



## SYMPOSIUM

# Five Key Strategies for Organizing Interdisciplinary Scientific Events to Strengthen Careers, Collaborations, and Creativity

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**Synopsis** Science is becoming increasingly interdisciplinary; the widespread emergence of dedicated interdisciplinary journals, conferences, and graduate programs reflects this trend. Interdisciplinary scientific events are extremely valuable in that they offer opportunities for career advancement, especially among early career researchers, for collaboration beyond traditional disciplinary echo chambers, and for the creative generation of innovative solutions to longstanding scientific problems. However, organizing such events can pose unique challenges due to the intentionality required to meaningfully break down the barriers that separate long-independent disciplines. In this paper, we propose five key strategies for organizing and hosting interdisciplinary scientific events. The recommendations offered here apply both to small symposia aiming to contribute an interdisciplinary component to a larger event and to broad interdisciplinary conferences hosting hundreds or thousands of attendees.

## Motivation

In the 21st century, the gaps between scientific fields have slowly grown smaller, if not disappeared entirely (Porter and Rafols 2009; Van Noorden 2015). Dedicated interdisciplinary journals [e.g., *Integrative & Comparative Biology* (ICB), *Proceedings of the National Academy of Sciences* (PNAS) Nexus, *Journal of the Royal Society Interface*, *Journal of Experimental Biology* (JEB)], conferences [e.g., Society of Integrative and Comparative Biology (SICB), International Symposium of Adaptive Motion of Animals and Machines (AMAM), Internal Society of Biomechanics (ISB), International Society on Systems Biology (ICSB)], and graduate programs (e.g., Quantitative Biosciences, Biomimetics, Systems Biology) have become increasingly common, reflecting the reality that scien-

tists now bridge traditional disciplines in their day-to-day work. The field of biology, for example, frequently interfaces with fields such as computation, geology, materials science, and engineering. Embracing such intersections has empowered biologists to address a broader range of scientific questions, such as the evolution of integument in birds (Maderson and Homberger 2000) and the reconstruction of locomotion in extinct dinosaurs (Manafzadeh et al. 2024), while also facilitating the translation of basic research into applied solutions for real-world problems, such as more effective bipedal prosthetics for amputees (Beck et al. 2017) and more efficient image analysis algorithms for animal conservation (Tuia et al. 2022; Schulz et al. 2023). The trend towards interdisciplinarity has even gone so far as to spark the genesis of entirely new fields of science—such

## Interdisciplinary Events Strengthen:



**Fig. 1.** Interdisciplinary events can strengthen scientists' careers, collaborations, and creativity.

as biomechanics, which fundamentally aims to bring together ideas, methods, and techniques from both biology and engineering—in turn catalyzing the emergence of even further fields—such as mechanical ecology, at the intersection of biomechanics and ecology (Bauer et al. 2020; Wainwright and Reilly 1994).

Although complex scientific problems benefit from such interdisciplinary synergy, achieving successful integration between or among long-independent disciplines can present substantial challenges. Because each field comes with its own terminology, it can be challenging to find an effective common language without losing valuable, field-specific meanings of words or phrases (Pischke et al. 2017). Finding such a common language depends on the ability of teams to establish an understanding of their shared goal while also keeping in mind their differences in background and any additional learning required to better understand each other (Yarden and Esterman 2008; Xu et al. 2015; Wagner et al. 2019). Interdisciplinary teams may also struggle with broader, discipline-based differences in culture, such as an emphasis on more theoretical versus experimental approaches or more reductionist versus holistic approaches, which can complicate consensus on the selection and adoption of shared methodological practices.

Interdisciplinary scientific events, ranging from small-scale workshops to large conferences, offer a dedicated space and time to tackle these and related challenges. For example, CV4Animals is an event regularly hosted to contribute to the annual Computer Vision and Pattern Recognition conference, aiming to harness big data for wildlife conservation through interdisciplinary collaboration, and this community has worked together on publications helping address

the language gaps between ecologists and computers scientists (Tuia et al. 2022). Some symposia at the Society for Integrative and Comparative Biology annual meeting have also worked to encourage interdisciplinary team-building, such as those that have aimed to unify experimental and theoretical approaches to comparative biomechanics (Schwaner et al. 2021a; Wheeler and Chan 2023). Other scientific events have even gone so far as to lead to new journals explicitly promoting interdisciplinary publication. For example, *Conservation Physiology* began as a special session in the Society of Experimental Biology annual meeting in the early 2000s and, starting in 2013, grew into an annual session with an accompanying interdisciplinary journal (Cooke et al. 2013).

