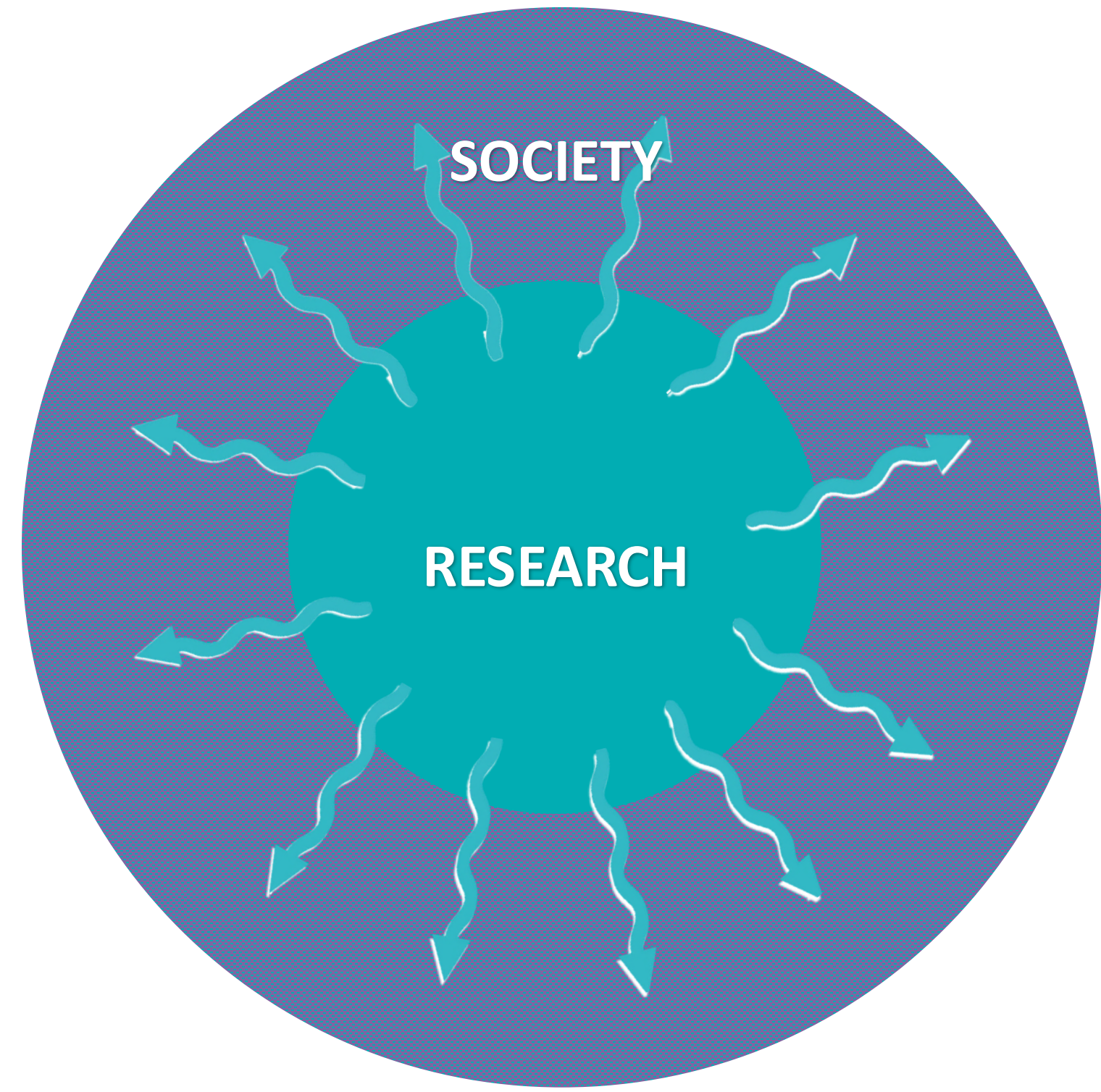


The background features three large, stylized question marks in light green, light blue, and light orange. Scattered around them are various sized circles in the same three colors. The text is centered horizontally and vertically over the composition.

