



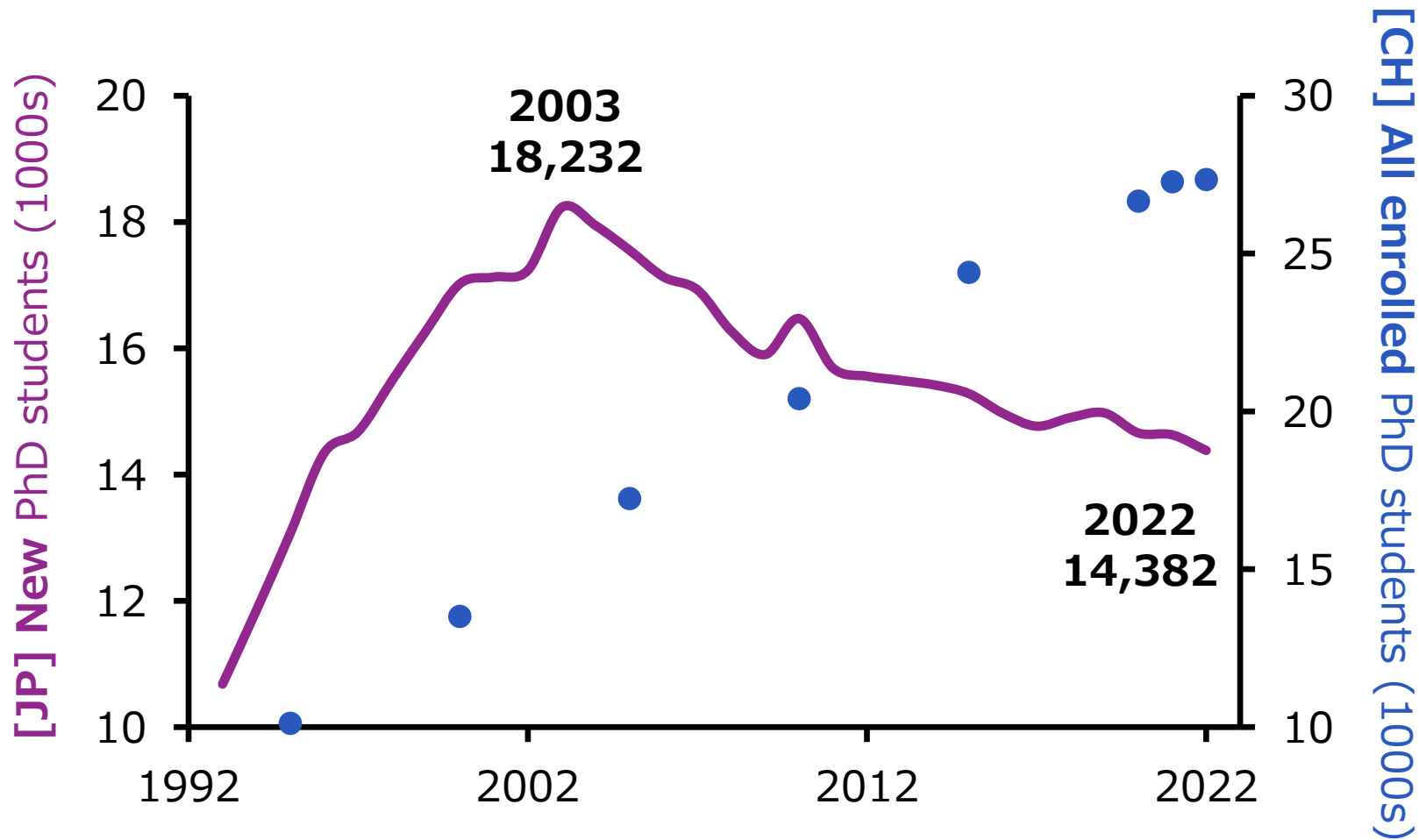
東京大学
THE UNIVERSITY OF TOKYO



Scientific Writing, Publication, and Communication

Dr. Kate Harris
School of Science, UTokyo

Doctoral Education in Japan



Data from "Japanese Science and Technology Indicators 2023", NISTEP RESEARCH MATERIAL, No. 328, National Institute of Science and Technology Policy, Tokyo; and "Studierende nach Studienstufe, Geschlecht und Staatsangehörigkeit (Kategorie), Entwicklung seit 1990/91", Studierende und Abschlüsse an Hochschulen, Bundesamt für Statistik.