We suggest that organizing these kinds of interdisciplinary scientific events has exceptional potential to advance interdisciplinary science, while also generally strengthening scientists' careers, collaborations, and creativity (Fig. 1). Organizing any event promotes career development by facilitating networking and fostering transferable management skills (Bridgstock 2009; Sciortino 2018; Camarinha-Matos et al. 2020). Beyond this baseline, however, interdisciplinary events further promote collaboration by bringing together researchers who might not otherwise interact. In doing so, they create an explicit space for the cross-pollination of ideas, often resulting in reciprocal illumination—whether sought or serendipitous—between or among traditional fields (Darbellay et al. 2014). By forcing scientists outside of their field-specific echo chambers (Kim et al. 2017), interdisciplinary scientific events encourage increased risk-taking, innovation, and creative thinking (Patterson 1986; Moirano et al. 2020), ultimately accelerating the pace and expanding the hori-

zons of scientific discovery (Wuchty et al. 2007; Chen et al. 2009).

## Five key strategies

With the goal of helping those motivated to contribute to advancing interdisciplinary science, here we outline five key strategies for organizing a successful interdisciplinary scientific event:

- **Strategy 1** - Divide labor with a diverse dream team
- **Strategy 2** - Seek funding broadly to bring disciplines together
- **Strategy 3** - Build an inclusive and accessible event
- **Strategy 4** - Communicate early, often, and broadly
- **Strategy 5** - Actively coordinate cross-disciplinary collaboration

These suggestions are nonexhaustive and are strongly shaped by our own experiences contributing to the organization of scientific events ranging from small symposia (e.g., regional meetings of the Society for Integrative and Comparative Biology Divisions of Vertebrate Morphology and Comparative Biomechanics) to large conferences (e.g., symposia at the annual Society for Integrative and Comparative Biology annual meeting or congresses of the International Society for Vertebrate Morphology).

### Strategy 1 - Divide labor with a diverse dream team

When planning and executing an event, the first—and arguably most important—step is to assemble a team. When assembling your organizational “dream team,” we suggest that you:

- **Target interdisciplinarity from day zero** - A successful team for an interdisciplinary event will, itself, be interdisciplinary. Beyond targeting the academic disciplines you hope to unite through your event, also consider bringing on members from nonacademic backgrounds, especially if a secondary goal of your event is to offer diverse professional development opportunities for early career attendees.
- **Bring aboard scientists you trust and respect** - Effective teamwork is founded on trust and respect. When assembling a group of organizers, think about colleagues you would also enjoy working with in the future, because working together on an event can lay a foundation for future collaboration. It is important to note that you might not know your co-organizers beforehand. Reaching beyond your own circles will help you escape your pre-

viously established echo chambers and widen the interdisciplinary goal's reach.

- **Divide labor fairly and clearly** - Balance members' roles on your team, making sure not to burden any one member with an unreasonable workload. Consider team members' career stages and other commitments beyond event organization. Transparent descriptions of roles ensure that everyone is aware of their responsibilities and help to avoid unnecessary tension. With an interdisciplinary team, it is particularly important to ensure that the terminology used to describe roles and goals is equally accessible to members from all included fields.
- **Be kind. Life happens** - Acknowledge that your team members are human. To preserve continuity in event planning, ensure tasks rely on more than one person in case anyone has to take a temporary or permanent step back from the team. If you need to fill the role, look to a discipline similar to the teammate who needed to step away, such as a trainee in that individual's lab, to ensure the team's interdisciplinarity remains intact. As organizers, having an effective communication plan with regular check-ins among members can help everyone stay informed.
- **Err on the side of inclusivity** - Strive to provide opportunities for anyone interested in being involved in organizing your event. Enthusiastic people who believe in an event's mission make the best and most reliable team members, regardless of their career stage.

