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Collaboration in Academic Research

When Bob Dylan was awarded the 2016 Nobel Prize in Literature, his fans were astonished and delighted. His Nobel acceptance speech (recorded after the ceremony that he didn't attend) is mostly an ode to his influences, from Buddy Holly and Appalachian ballads to *Don Quixote*, the *Odyssey*, and *All Quiet on the Western Front*, among others. While Dylan appears to be a singular genius, and the Nobel Prize in Literature is given to 1 person, the Nobel Prize in Physiology or Medicine can be given to 3 people (and almost always leaves out a significant contributor). Scientific research is, by nature, collaborative.

David Calkins, at Vanderbilt Eye Institute in Nashville, Tennessee, credits the Human Genome Project as one of the best examples of collaborative research. The project required support from the NIH and private industry, along with the partnership of scientists from nearly a dozen countries with expertise in genetics, molecular biology, information technology, biochemistry, and biostatistics. At the University of Toronto, Neeru Gupta believes such collaboration is necessary because of the rapid growth of specialized knowledge. Her own research into the lymphatic vessels as a new target for eye disease draws on the expertise of physiologists, pathologists, physicists, and engineers. And Gary Novack, a pharmacologist at the University of California, Davis, asserted that basic science research and drug development require working together. "You cannot be successful unless you realize that you do *not* know everything."

Yet academic researchers can be somewhat isolated. This isn't a new issue: In 1963, *Science* published a letter by Bernard K. Forscher, in which he compared academic research to a brickworks.¹ Warning of academic isolationism, he suggested that the brickmaking could become an end unto itself.

What are some of the barriers to collaborative research in ophthalmology? First, most academic scientists must build an individual extramural funding portfolio. NEI funding for research is a competitive process, and scientists contend for the same too-small pool of money. As Carla Siegfried, at Washington University in St. Louis, said, "If one views the funding source as a 'zero-sum game,' then the competition may suppress potential valuable collaborations."

Second, since major breakthroughs usually require a multi-

disciplinary approach, ophthalmic researchers must recognize and woo individuals who may not currently be working on vision research. Neeru finds this task exciting and rewarding, but it requires creativity, great communication skills, time, and investment in relationships.

Third, as David pointed out, promotion in academic institutions is based on individual metrics, which are easier to assess than collaborative efforts. Neeru agreed, although she noted a positive shift "toward recognizing collaborative efforts, both in publications and at the institutional level, including promotions."

How to overcome these barriers? Many academic researchers encourage teamwork. At Vanderbilt, David aspires to create a culture of collaboration by emphasizing the values of teamwork, accountability, and data sharing. And philanthropic and organizational efforts can promote innovative collaborative projects. For example, the Glaucoma Research Foundation (GRF) initiated Catalyst for a Cure. In this program, a team of 4 researchers is selected by a scientific advisory board and funded to work together on a specific challenge. GRF's current team is gearing up to coordinate innovative research on neuroprotection. And let's not forget the IRIS Registry (see page 13), which is the world's largest specialty clinical database and can be employed to answer specific questions quickly.

In looking ahead, Carla imagines that "Ophthalmology can be a leader—as we have been in other aspects of medicine—to elevate the profession and provide guidelines for this new perspective of collaboration in research development, adding value to our scarce research dollars."

¹ Forscher BK. *Science*. 1963;142(3590):339.

NEXT MONTH. Successes in increasing NEI funding.



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