

Why and How “Bedside-to-Bench” Research Will Change Medicine

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As Huntington Medical Research Institutes' new President & Chief Scientist, I decided to turn the usual translational research direction on its head. Huntington Medical Research Institutes (HMRI) is a small (58 employees) 62-year-old non-profit medical research organization in Pasadena, California. In that location, HMRI is very near the powerhouse of basic research, Caltech, and within a few miles of USC Keck School of Medicine in Los Angeles and City of Hope in Duarte. HMRI is also co-located with a superb community hospital, Huntington Memorial Hospital.

Our path towards implementation of a bedside-to-bench strategy:

Bedside-to-bench is meant to give HMRI a unique identity, as a physician-scientist run organization. I feel strongly that the deep understanding of disease processes that comes with patient care—expert patient care—leads to the most compelling research questions.

Physician-scientists are uniquely positioned to define the gaps in understanding disease (this said with all respect to my PhD colleagues). Most research organizations can't have an 'all physician-scientist led' structure because of size—there are not that many great physician-scientists around! HMRI's small size allows us to give physician-scientists a break from the inevitable bureaucracy of large university medical centers. HMRI's goal is to find leaders (and successors for these leaders) who are inspired by their clinical experience to take calculated chances in their research.

Unfortunately, statistics clearly show that physician-scientists have a short half-life. The drop-out rate (choosing one path or the other) is depressingly high. The unique environment of a small non-profit research unit, without huge administrative professorial burdens, offers the right physician-scientists some time to actually think! So in the process of forging a new leadership strategy, I hope that physician-scientist half-lives can be prolonged, and that we can become

a model for sustaining these careers.

Since HMRI is a small organization, strategic collaborations are necessary for making a meaningful dent in our understanding of the causes and treatment of complex disease processes. The physician-scientist led strategy was calculated to attract the interest of collaborators in California's great engineering programs that do not have the necessary clinical expertise to move their translational research out of the university. The strategy was also calculated to be welcoming to our local hospital's physicians. Busy clinicians with great ideas are likely to be more comfortable talking about their research ideas with a fellow clinician than with someone who does not speak their language.

Bedside-to-bench implies interdisciplinary research. Complex disease processes require multiple domain experts. Again our size is as an advantage. During my academic career, I worked in clinical departments that had as many or more faculty than all of HMRI employees. Reaching across a large cam-

pus to find the right collaborator outside one's home department is often difficult to negotiate in a large academic medical center. On the other hand, at HMRI we all know each other. That doesn't necessarily make for the kind of cross-talk necessary for meaningful collaboration, but certainly gets us out of the starting gate. Although we are fairly broad for such a small organization (with distinct programs in neurosciences, neural engineering, stem cell and cancer biology, liver diseases, colorectal disease, advanced imaging, and cardiovascular disease) we will need outside collaborations to drive some research programs. In particular, our PhD researchers may need clinical partners in areas where we have no deep clinical expertise, and these relationships must be built early on in the life of a research program. Making the appropriate match between scientists is not all that hard, but maintaining the relationships is; fostering and ongoing assessment of collaborations are the main duties of the chief scientist.

The success of bedside-to-bench is dependent on constant communication between all our scientists, even when collaborations are not active. Here the communication is fostered

by weekly seminars for ALL employees, given by physicians and scientists from every imaginable science discipline. The topics of the seminars are certainly important, but more important is hearing the responses to the topic from your colleagues in completely different disciplines.

With diverse programs in a small institution, we needed a common focus for bedside-to-bench. All diseases of interest here (liver disease, cancer, neurodegeneration) have major inflammatory and metabolic underpinnings—and so an immunologist and mitochondrial biologist have something to offer everyone. For this reason our focus on new recruits is to bring in experts in these areas who can bridge many of our specialty groups.

Another reason for adopting “bedside-to-bench” as a mantra was that it prompts the inevitable question: “What could you possibly mean by that?” This question affords an opportunity to tout the many past translational successes of HMRI and, more importantly, to talk about our current truly multidisciplinary, physician-scientist led programs. If we succeed with “bedside-to-

bench”, HMRI will be the node in a Pasadena-based translational hub that links diverse engineering and clinical specialties. Amazingly in Los Angeles County, it is possible for collaborators to walk from one end of this hub to the other. We hope the successes and future successes of our model will help inspire others to adopt this highly functional approach to medical research.

About Huntington Medical Research Institutes

Huntington Medical Research Institutes (HMRI) is a tax-exempt 501(c)(3) nonprofit, public-benefit organization based in Pasadena, California, dedicated to enhancing knowledge of diseases in order to improve health and save lives. For six decades, it has been making biomedical discoveries and developments that have set new precedents in medical knowledge across the nation and around the world. HMRI is dedicated to enhancing knowledge of diseases in order to improve health and save lives. HMRI is a vital biomedical research organization with more than 25,000 square feet of research facilities. For more information, visit: www.hmri.org.

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