### Strategy 2 - Seek funding broadly to bring disciplines together

The most common concrete barrier to event planning is funding. This is particularly true of interdisciplinary events, because they often hope to attract scientists who are already committed to attending more traditional events within their own fields. When seeking event funding, we suggest that you:

- **Take advantage of high-ranking team members** - Certain funding agencies, such as the US-based National Science Foundation (NSF) and National Institutes of Health (NIH), require personnel leading a grant to be at or above a certain career stage. As a result, delegating grant writing to your highest-ranking team members may maximize the number of funding opportunities accessible to you.
- **Host your event as part of an existing event** - To minimize required funding and gain assistance with navigating cash flow (i.e., payments, reimbursement), nest your event within a larger, existing event (e.g., an annual meeting of your professional

society). This can also simplify the logistics of room reservations, attendance, registration, and catering. Many professional societies are open to such initiatives if interested members are willing to spearhead the planning and execution—reach out to a society's executive officers to inquire and learn more, making sure to inquire about how this might affect your timeline and policies.

- **Look to industry sponsors** - Reaching out to potential industry sponsors will test your ability to communicate why your event matters. If successful, a partnership with an industry sponsor can be mutually beneficial, offering the sponsor visibility among your participants while offering you a potential long-term funding source for your initiative.
- **Get creative with funding schemes** - Each funding organization has limitations on what their funds can be used for, so think creatively when budget planning. For example, some organizations will only allow funding to be used for competitions or awards, or will only support attendees from certain geographic locations. Therefore, read funder requirements carefully and diversify your funding sources, tapping into the appropriate pool of money for each budget line item. Researching funding timelines is critical when planning because the review and reward process for funding schemes can take anywhere from a few weeks to more than a year.
- **Focus limited funding on those most in need** - When you do not have sufficient finances to reimburse all attendees to the same amount or cover all travel expenses, focus on supporting those who can only attend the event if they are offered funding, such as early career researchers (ECRs) and those from low-GDP countries. This approach helps to level the playing field and provides more equal opportunities for potential attendees to participate.

### Strategy 3 - Build an inclusive and accessible event

Interdisciplinary scientific events will, by definition, draw participants from diverse fields but should also strive to embrace other axes of diversity and to empower scientists of diverse identities to participate equally (Armstrong 2015; Nielsen et al. 2017; Chalmers et al. 2023; McClurg 2024; Freeman and Huang 2014). To promote the inclusivity and accessibility of your event, we suggest that you:

- **Uphold a code of conduct** - Codes of conduct allow you to communicate a clear set of shared values for engagement with your event. Make sure to have an actionable plan in place for managing any vio-

lations, preferably involving the senior-most members of your organization team.

- **Create spaces for diverse identities** - When seeking to accommodate and celebrate the wide spectrum of intersecting identities of your attendees, consider creating both physical spaces—such as quiet rooms for neurodivergent participants and gender-inclusive bathrooms—and social spaces—such as alcohol-free events and identity-based affinity-group socials—during planning.
- **Accommodate parents and families** - Scientific events have increasingly begun providing childcare and/or parents' room options to support their attendees with young families (Schwaner et al. 2020). Communicate early with your attendees about any such options, their available hours, and their associated costs—while striving to subsidize costs to the greatest extent possible.
- **Virtual elements increase accessibility** - The COVID-19 pandemic underscored the extent to which virtual conference elements, when well-executed, can increase the accessibility of scientific events (Sarabipour et al. 2021; Wu et al. 2022; Chalmers et al. 2023). Explore synchronous virtual options to maximize off-site accessibility, or consider hybrid/asynchronous components in cases where this is logistically impossible.
- **Showcase inclusive initiatives** - Explicitly inform attendees about the steps you are taking to promote inclusivity and accessibility at your event. Not only will this enable them to take full advantage of these initiatives, it will also help to spread the word about the importance of considering these factors in planning scientific events.

### Strategy 4 - Communicate early, often, and broadly

Communication is the foundation of successful event execution (Hackman and Johnson 2013), and in interdisciplinary contexts, requires especially careful forethought. We suggest that you:

- **Create a website** - We strongly encourage using a website as the face of your event and the central clearinghouse for all official updates. We encourage posting updates on social media, as well, but caution against using it as a primary communication avenue because only some potential attendees use or check it regularly. Remember to give more than one organizer editorial access to ensure this website always reflects the latest logistical information, including any last-minute abstract deadline extensions or programming changes.