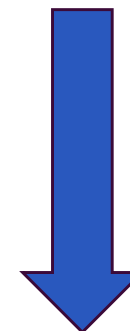




Forefront **P**hysics and **M**athematics Program to Drive Transformation

- **Exploits the strengths of Japanese graduate education**
 - High level of basic education
 - Excellent problem-solving skills within existing fields
- **Encourages interaction across disciplines and borders**
 - Secondary supervisor from a different research field
 - 4PM Seminar, International Research Experience
- **Provides training for academic and non-academic careers**
 - Diversity and Ethics Training
 - Scientific Writing, Publication, and Communication
 - AI and Quantum Computing
 - Awareness of societal and industrial issues
- **Maximizes students' career potential**
 - International Career Seminar
 - Recommendation letter writing workshops for faculty

Education based on individual labs



Education by the whole program

A 5-year integrated Masters-Doctoral program with stipend for students in Physics, Maths, Applied Physics, Chemistry, Astronomy, Earth and Planetary Sciences. Selected for MEXT funding (WISE Program, 2019-2025)

Scientific Writing, Publication, and Communication



Oral Presentation



Manuscript Writing and Publication

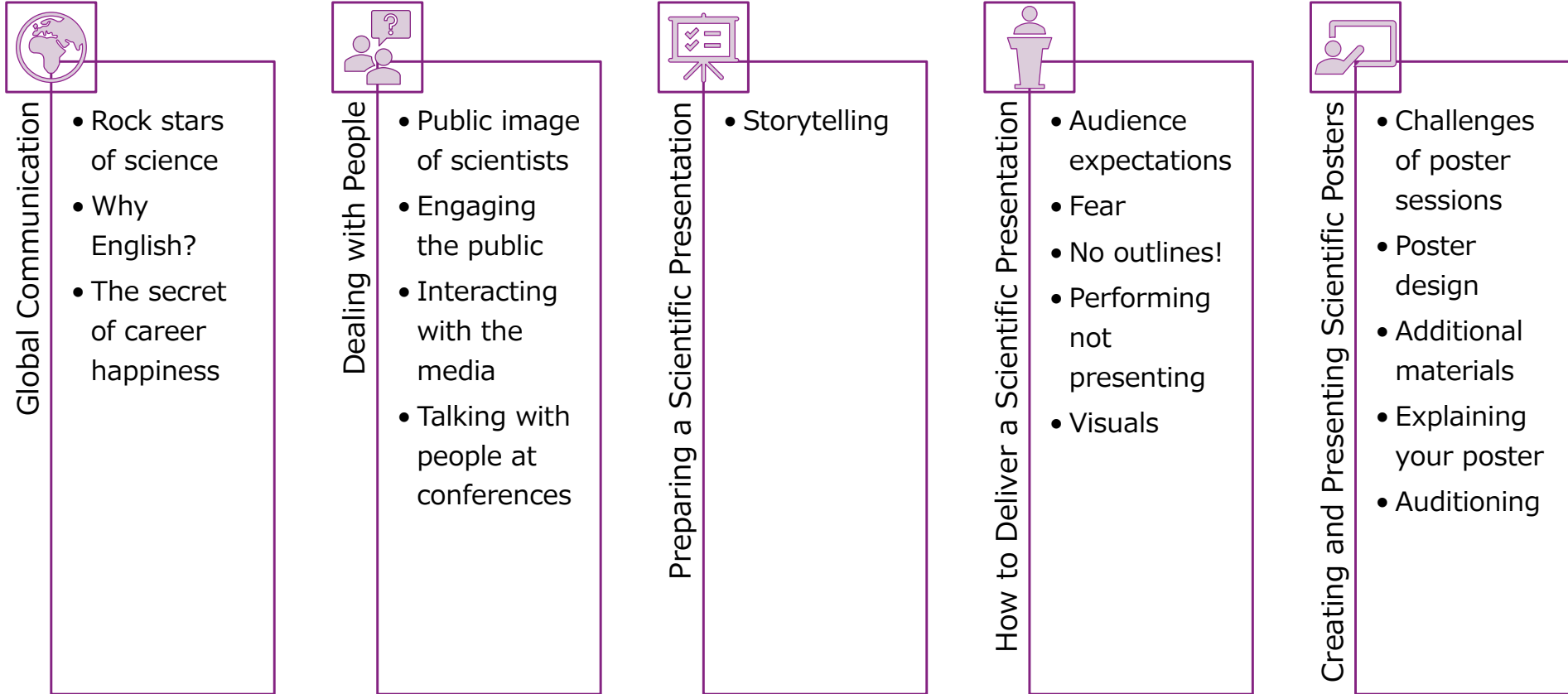


Public Communication

Everything we wish we had known back when we were graduate students...



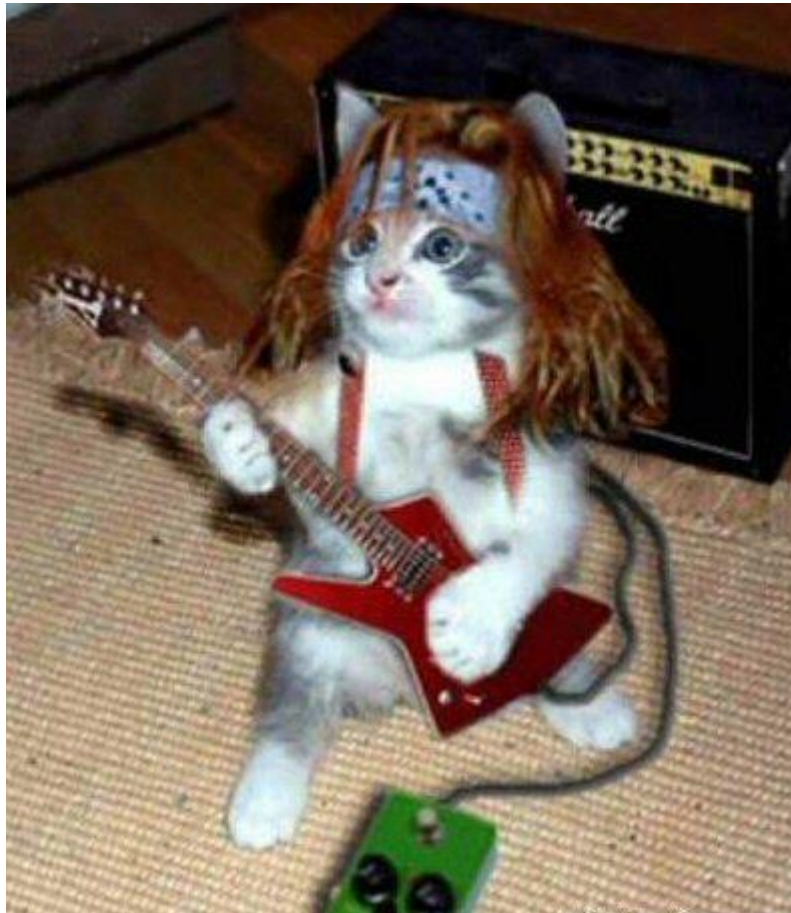
Oral Communication



"I was surprised and impressed by your presentation style. I used to think that we should do presentations calmly. However, I learned that it was very effective to act like a show to attract people and help them understand the content."



My goal for this course is to teach you to be
the rock stars
of the international science world!

