On the Same Page

The NIH Clinical and Translational Science Award

July 27, 2009

This column is the first in a tradition of regular communications from me to the faculty, students, residents, fellows and staff who comprise the Health Science Center and Shands. I wrote a brief introduction (http://news.health.ufl.edu/news/story.aspx?ID=5344) when I arrived on July 1, and *On the Same Page* inaugurates communication on specific topics.

Why write these columns? First, each of you works in one part of the "system;" it will, I hope, be of interest for you to know about what's going on in other, less familiar parts. I've been in Gainesville for only a few weeks now, and already I have discovered truly amazing things going on in all corners of this university and academic health center. Even those of you who have been here many years may not be fully aware of all the nooks and crannies in this place — and of the extraordinary people who work here.

Second, I want to keep the entire community apprised of the issues confronting us and how we plan to address them, and I would like your feedback and input. Finally, my charge from President Machen — and the challenge that attracted me to UF — is to integrate the Health Science Center with Shands and its affiliates on the one hand, and with the larger UF campus on the other. A big part of getting from "us and them" to "we" is communication. I hope that *On the Same Page* will help.

On July 19th, it was announced that under the leadership of Dr. Peter Stacpoole as principal investigator, UF had received a $26 million Clinical and Translational Science Award, or CTSA, from the National Institutes of Health. As we shall see below, this award captures the kind of multidisciplinary, cross-campus and statewide research vision that we would like to recapitulate on the clinical side of the enterprise. But what exactly *is* the CTSA, and how will it help research at UF?

In my experience, virtually all investigators involved in biomedical science not only are fascinated by the intrinsic scientific challenges of their work, but also would love to see the day when their innovations are translated into clinical tools that can better prevent, diagnose or treat human disease. Indeed, it is part of the mission of NIH to foster fundamental discoveries that "advance significantly the Nation's capacity to protect and improve health," … that "develop, maintain and renew scientific human and physical resources that will assure the Nation's capability to prevent disease," … and that "expand the knowledge base in medical and associated sciences in order to enhance the Nation's economic well-being and ensure a continued high return on the public investment in research."

Thus, while NIH is associated in most people's minds with basic science research, the stated mission of NIH connects basic science discoveries with improvements in health, and with economic development. (The latter mission was particularly advanced by the Bayh-Dole Act of 1980, which created a uniform patent policy among the federal agencies that fund research, including NIH, such that universities retain titles to inventions discovered under federally sponsored research.)

It is the connection between scientific discovery and improved health that is the focus of the CTSA. This includes technology and its commercialization, i.e., bringing new drugs and devices to clinical use. It also includes research on how recognized, efficacious practice can be better adapted in the community, and how best to develop a system of health-care delivery that maximizes health benefit at the least cost.

The national CTSA program is part of the legacy of NIH Director Elias Zerhouni, M.D., who in 2003 launched the NIH "Roadmap for Medical Research." (See Zerhouni E. The NIH Roadmap. *Science* 2003;302:63-72. Dr. Zerhouni stepped down from his position as NIH Director in October 2008.) The Roadmap represented the NIH response to the question: "What novel approaches can be developed that have the potential to be truly transforming for human health?" It consisted of three key themes: (1) develop novel approaches that will unravel the complexity of biologic systems and their regulation, called "New Pathways to Discovery;" (2) invoke an era in which scientists can cooperate in new and different ways, across disciplinary boundaries, called "Research Teams of the Future;" and (3) "Re-engineering the Clinical and Translational Research Enterprise."

The CTSA primarily relates to the second and third themes. To provide context, I will quote at length from a "Sounding Board" article by Dr. Zerhouni published in October 2005 in *The New England Journal of Medicine* (vol. 353, pp.1621-23). There is no better explanation: "Translational and clinical research are core components of a full-spectrum biomedical research enterprise. Yet, these critical arenas of research are hampered by increases in costs and complexity, a dearth of information systems and increases in regulatory burden. An explosion in clinical-service demands and reduced financial margins have sharply cut protected research time for many clinical and translational researchers and diluted the time and attention devoted to the research mission of academic institutions.

"The inevitable result of these changes has been, for example, difficulties in the recruitment and retention of human subjects in clinical trials and, ultimately, considerable delay in the completion of critical studies. It is more and more difficult to recruit, mentor and retain a critical mass of clinical and translational scientists. Proper training and mentoring of scientists capable of conducting truly innovative patient-oriented research require dedicated time away from the escalating pressures of clinical-service demands.

