

ScienceWriters2025 Highlights: Artificial Intelligence, Research Integrity, Science Communication, and More

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Addressing topics ranging from artificial intelligence (AI), to questionable research practices, to editor–freelancer interactions, ScienceWriters2025—organized by the National Association of Science Writers and the Council for the Advancement of Science Writing—featured virtual-only sessions on October 22–24, 2025, and in-person sessions in Chicago on November 7–9, 2025. The current report presents highlights of the virtual-only sections and selected in-person sessions.

Kyle Hickman (<https://orcid.org/0009-0007-5527-7292>), Ye (Vivian) Chen, Genevieve Makowski, Sophia Cela, and Hussien Elkazaz covered virtual-only sessions of ScienceWriters2025 as work for a graduate science reporting course at Texas A&M University. Mouttasem Albarodi, Emily Velez (<https://orcid.org/0009-0008-2029-7805>), Erin Wunderlich, and Lalain Aquino (<https://orcid.org/0009-0008-5655-5319>) attended ScienceWriters2025 in person through the graduate program in science and technology journalism at Texas A&M. Barbara Gastel (<https://orcid.org/0000-0003-0804-2953>) teaches the course and directs the graduate program.

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The Truth About AI: How to Report on It Without Giving in to Hype and How to Use It in the Newsroom

By Kyle Hickman

The opening session of ScienceWriters2025 examined how journalists can responsibly report on AI, and how they can thoughtfully incorporate it into newsroom work. Moderated by Brittany Trang, health tech reporter at *STAT*, the session featured Ari Sen, investigative data journalist at CBS News, and Jeff Hargarten, data journalist at the *Minnesota Star Tribune*.

Sen began by outlining the fundamentals of AI, explaining that many public debates about the technology—whether it will eliminate jobs, cure disease, or pose existential risks—are best approached with a solid understanding of what AI actually is. He distinguished between algorithms, which follow explicit human instructions, and machine learning models, which infer patterns from data. Sen described how modern AI systems use vast amounts of text, image, and audio data to identify relationships, recognize language, and make predictions.

Sen encouraged reporters to dig into how AI models are built and tested, noting that their reliability depends on the quality of training data and on which outcomes developers choose to optimize. Evaluation metrics, he explained, determine how success is defined and can inadvertently shape real-world behavior. He also discussed the importance of fairness and transparency, pointing to high-profile cases in which biased data led to discriminatory outcomes.

Hargarten followed by discussing how AI can be applied in journalism itself. He highlighted uses such as automated transcription, document summarization, data cleaning, and idea generation. He cautioned that while these tools can streamline repetitive work and reveal new insights, journalists

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must disclose their use and ensure human oversight at every stage.

Both speakers agreed that AI should be covered with the same rigor as any scientific or political institution. When approached critically and ethically, they said, AI can enhance accuracy, efficiency, and creativity in journalism while reinforcing the indispensable role of human judgment.

Reporting Mistakes and Failure in Science as a Path to Trust

By Genevieve Makowski

Errors are inevitable in any field, but in scientific writing and science reporting, their effects can reach beyond a single incident. At this session, a panel addressed communicating appropriately about such errors. The panel was moderated by Brian Southwell (distinguished fellow, RTI International) and consisted of Annette Flanagan (executive managing editor, JAMA and JAMA Network), Ashani Johnson-Turbes (president, Society for Health Communication), Caitlin Looby (reporter, *Milwaukee Journal Sentinel*), Emily A Andrews (doctoral candidate, Northwestern University), and Ivan Oransky (cofounder, Retraction Watch; Editor-in-Chief, *The Transmitter*; and distinguished journalist in residence, New York University).

The panel began by discussing the importance of corrections. The panelists agreed that corrections are a net good for the scientific literature. Flanagan described the retraction and replacement process at JAMA, which lets authors easily correct mistakes that do not invalidate the science.

