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EDITOR'S PAGE

Translational Research: Then and Now

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Gleaming facilities and expensive equipment are now a necessity, but the most important ingredient for productive and effective translational research is the novel idea and the tenacity in carrying out the necessary experiments until the answer is obtained.

. . . inspiration of Andreas Gruentzig, who translated simple but elegant experiments into the foundation for the field of interventional cardiology, inspired all of us and continues to inspire young physicians and scientists.

I was recently clearing out some old files belonging to Dr. Keith Robinson, our former translational research chief scientist. Keith died prematurely last year and his widow brought the files to me. They were mostly drawers of photographs of old histology, histochemistry, and electron microscopy images from the 1980s. Looking at these brought back memories of small rooms in the basement of the Woodruff research building at Emory University that passed for our interventional cardiology research laboratory. The resources were meager but the ideas were rich. Many of the slides were of balloon-injured porcine coronary artery segments from multiple experiments aimed at attempting to control restenosis. These serial histology specimens convinced us that the process of restenosis was one of cell growth, not primarily a thrombotic problem as had been previously purported. The scientists and technicians working in this cramped space helped illuminate the mechanisms of restenosis through collaborations with vascular biologists using in situ hybridization and other techniques. Systemic drugs did little for preventing restenosis, and local delivery compounds using a porous balloon developed in our lab were hampered by the inability of the drugs to dwell long enough to produce the desired effect. Early stent experiments solved acute recoil but exaggerated cell growth. Radiation therapy applied intracoronary was an idea based on the success of treating keloid scars on the skin and pterygium on the cornea. This technique became the first local delivery method to effectively inhibit restenosis and pave the way for antimitotic drugs applied to stents. Many other ideas were tested and the concept of translational research applied to interventional cardiology problems was a valuable component of training for fellows. Some work was sponsored by the industry's needs to test devices and therapies, but much was supported by philanthropy especially from the Rich Foundation, a beneficiary of the venerable Atlanta department store of the same name. We named the lab for the foundation (Fig. 1).

Some who explored ideas in the Rich Research Laboratory were: Steve Karas and Ed Santoian (the mechanisms of restenosis); Brad Burke (systemic antioxidant therapy for restenosis); Neal Scott and Steve Hanson (local drug delivery with the porous balloon and laminar flow techniques); Gary Roubin (the earliest stent evaluations); Ron Waksman (radiation brachytherapy); Nicolas Chronos (antiplatelet therapies in percutaneous coronary intervention and stenting); and Cy Wilcox (in situ hybridization techniques). Keith Robinson's collaborators, including Gus Cippola, Norman Tarazona, Gilberto Nunez, Joe Brown, Stefan Verheye, and many others, are among those who made major contributions.

As I move these boxes to the new translational research facility, the Saint Joseph's Translational Research Institute, which evolved from the Emory facility, I am struck by the contrasts and similarities between this ultramodern facility and our first research lab. Instead of 2 rooms and a barely functioning semi-discarded fluoroscopic system, the new institute, directed by Dr. Nicolas Chronos, is a 38,000-square-foot facility adjacent to the Georgia Tech campus, a major center for bioengineering. The senior scientists, veterinarians, and technicians, now numbering almost 60, perform pre-clinical experiments to support Food and Drug Administration applications as well as investigator-initiated experiments in vascular healing, thrombosis and reactivity, tissue engineering, regenerative medicine, device development and evaluation, and many related fields. Catheterization laboratories, operating bays for large and small animals, histology and histochemistry laboratories, specialized instruments including intravascular ultrasound, virtual histology, flow cytometry, optical coherence tomography,

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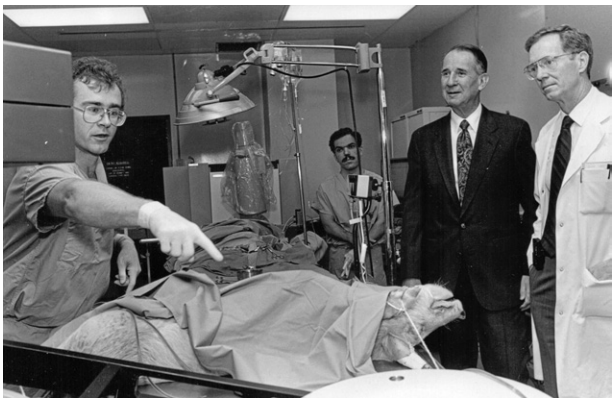

Figure 1. The Rich Research Lab in the Late 1980s

From left: Keith A. Robinson, Gilberto Nunez, Joel Goldberg (The Rich Foundation), and Spencer B. King III.

angioscopy, and magnetic resonance imaging, as well as recovery and holding bays for more than 100 large animals provide the resources for modern science in a spotless good laboratory practice environment. It is a far cry from the limited facilities we had in the 1980s. The rewards of participating in the testing of interesting concepts, however, were no less then than now. Gleaming facilities and expensive equipment are now a necessity, but the most important ingredient for productive and effective translational research is the novel idea and the tenacity in carrying out the necessary experiments until the answer is obtained.

The inspiration of Andreas Gruentzig, who translated simple but elegant experiments into the foundation for the field of interventional cardiology, inspired all of us and continues to inspire young physicians and scientists.

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