

Conducting Successful Research During Your Fellowship

WITH MEHRAN TABAN, MD; AND JONATHAN L. PRENNER, MD



First and second year vitreoretinal fellows are often approached by their mentors regarding participating in research projects. For the uninitiated, beginning a research project can be a daunting task. Inexperience and time constraints can make knowing what is a feasible yet meaningful project difficult. However, there are many rewards for being an active investigator and contributing to the rapid

developments in our field, during fellowship and beyond. We asked two accomplished contributors to the field of retina research to share their motivations, insights, and tips to conduct successful research during fellowship. Mehran Taban, MD, is a second year vitreoretinal fellow at the Cole Eye Institute, and Jonathan L. Prenner, MD, completed a fellowship at Beaumont Hospital in Royal Oak, MI in 2002 and is currently an Assistant Clinical Professor in the Departments of Ophthalmology and Pediatrics at the Robert Wood Johnson University Hospital.

-Omesh P. Gupta, MD, MBA; and Anita G. Prasad, MD

1. WHY DID YOU DECIDE TO GET INVOLVED IN RESEARCH?

Mehran Taban, MD: My first research experience started when I was a freshman in college, and my reasons and interests have changed and grown since. Although initially I got involved more for the curiosity of research and really something to do during summer break, since then I have enjoyed the different facets of research and various projects along the way that keep me tuned into the field.

Jonathan L. Prenner, MD: My mentors during fellowship are leaders in both clinical medicine and research, and they demonstrated to me by example that expertise in these two arenas goes hand in hand. Being involved in clinical investigation, especially when original, pushes physicians to question how they practice on a daily basis. This investigative process encourages you to try to achieve a very high level of patient care.

2. WHAT ARE THE BEST TYPES OF RESEARCH TO CONDUCT DURING FELLOWSHIP?

Dr. Taban: Writing up a case report or small chart review is an excellent way to become involved during

fellowship. These types of projects are great for those inexperienced with research or those with time constraints. These projects tend to be very manageable and often can be packaged into a publication or presentation at a meeting. Contributing to an existing project that other fellows or attendings are conducting can also be a nice introduction to the field. These projects allow you to work closely with others who have more experience and learn about study design, data collection, statistical analysis, and manuscript preparation. Larger retrospective chart reviews can be conducted by those with a stronger interest. Choosing an appropriate topic is also important. A relevant, time-sensitive topic requires an intense involvement until submitted, while projects on more obscure topics can be conducted at a more comfortable pace.

Dr. Prenner: Participating in clinical trials for industry has become a common route for fellows to partake in and provides valuable baseline research experience. Developing a successful relationship with our industry partners will be helpful for the rest of your career, and the introductions and opportunities that you will have during fellowship should not be passed up. However,

with large studies now utilizing 150 centers or more, the recognition once associated with participating in these trials is somewhat diluted. Conducting original research and asking probing, relevant questions is always most interesting and perhaps most rewarding because you can control each part of the process. I would definitely recommend leading an investigation during your fellowship, under the guidance of an experienced mentor.

3. WHAT ARE THE MOST REWARDING ASPECTS OF BEING INVOLVED WITH RESEARCH?

Dr. Taban: There are both selfish and selfless aspects. Research has allowed me to be at the forefront of the field, learning about new technology or shedding light on existing topics in our field. Moreover, I have learned a lot about every topic in any project I have been involved with, as it has forced me to know everything about that subject. Without question, however, the most rewarding aspect is the satisfaction that one achieves by having contributed to science; more important, it feels very fulfilling when the work is something meaningful that raises awareness, which readers/clinicians refer to and then adjust their management strategies accordingly.

Dr. Prenner: I always particularly enjoyed the process of asking and answering a question, and I find this basic component of clinical research highly rewarding. Presenting the data at meetings and becoming a part of the community of retinal specialists, both home and abroad, is enriching and makes for a more robust professional life after fellowship.

4. WHAT ARE THE BIGGEST CHALLENGES OF PERFORMING RESEARCH AS A FELLOW?

Dr. Taban: The biggest challenge has to be finding the time necessary to perform and complete a project; because of this, it is hard to get involved in long-term or potentially more rewarding investigations, which is perhaps more the case for basic science research. Often the more important topics and interesting projects require more time than is possible during fellowship. Another challenge true across all research is obtaining the appropriate funding. Awards such as the Heed Fellowship and Howard Hughes Medical Institute are avenues of help in this regard, although difficult to obtain because of the amount of competition and limited spots.