Researchers built an AI scientist



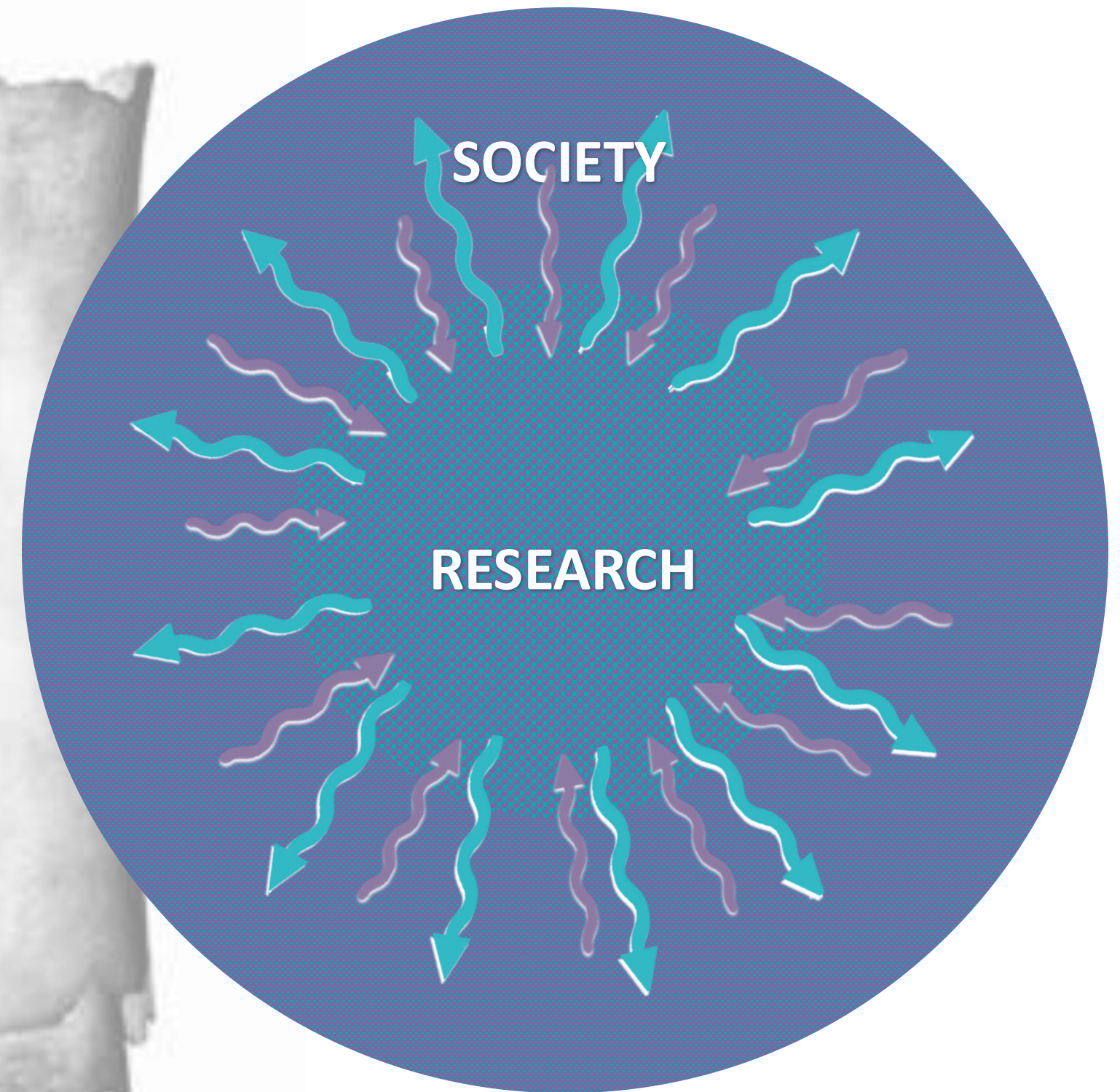




But also . . .

*“We choose to ask
certain questions, and
not others.”*

*—Sally Slocum,
“Woman the Gatherer”*

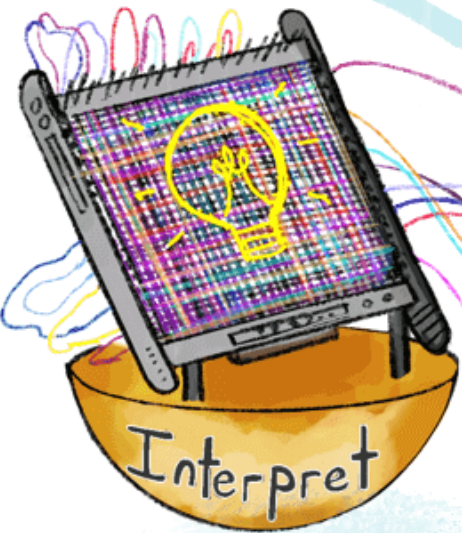
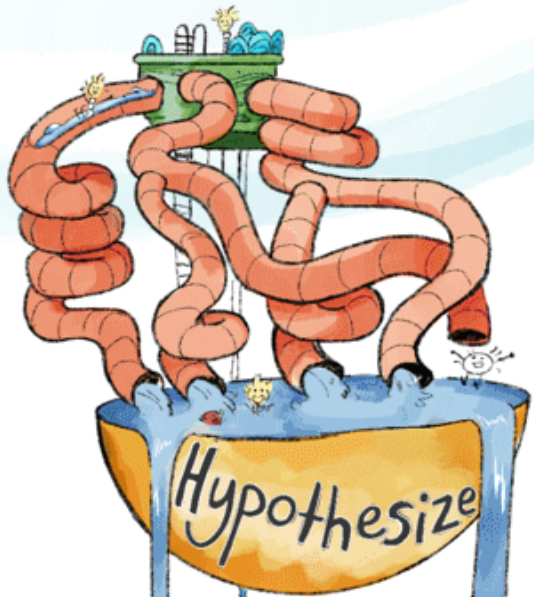




SCIENCE IS A SOCIAL PROCESS

APAT

What's Your Sci Journey?



