

## **Associate Chair for Research 2007-2008**

Research in the Department of Pediatrics at the University of Virginia Children's Hospital is an integral part of who we are and what we do and sets us apart from many academic pediatric departments. Clinicians in our Department are investigators in basic science research, disease-oriented basic research, clinical research and clinical trials. Research programs are ongoing in virtually every Division in the Department with basic science, clinical investigation and clinical trials in Allergy and Immunology, Cardiology, Critical Care, Developmental Pediatrics, Endocrinology, Gastroenterology, Genetics, Hematology/Oncology, Infectious Disease, Neonatology, Nephrology and Pulmonary.

During the past year, the Department has continued to invest in young investigators but has also embarked on recruiting more senior investigators as well in both basic and clinical investigation. The Department has been very successful in supporting these faculty in obtaining NIH KO8 awards to support them early in their careers. Historically we have had over half of our K award holders go on to obtain RO1 funding. Our new faculty recruits complement existing strengths and will help us grow our research base to expand our programs.

### **Basic science Investigation Benjamin Gaston, MD**

Several fundamental basic science discoveries have been made that are relevant to pediatric disease over the past few years by investigators in our Department. These discoveries include landmark observations regarding nephrogenesis from Dr. Gomez's lab; major advances in understanding kidney disease in obstructive uropathy as reviewed by Dr. Chevalier in *Nature Clinical Practice Nephrology*; the discovery of a novel mechanism by which hypoxia is sensed and by which a routine antioxidant has the potential to cause pulmonary arterial hypertension, work from the Dr. Lisa Palmer's and Dr. Benjamin Gaston's laboratories that was published in the *Journal of Clinical Investigation*; novel therapies for asthma and cystic fibrosis being developed and studied mechanistically in the laboratories of Dr.'s Zaman and Gaston; the recent recruitment of Dr. Stephen Lewis from the University of Georgia, who has an RO1 and has industry support to study apnea and control of breathing in the context of new drug development; landmark discoveries regarding abnormal airway pH and its relevance to new asthma therapies published in the *Journal of Allergy and Clinical Immunology* from the laboratories of Drs. John Hunt and Benjamin Gaston; discoveries regarding rhinovirus replication in the human airway epithelium *in vitro* and *ex vivo* from the laboratories of Drs. Ron Turner and Peter Heymann laboratories - including a translation publication from the Turner laboratory in the *New England Journal of Medicine*; important advances in understanding cyclooxygenase metabolism in the kidney from Dr. Victoria Norwood's laboratory; and a variety of important discoveries made in the course of collaborative projects with other departments. Many of these advances have led to allowed patents, permitting the development of new startup companies for diagnostic and therapeutic development. These companies include N30 Pharma, Galleon Pharmaceuticals, Respiratory Research, Inc., and Airbase Therapeutics.

### **Clinical Investigation. Richard Stevenson, MD**

The Department of Pediatrics is committed to increasing clinical research by its faculty, fellows, and residents to aid its mission of enhancing the health and quality of life of children and their families. Toward that end, the Department has focused resources in the creation of a clinical research infrastructure (Children's Clinical Research Office or CCRO) to foster and facilitate research by departmental faculty and housestaff. This clinical research infrastructure works in concert with the Children's Hospital Committee grants-in-aid to move the mission of clinical research forward. The

CCRO also works closely with departmental grants and contracts finance personnel and with other research staff in the School of Medicine to facilitate both investigator-initiated and other (e.g. foundation or industry sponsored) proposals. The CCRO consists of a medical director, a PhD-biostatistician, and a clinical research nurse coordinator. These personnel and their duties are:

- Richard Stevenson, Medical Director, oversees departmental clinical research activities, supervises other personnel in the CCRO, facilitates utilization of departmental resources for clinical investigation
- Matt Gurka, Bio-Statistician, provides guidance for study design, performs data analysis, contributes to manuscript and grant writing, and assists in the development of research projects for residents.
- Stephanie Lowenhaupt, Clinical Research Coordinator, provides assistance in IRB submissions, GCRC submissions, regulatory compliance, contract and budget negotiations, marketing, patient recruitment and enrollment, conduct of clinical trials, monitoring visits. Provide guidance with the submission of new protocols and yearly protocol continuations when needed. Facilitates interactions with the IRB staff as needed.

During fiscal year 2007-2008:

- UVA pediatric patients were enrolled in 180 active clinical protocols (compared to 153 active protocols in FY07)
- 59 new clinical studies were opened (compared to 68 in FY07)
- 50% of pediatric faculty were involved in Clinical Research (compared to 45% in FY07)
- Total research funding for the fiscal year increased 15% to \$8,252,307

This work has been possible because of the efforts of the CCRO.