Dr. Prenner: Finding the time to participate in compelling clinical research while training is always a difficult balance. While it seems that we have no time to ourselves as fellows, professional life after training has equal-

ly consuming challenges that make finding the time to conduct research difficult. Training yourself to make research a part of your professional life during fellowship will help you build the muscle memory required to continue those inquiries when out in practice.

5. HOW DO YOU MANAGE TIME CONSTRAINTS IN ORDER TO GET PROJECTS COMPLETED?

Dr. Taban: Unfortunately, I have not enjoyed dedicated research time throughout medical school, residency or fellowship; having said this, that has not prevented me from getting involved in research. I mention this not to brag, but to point out that it is possible to do research if one is really committed. Finding a project that allows one to work around a typical resident or fellow workday is the key, but this requires staying late, coming into work after hours or on weekends, and cutting into vacation or leisure time to perform the necessary work. With time, one also becomes more efficient in the various required tasks, such as literature search, background reading, conducting the research, and finally analyzing and writing up the results.

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Dr. Prenner: Our program gave us dedicated time to perform research each week, and as a result the fellows at Beaumont Hospital in Royal Oak, MI have always been extremely productive. The interesting thing about conducting research is that it comes in waves. There are typically long periods of study design and data collection, followed by the more intense work of data analysis, and paper and presentation writing. Time management is relatively simple during downtimes, but when crunch-time occurs, you need to juggle the multiple responsibilities that you have as best you can. Getting through those periods usually happens mostly by inertia and coffee. The rewards of completing a project, publishing it, and presenting it at a meeting of your peers are well worth it.

6. WHAT ARE THE PLUSES AND MINUSES OF DOING MULTIPLE PROJECTS WITH ONE MENTOR VS WORKING WITH SEVERAL MENTORS?

Dr. Taban: Performing multiple projects with one

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mentor enables one to make a connection with a mentor and to build on that over time; moreover, potentially one can expand on a single major topic by performing sub-projects under one mentor. Some mentors initially offer simple projects to a new fellow. As the relationship develops, mentors offer an opportunity to become involved with larger projects that have greater scientific importance. On the other hand, working with several different mentors allows one to obtain a variety of exposures, presumably working on very different projects and learning various topics; however, it would be difficult to build a strong connection with multiple mentors due to the limited interaction.

Dr. Prenner: Establishing a strong relationship with someone with whom you work well is always rewarding, and can be both efficient and enjoyable. I think it is best to try to work with a number of mentors while in training. As with surgery, each of them is likely to bring unique talents and skill sets to a particular project. You can adopt the best part of each of their approaches by exposing yourself to the breadth and diversity of their expertise.

7. WHAT ARE THE EVOLVING AREAS OF RESEARCH THAT ARE OPTIMAL FOR FELLOWS TO INVESTIGATE OVER THE NEXT FEW YEARS?

Dr. Taban: Research in ophthalmology is an evolving and fluid field. Typically, fellows train in institutions that are involved with developing and evaluating new surgical instrumentation. Utilizing fellows to evaluate this new instrumentation would have a practical application. Another emerging field is ocular drug delivery systems. Pharmaceutical development has been the primary emphasis of research. Sustained-release formulations of these drugs have been overlooked. There are a number of retinal diseases, in particular, that could substantially benefit from improved delivery of pharmaceutical agents.

Dr. Prenner: As industry pushes further and further into our research arenas, original investigation in approaches to common retinal diseases becomes increasingly valuable. Realize what the goals of industry-based research are, and then try to ask some of the questions that might not have been asked. I think the

questions regarding monotherapy and anti-VEGF therapy in particular have been answered. Inquiries into combination therapies for retinal diseases, and utilizing advanced therapeutics and novel biologics will be an emerging research area in our field for the next decade.

8. WHAT ADVICE DO YOU HAVE FOR FELLOWS THINKING ABOUT BECOMING INVOLVED IN RESEARCH?

Dr. Taban: This is classic Research 101, and there are four key factors: 1) finding a topic that interests them; 2) asking a question that no one has answered before; 3) pursuing a topic that one can contribute something meaningful towards; and 4) not giving up hope when things do not turn out well or as expected and to moving forward (especially true for basic science research).

Dr. Prenner: Do it. You really cannot go wrong. If you dislike the work, you can stop after one project. Beginning your research career will never be easier than when you are a fellow and you have experts at your side to help you succeed. If you do not do it now, you likely never will. ■

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