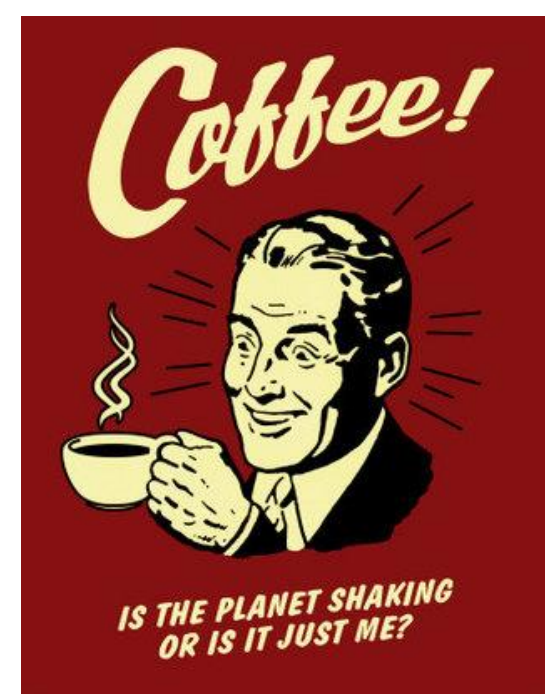


Coffee breaks are usually the best time to talk with new people at meetings



Why are they so good for this?

1. Free coffee and food usually puts people in a good mood.
2. The last few talks will provide easy conversation starters.
3. People expect to chat during these breaks.
4. You can easily move from person to person while getting more coffee and snacks.
5. Not too long... if things get awkward, the next session will start soon enough.



Thriller Video Outline

- Scary movie; Michael turns into a cat monster!
- Scene in the theater → cat monster is not real
- Leave theater, walk down street; singing
- Zombies come out of graveyard; they are real!
- Zombie dance → Michael is now a zombie too!
- Woman runs to creepy house, saved (?) by Michael



Manuscript Writing and Publication



Writing as a Scientist

- Preparing to write
- Readability
- Sentence/ paragraph structure
- Common mistakes



Reading as a Scientist

- Reading strategy
- Literature search strategy
- Assessing a paper without reading it all



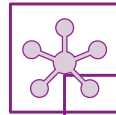
Writing Your Paper

- Manuscript structure
- Titles and abstracts



Publishing Your Paper

- Cover letters
- Peer review reports
- Responding to reviewers



Academic Publishing

- Publication process
- Publication ethics
- Article types
- Publishing models
- Predatory journals

"All of your lectures were extremely helpful to me because I am right in the middle of writing my very first manuscript as a first author. All of the lecture contents were so relevant to what I am working on right now, and I'm very thankful that I had the opportunity to learn from you. Thank you so much!"

