

'bench to bedside to bench': Scientists call for closer basic-clinical collaborations

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Credit: Jackson Laboratory

In the era of genome sequencing, it's time to update the old "bench-to-bedside" shorthand for how basic research discoveries inform clinical practice, researchers from The Jackson Laboratory (JAX), National Human Genome Research Institute (NHGRI) and institutions across the U.S. declare in a Leading Edge commentary in *Cell*.

"Interactions between basic and clinical researchers should be more like a 'virtuous cycle' of bench to bedside and back again," says JAX Professor Carol Bult, Ph.D., senior author of the commentary. "New technologies to determine the function of genetic variants, together with new ways to share data, mean it's now possible for basic and clinical scientists to build upon each other's work. The goal is to accelerate insights into the genetic causes of disease and the development of new treatments."

Genome sequencing technologies are generating massive quantities of patient data, revealing many new genetic variants. The challenge, says commentary first author Teri Manolio, M.D., Ph.D., director of the NHGRI Division of Genomic Medicine, "is in mining all these data for genes and variants of high clinical relevance."

In April 2016, NHGRI convened a meeting of leading researchers from 26 institutions to explore ways to build better collaborations between basic scientists and clinical genomicists, in order to link genetic variants with disease causation. The *Cell* commentary outlines the group's recommendations, which include promoting data sharing and prioritizing clinically relevant genes for functional studies.

In order for these collaborations to be most effective, the researchers note, both the basic and clinical research disciplines need better data-management practices. Basic scientists should seek better integration across model systems and focus on standardizing and collecting data on phenotypes (physical characteristics or symptoms) for matching with genomic data. Clinicians should work more closely with the clinical laboratories that perform the [genome sequencing](#); "even better would be a two- or even three-way interchange including the patient as a long-term partner."

The researchers comment, "These efforts individually and collectively

hold great promise for bringing basic and clinical researchers and clinicians, and indeed researchers from many other relevant disciplines, together to work on mutually relevant questions that will ultimately benefit them both, the scientific community at large, and most importantly, the patients whom we are all committed to serving."

More information: Teri A. Manolio et al, Bedside Back to Bench: Building Bridges between Basic and Clinical Genomic Research, *Cell* (2017). [DOI: 10.1016/j.cell.2017.03.005](https://doi.org/10.1016/j.cell.2017.03.005)

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