Next, the panel addressed reporting on controversial areas of science. Looby noted the difference between researchers publishing differing results and the use of “conflicting evidence” (or misinformation) as a political tool. Portraying science as a developing process and being careful not to repeat misinformation while reporting on contentious topics were strategies advocated to prevent misunderstanding among the public.

The panelists then discussed ways to regain audience trust after an error is published. Everyone agreed that choosing transparency over defensiveness is among the most impactful ways to rebuild trust. Other mentioned approaches included focusing on corrective steps, showing empathy and humility, and rebuilding trust through engagement. Johnson-Turbes noted that this process is audience-specific, as audiences’ histories with the scientific establishment will affect how they interact going forward.

The final segment regarded how AI is affecting scientific publishing. While AI itself brings in both benefits and problems, Oransky stated that the bigger problem is the

incentive structure that pushes researchers to cut corners and not check their work.

How to Spot “Questionable Research Practices”—and Never Be Fooled by Bad Science Again

By Sophia Cela

This session unpacked questionable research practices (QRPs)—research behaviors that fall short of fraud, yet still undermine the quality and credibility of scientific findings. These practices, which sometimes occur unintentionally, can bias results and hinder study replication. Moderated by science journalist Rose Rimler (senior producer, Science Vs podcast), the panel on this topic featured psychologists Jane Hergert (postdoctoral researcher, Humanistische Hochschule Berlin) and Tamás Nagy (assistant professor, ELTE Eötvös Loránd University, Budapest). Much of the discussion was based on the recent paper “Bestiary of Questionable Research Practices in Psychology.”¹ This paper, of which Nagy and Hergert were lead authors, expanded the number of recognized QRPs from about 15 to 40.

Rimler opened by acknowledging that the session’s title might be slightly exaggerated but captured its aim—to help journalists be fooled less often by weak or misleading studies. Drawing from the paper, she explained that about half of researchers across disciplines are estimated to engage in QRPs. Recognizing such practices, the panelists emphasized, is vital for evaluating research—an essential skill for science writers seeking to convey accurate findings.

During a question-and-answer segment, Nagy explained the presentation of their findings as a “bestiary,” a format inspired by medieval collections of mythical animals. The paper, he said, is a collection of QRPs and addresses their detectability, potential harms, preventive measures, warning clues, and stage in the research process. Making the metaphor more literal, he then presented 6 examples, each depicted as mythical “beasts”: biased manipulations, selective sampling, rule changing, ad hoc covariates, hypothesizing after results are known, and selective publishing. Nagy noted that some practices are problematic only when not transparently reported and that some familiar QRPs, such as p-hacking, are actually umbrella labels encompassing several QRPs.

To illustrate the content, Hergert led quizzes before and after Nagy’s overview, asking attendees to decide whether sample research scenarios were acceptable or questionable. Following the presentation, attendees showed greater confidence in recognizing questionable methods. In the final discussion, the panelists responded to attendees’ questions, including why such problems escape peer review and how journalists might address them with researchers.

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The session concluded with a link to the speakers' paper and a table listing all 40 QRPs, organized by research phase.

Cultivating Your Own Paying Audience: Entrepreneurial Science Writing for Newsletters, YouTube, and Podcast

By Ye (Vivian) Chen

This session discussed the challenges and opportunities faced by freelance science writers as they seek to establish their own channels. Moderated by Eli Kintisch, journalist and professor at George Washington University, the discussion featured insights from Justin Helps, writer, animator, and producer of the Primer YouTube channel; Colleen Hagerty, disaster reporter, *My World's on Fire* newsletter; and Cynthia Graber, cohost and cofounder of the Gastropod podcast.

Helps said providing valuable content is key to retaining an audience. He shared how he transformed his passion for biology and animation into a YouTube channel that visually explains science. He emphasized that passion, not economic goals, drives sustainable content creation. Hagerty and Graber explained how they turned their interests into niche content, advising others to research the market thoroughly and leverage networks. Meanwhile, both noted the balance between passion and financial realities. Hagerty said it took her two and a half years to become profitable; Graber said she spent 18 months preparing her podcast without income.