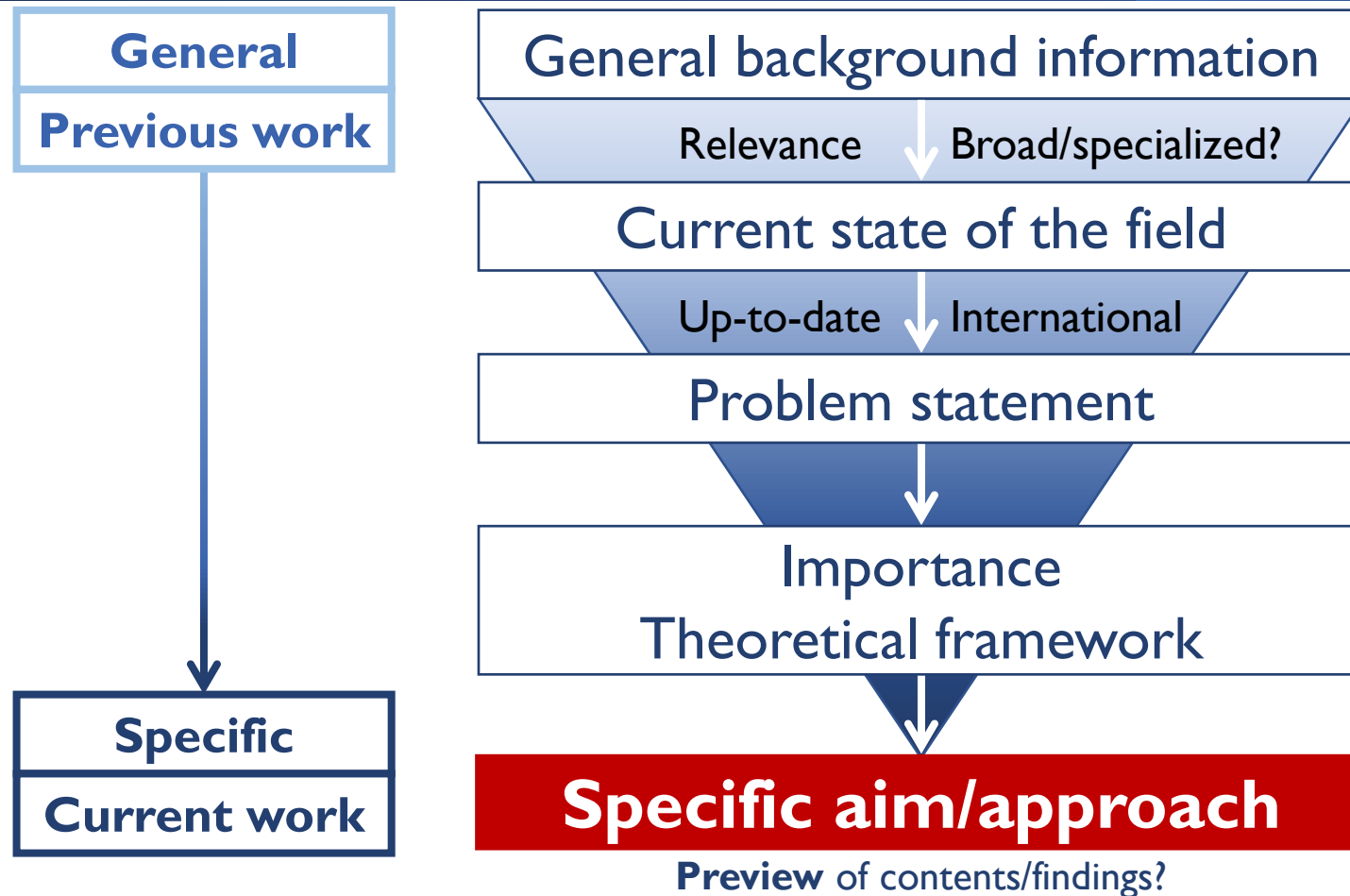
Use simply constructed sentences

Nanoporous Co₃Mo/Cu **electrodes** with intermetallic Co₃Mo nanoparticles seamlessly integrated on the surface of a nanoporous copper skeleton via spontaneous phase separation during a chemical dealloying process **exhibited** negligible onset overpotential.

