MBS DIGEST

| Spring 2025 - Issue 3

MBGSO
Molecular Biosciences Graduate Student Organization

Spring issue highlights

Spring is in the air, and so is a fresh edition of the MBS Digest! As the campus blooms back to life, we're bringing you our latest- this issue, we're diving into the power of AI tools for scientific writing, exploring why the philosophy of science matters more than ever, and giving you an exclusive sneak peek at the upcoming MBGSO Symposium schedule. Plus, we've got fun challenges to keep you engaged!

Shake off the winter blues, grab a coffee, and dive into the season with us!

Top stories

Top stories brought to you by MBGSO
Editor: Sayoni Chatterjee

AI Tools to the Rescue:

Tips to overcome literature overload without shedding a tear

Brought to you by Reem Alatrash
3rd year MMG

Ever feel like you need superpowers just to keep up with the mountain of academic papers? We've all been there, drowning in PDFs, bookmarking papers we swear we'll read (next weekend), and wondering how anyone stays on top of it all.

Now, before you say it: yes, I know, some people might accuse me of promoting AI as a shortcut to doing the real work. But here's the thing, these tools aren't here to replace reading or critical thinking; they're here to make managing the flood of information just a bit more…manageable.

In this article, I summarized for you some AI tools and websites designed to make navigating the academic literature jungle a bit easier. Whether it's finding the latest research gems or just saving you from endless scrolls on Google Scholar, each tool comes with its own set of strengths and quirks. Let's see which ones might become your new digital sidekick and which you'll want to handle with caution.

1. Connected Papers https://www.connectedpapers.com/

Pros: Connected Papers is perfect for exploring the research landscape. Input a paper, and it creates a visual graph of related work, helping you see the connections between different studies at a glance. It's especially helpful if you're branching into new areas or just need a fresh perspective.

Cons: It can get a little overwhelming. The web it creates is sprawling, and you might end up lost in a research rabbit hole.

2. Research Rabbit https://www.researchrabbit.ai/

Pros: Similar to Connected Papers but a bit more flexible, Research Rabbit lets you set up "collections" to track papers. It's great for digging deep into a topic and continuously finding new papers. Plus, it's visually neat and less dense than some other platforms.

Cons: It can still become overwhelming if you keep adding new papers without filtering, so it might take a bit of self-control.

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3. Semantic Scholar https://www.semanticscholar.org/

Pros: Known for its AI-powered search and smart citations, Semantic Scholar highlights influential papers and sorts search results by relevance. Its ability to understand paper context helps you cut through the noise.

Cons: Some specific papers or niche topics may not be indexed as thoroughly as on Google Scholar.

4. Scite.ai https://scite.ai/

Pros: Scite.ai doesn't just show citations—it tells you how a paper was cited, whether positively, negatively, or as supporting evidence. This makes it easier to gauge the paper's actual impact on the field, which is a huge time-saver for gauging quality and relevance.

Cons: It's a paid tool for full access, so while the free version is useful, it's limited.

5. Elicit.org https://elicit.com/

Pros: Elicit uses AI to generate research questions and summarize findings across studies. Enter a question, and it scans literature to pull out answers, which can be invaluable for early-stage brainstorming or systematic reviews.

Cons: Like all summarizers, it's only as good as its sources. For niche areas, it can give superficial summaries.

6. Zotero + ZotFile https://www.zotero.org/

Pros: Okay, Zotero isn't strictly an AI tool, but its open-source nature and organization features are a lifesaver for paper storage. Plus, with ZotFile, you can annotate PDFs and easily find them later.

Cons: It requires some setup, and if you have a large library, it can get unwieldy. Also, AI capabilities for summarization are minimal.

So there you have it! Whether you're an AI enthusiast or just looking for a way to cut down on coffee-fueled, all-nighter literature searches, these tools have something to offer. And while they won't replace good old-fashioned reading, they might just help you get to the important stuff faster, leaving you a little more time to sleep, eat, and, you know, actually do research.

Editor's Take:

Putting the "Why" back in Science

Sayoni Chatterjee
3rd year CDB

Lately, I've noticed a curious trend: many people seem to eagerly embrace shiny new technologies and yet remain dismissive of the implication of the science behind them, revealing a puzzling gap between "pro-tech" enthusiasm and "anti-science" sentiment. This disconnect might stem from a fundamental misunderstanding of what science truly is. At its core, science isn't just a body of facts or techniques; it's a method of inquiry- one that actively acknowledges and accounts for biases. In this sense, science is a deeply philosophical enterprise because it doesn't just examine evidence; it also examines the questions.

This trend has prompted me to take a closer look at my own undertaking of science. In doing so, I decided to write this column as a musing, if you will. Here, I revisit the intimate ties between science and philosophy to make the case that they are natural partners, each feeding into the other. I write this piece with the "belief " that reconsidering philosophy's role in science not only helps scientists do a better job, but also fosters greater public understanding of what science actually brings to the table.

