

Seattle Expert Panel Meeting, August 19-20, 2008



Executive Summary:

Biomedical research is critical for effective resolution of the health issues which negatively impact our world. From both individual and societal perspectives, serious health issues are a profound detrimental influence on quality of life. In addition, treatment of health issues consumes a significant and increasing share of individual and national resources, thereby limiting options to address other issues of societal concern. Taken together, these factors form a substantial motivation to maximize productivity in biomedical research.

The biomedical research enterprise is facing a period of transition which offers vast potential yet equally apparent challenges. Recent technological advances have led to larger numbers and more complex research modalities with generation of massive amounts of data. Unfortunately, efficient use of information derived from animal models, computer models, in vitro studies, and other means of scientific investigation is becoming an increasingly intractable process.

The inability to effectively analyze, share, and perform computational studies on existing data stands as a considerable impediment to scientific discovery as well as translation of important findings into beneficial medical advances. A great urgency exists for development of efficient capabilities for integration of and computation on experimental data. The problem is not specifically a lack of resources – the NIH alone funds billions of dollars each year for biomedical research. Rather, the issue is the lack of ability to effectively utilize data across experimental groups, institutions, and domains.

As a means to resolve this challenge, this expert panel proposed the construction of Knowledge Environments (KEs) which will provide the informational infrastructure necessary to take full advantage of the latent value in existing datasets. These KEs will provide the framework for effective computation on existing animal models data with the goal of facilitating medical progress.

Specifically, this panel identified the process and resources necessary to develop and implement first-generation KEs related to animal models and related technologies. This diverse leadership group further identified important issues and jointly developed an action plan to establish the necessary organizational and logistical framework. This action plan will be used by NIH staff and private entities to develop funding opportunities and timelines essential for success. This effort will become a benchmark for future NIH and private efforts to fully realize the benefits of investment in biomedical research, ultimately translating into significant medical benefit to society.