The speakers emphasized that building audience trust is essential. They described how, to ensure accuracy, they do fact-checking through experts, collaborators, or paid reviewers. Transparency also matters, they said. Helps said he openly communicates his mistakes to viewers. Hagerty said she explains her workflow to her readers, and Graber said she incorporates her personality into her podcast. In addition, the speakers indicated that strong branding sets a channel apart. Hagerty said she chose platforms that allowed her to own her content, design her own cover pages, and invite membership through a QR code. Helps said he designed a cartoon-style logo to differentiate his channel.

The 3 speakers also shared how to generate income while staying true to their content. They discussed the options of advertisements, subscriptions, licensing, and grants. Graber said she values subscriptions because they help her establish a direct connection with listeners. She also focused on podcasts instead of seeking a return on investment by expanding the channel. Helps said he rejected ads that compromised his content. Overall, the session's message was that science writers pursuing such entrepreneurial

endeavors must balance passion and financial goals and stay committed to their chosen path.

How Worker-Owned Media Outlets Can Work

By Hussien Elkazaz

Moderated by Ramin Skibba (freelance science, climate, and technology reporter), this session explored practical strategies for establishing independent media outlets. The panel featured Jason Koebler, cofounder of 404 Media; Maddie Bender, cofounder of *Sequencer* magazine; and Sabrina Imbler, staff writer at the worker-owned publication *Defector*. Together, they discussed lessons learned from founding new journalistic ventures amid instability in legacy media.

The panelists described their publications as responses to "corporate bloat" and editorial constraints in previous workplaces. Imbler noted that *Defector* emerged after former *Deadspin* writers resigned collectively when ordered to "stick to sports." Koebler similarly explained that 404 Media was created to "strip the company down to journalism itself," avoiding excessive executive overhead and allowing editorial independence.

Financial sustainability of their outlets, the speakers stressed, relies on subscriber-driven models and intentionally lean operations. 404 Media, which emphasizes transparency and "journalism with real-world impact," uses a paywall and offers subscriptions at US\$100 per year or US\$10 per month. *Defector* is funded primarily by roughly 42,000 subscribers, including a core base of about 20,000 who have remained since the outlet launched 5 years ago. *Sequencer* employs a flexible "pay-what-you-can" approach, with a typical subscription level of US\$6 to US\$7 per month that supplements its free newsletter.

Koebler emphasized keeping overhead "as low as possible." The panelists said that this financial independence enables a journalistic voice that rejects what they termed "false objectivity." Imbler said *Defector* is the first newsroom where they are "allowed to have a political opinion" and stated that such freedom "sharpens the coverage."

However, independence carries challenges. Koebler identified legal protection as the largest ongoing expense. Additionally, the decline of traditional social media platforms has made audience growth harder, pushing these outlets to depend more on direct referrals and community word-of-mouth. Still, the panelists agreed that the benefits outweigh the difficulties. Koebler said he now feels "more financially secure" than in corporate media "because we control the numbers." Bender added, "At the end of the day, I wouldn't do it if it wasn't fun."

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After the Pitch: Bridging the Editor–Freelancer Divide

By Mouttasem Albarodi

Scope creep, editor ghosting, and late payments are among the common causes of friction in editor–freelancer relationships. These issues were the focus of a panel that brought together science editors and reporters from US-based outlets to examine how tensions arise and how they can be managed.

Scope creep, the gradual expansion of a story's scope after reporting begins, emerged as a recurring concern. Panelists emphasized that it often reflects miscommunication. Freelance science journalist Sarah Scoles, a senior contributor to *Undark*, shared a practical tactic: placing the originally accepted pitch at the top of the draft to anchor expectations for both writer and editor.

