Pursuing a Clinical Academic Career During Gastroenterology Fellowship

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According to the American Medical Association, among the 487 graduates from gastroenterology fellowship programs in 2014, 137 (32 %) graduates pursued academic medicine, 86 (20 %) pursued more training, and 209 (48 %) joined clinical practice [1]. Among gastroenterology fellowship graduates who pursued an academic career, the most important factors underlying the decision were geography, a good relationship with co-workers, a desire to conduct research while maintaining an optimal balance between patient care responsibilities and academic pursuits, and a desire to teach [2, 3]. For those who plan to pursue academic gastroenterology, it is important to decide on general career paths before identifying an academic area of focus [4]. First, would you prefer to be primarily a clinician, clinician–educator, or clinician–investigator? Then, are you interested in gastroenterology or hepatology? Are you interested in a sub-subspecialty within gastroenterology, such as motility, inflammatory bowel disease (IBD), or advanced endoscopy? Even within these sub-specialties, clinician–educators and clinician–investigators will likely choose a narrower area of concentration (e.g., pancreatic cyst research within the field of advanced endoscopy). Additionally, clinicians at academic centers may take on primarily administrative positions that may involve issues such as organization, economics, and quality of care.

Steps in Pursuing an Academic Career as a Clinical Investigator

Determine your niche We recommend choosing a relatively narrow area of emphasis such as a specific disease or condition (e.g., celiac disease, eosinophilic esophagitis, gastrointestinal bleeding) or even only one aspect of a disease (e.g., neoplasia in IBD rather than all aspects of IBD). This sharply defined focus provides you a better opportunity to become an expert in your niche early in your career. It is important to develop a solid scholarly and clinical foundation within your niche, which requires extensive review of past literature, keeping abreast of new developments, and seeking out a large number of cases during fellowship to develop clinical experience in the area [4, 5]. Publishing a systematic review related to your chosen niche is a good way to develop your knowledge base, achieve a track record within your area of emphasis, and begin to establish yourself in the area early in your career. Rotations at national centers of excellence during fellowship in a number of areas (e.g., motility, IBD, nutrition), fast-track gastroenterology–hepatology (combined pilot) programs, and advanced fellowship programs are all potential mechanisms to obtain training beyond what a standard fellowship provides.

Find a mentor One can have multiple mentors or one mentor, but it is important to identify someone who has been through similar experiences and can help you navigate through your path as an academician, both during times of success and times of frustration. A good mentor understands your shortcomings as well as your strengths, but will care about your future, your scholarly pursuits, and your personal (nonwork) goals, and have your best interest at heart. Those who have mentors have a higher likelihood of advancing within their careers, and derive more

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satisfaction at work [6, 7]. Mentors do not necessarily have to be from within the field of gastroenterology.

Get a background in methodology For those who want to pursue a career in clinical investigation, it is important to have a sound knowledge foundation in research methodology, which can include statistics, study design, informatics, epidemiology, and economics [8]. Take advantage of research courses offered during fellowship or master's degree programs or PhD programs if offered as part of your fellowship. This can augment your research skills and pedigree, improving your research projects and enhancing your candidacy for research awards.

Choose a project that is interesting and practical Your first research project(s) should be in your chosen niche and should be of interest to you so that time spent reading about the topic, developing the project, and completing it is enjoyable and stimulating. A useful sign of such a "fit" is to find yourself waking in the morning with an intense desire to get to work. Of equal importance, make certain the project is feasible to complete during your fellowship. Continue to build within your area of focus during your fellowship with additional research projects and clinical experience. Your record of publications, your scholarly work, and ongoing research projects will be important as you begin to apply for grant funding. Do not be easily frustrated by rejection of grant proposals and manuscripts, an inevitable requisite of academic life no matter how successful the investigator.

Decide on your faculty track Consider the track you wish to pursue when you establish your first faculty appointment. Know what the expectations are and how you can fulfill them in order to reduce frustration later. Ensure that you have some protected time to think, to read and review, to develop protocols, execute research studies, analyze and interpret results, and write manuscripts. In order to develop your career, you will need to have dedicated time set aside.

Consider economics and available support The median debt after graduation from US medical schools was \$180,723 in 2015 [9], a financial burden that clearly informs decisions about research versus clinical practice. The National Institutes of Health (NIH) has loan repayment programs that repay debt up to \$35,000 annually if: (1) your total qualified educational debt is $\geq 20\%$ of your institutional base salary; (2) you work at a nonprofit institution; (3) you conduct research ≥ 20 h a week; and (4) your research is supported by a domestic, nonprofit institution (e.g., foundation, university, professional association) or US government agency (federal, state, or local). Funding of your position is important to understand before you commit to academic employment. What are the sources of income paying your salary, how much clinical work

is entailed, and are there thresholds of clinical productivity (e.g., relative value units) that must be achieved to attain your salary? What are expectations regarding your securing independent funding, and is bridge funding available? If you secure funding, how much additional protected time can you secure? Does the startup package provide adequate resources and time for you to successfully launch your career? Is there an infrastructure available to you to help improve chances of success in your research career: e.g., available study coordinators, statisticians, and grants administrators; convenient core laboratory facilities (e.g., specimen repositories); other investigators nearby with similar interests; frequent seminars; personnel with regulatory expertise and knowledge of information technology; adequate research/office space; and shared equipment.

Apply for grant funding Begin to apply for grant funding during your fellowship and certainly immediately after fellowship. This will be important to provide time and financial support to perform research. Funding may support your salary, supplies, services, and personnel. Local institutional grants, governmental funding (e.g., NIH, Veteran's Affairs), nonprofit organizations (e.g., American Gastroenterological Association, American Society for Gastrointestinal Endoscopy, American College of Gastroenterology, American Association for the Study of Liver Diseases), industry (investigator-initiated to establish a reputation for creativity and industry-initiated to help attract patients, generate revenue, and gain recognition in the field), and philanthropy (from individuals or organizations) are potential sources. In addition to an appropriate project, evidence of prior work (e.g., publications) will improve the likelihood of receiving grant support.

Network with your mentors and colleagues Attend national and regional conferences and the sessions in your area of interest. Interacting with others in your field at meetings can lead to long-term relationships and collaborations that can help you advance in your chosen field. Take part in national organizations related to your area of interest. Be a team player. Collaboration is important in clinical investigation.

Find a work-life balance With any luck, you will love your work and enjoy the time devoted to it. Still, be sure to spend sufficient time with your family and friends, doing things outside of work you love (whether it is exercise, opera, or fantasy football).

An academic career as a clinician-investigator or clinician-educator can be rewarding, provide stimulation and satisfaction, and impact gastroenterology and patient care locally and even globally. The path to achieving academic success can take a circuitous route, but forethought and preparation may minimize the detours along the way to a fulfilling, successful academic career.

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