
Gordon G. Hammes, PhD

Evolution of the Medical Center-University Relationship: From PhD Programs to Human Genetics

Gordon G. Hammes

Introduction

Duke University Medical Center has an illustrious history of accomplishments in medical and basic research. This has included strong interactions between the basic and clinical departments. The location of the medical center adjacent to the main campus of the university, i.e., Arts and Sciences, Engineering, and School of the Environment,

provides a unique opportunity for the integration of research across a broad spectrum of interests that benefits both clinical and basic research. (The other professional schools, Divinity, Law, and Business also merit mention in this regard.) As is true for all universities, Duke University is a very complex organization, with multiple priorities not always precisely aligned. Of course, the interaction of various people across the campus has occurred for many decades. However, these interactions dramatically increased during my tenure as vice chancellor for medical center academic affairs. The result has been

the development of some remarkable programs and research. This article explores some of the important aspects of this development. This is not intended to be a complete and detailed history of the subject, and I apologize in advance for not including the names of all of the many people involved. Instead, the focus will be on selected events that were entwined with my office for the period 1991-1999.

To put matters in perspective, it is important to understand what was happening when I was recruited to Duke. A new chancellor, Dr. Ralph Snyderman, had just begun his first term in office. Simultaneous with his arrival, a reorganization of the basic sciences was made, and as a result Dr. Snyderman recruited several new chairs, including Dr. Dale Purves, Neurobiology, Dr. Anthony Means, Pharmacology, and Dr. Michael Sheetz, Cell Biology. In addition, two sections were created that eventually led to new departments: Genetics, led by Dr. Joseph Nevins, and Molecular Cancer Biology, led by Dr. Robert Bell.

My recruitment was to provide central leadership for these research efforts, as well as to improve interactions with the clinical departments and the overall medical center enterprise. I must confess that I did not have great enthusiasm for moving to a medical center as my previous experiences were in undergraduate/graduate institutions. However, the chancellor convinced me that this was a special opportunity and that he would welcome a non-MD to oversee the research and teaching efforts of the medical center. Indeed the next seven-and-a-half years proved to be exciting and provided ample opportunity for many interesting and productive undertakings.

What follows is a brief description of one aspect of this period, namely the integration of the medical center with the rest of the campus. The culmination of these developments was the creation of the Institute for Genome Sciences & Policy, formally announced in 2000, a university-wide program whose scope and magnitude could not have been envisioned in 1991. Indeed all “breakthrough” programs are built on the shoulders of many incremental events and the efforts of many people. No attempt is made to be

inclusive in this regard.

Shared Research Facilities

As I gradually became acclimated to Duke University Medical Center and the excellence therein, I was struck by the great potential for university-wide programs that might enhance this excellence. The most obvious opportunities were the development of shared research facilities, integration of PhD programs across the university, more comprehensive sharing of faculty between departments, and closer interactions between clinical and basic science departments.

The MD/PhD program (also called MSTP, Medical Scientist Training Program) is a particularly impressive example of how to span the clinical and basic sciences. The students recruited to this program have incredible credentials. However, only a small number of students were admitted to this program each year. All of these matters were addressed during my tenure as vice chancellor, but I will particularly concentrate on how they impinge on the integration of the medical center with the rest of the university.

A remarkable fortuitous opportunity arose just as I came to campus with the construction of the Levine Sciences Research Center (LSRC) spearheaded by Charles Putman, senior vice president for research administration and policy and previously chair of radiology. This building was slated to house departments from the entire university, as well as shared research facilities. In the case of the medical center, the Department of Pharmacology and section of Molecular Cancer Biology ultimately were housed there. These two units exist today as the Department of Pharmacology and Molecular Cancer Biology.

The shared research facilities to be housed in LSRC were still under consideration when I arrived, and I immediately took the opportunity to request space for the Nuclear Magnetic Resonance Center, X-Ray Crystallography and Computer Center, and some time later a transgenic mouse facility. The NMR Center, under the leadership of Len Spicer, professor of biochemistry and radiology, was already a

thriving enterprise but needed more space and a better location. The LSRC proved to be ideal for the development of this facility for the entire campus, and in fact, for the entire geographical area. Without question, Duke University has one of the best NMR shared facilities in the country. The computer aspect of the second facility did not evolve, primarily due to the ever-increasing power of small computers. The X-Ray Crystallography Center, however, has become available for the entire campus.

