

Introduction-Standing on each other's shoulders

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In his book, *The Structure of Scientific Revolutions*, Thomas S. Kuhn proposed that “scientific knowledge advances by *periodic paradigm shifts* rather than solely progressing in a linear and continuous way, and that these paradigm shifts open up new approaches to understanding what scientists would never have considered valid before; that the notion of scientific truth, at any given moment, cannot be established solely by *objective* criteria but is defined by a consensus of a *scientific community*.” (1) Such has been the progress in pediatric research, a paradigm shift followed by a new understanding of disease pathophysiology leading to advances in diagnosis and intervention. With a few exceptions, no one researcher makes the discovery that changes everything about the way a disease is treated. Even if there are no giants involved, investigators stand on the shoulders of each other and do studies that confirm, slightly change, or perhaps even radically reverse existing beliefs. Studies are repeated and adjusted, and we are always uncovering a new detail. Often, a single researcher is credited with a great triumph, but this seminal discovery is due to an entire architecture of investigators who devote years to increasing our knowledge of health, illness and treatment.

That is why, in this 50th Anniversary Review issue, we would like to remember, congratulate, and thank everyone who has been involved in *Pediatric Research*. To all the researchers, authors, statisticians, editors, and reviewers—to the doctors, nurses, children, their parents, and communities—wholehearted thanks are due. Because of you, this journal has thrived and published hundreds of papers since 1967, less than a year after the Society for Pediatric Research officially adopted the Declaration of Helsinki.

With this 50th Anniversary Review issue, we look to the past and future of pediatric research, medicine, and policy. Many technologies, undreamt of years ago, are used on an hourly basis today. With those technologies come high costs, and research accordingly is expensive. The Public Policy Commentaries in this issue grapple with the challenge of funding pediatric research. In the September 2016 issue of *Pediatric Research* “7 Great Achievements in Pediatric Research in the past 40 years” was published highlighting lives saved because

of research and a campaign to increase public awareness (2). Continued research progress requires continued investment.

The reviews in this issue cover the histories of a myriad of conditions that afflict children, prevention/intervention directed towards those conditions, and point a way forward into the future. They include discussion of the four important phases of translational research including T1 basic science research defining mechanisms, T2 translation to humans in new methods of diagnosis, treatment and prevention, T3 translation to patients in effectiveness trials, and T4 translation to the community in population outcomes research (3). Articles span T1 research on “omics” and precision medicine in neonatal kidney disease to T3 quality improvement science and T4 public health and policy approaches to the leading cause of death for Americans age 1–44 y, injury. The articles highlight surgical innovations and new vaccines and drugs to address old and new infectious diseases.

Finally, the articles emphasize extraordinary new tools that will accelerate discovery including big data, gene sequencing, new structural and functional neuroimaging modalities, and new “omic” or genetic biomarkers. Many articles in this issue and growing research demonstrate that there are early antecedents to adult health and disease (4). Investment in research early in the life course is essential to prevent, forestall or modify future disease. It is an exciting time for pediatric research.

Looking back into the archives of *Pediatric Research*, we see that the journal's essential mission remains the same. In the past 50 y, due to the combined work of many investigators, certain illnesses have all but been eradicated. Unforeseen diseases have arisen. We must continue to support each other and stand on each other's shoulders to ensure a healthier future.

REFERENCES

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