Why do we need to move new science into the drug development process?

How do we translate new drug development tools into regulatory use?

What specific regulatory questions can new drug development tools help address (today)?
Advancing Alternative Methods for Regulatory Use

David Strauss, MD, PhD
Director, Division of Applied Regulatory Science, FDA/CDER

Presentation to the FDA Science Board on Behalf of
FDA New Alternative Methods Group Members – June 14, 2022
Why do we need to move new science into the drug development process?
The Promise of New Technologies

➢ Advances in systems biology, stem cells, engineered tissues, and mathematical modeling present new opportunities to improve our ability to predict risk and efficacy

➢ Advances may help bring products to market faster, with improved efficacy, or prevent products with increased toxicological risk from reaching the market
How do we translate new drug development tools into regulatory use?
However, …

Multiple steps are required to translate these new technologies into regulatory use and maintain the same standard of safety, efficacy and quality of FDA-regulated products.

While we are nowhere near being able to replace all animal testing …

… there are opportunities for alternative methods to make additional inroads in addressing the 3Rs for specific contexts of use.
What specific regulatory questions can new drug development tools help address (today)?
Drug Discovery and Early Development

IND
Phase 1 and 2
Phase 3
Marketing application
1 Approved Drug

Translating New Drug Development Tools into Regulatory Use
LEARNING FROM PRIOR EXPERIENCES

Background, Motivation for and Overview of the New Questions & Answers for ICH E14 and S7B

David Strauss, MD, PhD
Rapporteur, ICH E14/S7B Implementation Working Group
FDA, United States
Why

Why do we need to move new science into the drug development process?
Value Proposition of New E14/S7B Q&As

Directed at scenarios where nonclinical data can:

- Reduce number of clinical studies
- Inform clinical regulatory decision making at the time of a marketing application
- Streamline drug development
- Inform labeling to better communicate risk

“No Large QT Effects” → Low Risk

NDA = new drug application
How do we translate new drug development tools into regulatory use?
How did we get there?

Guidance, Policy, Training

Workshops & White Papers

Applied Research & Collaboration
MULTIPLE WORKSHOPS

- 2013 Think Tank
- 2014 CiPA Update Workshop
- 2016 Drug-Induced Arrhythmias and CiPA Workshop
- 2017 CiPA In Silico Modeling Workshop
- 2018 FDA-CSRC-HESI Think Tank
APPLIED RESEARCH: EXAMPLE MULTISITE COLLABORATIVE STUDY

Resource
International Multisite Study of Human-Induced Pluripotent Stem Cell-Derived Cardiomyocytes for Drug Proarrhythmic Potential Assessment

Cell Reports, 2018, 24(13):3582-3592
WHITE PAPERS

White Paper on Human Stem Cell-Derived Cardiomyocyte Assays

- 20 Authors
- 6 Countries
- 2 Regulatory Agencies
- 11 Industry Partners
- 3 Academic Institutions
- 1 Non-Profit

White Paper on Proarrhythmia Model Validation

- 42 Authors
- 8 Countries
- 2 Regulatory Agencies
- 15 Industry Partners
- 21 Academic Institutions
What specific regulatory questions can new drug development tools help address (today)?
WHAT IS IN THE ICH GUIDELINE?

ICH E14/S7B Implementation Working Group
Clinical and Nonclinical Evaluation of QT/QTc Interval Prolongation and Proarrhythmic Potential
E14/S7B Q&As
Adopted on 21 February 2022

Best practice recommendations for in vitro ion channel and human induced pluripotent stem cell assays

Principles for validating in vitro and in silico proarrhythmia models and qualifying them for regulatory use
A Potential Model for Other Safety Areas?

“The integrated nonclinical-clinical assessment here can also serve as a model for other safety areas in drug development and regulatory evaluation.”
Why Have This Workshop?

Bring all stakeholders together ... So we can figure out the ...

Why
Why do we need to move new science into the drug development process?

How
How do we translate new drug development tools into regulatory use?

What
What specific regulatory questions can new drug development tools help address (today)?

Thanks for Joining!