Sherin Devaskar, MD, is the Guest Editor for this annual review issue on Basic Mechanisms of Pediatric Disease. Dr Devaskar is a Distinguished Professor of Pediatrics and Mattel Executive Endowed Chair, Department of Pediatrics, at the David Geffen School of Medicine at the University of California, Los Angeles. Ofer Levy, MD, PhD, served as a contributor to this issue. Dr Levy is a physician in the Division of Infectious Diseases and a Principal Investigator at Children's Hospital Boston, Boston, Massachusetts. Dr Levy is also a faculty member in the Department of Human Biology & Translational Medicine and Associate Professor at Harvard Medical School, Boston, Massachusetts.

Scientific discovery: building blocks of translation

Sherin U. Devaskar[1,2]

The variety of articles in this annual review issue of *Pediatric Research* reflects the broad nature of pediatrics and is a hallmark of the journal. *Pediatric Research* has always been at the forefront of translational research, even before that term became fashionable and other journals declared themselves to be "translational" as well—each with different definitions of the word. We have now entered a "postgenome, big data" era in science. This has provided researchers with tools that promise accelerated discovery, movement of a particular field into unconventional territory, provision of guidance to fortuitous associations, and proximity to improved diagnosis and treatment of disorders. This promise of new velocity comes with increased responsibility. Even as our community demands speed in obtaining solutions to disorders that afflict our children, we must continuously pay attention to ethics, parental informed consent, and children's assenting process to research protocols. We must understand the limitations of our tools.

Drawing conclusions when a study is not well designed may, unfortunately, serve as a distraction to the entire field. We must also realize the limitations of associations drawn from some of the "big data" results. The emphasis on Children's Health in the recent National Academy of Sciences Institute of Medicine's recommendations related to Clinical and Translational Science Institutes is a valuable opportunity in addressing some childhood disorders and developing appropriate therapies and devices. The establishment of Patient Centered Outcomes Research Institute is yet again an opportunity for rolling out observed associations and interventions widely for the benefit of patients (children) and communities.

This issue addresses our responsibility to recognize that while associations between genes, their translated products, and key molecular pathways with particular disorders are forthcoming from large association studies, it is imperative that these associations be adequately validated with *in vitro*, preclinical, and clinical *in vivo* studies to ensure a cause-and-effect paradigm before being considered in clinical practice or in the community. We must remember that an association is simply that—an association based on statistical probability—not a cause-and-effect or mechanistic paradigm. This issue of the journal has strived to provide reviews concerning investigations that help uncover pathobiology of disease. Mechanisms and pathobiology of disease should not be considered out-of-vogue, because it is the discovery of disease targets that paves the way for developing diagnostic tests and therapies. In the absence of knowledge regarding the mechanisms responsible for disease, therapies become nonspecific and we risk the introduction of unnecessary side effects and therapeutic complications.

In this issue, we have brought to you a collection of reviews targeting disorders such as asthma, primary ciliary dyskinesia, atopic dermatitis, systemic juvenile idiopathic arthritis, polycystic kidney disease, disorders of perturbed foregut endoderm and mesenchyme cross talk, intestinal inflammation, nonalchoholic fatty liver disease, α-1 antitrypsin deficiency, bone marrow failure syndromes, sickle cell disease, pontine gliomas, autophagy-related neurodegeneration and neurometabolic diseases, severe intraventricular hemorrhage and arrest of the preterm brain contributing to neurodevelopmental disorders, and the developmental coordination disorder. These reviews will enlighten the readership about the importance of pathogenesis in helping us define and refine the targets of disease. We hope these reviews will ignite future dialogue, collaborations, consortia, valuable investigations consisting of translating gene discovery, and pathogenesis to targeted therapies that benefit children and our collective future.

[1]Department of Pediatrics, David Geffen School of Medicine, University of California, Los Angeles, Los Angeles, California; [2]Children's Discovery & Innovation Institute, Mattel Children's Hospital, University of California, Los Angeles, Los Angeles, California. Correspondence: Sherin U. Devaskar (SDevaskar@mednet.ucla.edu)

Advance online publication 15 January 2014. doi:10.1038/pr.2013.228