In science, the questions we choose to ask shape not only our experiments but the kinds of answers we uncover. For scientists, the art of inquiry is grounded in asking questions that are precise, actionable, and answerable. This is why science has leaned towards questions like "what," "how," and "when." Each of these questions is specific, designed to yield measurable, testable outcomes. For experimental scientists like us, especially in molecular biology or biomedical research, this specificity is our strength: we rely on these questions to build incremental knowledge that fits within a clear, repeatable framework. In other words, science excels at getting concrete answers by dissecting reality into manageable parts.

Yet there's a fundamental limitation here. By focusing only on what can be readily measured, science tends to sidestep broader questions, particularly the notorious "why". This is understandable, as "why" tends to be open-ended. It doesn't always lead to neat, empirical results, and it challenges us to go beyond mechanism and detail into larger patterns and deeper causes. For many, this makes "why" seem abstract, even distracting, especially when immediate outcomes are the focus. In applied fields, like cancer or disease biology, the need for specificity is heightened by the stakes of the work. Getting exact answers to "what" and "how" can lead to therapeutic breakthroughs, where clarity and precision drive the development of life-saving solutions.

Editor's Take:

Putting the "Why" back in Science

However, asking “why” can also serve science by providing a broader lens, one that allows us to connect specific findings to larger principles. In a field like physics, for example, we see this at work: physicists explore not just mechanisms but fundamental principles, often delving into “why” questions as they seek to understand the underlying structure of reality. This approach has fueled breakthroughs like quantum mechanics and relativity, which don’t just describe reality, they reveal foundational truths. Biology, though it operates at an emergent domain and is much more complex, could benefit from this kind of expansive thinking I belive.

For me, as an evolutionary biologist, the “why” question feels almost intuitive. Evolution inherently asks why traits or behaviors emerge, why certain patterns persist, and indeed why other patterns don’t. But I recognize that this perspective isn’t necessarily standard across all fields in biology. For colleagues in translational sciences, like those focusing on specific diseases or therapeutic interventions, the emphasis is often on immediate, targeted questions. Why something happens may feel less relevant than knowing precisely what happens or how to modify it for clinical outcomes. This kind of focus isn’t just practical; it’s essential. By honing in on clear, specific inquiries, translational science delivers actionable insights, keeping researchers on track to develop direct applications, whether it’s a drug, a diagnostic tool, or a therapeutic approach.

Yet, the broader “why” remains valuable even here. Asking why certain biological systems behave the way they do, or why specific pathways influence disease outcomes, can open the door to connections we might otherwise miss. This kind of questioning doesn’t distract from precision; it complements it. It allows scientists to see patterns and connections across pathways, potentially uncovering principles that apply beyond a single disease or condition. In this way, “why” isn’t a deviation from scientific rigor, but is rather an enhancement, one that pushes us to see beyond isolated mechanisms and to appreciate the shared underpinnings across different systems.

Importantly, this “why” doesn’t necessarily imply purpose or intention; it simply broadens our scope. In the context of the origin of life, for instance, asking “why” life exists is not about assigning purpose but about uncovering the conditions that allow life to emerge. Physics provides an instructive example of this. By asking why certain forces operate as they do, physicists have developed theories about the nature of space and time itself. Questions about entropy and the arrow of time, for instance, have revealed universe’s inherent drive toward disorder, shedding light on why despite increasing disorder, life (complexity from simplicity) could emerge. This doesn’t answer everything, but it frames specific questions within a universal structure, showing how underlying principles like entropy, space-time fabric, and energy dynamics, create conditions where reality unfolds.

Editor's Take:

Putting the "Why" back in Science

In biology, we see a similar relevance in questions about emergence of complex systems. Emergent properties, traits that arise from the interactions of simpler components, are fundamental to biology. For example, why do collections of molecules in specific conditions develop into self-replicating cells, and why do cells organize into complex organisms? These aren't simply questions of purpose but of principle: they prompt us to explore the deeper rules that govern complexity and self-organization in biological systems. By asking "why" in this context, we're encouraged to examine how life becomes possible, focusing on conditions and patterns that enable biological systems to develop traits like adaptation and homeostasis. In this way, the "why" in biology isn't abstract; it's foundational to understanding life's potential and variability.

This interplay between "why" questions in science and philosophy highlights the progression between the two fields. Philosophy often begins with "why" and "how" questions that science later refines with empirical rigor. As science advances, it often raises new philosophical questions, creating a loop where philosophy and science fuel each other's progress. Rather than being separate, they're linked by a shared quest to understand reality: philosophy provides the conceptual foundations, while science builds the structures that test, refine, and expand these ideas. This dynamic relationship gives science a broader framework within which to interpret findings, helping scientists see not just isolated facts but interconnected phenomena that reveal larger truths about nature.

