Selected publications


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We have moved away from studying human disease in humans; the problem is that it hasn’t worked. We need to refocus and adapt new methodologies for use in humans to understand disease biology in humans.

—Elias Zherouni, MD, former director, U.S. National Institutes of Health

**Human-based toolbox**

**Pathway-based organizing framework**
linking events at the molecular, genetic and cellular levels with organism-level health/disease outcomes, akin to the ‘adverse outcome pathway’ (AOP) approach in toxicology.

**Human-based microphysiological models** such as 3D cell models, organoids, and organs-on-chips, to test hypotheses and evaluate pathway perturbations in species-relevant biological systems of varying complexity.

**Computational systems biology models** to integrate experimental and predictive approaches to understand complex biological data, develop and test hypotheses, and predict outcomes for improving translation of research results from bench to bedside.

**How we work**

**Fund** open-access publication of independent scientific reviews examining the human relevance and translational efficacy of existing models for major human diseases, with recommendations for new research directions leveraging the growing toolbox of 21st century, human-specific tools and technologies.

**Organize** and sponsor workshops to stimulate dialogue among key stakeholders at regional and international levels regarding strategic science opportunities and barriers, and to make recommendations necessary for implementing a human biology platform for biomedical research.

**Train** scientists and graduate students in human-based research design, integrating a sophisticated understanding of disease pathophysiology and AOPs with modern microphysiological and computational tools.

**Collaborate** with scientists, policy makers, funding bodies and other key stakeholders to redirect research funding toward modern, human-relevant approaches, and to establish targets for phasing out animal use in science, with defined timetables and metrics.