Science as a social process

What we think knowledge is



What knowledge actually is



Science as a social process

Peer



Public

Journal reviewers

Journalists

People of the
interwebz

Journal readers

Science teachers



Proposal reviewers

Science-curious adults

Social media
followers

K-12 students

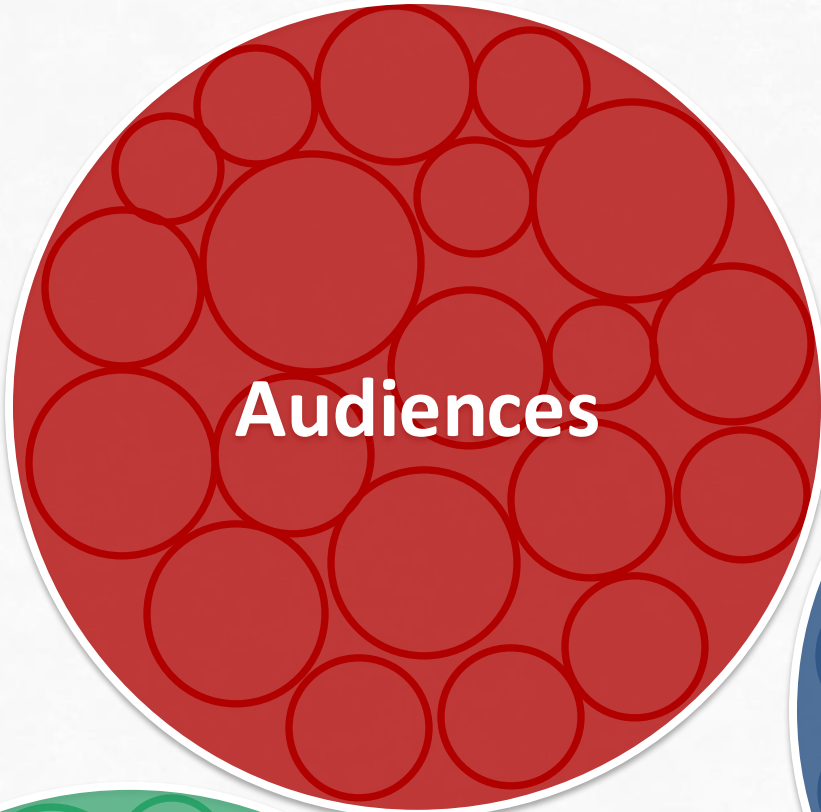
Professional conference
attendees

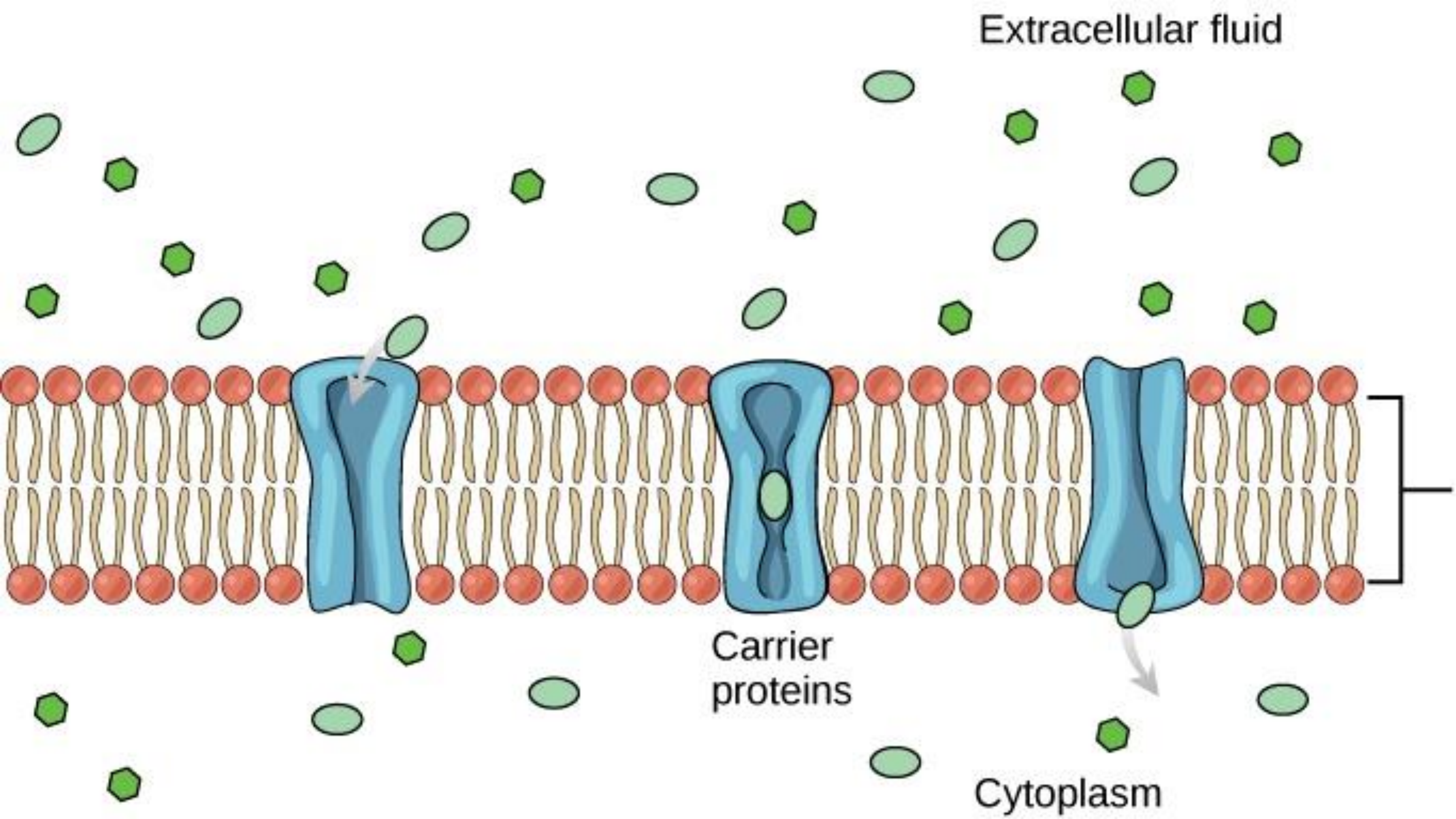
Friends and
family

Government
policymakers

Business leaders

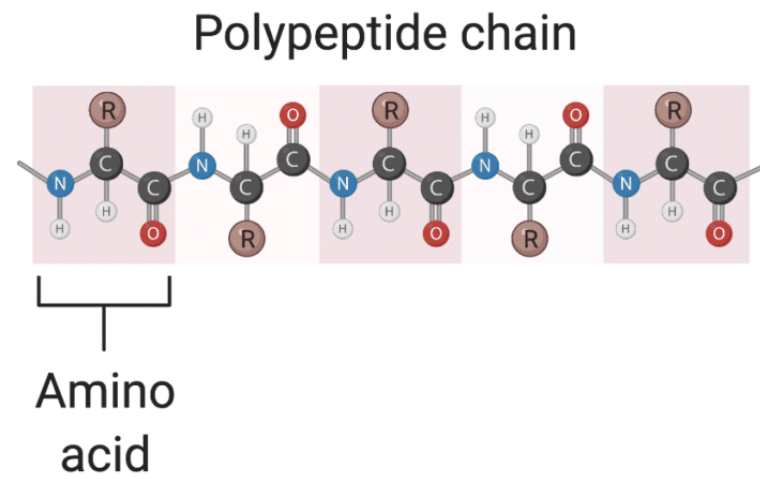
Science as a social process



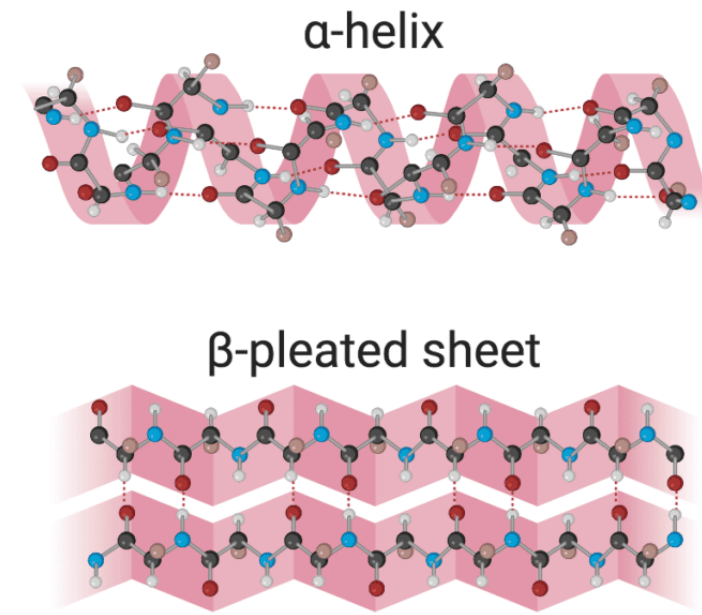