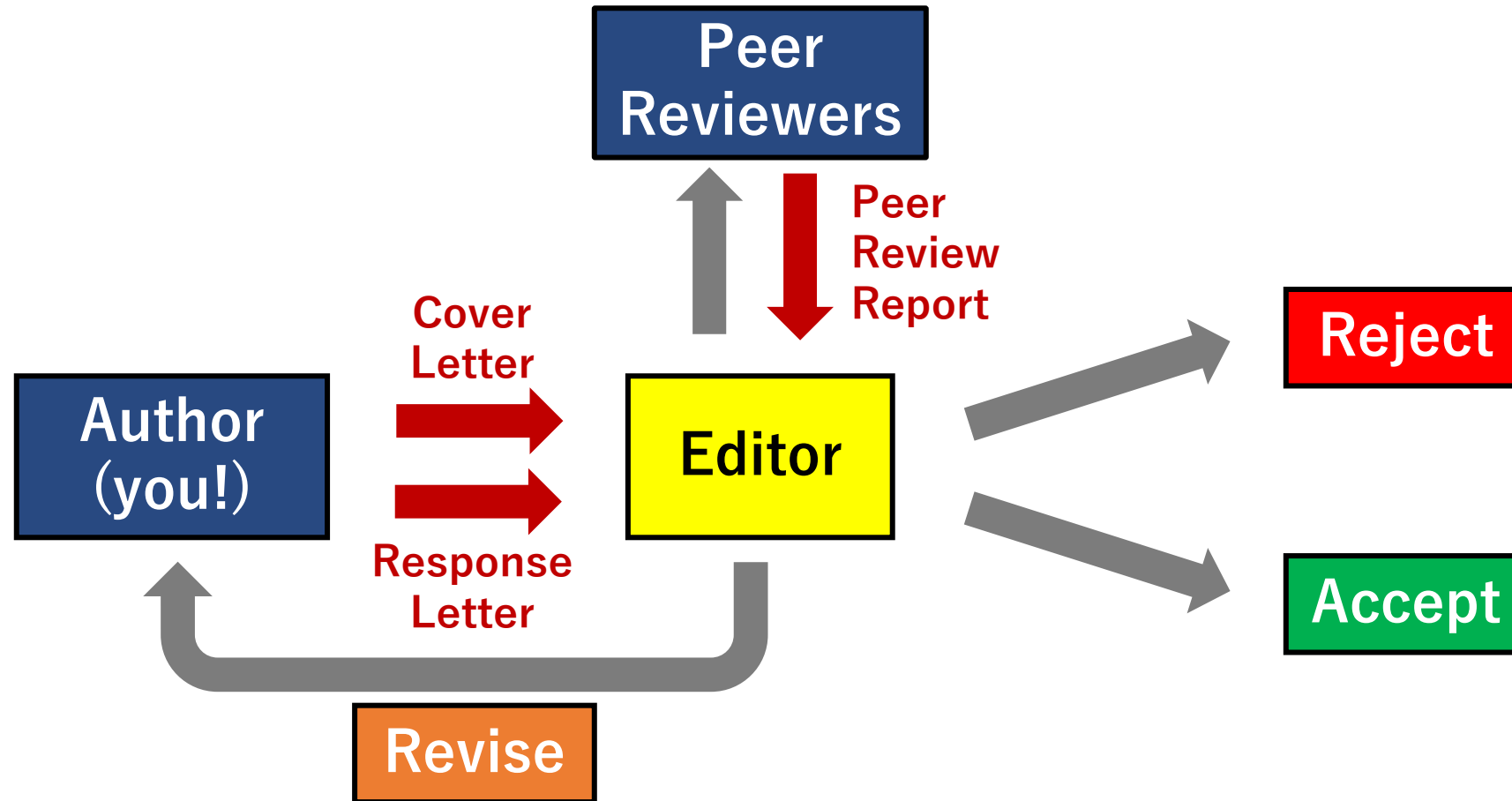
Intermetallic Co₃Mo **nanoparticles were** seamlessly integrated on the surface of a nanoporous copper skeleton. **This was** achieved via spontaneous phase separation during a chemical dealloying process. The resulting nanoporous Co₃Mo/Cu **electrodes exhibited** negligible onset overpotential.

Keep verbs and nouns close together and keep sentences short

The Introduction

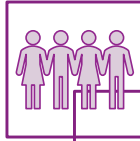


What happens at a journal?



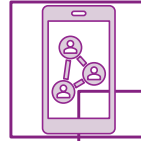


Public Communication



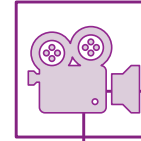
Public Engagement

- Why engage with the public?
- Communication models
- Your audiences
- Find your key message
- Considerate communication
- Opportunities for engagement
- Storytelling



Social Media

- Why use social media?
- Social media best practice
- Science memes
- Micro-blog your paper
- Tweeting at conferences
- Graphic abstracts



News Media

- Why use the news?
- Trust in the media
- How the media works
- How to get your research into the news
- Interviews with journalists
- What happens if you are awarded the Nobel Prize?

"I had not had enough opportunities to think about how to engage with public communication as a scientist. So, it was a great experience for me."

