Translation as a Scientific Framework

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Translation as a Core Principle

Translational Toxicology at NTP

Our impact
- Policy
- Public Health
- Regulation

Our aims
- **Inform** the present
  - Enabling and educating stakeholders
  - Timely responses
  - Contextualizing data
- **Innovate** the future
  - Build mechanistic understanding
  - Capability innovation
  - Train next generation translational toxicologists

Our tools
- Literature analysis
- Animal studies
- In vitro systems
- In silico/computational analytics

Aspiration = Support the evolution of toxicology from a predominately observational science to a predominately **predictive** science
Define hypotheses & Design a testing strategy

Data Mining

QSAR Profiling

Bioactivity Screening

In vitro Studies

Knowledge Integration

Longer-term in vivo Tests

Short-term in vivo Tests

Human Health Effects

Communication

Primary focus on the human condition
Translation the NTP Way

Traditional Approaches
- Animals → Humans

Government context
- Science → Regulation/Policy

Precision Toxicology
- Anybody → Somebody

Predictive Toxicology
- Cells → Tissue → Organ → Organism

New Approaches
- Innovation → Practice
Translation the NTP Way

Traditional Approaches

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New Approaches

Innovation → Practice

Past bias
Translation the NTP Way

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Predictive Toxicology

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New Approaches

Innovation → Practice

Future bias
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Questions?