#### **Pediatric Department Fellowship Programs.** Paul Matherne, MD

The Department of Pediatrics has always placed training of Academic Subspecialists as a major goal. There are eight pediatric subspecialty training programs within the Department of Pediatrics with a federally funded training grant in Cardiology and Nephrology as well as two joint training grants with other departments that benefit our fellows.

**Allergy and Immunology:** currently directed by Dr. Thomas Platts-Mills. This program is a joint Pediatrics and Medicine program. The program has graduated 3 fellows in the last 5 years, who cumulatively published 3 manuscripts in peer-reviewed journals.

**Cardiology:** currently directed by Dr. George McDaniel. This program has had two consecutive institutional NRSA awards, funding 4 trainees annually (not all in Cardiology). The program has graduated 5 fellows in the last 5 years, who cumulatively published 7 manuscripts in peer-reviewed journals.

**Critical Care:** currently directed by Dr. Noreen Crain. This program has graduated 5 trainees in the last 5 years, who cumulatively published 7 manuscripts in peer-reviewed journals.

**Developmental Pediatrics:** currently directed by Dr. James Blackman. The fellow who most recently completed the program has just joined our faculty. She published one paper and submitted a second paper for review. There has been a dramatic increase in the applicants for the program this year and we anticipate a fellow for July, 2009.

**Endocrinology:** currently directed by Dr. William Clarke. This program has graduated trainees in the last 5 years, who cumulatively published 11 manuscripts in peer-reviewed journals and 4 book chapters.

**Neonatology:** currently directed by Dr. Karen Fairchild. This program has had two individual NRSA awards in the past 5 years. The program has graduated 5 fellows in the last 5 years, who cumulatively published 13 manuscripts in peer-reviewed journals.

**Nephrology:** currently directed by Dr. Victoria Norwood. This program has graduated 3 fellows in the last 5 years, who cumulatively published 6 manuscripts in peer-reviewed journals during their training. All are in academic practice. There is currently one first year fellow who will be supported by the joint T32 training grant with cardiology.

**Pulmonary:** currently directed by Dr. John Hunt. The program has multiple unique cross-discipline bench and translational research collaboratives in airway biology, leveraging the interactions among allergists, pulmonologists, and basic scientists within the division.

There are two tracks of training in each fellowship program: clinical research and basic research. In addition to the clinical training, there are two main components to the Academic portion of the training programs:

- There is a defined didactic core curriculum for clinical research and basic research designed to introduce fellows to the fundamental skill set necessary for success in the selected realm of scholarly endeavor.
- All fellows have a separate, individualized “scholarship oversight committee” composed of the division/fellowship director, the fellow’s faculty research mentor, and 1-2 senior scientists in the field of interest. The purpose of this committee is to assure that the fellow is provided appropriate time and mentoring for success, provide guidance for the design & execution of meaningful research, and to monitor the progress of the fellow.

#### **Pediatric Research Symposia.** Peter Heymann, MD

The University of Virginia Children’s Hospital Research Symposium is a yearly event highlighting research devoted to the health of children from the clinics and laboratories of investigators at the University of Virginia. The program is carried out on two consecutive Thursdays in May and includes both oral and poster presentations. Each year over 30 presentations are given; half by faculty and half by developing investigators including fellows, residents, medical and undergraduate students, and health care providers. Abstracts are submitted by all those who conduct pediatric research at the University of Virginia, and it provides a wonderful forum for the exchange of information and for exploring opportunities to collaborate with other investigators.

#### **Pediatric Resident Research Program.** Martha Hellems, MD

The Department of Pediatrics at the University of Virginia has implemented a comprehensive research program for pediatric residents that encourages residents and faculty mentors to “think outside the box” of traditional laboratory and clinical research. Recognizing that many residents are planning careers in community pediatrics, the program promotes a broad definition of “research project” to include endeavors in areas such as child advocacy, quality improvement, health policy, and child safety.