Half-Life Your Message

- 60 seconds
- 30 seconds
- 15 seconds
- 08 seconds

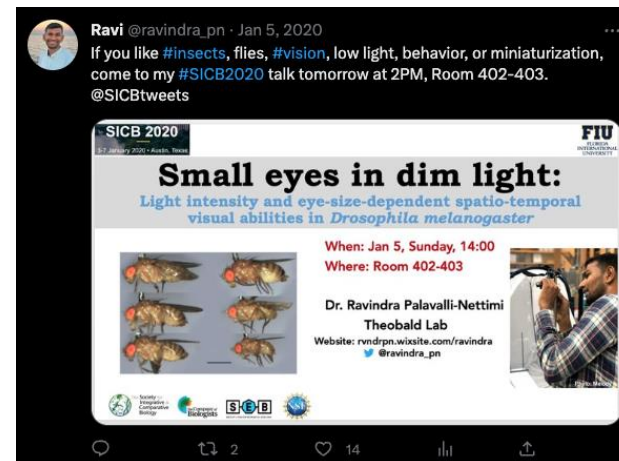
Pair challenge

With a partner...

1. Rock-Paper-Scissors
2. Winner attempts to half-life their message.
3. Partner helps by timing them (onscreen/ phone/ watch).
4. You might be asked to share the final message afterwards!

How to use **Twitter** at conferences

- Use the conference hashtag, #FoPM2023
- Tweet about a talk, summarize (text and graphics), share a picture
- Share what you learned
- Invite others to your talk with a picture summary of your talk, location, and time...add links



A news story is complete if it has these things

WHO

– who did the research?

WHAT

– what was the most important thing discovered?

WHEN

– when did the study come out?

WHERE

– where was the study published?

HOW

– how did the researchers find the result?

WHY

– why was the research carried out?

Essay Project

- Experience the collaborative process of academic publishing



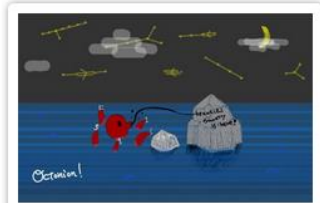
- **Develop skills in:**
 - Describing research results and their significance
 - Communicating with non-specialists (non-scientists)
 - Critical reading and reviewing
- **Not a test of English language ability**

Your aim

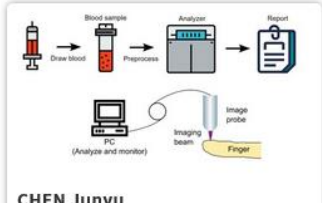
By writing about a published discovery in the basic sciences that has changed (or has the potential to change) science and/or society beyond the original field of research, can you inspire high-school students to consider a career in the sciences?



Essay Project



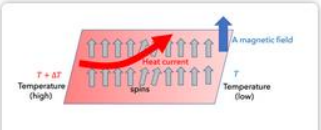
AOYAMA Tenma
The algebra with beautiful symmetry "Octonion"



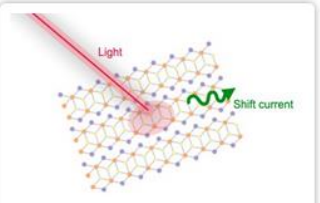
CHEN Junyu
Needless Blood Count



CHITOSE Akifumi
Asymmetry from which we are born



ESAKI Nanse
Can magnon be a platform for new technologies and the new topological physics?



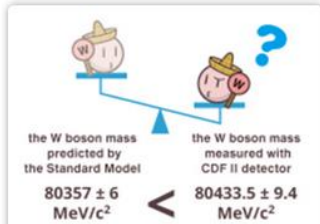
FUJIWARA Kosuke
Shift Current as a New Solar Power Generation System



FUNAHASHI Ikuchi
Tiny dust is a quiet gift from the space



GU Ziyang
Gravitational waves may reshape our daily lives!



KARAYAMA Kiri
The anomaly of the mass of the W boson will lead to a new world in physics



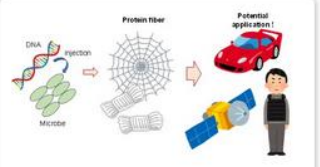
HORIE Kohki
Novel Cell-Friendly Microscopy



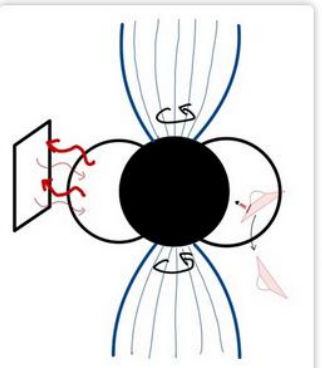
KAWASUMI Kotaro
Will analogue black hole systems reveal quantum gravity?