**Work within
your group**

Primary structure



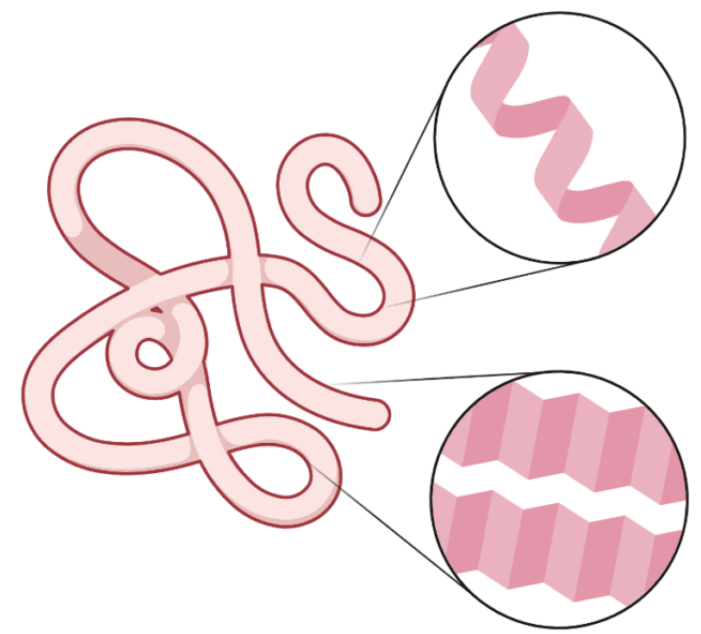
Secondary structure



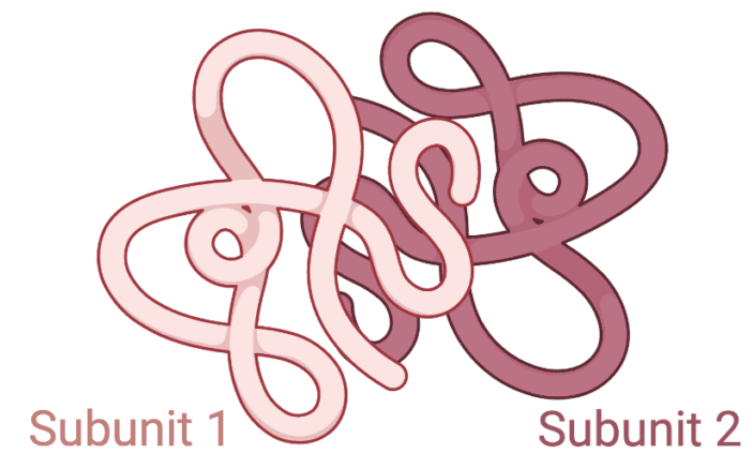
**Work within
your field**

**Work across
disciplines**

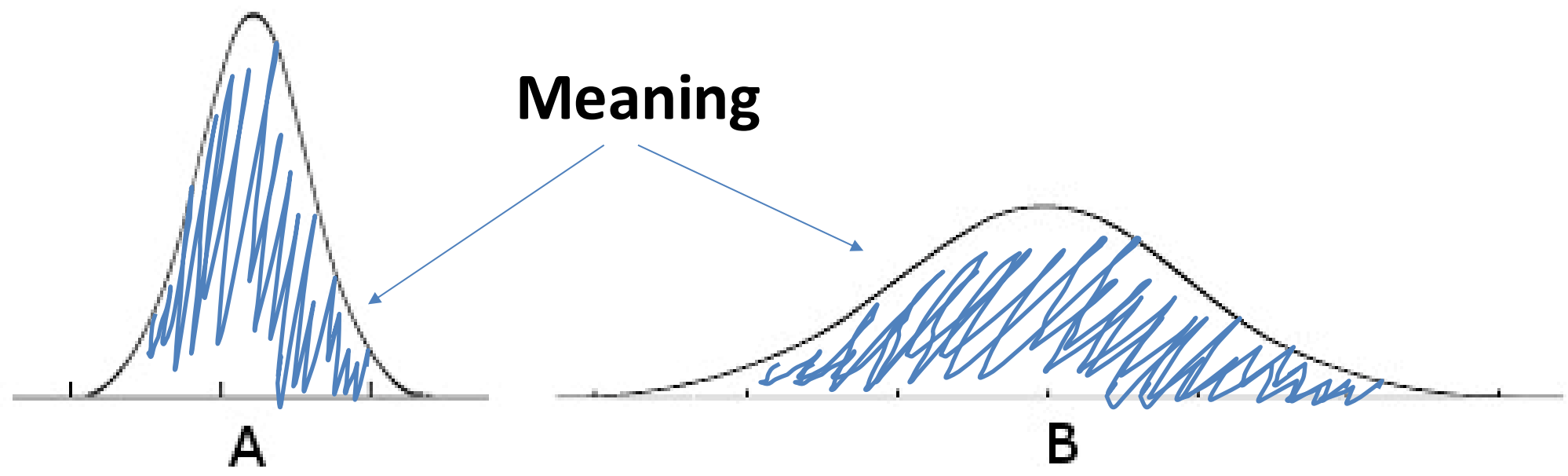
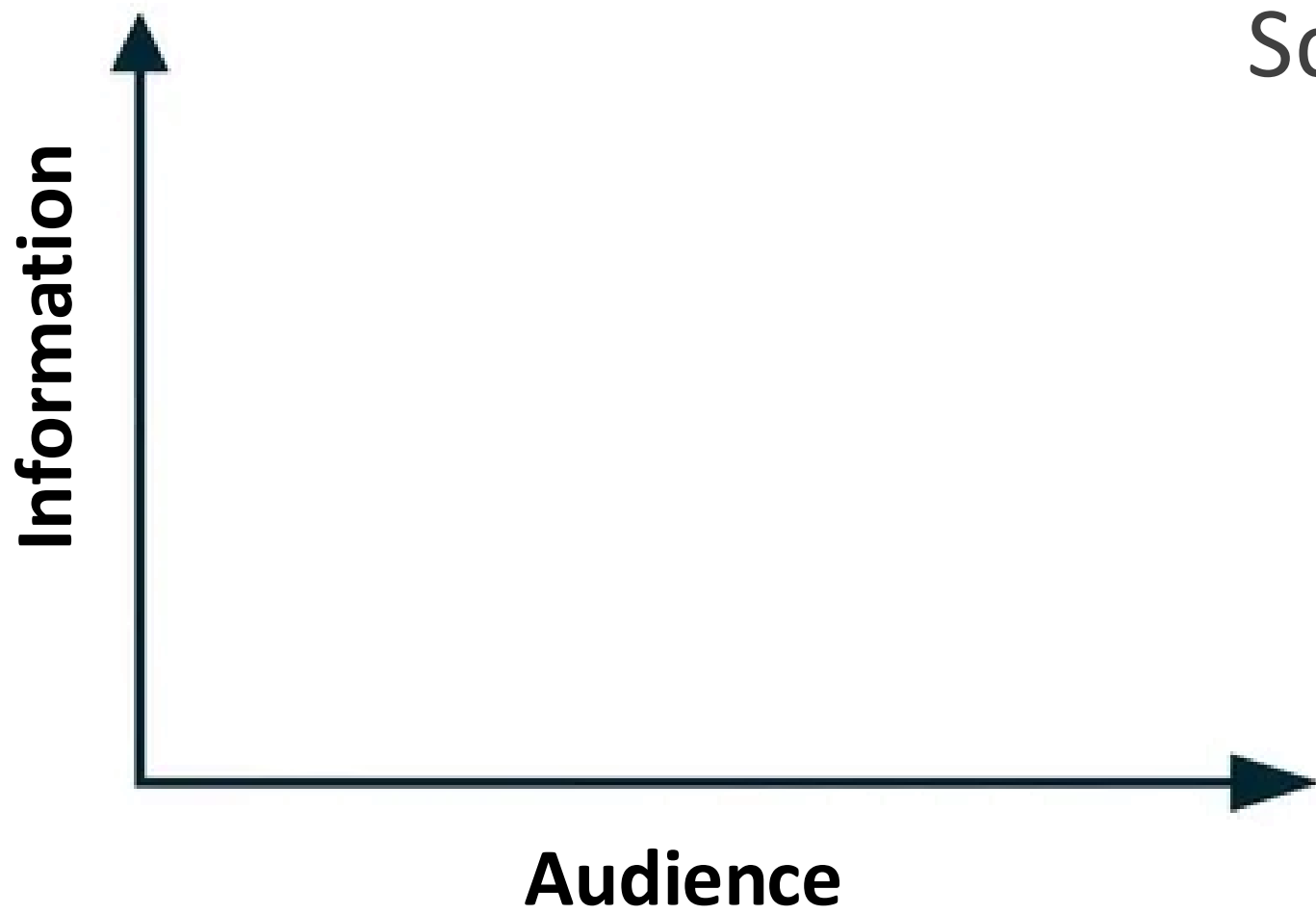
Tertiary structure



