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## WORLD-WIDE SCIENCE

Raoul Martin ([http://berkeleysciencereview.com/author/bsr\\_magazine\\_upload/](http://berkeleysciencereview.com/author/bsr_magazine_upload/)) ■ briefs (<http://berkeleysciencereview.com/category/magazine/briefs-magazine/>)🕒 16d ago 🏷️ BGSi (<http://berkeleysciencereview.com/tag/bgsi/>), briefs (<http://berkeleysciencereview.com/tag/briefs/>)

Just a few years ago, the chemistry division at the **Vietnam National University** (<https://vnu.edu.vn/eng/>) in Ho Chi Minh City had few facilities for research. PhD programs and laboratories were in place, but the department focus was on coursework rather than laboratory research. Recognizing the value of developing research-focused chemistry expertise in their own country, the university partnered with the **Berkeley Global Science Institute (BGSi)** (<https://globalscience.berkeley.edu/>) to build a research center from the ground up.

Today, the institution houses Vietnam's first single crystal X-ray diffractometer, a crucial tool for studying the structure of molecules, along with state-of-the-art chemical analysis instruments and safety facilities. This equipment is handled by the new Center for Molecular and Nanoarchitecture, with the goal of studying and synthesizing molecular structures. The center is home to many expert young scientists that have published in high-impact journals, with over 20 articles since 2014. These changes are largely thanks to the mentoring provided by BGSi along with a governmental fund to develop the center.

The flourishing research center at Vietnam National University is one of BGSi's greatest success stories, but it is only one of many projects that they are coordinating. Based at UC Berkeley, BGSi is dedicated to developing fundamental science research in foreign countries aided by funds provided by local governments, industries, and institutions. Omar Yaghi, professor of chemistry at UC Berkeley and founding director of BGSi, explains that all global science activities are based on mentoring. "We are approached by institutions around the world and help them according to their scientific needs," Yaghi says. BGSi then works on-site to "mentor emerging scholars on how to manage a successful research enterprise, as well as train on the use of new instruments and how to think scientifically in term of recording observations and work ethics."



On top of improving scientific technique, BGSi also helps researchers communicate their work to the international scientific community. "We then guide them through publishing their work," Yaghi continues. "We do all of this in consideration of what the research represents in the grand scheme of the field." Since 2008, BGSi has partnered with universities around the globe, such as the **Royal Scientific Society** (<http://www.rss.jo/>) in Jordan, the **King Abdulaziz City for Science and Technology** (<https://www.kacst.edu.sa/eng/Pages/default.aspx>) in Saudi Arabia, and the **Universidad Nacional de Córdoba** (<https://www.unc.edu.ar/>) in Argentina, with the goal of helping each of them develop a solid foundation in the basic sciences.

BGSi believes there is great value in the basic sciences—pursuing questions that advance our knowledge of the natural world without necessarily having a direct application for industry. "It is the place you have the most likelihood to break new ground, as the solution may have many outlets," Yaghi says, "whereas practical problems limit the number of ways you can think of a problem because they are based on a top-down approach." However, while this type of basic research is beneficial, it is difficult for developing countries to establish a successful research enterprise when there isn't any prior culture of research to begin with. Kyle Cordova, associate director of the BGSi, explains that "typically, these nations will focus on initiatives for engineering and creating new innovations that will guarantee a final product that can quickly be sold on the market. The awarding of grants is linked to commercialization and is based on short-term contracts that are

only renewed depending on the success of the scientist."

This is where the BGSi can help. The organization hopes to grow the basic sciences in these countries by helping students and researchers obtain funds and mentoring on projects with a longer timeline or a high-risk, high-reward structure. "Failure is part of scientific success," Yaghi says. "Students must be allowed to fail in order to learn and think outside the box."

In the future, BGSi's success would further highlight the importance of pursuing basic science, not only in developing countries but also at home in the United States. As of now, BGSi remains a young organization with little staff and financial resources.

"We are few working for BGSi," Cordova says. "We are starting to depend on colleagues and affiliate research groups in order to expand our quickly growing global science network without sacrificing quality of research. But our progress has been limited to the chemical and materials sciences, and we wish to expand across scientific disciplines in order to reach more emerging scholars." As BGSi grows, its achievements will demonstrate the importance of basic research and strong mentorship to all nations.

*Raoul Martin is a graduate student in biophysics.*

*Design credit: Alexandra Ramsey*

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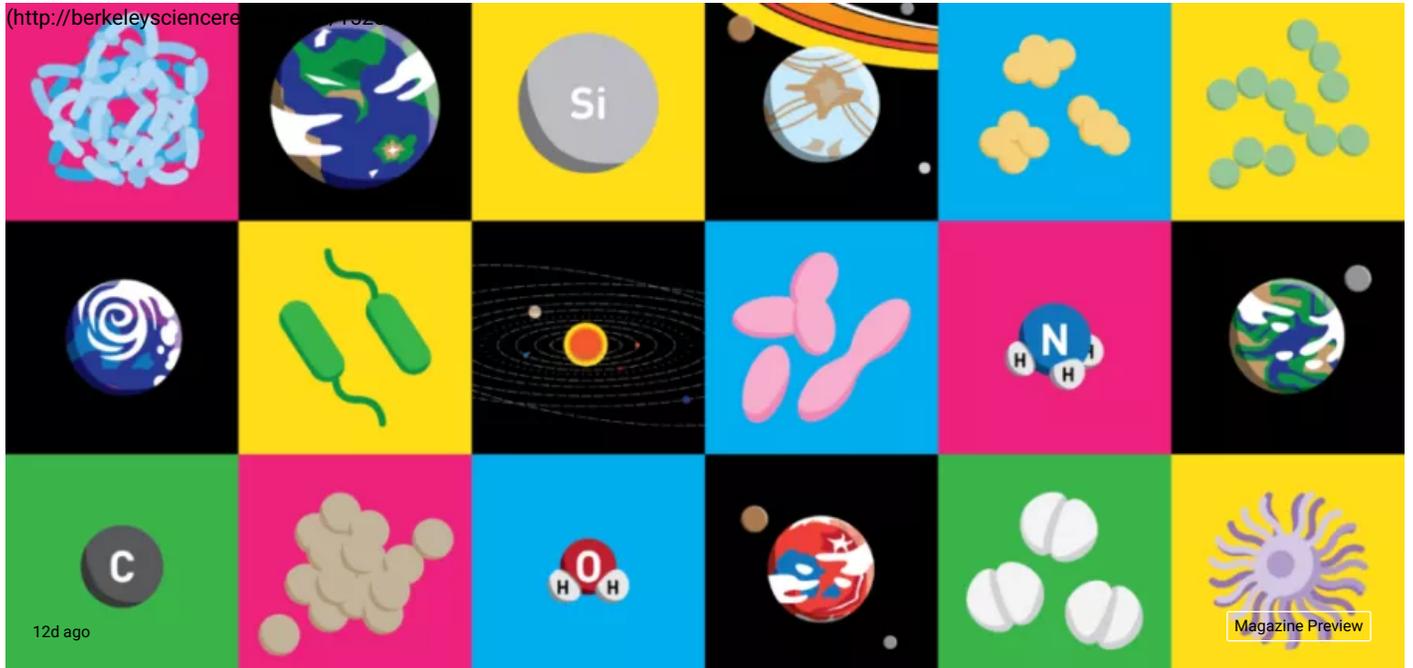
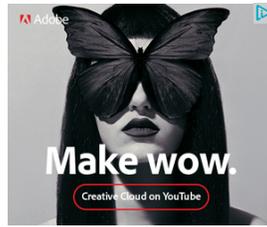
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