

The Road Less Traveled: Combining an MD and PhD to Establish a Research Program in Biomedicine

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Abstract—Developing an academic career in fields closely related to medicine is challenging. In this paper, various aspects of establishing, growing, and maintaining a viable program are discussed, with the examples from personal experience. The importance of understanding funding resources, the funding environment, institutional resources, and mentorship will be emphasized.

Various elements combine for a successful career in bioengineering or allied fields, and medicine. Funding is a major part of the equation, as are institutional support, and a balance of work and home life expectations that is different than was the case in the past. These will be discussed in more detail below.

Funding a laboratory usually means getting grants from larger organizations such as companies or venture capital firms, major foundations in the area of interest, or the NIH. Obtaining funding from major granting agencies such as the NIH has become progressively more difficult over the last several years. [1] The situation at the NIH has therefore increased the pressure on other agencies and foundations as a natural response of investigators. The age of obtaining an R01 or similar grant has steadily climbed since 1970 when it was 32-34 to now, on average, 46. Thus, at one point there was a very good chance to become established soon after beginning a career but this is no longer the case. Combined degree scientists must deal with a two-edged sword. Their education does indeed give them a unique perspective but it comes at a cost of longer training and more debt. The NIH budget doubled from 1998 to 2003, [2] but the number of applications more than kept pace. Funding rates vary among institutes but overall funding has been in the low teens most recently. Adding to the difficulty is that the budget at the NIH, until the passage of the American Recovery and Reinvestment Act of 2009 (ARRA), remained flat or decreased depending on the numbers used. The ARRA act adds approximately \$10 billion over two years to the NIH budget of \$28 billion but is not a long-term solution by any means. [3] Across the country the economic crisis and drop in revenues has also led to an increasing demand placed on academic institutions for higher performance with fewer resources.

This combination of circumstances makes establishing a research program and independent laboratory challenging [4] but nevertheless feasible. It does require a directed analysis of the circumstances to apprehend or grasp the

overall picture. In many social, business, and employment situations an assessment of the forces at work defining the present arrangement is very helpful. One must also realize the dynamic nature of these forces and be able to adapt over time as the situation requires. Recognition of the situation is the first step in targeting efforts toward a successful career. Once a desired direction is determined, one can seek ways to apply force in the right direction to accomplish this goal. When looked at in any depth, money is usually the driver behind most of these forces.

Institutional support is the other major external component. Commitment from the academic center, the chair of a department for protected time, the stability of the institutional funding and staffing, the degree to which collaborations are part of the culture, presence of common core facilities, and the availability of startup or pilot funds are all key pieces. It is also helpful to determine the institutional policy on tenure as this is an evolving concept within medical schools. The number of schools offering tenure has steadily declined over time to the point that more than one third of schools in a recent survey no longer have a financial guarantee associated with tenure, many of those that do have widely varied levels of guarantee, and the probationary period has become longer. [5]

A final issue on career choices, which applies to either academic or industrial positions, is that of mentorship. Early identification of good mentors is a critical component for development. This often is left to chance, and yet advice on how hard to pursue a particular area, timing, and resource allocation can be the most important part of all.

Due to the implications of each choice, all of these factors must be considered as early in training as possible. Overall, combining both MD and PhD degrees provides a perspective that is unusual if not unique. Straddling two fields, seeing what no one else sees, and building bridges can be exceptionally rewarding.

References

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