As researchers pursuing a PhD- Doctor of Philosophy, I want to remind us of this connection and encourage us to cultivate both precision and breadth in our inquiries. Integrating philosophical thinking into scientific work doesn't detract from rigor; it strengthens it. By occasionally stepping back to ask "why," we allow ourselves to see our work in the context of a larger framework, enriching our perspective and enhancing our ability to draw connections. For those of us in applied fields, a momentary engagement with "why" can reveal patterns or relationships we might otherwise miss, guiding us to more comprehensive approaches to scientific questions. Embracing this mindset might help us not just as thinkers, but as representatives of science in public.

I would love to hear your thoughts, questions, or concerns on this piece. Send them my way: sayoni.chatterjee@rutgers.edu

Best Lab Selfie Contest

Give us a sneak peek of your 'lab life' by entering the Best Lab Selfie contest. Get creative and send us a selfie of you by yourself or with your lab mates in your lab. All photos will be featured on our monthly newsletter and social media handles!

Disclaimer – we want everyone to get creative with their selfie's but remember to take safety precautions.

Example for Best Lab Selfie:
Barber Lab

Snap it up!

Send your submissions to Seanna at sek155@rutgers.edu

MBGSO Symposium

The Annual Graduate Student Research Symposium

The MBGSO Presents:

The Annual Graduate Student Research Symposium

FRIDAY MARCH 14, 2025

Life Sciences Building Atrium 145 Bevier Rd,
Busch Campus, Rutgers University

Keynote Speaker:

Zhiping Pang, PhD

"Mechansims of Synaptic Regulation: from Stem Cells to the Brain"

Associate Professor, RWJMS Department of Neuroscience and Cell Biology and Child Health Institute, Rutgers University

Graduate students from all programs and welcome to attend and present

The symposium is brought to you by the collective efforts of:

RUTGERS UNIVERSITY School of Graduate Studies

MBGSO

GSA

MBGSO Symposium

The Annual Graduate Student Research Symposium

Program Schedule

9:30AM -10:00AM
Registration and Introductions

10:00AM -11:00AM
Oral Presentations I

11:00AM -12:00PM
Poster Presentations I

12:00PM -1:00PM
Keynote Speaker

1:00PM -2:00PM
Lunch

2:00PM -3:00PM
Poster Presentations II

3:00PM -4:00PM
Oral Presentations II

4:00PM -4:30PM
Presentation of Awards

4:30PM -5:45PM
Faculty Mixer for Admitted & Current Students

Boxed lunch will be provided to all those who registered by March 7th, 2025

Headshots and Group Photos

A photographer will be available to take professional headshots and group photos during lunch break at **1.00 PM** at the **Life Science Building Atrium**

If you would like to get a profesisonal photo taken, please fill out the Qualtrics survey linked below:

https://rutgers.ca1.qualtrics.com/jfe/form/SV_6i2XoLsx498XHUO

MBGSO Symposium

The Annual Graduate Student Research Symposium

Poster Presentations

Poster Presentation -1
11.00 AM - 12.00 PM

Poster #	Presenter
1	Ghata Nandi
2	Xia Qui
3	Masuda Akther
4	Laura Byron
5	Sree Varshini Murali
6	Maddy Terry
7	Yue Wu
8	Derek Cavallpo
9	Hayley Palmer
10	Sesha Rajeswari Tullari
11	Prarthana Gowda
12	Prateeksha Rout
13	Jay Joshi
14	Katherine Duseau
15	Nora Jaber
16	Rachel Ofer
17	Jingyun Qiu
18	Byron Avihai
19	Yijia Chen
20	Saurav Doshi
21	Kimberley Izarraras
22	Gustavo Rios

Poster Presentation -2
2.00 PM- 3.00 PM

Poster #	Presenter
23	Connor Mattivi
24	Mansi Gokani
25	Sebastian Gallon
26	Ahmad Salman Sirajee
27	Kaitlyn Snyder
28	Jordan Lee
29	Lucas Foster
30	Lingjun Lu
31	Seepra Rath
32	Sarah Potgieter
33	Ryan Fink
34	Mudassir Lodi
35	Gabby Panayotakis
36	Eleanor Agosta
37	Xinyu Hu
38	Zoe Mastromihalis
39	Eton Victor
40	Komal Mandleywala
41	Sayoni Chatterjee
42	Nusrath Yusuf

MBGSO Symposium

The Annual Graduate Student Research Symposium

Oral Presentations

Oral Presentation -1
10.00 AM - 11.00 AM

Talk #	Presenter
1	Siwen Wu
2	Nora Jaber
3	Mihai Solotchi

Oral Presentation -2
3.00 PM- 4.00 PM

Talk #	Presenter
4	Pradeep Moon Gunasekaran
5	Abigail Heller
6	Branden Sanabria

Thank you for being a part of our amazing community! We hope you enjoyed this edition of the MBS Digest. Don't forget to join us at the MBS Symposium! And if you see a camera, don't be shy, strike a pose! Stay curious, stay connected, and see you all soon!

If you have any questions or comments, reach out to:
Reem Alatrash (President, MBGSO): ra996@gsbs.rutgers.edu
Sayoni Chatterjee (Vice President, MBGSO): sayoni.chatterjee@rutgers.edu