

Lessons Learned from Organizing a Biophysics Symposium in a Developing Country

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Scientists in developing countries face several challenges, including limited funding and a smaller and less connected scientific community. One opportunity of growth is to host scientific meetings in these countries to highlight the importance of scientific research in society. As early career investigators, we organized a biophysics symposium in Costa Rica, a developing country, with the goal of increasing the awareness of and interest in biophysics and biomedical research. In this report, we discuss our experience organizing this event to serve as a practical guide with actionable points to organize meetings of this kind in developing countries.

Science and networking in the developing world

Developed nations have benefited from the *scientia potentia est* or “knowledge is power” economy, in which pioneering work in the sciences has led to crucial new technologies and further economic growth. Developing countries, on the other hand, face challenges that limit investment in fundamental science that may not produce immediate tangible benefits but has significant potential to provide long-term returns. Hence, smaller scientific communities in developing nations must take advantage of the larger scientific network already in place after decades of investment in research in high-income countries. Some advances have been observed in this area. Chile, for example, has boosted its scientific productivity by establishing strong international collaborations (1). Overall, internationally coauthored articles in developing countries rose from 10% in 1990 to 25% in 2010 (2). Nonetheless, further actions must be implemented to bridge the gap between the developing and developed nations.

Beyond increasing research funding, other actions can substantially benefit scientific progress. Experienced investigators who have built prestigious careers in developing nations highlight the need for national and international collaborations, as discussed above, but further emphasize the importance of participating in meetings and

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visiting other institutions as vital factors for success (3). Face-to-face encounters at scientific meetings are the standard to spur collaborations between investigators who otherwise would have difficulties connecting (4). Scientific and networking events in developing countries can promote fruitful professional relationships, while allowing scientists from these nations to better use their already limited resources.

The first Costa Rican Biophysics Symposium

Costa Rica has a middle-income economy, which according to the World Bank invested approximately 0.5% of its gross domestic product in research and development in 2016. For comparison, Israel invested 4.58% in 2017 (5). Government-supported research in Costa Rica is varied, with internationally renowned groups such as the Clodomiro Picado Institute, a powerhouse of snake venom research tasked with the production of snakebite antidotes for human and veterinary use. Our field of interest, biophysics, does not have a strong presence in the Costa Rican scientific community. We organized the first Costa Rican Biophysics Symposium to create a space where biophysics could be introduced to a mixed audience of scientists, students, and the general public. We found it extremely important to build a strong organizing team. Organizing such a specialized networking event for the first time, while living in different countries, can be a tremendous challenge.

Biophysical research relies on particularly expensive, cutting-edge techniques and instrumentation that may not be available in most institutions. A strong network of collaborators is then key to promote effective resource sharing for biophysicists in developing countries. Furthermore, such collaborations are beneficial for national and international funding applications. We therefore surmised the event would be an excellent networking opportunity to promote such collaborations, relying on a mixture of local attendees and Costa Ricans performing research abroad. In addition, this would be an opportunity to bring awareness about the large umbrella that biophysics casts across multiple disciplines.

Recruit speakers using your network, social media, and databases

Since the inception of this idea, we set the event close to the end-of-year holiday season, given that many Costa Rican expatriates return home during this time. Timing of the event is particularly important, because incentives are few for prospective speakers to invest time and resources in attending a small, first-of-its-kind meeting instead of an established conference. Speakers should be invited well in advance (more than a year of anticipation, if possible) to allow them to plan their schedules accordingly.

To identify potential speakers, we took advantage of freely available databases. First, we used the Red Ticotal from the National Academy of Science of Costa Rica (ANC by its Spanish abbreviation; 6), which encompasses scientists and engineers who study or work abroad. Another resource was the “Find a Biophysicist” database from the Biophysical Society, which includes a country-specific search (7). Professional social media sites, such as LinkedIn or ResearchGate, helped make a broad search among the organizers’ networks. Speaker selection for this type of meeting needs realistic expectations, and some flexibility was necessary in the research topics presented, given that the number of speakers determines the program. We recruited 8 speakers, including the 3 organizers, and organized the symposium as a half-day event. The first talk was an overview of what is encompassed by biophysical research, also highlighting prominent female and Latin American scientists.

Find venues that want to promote your event

The venue is a major expense for a professional meeting. Our recommendation is to work with local universities or institutions that oversee the scientific enterprise to host the event in their

facilities. We organized the symposium at the National Academy of Sciences of Costa Rica, which generously offered its auditorium for the event at no cost. This arrangement is also advantageous from a logistics and advertising perspective: it is in the best interest of these institutions to promote novel scientific events through their networks.

Think creatively about funding sources

We aimed to promote attendance by making the event free to the public. Procuring funding sources for a first-time event can be challenging, especially given the already limited resources in developing countries. Professional societies can provide a substantial help in this matter. The Biophysical Society kindly supported our event through a Networking mini-grant, which was enough to cover all expenses of the meeting, including refreshments and printed materials. By creating a precedent, sponsor recruitment may become easier in future editions (one of the authors has organized unrelated symposia and found that repetitions of an event increase confidence of prospective sponsors). In some instances, it may be unavoidable to ask for a registration fee.

Promote the event to a broad audience

Recruiting attendees starts with the flyer. It does not need to have all the details in the first iteration. We sent flyers to local universities, relevant governmental institutions, and the organizers' professional networks. We promoted the event with the Costa Rican College of Physicians, the ANC's database, and Red Ticotal. We emphasized the role of the basic sciences as the starting point of many important translational discoveries in medicine. In fact, some medical doctors attended this event. Making a web page so anyone who is interested could follow updates such as changes in the schedule, the venue, or even the date of the event was also useful.

Gather feedback

The standard method to get feedback is to ask attendees to fill evaluation forms. To improve turnout, we provided printed forms and emphasized their importance throughout the event. Other alternatives are digital feedback surveys if attendees' email addresses are available. An online registration tool becomes helpful because email information can be collected and a head count can be determined for logistic purposes.

Conclusion

We hope that these lessons and recommendations may encourage others to develop scientific conferences in other developing countries. No agenda, venue, or theme for a meeting is ideal. The best advice we can give is to have a very committed team and to be eager to adapt to any situation that arises. In the end, this professional experience is rewarding, and you will have the chance to make an unprecedented scientific impact. As research becomes more competitive and funding rates decrease even in developed nations, networking events such as this are crucial to stimulate scientific research and form the best collaborative teams.

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REFERENCES

1. Gonzalez-Brambila, C. N., L. Reyes-Gonzalez, F. Veloso, and M. A. Perez-Angón. 2016. The scientific impact of developing nations. *PLOS ONE* 11(3):e0151328.

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2. Wagner, C. S., H. W. Park, and L. Leydesdorff. 2015. The continuing growth of global cooperation networks in research: a conundrum for national governments. *PLOS ONE* 10(7):e0131816.
3. Moreno, E., and J. M. Gutiérrez. 2008. Ten simple rules for aspiring scientists in a low-income country. *PLOS Comput Biol* 4(5):e1000024.
4. Sohn, E. 2018. The future of the scientific conference. *Nature* 564(7736):S80–S82.
5. World Bank. 2020. World Bank country and lending groups. Accessed 15 January 2020. <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>.
6. Academia Nacional de Ciencias. 2020. Accessed 17 February 2020. <http://tiocatal.cr>.
7. The Biophysical Society. 2020. Accessed 17 February 2020. <https://www.biophysics.org/find-a-biophysicist>.