

Translational Research: The Time is Now

JAMES F. PADBURY, MD
BONGSUP P. CHO, PhD
GUEST EDITORS

The National Institutes of Health (NIH) Roadmap identified the need to develop new research pathways and inter- and cross-disciplinary research teams to accelerate clinical research and solve enigmatic problems.¹ This critical need has been intensified by advances in genome science and transformational improvements in technology over the years. Whole-genome DNA sequencing of humans and model organisms is not only realistically possible and economically feasible, but it is also widespread. The opportunity has emerged to use cell and molecular techniques to decipher the “secrets of the genome” and initiate therapies based on a wide array of “omics” platforms. Breakthroughs in gene editing and gene therapy are changing the landscape of cancer, genetic, and metabolic disorders. Nonetheless, many clinicians do not yet recognize this as part of their “core business.” Likewise, many basic scientists lack the clinical insights of their medical colleagues. This is due to traditional, if not parochial, disciplinary barriers. Still, for the most part, it is due to lack of knowledge and awareness of new developments in rapidly evolving scientific trajectories. Many new therapeutic options in medicine will derive from a new generation of clinical researchers having a facility with the lexicon of cell and molecular biology, genomics, next-generation sequencing, semantic data-mining, large datasets, informatics tools, and an ability to conduct extensive clinical research initiatives employing integrated, federated databases.

The past decades have been associated with changes in society and the public’s interface with the healthcare system. With increasing income inequality and economic uncertainties, access to healthcare has become ever more fragmented. Disruptions in access to care and preventive services have led to a worsening of long-standing healthcare problems. In addition, racial, ethnic, socio-economic and geographic differences across our community are increasingly associated with significant health disparities. Both the opioid epidemic and the COVID-19 pandemic, while sparing no racial or ethnic group, have had a disparate impact on minority and rural populations. Notably, the effect of behavioral and mental health problems on individuals and populations’ overall health has become increasingly recognized. These are challenges that affect the healthcare systems and the people in all domiciles of the United States. However, the impact of each varies by region, race, income, and historical factors. Recognition of these factors’ interplay with the extraordinary breakthroughs in clinical and basic science is among the challenges faced by clinical and translational research programs. Whether it is through efforts to bring discoveries from the “bench to the bedside,” to effectively testing new clinical applications, or to generalize advances to broader populations, the clinical and translational research enterprise needs to address health disparities head-on to improve health across the translational research continuum and to serve our communities.

In the previous issue of the Journal, we presented contributions from “basic science” biomedical-oriented Institutional Development Award (IDeA) programs in Rhode Island. In this issue we highlight programs for their “clinical” and “translational” impact on research and research opportunities. **ADAM CZYNSKI** et al describe studies to develop systematic approaches to the care of infants with Neonatal Opiate Withdrawal Syndrome (NOWS). **TRACI GREEN** et al provide an overview of the COBRE on Opioid and Overdoses, a collaborative research-based center addressing the opioid crisis in Rhode Island. **PETER MONTI** et al describe the Center for Addiction and Disease Risk Exacerbation (CADRE), a COBRE that is establishing a thematically linked, state-of-the-art, multidisciplinary Center investigating mechanisms whereby substance use increases risk for or exacerbates chronic disease. **SUNIL SHAW**’s overview of the COBRE for Perinatal Biology (CPB) describes their scientific focus on perinatal diseases such as preeclampsia and preterm birth, as well as more broadly on cardiopulmonary development and reproductive biology. **JEROME SANES** presents a description of the COBRE Center for Central Nervous System Function: Progress and Perspectives. **VALERIE ZABALA** has provided an overview of the Advance Clinical and Translational Research (Advance-CTR) award’s efforts to bridge translational research gaps by creating a statewide hub to coordinate and leverage existing research resources and provide new career development support and funding for academic researchers, particularly junior investigators.

As we noted in our first Edition, our goals are to enhance understanding of these dynamic programs among the clinical, biomedical, and scientific research community and drive usage of the extraordinary resources that have been made available through the IDeA programs. We are fortunate to have been awarded this endowment of resources and are using them to strengthen our region’s biomedical enterprise.

Reference

1. Zerhouni E. Medicine. The NIH Roadmap. *Science*. 2003 Oct 3;302:63-72.

Guest Editors

James F. Padbury, MD, Principal Investigator of Advance-CTR, William and Mary Oh - William and Elsa Zopf Professor of Pediatrics for Perinatal Research, Brown University, Providence, RI.

Bongsup P. Cho, PhD, Professor of Pharmacy, University of Rhode Island, Program Director of Rhode Island IDeA Network of Biomedical Research Excellence (RI-INBRE), Kingston, RI.

Correspondence

James F. Padbury, MD
james_padbury@brown.edu