- **Advertise across disciplines** - Announce your event as early as possible—both to recruit organizers and attendees. Use creative combinations of word-of-mouth and direct emails to colleagues, social media platforms, and society webpages and field-specific listservs across all target disciplines, to spread the word. Note that interested individuals might then try to reach out to you through all of these avenues, so make sure your team monitors them regularly.
- **Make yourself accessible** - Make clear in all advertisements about the event and on its website how best to contact you—and then ensure that a member or members of the organization team is/are prepared to respond promptly. For example, a central email address created for the event can be created to enable automatic forwarding to all organizers.
- **Email a lot (but not too much)** - While this sounds like an impossible task, and opinions on the appropriate balance will vary, you must strive to keep your participants updated without overwhelming them. State clearly and concisely at the top of each email why you are sending it and whether any action is necessary.
- **Solicit—and then act on—feedback** - Feedback is an incomparably powerful tool to assess what went well and what can be improved upon for future events. At a minimum, electronically distribute a survey that allows attendees to anonymously share their thoughts after the event. Meet as an organizing team for an event “postmortem” and discuss the responses, identifying areas for future improvement.

### Strategy 5 - Actively coordinate cross-disciplinary collaboration

Careers, collaboration, and creativity can be strengthened by interdisciplinary scientific events, but only when the event is truly interdisciplinary. Intentional interdisciplinary interactions must be a common theme extending throughout the event, not a single artificial moment. To achieve this outcome, we suggest that you:

- **Program with intention** - Event programming seeking to put into conversation perspectives across fields will take time, effort, and careful thought. Avoid promoting existing echo chambers, which result from taking the “easy way out” with insular monodisciplinary or mono-PI (a single faculty member is a senior author on all talks) sessions. In all likelihood, talk or poster sessions cannot be fully planned before having received most or all conference submissions; instead, they require individualized consideration of the specific projects submit-

ted. Diversify the fields of training captured, species represented, and methods used in each session to further foster cross-cutting connections among session presenters.

- **Create formal and informal spaces for networking** - Networking plays a vital role in the success and development of ECRs (Subramanian 2020), and facilitating networking at an interdisciplinary event will promote cross-disciplinary collaboration. Create a diversity of networking events, ranging from informal socials to formal panels or workshops, to create spaces for a range of personality types. It is important to give time for attendees to connect, and lengthened informal events are a great way to do this, such as longer coffee breaks, lengthy lunch breaks, and so on.
- **Feature strong communicators** - If your event includes plenary lectures, in addition to standard considerations of diversity, focus on inviting individuals who are strong science communicators and explicitly commit in advance to cutting across field-specific jargon. These might be scientists who already engage in interdisciplinary work, scientists who are interested in forging these connections for the first time, or individuals from outside academia who have a stake in the event focus, such as zookeepers or industry partners.
- **Consider event outputs** - To increase the long-term impact of your event (and to satisfy the requirements of some funding sources), think about potential concrete outputs. Examples include commentaries around the particular type of event you organized (e.g., Brown et al. 2023) or forward-looking manuscripts summarizing key takeaways (e.g., Schwaner et al. 2021b). Even a more informal blog post highlighting lessons learned from interdisciplinary interaction can broaden the reach of your event (e.g., Neergaard et al. 2023).
- **Support a long-term community** - After the conclusion of your event, provide a means for participants to continue to connect in the future, building from new collaborations. One successful example of such a community is the AI for Conservation Slack workspace (<https://beerys.github.io/#slack>; Beery 2024), but other options include an ongoing series of virtual follow-ups advertised through your event webpage.

### Final thoughts

In our own experience, contributing to the organization of interdisciplinary scientific events has been extremely enjoyable, broadened the horizons of our

scientific work, and offered us opportunities to strengthen our own careers, collaborations, and creativity. We have offered several points to help organizers get started, but prospective organizers may face constraints when implementing our suggestions, and we acknowledge that these suggestions require trade-offs. For example, moving events to offsite venues might save money but may create travel or safety issues for people of specific demographics or abilities. Likewise, creating a conference where virtual attendees are engaged can take additional funding for an internet connection and volunteers to help keep online participants engaged. Nevertheless, we hope the information and strategies offered here encourage and empower other scientists—particularly other ECRs—to organize interdisciplinary scientific events, further advancing interdisciplinary inquiry and creating spaces for the pursuit of new and exciting scientific questions.

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The authors declare no conflicts of interest.

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