“At the same time, the increasingly complex resources needed to conduct modern clinical and translational research are either missing or scattered. There has been little investment in methodologic research to improve the tools used by clinical and translational scientists. Bioinformatics, bench-to-bedside laboratories and statistical cores are not integrated in a manner that promotes, for example, both outstanding research and innovation in study design leading to a more efficient end result. At no other time has the need for a robust, bidirectional information flow between basic and translational scientists been so necessary.“

Shortly after publication of Dr. Zerhouni’s *NEJM* article, NIH released an RFA for Clinical and Translational Science Awards, designed to foster the re-engineering described above, including enhanced infrastructure in biostatistics, regulatory support, training, novel methodologies and the other elements described. At the University of Rochester, where I had been Dean of the School of Medicine and Dentistry since 2002, this came at just the right time because we had been creating the building blocks of the desired infrastructure for a number of years. We were lucky enough to be funded in the first group of 12 institutions. This meant that we received the full CTSA award, which was $6 million per year above the baseline level of funding of GCRCs, Roadmap K39 and K12 awards, etc.

In the second and subsequent years, with a fixed pool of CTSA dollars nationally across time and a desire ultimately to fund 60 institutions, NIH revised its budget guidelines such that each CTSA grantee would receive 140 percent of baseline funding. This compromised the ability of the grantee institution to achieve the goals of the CTSA program, and led to substantial institutional cost sharing. I am extremely pleased that UF stepped up to this challenge: Dr. Stacpoole and his dedicated team developed a visionary, campus- and statewide approach to the UF CTSA, and the university and College of Medicine contributed significant resources towards this vision.

Next year will be Dr. Stacpoole’s 30th anniversary at UF, but most of you may not be aware of his background and how he came to direct the UF Clinical and Translational Science Institute. A native Californian who was raised in San Francisco and the Bay Area, Peter Stacpoole attended college at Sewanee (The University of the South) because, as he puts it, “I enjoyed traveling and wanted a small school with a good premed program located in a part of the country to which I knew I’d never return.” As if that cultural shock weren’t enough, he spent summers attending school at U.C. Berkeley, thus bouncing back and forth between what was then a bastion of Southern aristocracy and ground zero for student radicalism.

When he was a senior chemistry major, Peter was asked by a family friend who headed an independent research foundation to write a review of the pharmacology of a compound with purported therapeutic potential for diabetes but that previously had been studied mainly overseas. He became immersed in the subject, and decided to postpone medical school and spend a couple of years as a graduate student to “cure diabetes” before pursuing his original goal of becoming a private practitioner.

As a first-year pharmacology graduate student at U.C. San Francisco, he experienced a fateful "Ah ha!" moment by discovering the pharmacological properties of one of the original compound's constituents, dichloroacetate, which was to become a major focus of his future scientific career. So, two years became five and, a Ph.D. and postdoctoral stint later, Peter entered medical school at Vanderbilt in Tennessee, the place to which he thought he would never return. This was followed by a Vanderbilt internal medicine residency and endocrinology fellowship. It was at Vanderbilt that Peter developed an appreciation for the synergy derived from combined laboratory and patient-oriented research. In 1980, Peter was recruited to UF, where he has remained. He was UF's GCRC program director from 1988 until 2009, when the center became incorporated into UF CTSI. As P.I., Dr. Stacpoole is its founding director.

Each CTSI bears the imprimatur of its own institution's unique resources and culture. So what distinguishes our CTSI and best reflects the intellectual spirit of the University of Florida? According to Peter, there are three distinguishing elements. First, the UF CTSI is perhaps the most academically and geographically comprehensive of its type. No other CTSA program encompasses 12 colleges, two health science campuses, two large health-care systems and an established community outreach program distributed across such a populous state. That's the advantage gained by an academic health center coexisting on the same campus with an academically diverse university such as ours.

Second, our CTSI has a virtually limitless potential to support multi- and interdisciplinary research. This reflects the breadth of activities available through our participating colleges and portends an exciting future of cross-disciplinary collaborations and team science. And third, our CTSI will enrich the education of an enormous pool of outstanding trainees at UF, from the 50,000-strong students through junior faculty members. These individuals represent our farm team — the next generation of clinical and translational investigators.

I salute Dr. Stacpoole and the entire CTSI team. The CTSI enables, so that others may do. There's a lot to be done, and it all just got a little easier.

Cheers, and Go Gators,

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