Quaternary structure



**Work across
sectors**





MEANING IS AN EMERGENT PROPERTY OF KNOWLEDGE SYSTEMS

APAT

Meaning as an emergent property



Meaning as an emergent property

- People
- Data
- Tools
- Media

Elements



- Research
- Teaching
- Communication
- Collaboration

Processes



- Costs/benefits
- Needs
- Partnerships
- Infrastructure

Relationships



IMPACT IS MAKING YOUR WORK

MEANINGFUL TO OTHERS

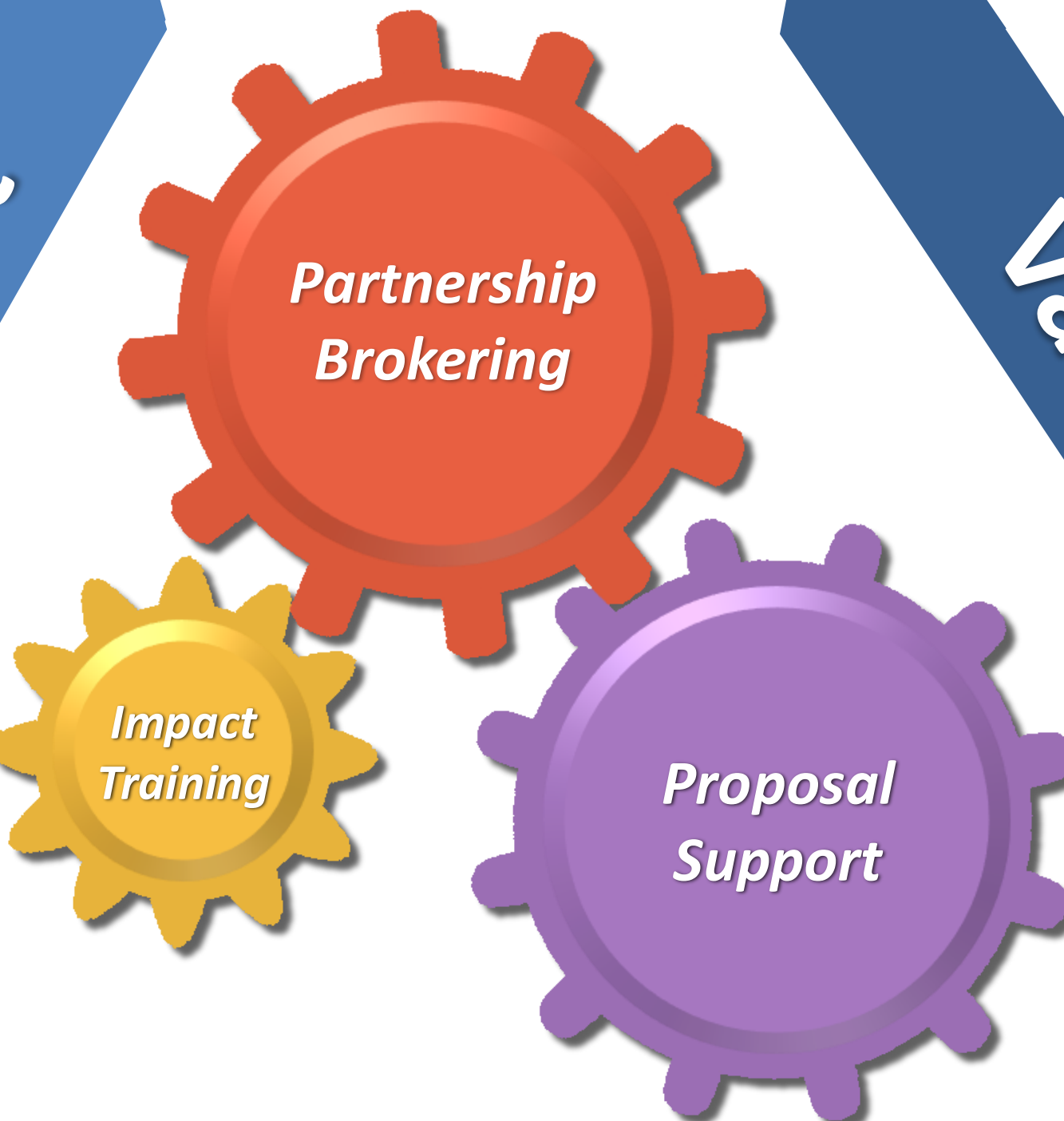


RESEARCH

IMPACT



Visibility of impact



Value of impact

Quality of impact





Visibility of impact

Value of impact



Cultivate a culture where impact is understood as an essential part of research

Quality of impact

Finding your impact niche



BASIC/DISCOVERY

USE-INSPIRED

APPLIED

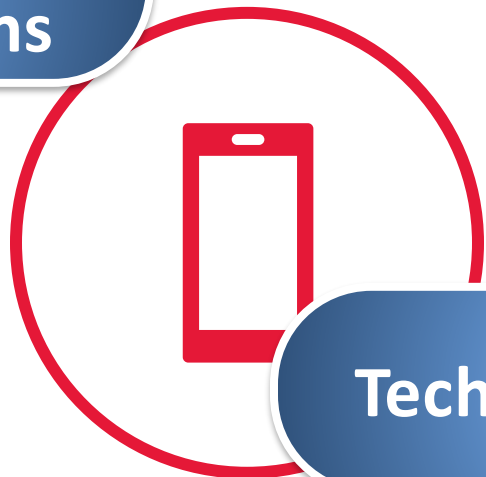
Finding your impact niche

Education Infrastructure

K-12 Outreach

Policy Recommendations

Research Infrastructure



Technology Transfer

BASIC/DISCOVERY

USE-INSPIRED

APPLIED

Broadening Participation

Community- Engaged Research

Industry Partnerships

Finding your impact niche

- ***Not just “practical” applications . . .***

Awe

Compassion

Wonder

Connection

Unveiling Impact Identities: A Path for Connecting Science and Society

Julie Risien¹ and Martin Storksdieck

Center for Research on Lifelong STEM Learning, Oregon State University, Corvallis, OR 97331, USA

From the symposium “Science in the Public Eye: Leveraging Partnerships” presented at the annual meeting of the Society for Integrative and Comparative Biology, January 3–7, 2018 at San Francisco, California.

¹E-mail: Julie.Risien@oregonstate.edu



Finding your impact niche

- People
- Data
- Tools
- Media

Elements



- Research
- Teaching
- Communication
- Collaboration

Processes



- Costs/benefits
- Needs
- Partnerships
- Infrastructure

Relationships



Elements



What skills, connections, tools, resources do you have?

- Do you enjoy/embrace new media/social media/new technology?
- Is your brother a teacher? Is your neighbor a podcaster? Is your tennis partner a scout troop leader? etc.

Processes



Besides your research, what are your interests and passions?

- Do you like to work with kids?
- Do you love outdoor adventures?
- Are you interested in art? music? creative writing?

Relationships



What change do you want to see as a result of your work and why?

- Who are your stakeholders or beneficiaries?
- What partners can help you reach these audiences?
- What are the potential costs and benefits to your audiences and partners?