Shared research facilities are excellent examples of how research programs across the entire university can interact and be facilitated. While examples had existed previously, the LSRC represented a step function change, and others followed; for example, the Brain Imaging and Analysis Center, a joint program across the entire university and the University of North Carolina at Chapel Hill (created in 1998 with Carl Ravin, chair of radiology, playing a major role in its inception).

Graduate Programs

The PhD program in the medical center was well established and many areas were quite strong. However, the structure was complex: Degrees could only be given in departments, but admission could be given by both NIH training programs and departments. In addition, the Departments of Botany and Zoology in the School of Arts and Sciences provided another source of entry and degrees in the biological sciences. (These two departments were combined in 2000 to create the current Department of Biology.) These two departments were strong in important areas, e.g., population biology, but had relatively little representation in the molecular areas of biology. The integration of these disparate programs was problematical, and the financial support of students varied from unit to unit.

Fortunately in 1991 Lewis Siegel became dean of the Graduate School. He came from the Department of Biochemistry in the medical center, and we had similar ideas as to what should be done to enhance the Duke University PhD programs in the biological sciences. In

1991 the policy for graduate studies was that all of the graduate tuition and fees were returned to the school of origin to be used as they saw fit. Over a period of several years, this policy evolved so that the fees were returned to the Graduate School and the tuition to the school of origin. The policy I then developed returned all of the tuition to the support of graduate students. A portion of the fees were also used by the Graduate School to subsidize portions of the graduate program, for example, foreign fellowships and seminar programs.

This financial arrangement permitted significant growth of the graduate program. The number of PhD students in the biological sciences was approximately 350 in 1999. However, it did not address the question of unification of the biological sciences across the Duke campus. Discussions concerning this matter took place between my office and the basic science chairs. I also initiated discussions with the chairs of the Departments of Botany and Zoology, Richard Searles and Frederich Nijhout, respectively. The first discussions revealed the concern that inevitably comes with any integration of resources, namely “What will it cost my program?” This was especially true with Botany and Zoology, who were very concerned that their departments in the School of Arts and Sciences would be adversely affected by integration with the much larger operation of the medical center. However, after discussion a plan was reached that was satisfactory to all parties. David McClay, a molecular-oriented faculty member in the Department of Zoology, was especially helpful in this process. David was an important bridge, both in teaching and research, between Arts and Sciences and the medical center during my tenure as vice chancellor. He served as director of the Cell and Molecular Biology NIH training grant from July 1993 to July 2000 even though this training grant was centered in the medical center.

The final agreement reached was that a university recruitment brochure would be created by my office that described the biological sciences at Duke University. The first brochure (in color) was produced by the medical center

in the fall of 1993 and was of great assistance in the recruitment of graduate students. This brochure contained a description of all of the programs and departments in the biological sciences at Duke, including a list of faculty members and their interests. In addition, the general policy for the biological sciences became that all students would be supported by training grants or university funds for their first two years. They then would be free to pick a research laboratory of their choice, which would support them until graduation. Furthermore, regardless of the admitting entity, training grant, department, or section, students would be free to move between these entities, with the financial support remaining with the student. To assist individual faculty members, tuition was waived for students supported on research grants. These policies gave considerable freedom to the students and also served as a unifying factor for the biological sciences across the campus.

As further indication of a unified biological sciences group, the Graduate Student Symposium was initiated. The symposium occupied an entire day, with all graduate courses being cancelled for the day. It consisted of poster sessions of research across the campus and a series of research talks by those students selected on the basis of their posters. These students also received cash prizes. The arrangements for the Graduate Student Symposium were made by a student committee. They also selected a distinguished outside speaker to end the day. The funding for this special event came from my office. The first Graduate Student Symposium was held in 1992, and it has been a great success for many years. Much of the initial guidance for this event came from Tony Means, the chair of the Department of Pharmacology. Although the Department of Chemistry was not explicitly included as part of the biological sciences, several secondary appointments of chemistry faculty members in medical center departments ensured the inclusion of this department.

This dramatic increase in the interaction between the various units of the biological sciences across the campus marked a significant improvement in the development of PhD

programs. Equally desirable is the integration of the clinical and basic sciences. This was accomplished in part by secondary appointments of clinical faculty in the basic sciences. Another effective means of doing this in terms of the graduate programs was to increase the number of students admitted to the MD-PhD program. This program was supported almost entirely by a grant from NIH, the Medical Scientist Training Program, and supported only four to six new students per year. During my tenure as vice chancellor, this number was gradually doubled to about 10 students per year through the use of medical center funds. (The director of the MSTP at that time was Salvatore Pizzo, chair of the pathology department.) This change simultaneously enhanced the quality and quantity of students admitted to both the medical and graduate schools.