Shi En Kim, a climate and science editorial fellow at *High Country News*, echoed that approach. “No surprises,” Kim said, stressing the importance of alerting editors as soon as reporting begins to shift. From the editorial side, Sarah Zielinski, print editor at *Science News Explores*, emphasized documenting expectations upfront. “If it's written down, there's no room for interpretation,” she said.

Panelists also discussed editor ghosting, when pitches or drafts go unanswered. They noted that silence often reflects workload rather than intent. Zielinski encouraged follow-ups and suggested escalating thoughtfully by calling the editor or reaching out to someone else at the publication. For time-sensitive pitches, Julian Nowogrodzki, science editor and newsletter lead at *Sentient Media*, advised clearly flagging urgency in the email subject and opening lines. Kendall Powell, senior editor at *Nature Careers*, who spent more than 2 decades freelancing before becoming an editor, noted that editors juggle multiple roles and deadlines, but that polite nudges are reasonable and should be expected.

Delayed payments also surfaced as a structural challenge. Zielinski described how *Science News Explores* has streamlined payments through standardized invoicing and automated systems, noting that editors who understand internal processes can better advocate for freelancers. “If you know the system well, you can hack it for your writers,” she said.

Scoles encouraged freelancers to plan workflows strategically by balancing quick-turnaround assignments with longer projects and to communicate transparently. Above all, she reminded writers that most editors want them to succeed and are balancing the needs of both readers and contributors.

How to Engage an Audience: Lessons from Fiction, Stand-up Comedy, and Shakespeare

By Emily Velez

This session featured lessons that science communicators have learned from their nonscience pastimes. Comoderated by Kathryn Jepsen, editor-in-chief of *Symmetry Magazine* (now physics editor at *Quanta Magazine*) and Madeleine O'Keefe, senior science writer at Fermi National Accelerator Laboratory, the panel consisted of Blythe Terrell, executive editor at *Science Vs*; Kate Gammon, freelance journalist; and Peter Jurich, freelance journalist.

Jepsen, who edits speculative fiction, emphasized the importance of tension in stories. In doing so, she introduced the M.I.C.E. quotient (milieu, idea/inquiry, character, event), each element of which can drive tension in a story. For example, in *The Hunger Games*, the concept of the games, an “event,” upends the world. Unexplained results in scientific research also can serve as sources of tension.

O'Keefe, who acts in Shakespeare plays, suggested ways for science writers to keep their topic fresh. Science stories can get repetitive, much like 400-year-old Shakespeare plays can. “Use it!” exclaimed O'Keefe, recalling the advice she received to show her personality and style in plays. Similarly, she said, your personality and energy should enliven your writing.

Terrell, who writes children's books, focused on her podcast *Science Vs* and the precariousness of finding the right tone. Although science can be serious, she emphasized letting scientists guide the humor, creating opportunities for their wittiness. This space for unserious moments shows interviewees that they can relax and makes for a more entertaining piece.

As a stand-up comedian, Gammon emphasized applying comedic skills to science writing. She especially highlighted the “rule of three.” This rule says the punchiness of a joke often relies on 3 phases: introduction, development, and punchline delivery. Using the rule of three, Gammon said, can make a science concept more memorable and make an audience more comfortable.

Jurich, also a stand-up comedian, discussed taking the time to figure out how you want to represent yourself. He presented questions to ask before diving into comedy or science communication: “What do I want to talk about?” “How do I deliver that message?” “How do I want people to feel?” From these answers, he said, he was able to establish a brand built on trust.

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When Reporters Conduct Mini-Research Projects to Tell Stories

By Erin Wunderlich

Moderated by Priyanka Runwal (associate editor, *Chemical & Engineering News*), this session focused on the experiences of 2 veteran investigative journalists who collected and analyzed their own data to tell stories.

Wendy Ruderman (senior health and science journalist, *Philadelphia Inquirer*) discussed “Toxic City,” a series she cowrote with Barbara Laker in 2019. This series exposed extensive lead paint issues in Philadelphia’s old housing and public schools. To gather evidence, her team collected neighborhood dirt samples, had teachers secretly gather paint samples, and reviewed documents such as those containing drinking water test results. The resulting series, which was a finalist for a Pulitzer Prize, led to a law mandating lead-safe schools and a \$15 million cleanup fund for Philadelphia.