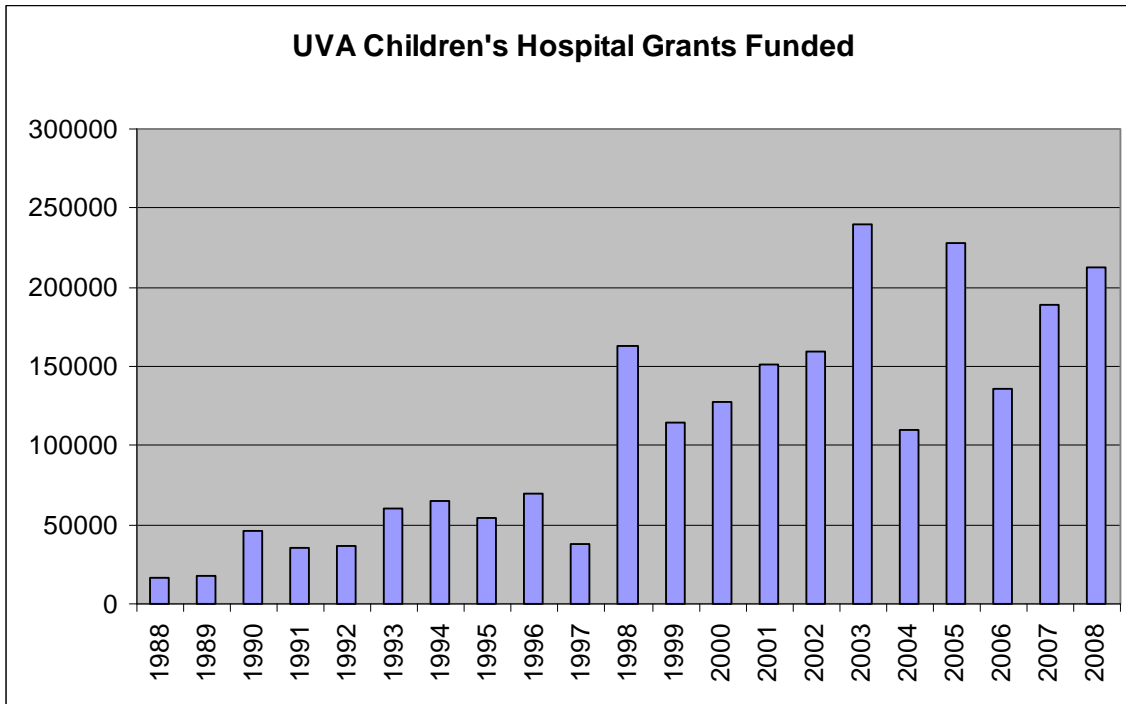
To facilitate resident participation in scholarly projects the Department of Pediatrics provides assistance with the regulatory process, and analytical support, including access to a PhD statistician. The research program has developed an informational web site which includes an on-going directory of potential mentors and projects, and resources for resident researchers. The program issues a monthly Resident Research Newsletter with updates on available projects, grant information, announcements of resident successes, and faculty articles on topics relating to research and career development. The research program also conducts a monthly journal club which teaches critical assessment of research studies and topics such as searching the medical literature, study design,

use of hospital databases, and basic statistics. An annual seminar on “Getting Started in Research” is held each spring in conjunction with the Department’s Research Symposium. The Resident Research Program has been awarded a grant by the Children’s Hospital Committee to fund resident research projects.

Now in its fifth year, the program has assisted many resident researchers who have presented their results at the Children’s Hospital Research Symposium and national conferences, published papers in medical journals, and have continued on to fellowship training or careers in academic pediatrics.

**Children’s Hospital Committee Grant Program.** Karen Fairchild, M.D.

The Children’s Hospital Grants Committee, comprised of approximately 15 pediatric faculty members and three lay members, reviews 20-25 internal grant proposals per year from UVA faculty and Pediatric Department residents and fellows. These seed grants, ranging up to \$35,000 per year, support the early stages of research projects prior to submission to outside agencies. Funding is derived from the Children’s Miracle Network Telethon contributions. Following is a graph of past and current support provided by the committee (please note that 2008 is current from 01/01/08, representing ½ year).



Since 2002 \$1,202,246 in research support has been awarded by the Children’s Hospital Committee. These have included approximately 40 Faculty Grant-In-Aids, 32 Fellow Grant-In-Aids, 3 Scholar’s Awards and 5 Career Enhancement Awards as well as a special resident research program grant. Historically, these grants have led to the extramural funding with a several fold payback to the institution.

**Summary:** The Department’s research enterprises in children’s health care research at the University of Virginia Children’s Hospital continue to be at the heart of what we do. The results of the research by our Faculty are leading to innovations in children’s health care and are helping to develop state of

the art clinical tools to improve the health and well-being of children in the Commonwealth of Virginia and the nation. These activities are paying huge dividends for our children.

G. Paul Matherne, MD  
Professor of Pediatrics  
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