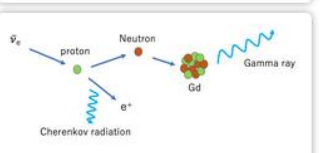
HAYASHI Kota
Sleep better, live better: science could be of help



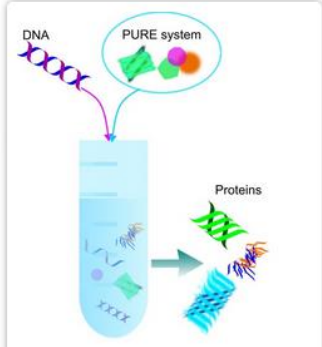
INOUE Shuhei
Protein Synthesis with Various Microbial Gene Sequence to Develop Unknown Functional Materials



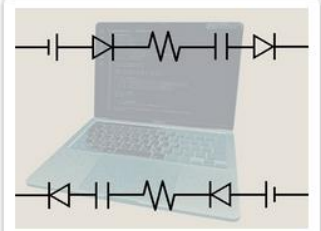
JEONG Hyun
Black holes as an energy source



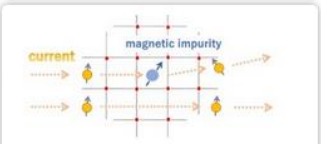
KAWAI Chikara
Neutrino astronomy reveals the nature of the universe



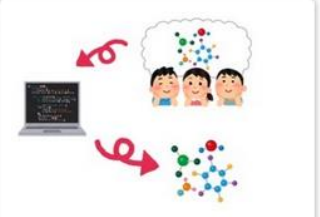
KOBAYASHI Tsubasa
Protein Synthesis Solves the Mysteries of Life



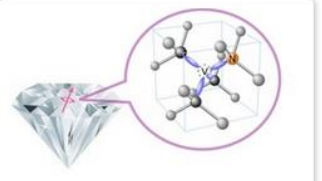
MOCHIDA Jun
Mysterious relationship between magnetic impurities and superconductivity



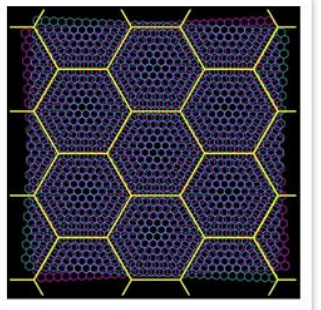
MOCHIDA Jun
Mysterious relationship between magnetic impurities and superconductivity



MATSUMOTO Akinori
Automatic creation of new materials



NISHIMURA Shunsuke



LI Hongchao
The Charm of Magic-Angle Twisted Multi-layer Graphene

Presentation Practice

- **4PM Seminar (once a month at 4pm)**

- All FoPM students
- One guest speaker (30 minutes)
- Four FoPM student presentations (5 minutes each)
- Peer review of each others' presentations
- Small group discussions

- **1st FoPM International Symposium (6–8 February 2023)**

- All FoPM students
- Thirteen invited speakers
- Oral presentations from all FoPM Doctoral students
- Poster presentations from all FoPM Masters students



Questions?



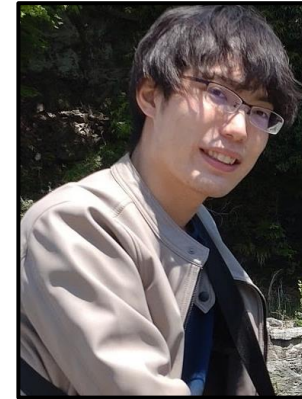
Aoi
Eguchi
(D3)



Taku
Yonemoto
(D3)



Ayaka
Matsushita
(D1)



Mirai
Fukase
(D1)

Thank you so much to all of you for teaching this course! I absolutely enjoyed every single class and I will always find them useful. I have saved all of the lecture slides and will be referring to them in my future research career. Thank you again!