Ruderman said that starting a project of this scale often requires outside funding—encouraging others to “apply, apply, apply” even if it is against the discretion of an editor. With regard to seeking out scientists and others to collect samples and run tests, she stressed the importance of avoiding conflicts of interest and adequately conveying to any exposed evidence-collectors the risk of participation.

Patricia Clarembaux (senior multimedia journalist, Univision Noticias Digital) led a multiyear investigation into immigrant farmworkers exposed to harmful pesticides in Florida, Michigan, and North Carolina. Using silicone armbands to detect up to 75 pesticides, and employing expert assistance in data interpretation, the investigation linked many cancer cases to exposure to common pesticides such as Roundup. The culmination was a multimedia story dramatically highlighting the impact of pesticide exposure on the individuals portrayed.

Clarembaux stressed the importance of collaborating consistently with scientists for fact-checking, noting that the team worked with over 15 experts from multiple states to verify data interpretation. Before publishing, she emphasized, it is critical to consult experts, contact lawyers, and review the story multiple times for accuracy. She noted that the ultimate goal was to “show the workers the numbers” regarding their pesticide exposure, so they were aware of the risks.

Thirsty Data Centers, Steep Emissions: AI’s Impact on the Environment and Public Health

By Lalain D Aquino

As AI continues to grow, so does the consumption of fresh, clean water to cool its data centers. According to a 2024 report from Lawrence Berkeley National Laboratory, data centers housing AI are estimated to consume 6.7% to 12% of

US electricity, and their direct water consumption is projected to double or quadruple by 2028. These rising demands on natural resources were the subject of a briefing by Shaolei Ren, associate professor of electrical and computer engineering at the University of California, Riverside.

“The actual, real story about AI water [use] is a lot more nuanced [than often portrayed],” Ren said. During this session, Ren explained how thirsty AI infrastructures influence our water, other aspects of the environment, and public health.

AI data centers, Ren noted, house powerful computers storing programs and large amounts of data—like a digital library—so AI systems can retrieve information to learn patterns, make predictions, answer questions, and perform other tasks. Extensive computing power is needed to run these AI systems, requiring data centers to have a steady flow of electricity, network connectivity, and reliable cooling systems to function.

Water, Ren explained, is a critical source of cooling. The water absorbs the heat produced by the computers, and some evaporates, carrying the heat away; the rest is recycled back through the system to repeat the cooling process. Without water, computers can overheat, be damaged, and catch fire. In such instances, service infrastructures powered by these centers, such as apps, hospitals, and banks, may stop functioning. However, the water used is often from the same source as that used by nearby residents.

In addition to issues regarding water, other environmental concerns exist. Backup diesel generators that are used during peak demand release air pollution, Ren stated. The pollutants—such as nitrogen dioxide, sulfur dioxide, and small particulate matter—can pose serious health risks to surrounding communities.

Ren noted that measures to lower AI-associated water consumption and air pollution are being explored. He stressed, however, the need for transparent reporting, smarter workload distribution, and thoughtful data center placement.

In closing, Ren acknowledged that AI has both benefits and costs. “It has some physical footprints, including energy, water usage, and public health impacts, but these are real costs just like in any other sector,” he said. “We need to face it, and we need to address it.”

Preparations for ScienceWriters2026 are now underway. The in-person component will be September 25–28, 2026, in Corvallis, Oregon, in partnership with Oregon State University. The virtual-only component will be October 14–16, 2026. For additional information, please see sciencewriters2026.org.

Reference

1. Nagy T, Hergert J, Elsharif MM, et al. Bestiary of questionable research practices in psychology. *Adv Method Pract Psychol Sci*. 2025;8(3). <https://doi.org/10.1177/25152459251348431>.