Do you want to develop meaningful and effective research impact activities but are uncertain how to begin? Strategic, mutually beneficial partnerships are essential to successful impact programs. This searchable Impact Partner database allows you to explore campus and community resources you might leverage to further your impact goals. Use the categories below to filter your results and find a partner that's the right fit for you.

Search

Partner Type Audience Participants Engagement type Outcomes Location

A World of Women in STEM

We are A World of Women in STEM (or WOW STEM for short). We make videos, write posts, and come up with fun activities that are focused on science, technology, engineering, and math (STEM) and the women+ who have been part of these fields throughout history.

<https://www.wowstem.org/>

[Explore a Partnership](#)

Partner type: Web-based

Outcomes: Public engagement Scientific literacy Broadening participation

Engagement type: Outreach activity Science communication

Participants: Girls and women

AGAM: Nebraska Cryptography Camp

The **AGAM: Nebraska Cryptography Camp** is a week-long summer mathematics camp for high school students that provides an invigorating and supportive environment for students to develop their mathematical abilities and interests. Young women, and particularly women of color, are underrepresented in the mathematical sciences. AGAM: Nebraska Cryptography Camp provides role models, opportunities to develop abilities and interest in mathematics with support from UNL's undergraduate and graduate students and faculty, and a growing community of their peers interested in creating a supportive environment for young women in mathematics. AGAM: Nebraska Cryptography Camp is open to all high school students.

<http://www.math.unl.edu/programs/agam>

[Explore a Partnership](#)

Partner type: Campus

Outcomes: Workforce development Broadening participation

AIM Institute

The **AIM Institute** is a nonprofit organization with a mission to grow, connect, and inspire the tech talent community through education and career development. AIM believes that creating a more diverse and equitable tech workforce is critical to community success, and it provides training, education, and connections to empower tech professionals to enter and grow in the tech workforce. Whether through Code School, Youth in Tech, Leadership Academies, AIM's annual conferences, or Silicon Prairie News, AIM's goal is to excite people about technology, inspire them to pursue a tech career, and help them navigate the tech career continuum.