A further significant development was the implementation of core courses for the biological sciences, with each of these courses lasting one-half of a semester. A series of these courses was created, with the idea being that no student would take all of them. Instead each department/program would select a set for their students. Mention also should be made with regard to enhancements of the infrastructure necessary to maintain the high quality of research and teaching. These included the establishment of rigorous procedures for faculty appointment, promotion and tenure, and regular external department reviews.

This description is not intended to be complete—instead it is intended to give the flavor of how programs in the biological sciences across the entire campus were developed. The actual implementation had some bumpy paths, and in fact it was several years before it became an accepted mode of operation.

Human Genetics

As the above events unfolded and many new faculty members were recruited into the basic medical sciences, the chancellor, Ralph Snyderman, and I were discussing what might be the next major research thrust of the medical

center. Already in place was the development of many specific areas, both in the clinical and basic sciences. However, we were seeking something on a grander scale that was directed to what we saw as the future for medical research. It did not take us long to reach the conclusion that human genetics was the area we should look at in some depth. Of course, the university had many things already going on in this area, including fundamental genetic studies in microorganisms, fruit flies, mice, etc. In addition, the genomic analysis of specific diseases was well under way; for example, the discovery of the involvement of the apoE gene in Alzheimer's disease by Allen Roses, Peggy Pericak-Vance, and co-workers. We decided that what was needed was a major initiative in human genetics across the entire university. This would include not only clinical and basic sciences, but also research on policy and ethics. These latter topics would be fundamental for the future of the application of human genetics and would require the efforts of many areas of the university outside of the medical center.

Clearly the initiative being considered would be expensive and would require a buy-in from both the medical center and the rest of the university. My job was to sell this concept to all of the parties across the campus that we wanted to be involved, primarily the deans of the various schools. At the same time the chancellor pursued this initiative with the president, Nannerl Keohane, and sought to obtain the necessary funding. Campus-wide discussions took place in the fall of 1997 and spring of 1998. Within the medical center, the support for this project was fairly extensive, although as usual concerns were expressed that this would detract from other important initiatives. Outside the medical center, the reception could best be described as lukewarm. The reception for the concept was enthusiastic, but considerable concern was expressed with regard to the resources that would be required for this proposal and where they would come from. The cost would be significant, and many other programs were fighting for priority.

A general consensus was reached within the medical center that we would spearhead the development of a university program that encompassed all aspects of human genetics. A concept paper was developed in the spring of 1998, and this goal was stated explicitly in the 1998 long-range plan of the medical center. As a future initiative of the medical center, the creation of an institute for human genetics was described: "The Institute would be a campus-wide initiative that will bring together the expertise of colleagues in law, ethics, theology, environmental research, engineering, public policy, the arts and humanities, physicians, and research scientists to focus on the pressing issues surrounding genetics. . . . Some of the Institute's activities will include epidemiological studies of specific diseases leading to the identification of associated genes, animal model studies of diseases, and basic research in gene function. Programs will address the ethical, historical, legal, and public policy aspects of genetics."

Other schools were invited to participate in the spring of 1998, and by the fall a blue-ribbon committee was convened to develop further the plans for the institute. This committee contained representatives from Arts and Sciences (James Siedow), Engineering (Earl Dowell), Law (Pamela Gann), Divinity (Gregory Jones), the School of the Environment (Norman Christianson), and the medical center (Peggy Pericak-Vance, Joseph Nevins, Jeremy Sugarman, and Dirk Iglehart). Fuqua indicated they would not be able to be a full participant, but also had a representative (Sim Sitkin). A detailed document was under consideration by November 1998.

The actual implementation of the human genetics project occurred after I left office in January 1999 and was due to the efforts of many different people that I will not attempt to enumerate. The concept for the Institute for Genome Sciences & Policy was publicly announced in 2000 as part of the strategic planning process of the university. This was viewed as an unprecedented venture in terms of its broad scope and the large resource investment of the university. From my viewpoint, this

was not a *de novo* innovation. It was a logical extension of the events described above. Many people participated in this development, only a few of whom have been mentioned by name. This brief discourse is intended only to present a snapshot of some of the activities during my tenure as vice chancellor in the course of the continual evolution of the integration of the various parts of Duke University.

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