<https://aiminstitute.org/>

[Explore a Partnership](#)

Partner type: Industry

Outcomes: Workforce development Broadening participation Education infrastructure Economic competitiveness

go.unl.edu/impact-partners

Finding your impact niche

Partner Type

- Campus
- Community
- Industry
- Web-based

Audience

- Adult public 
- Children & Families 
- Graduate students 
- Policymakers
- PreK-12 students 
- PreK-12 teachers 
- Undergraduate students 




Location

- Lincoln
- Nebraska
- Online 
- Other

Engagement type

- Citizen science
- Community service
- Curriculum development
- Entrepreneurship
- Experiential learning
- Mentorship
- Outreach activity
- Policy advocacy
- Policy development
- STEM education
- Science communication

Participants

- First-generation students
- Girls and women 
- Persons with disabilities
- Rural communities 
- Underrepresented minorities 

Outcomes

- Broadening participation
- Community health
- Economic competitiveness
- Education infrastructure
- Environmental sustainability
- National security
- Public engagement
- Research infrastructure
- Scientific literacy
- Workforce development



Finding your impact niche



AGAM: Nebraska Cryptography Camp



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<http://www.math.unl.edu/programs/agam>

Explore a Partnership



Funsize Physics



It's all the excitement of scientific discovery in a funsize package! **Funsize Physics** is a website where researchers share their discoveries with science enthusiasts of all ages, showcasing the wonder, beauty and potential of nanoscience through short articles on cutting-edge research and DIY activities. *WARNING: Funsize Physics is not responsible for any minds that are blown.*

<https://funsizephysics.com/>

Explore a Partnership



Lincoln Community Learning Centers

Lincoln Community Learning Centers provide a fun, educational delivery system that uses neighborhood schools as the central gathering place for students, families and neighborhoods. CLC clubs provide high-quality academic and enrichment opportunities during non-school hours for children. These clubs offer a variety of activities that complement and amplify what they're learning in school. CLC clubs help develop problem-solving and creative thinking skills as well as encourages community and parent engagement for the success of the children.

<https://clc.lps.org/>

Explore a Partnership



Bio Nebraska

Bio Nebraska is a nonprofit trade association tasked with promoting, connecting and catalyzing the biosciences in Nebraska. Through networking, advocacy, and workforce development and education activities, it strives to make Nebraska the best state for bioscience organizations to grow and thrive. Programs include Nebraska Women in STEM, an initiative created to provide Nebraska women the opportunity to connect, discuss, and collaborate with colleagues and leaders in STEM careers and industries.

<https://www.bionebraska.org/>

Explore a Partnership

Upcoming Opportunities



*Impact
Training*

Research Impacts 101

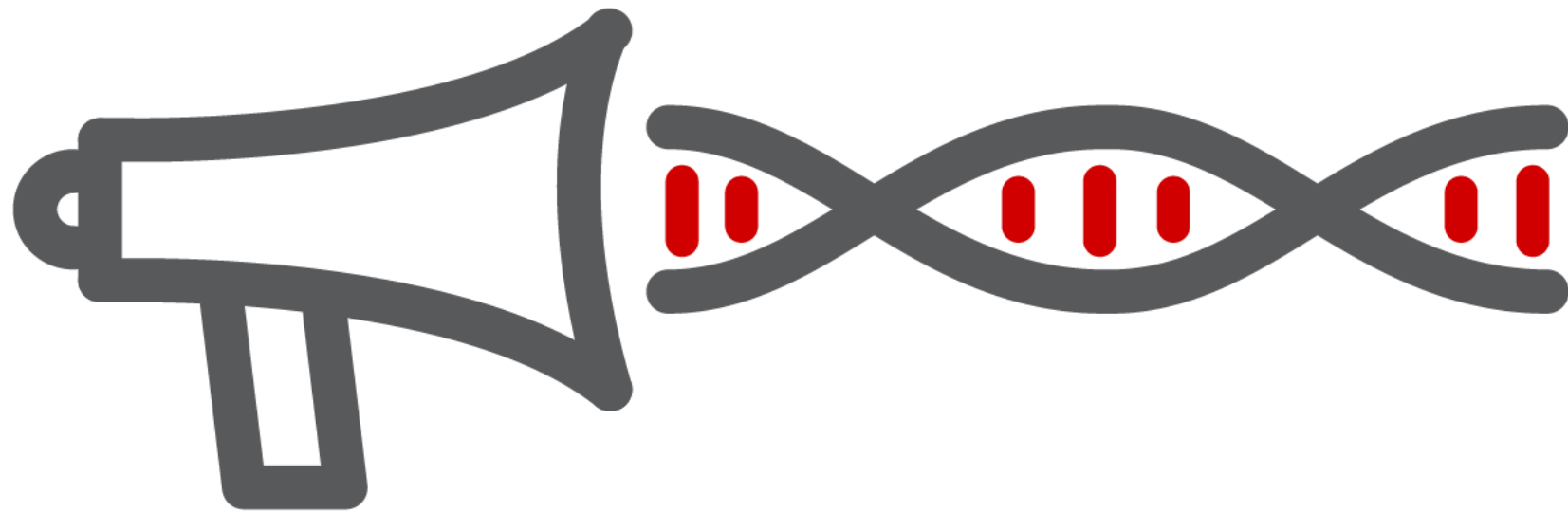
- *September 18, 3:00pm – 4:00pm*

Impact Incubator

- *Applications due Oct. 1*

go.unl.edu/fall-2024-impact-training

No Coast



SciComm
EST. 2015

*Connecting
Through Curiosity*

October 29-31
online (mostly)

<https://scimath.unl.edu/no-coast-scicomm-2024/>

Faculty Research & Creative Activity Slam

2024 Faculty Slam
November 13

Why does the world need your research?

Applications due October 10

<https://go.unl.edu/faculty-slam-2024>

THANK YOU!



RESEARCH

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@SciTalker

research.unl.edu/broaderimpacts/