

# Randolph Ashton

Associate Professor of Biomedical Engineering at UW-Madison  
and Co-Founder/CEO of Neurosetta LLC



**RosetteArrays™:**

**Transforming Risk Assessment and Drug Discovery  
for Neurodevelopmental Disorders**

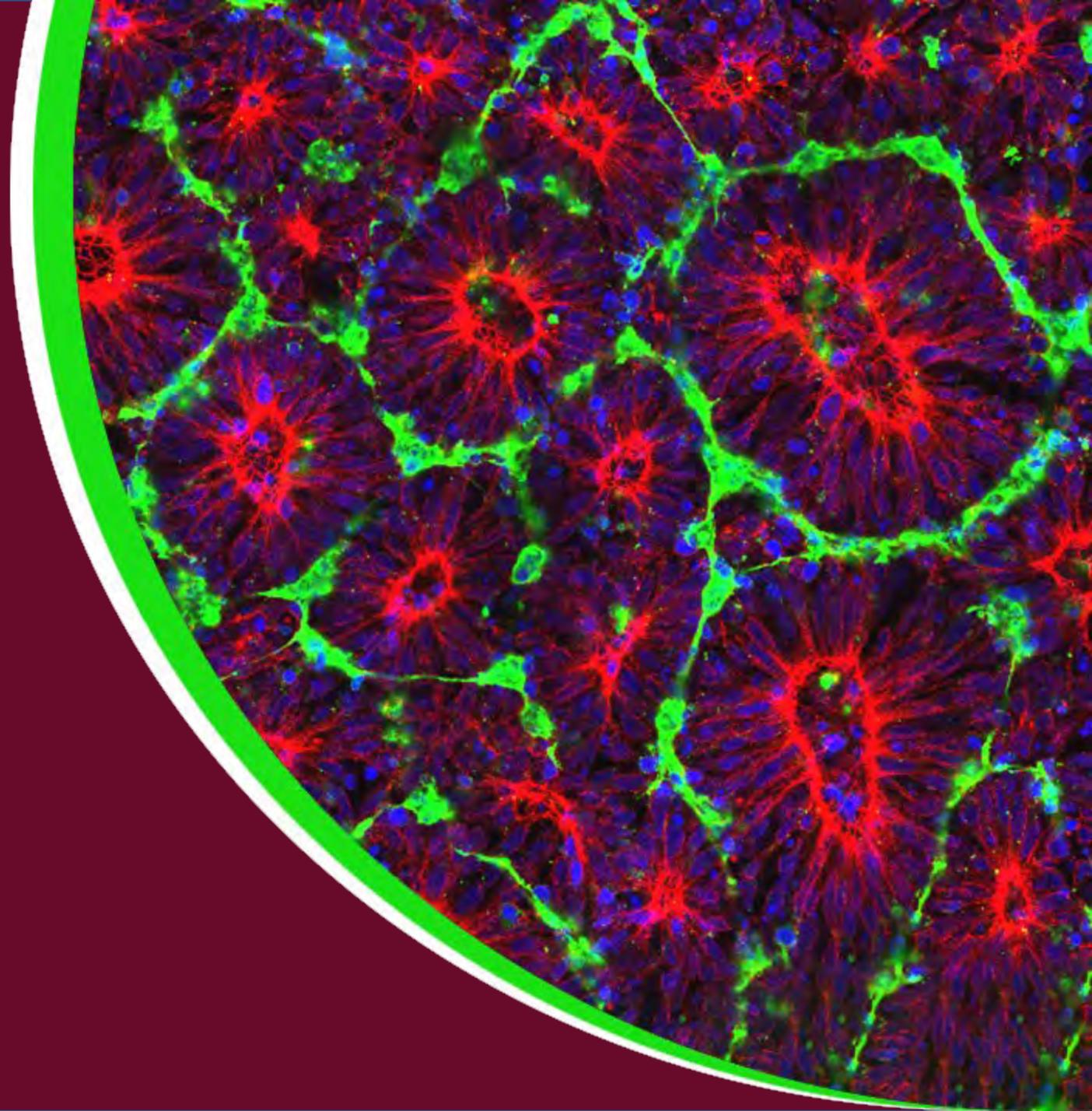
# RosetteArray<sup>TM</sup> :

Transforming Risk Assessment  
and Drug Discovery for  
Neurodevelopmental Disorders

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**Randolph Ashton**

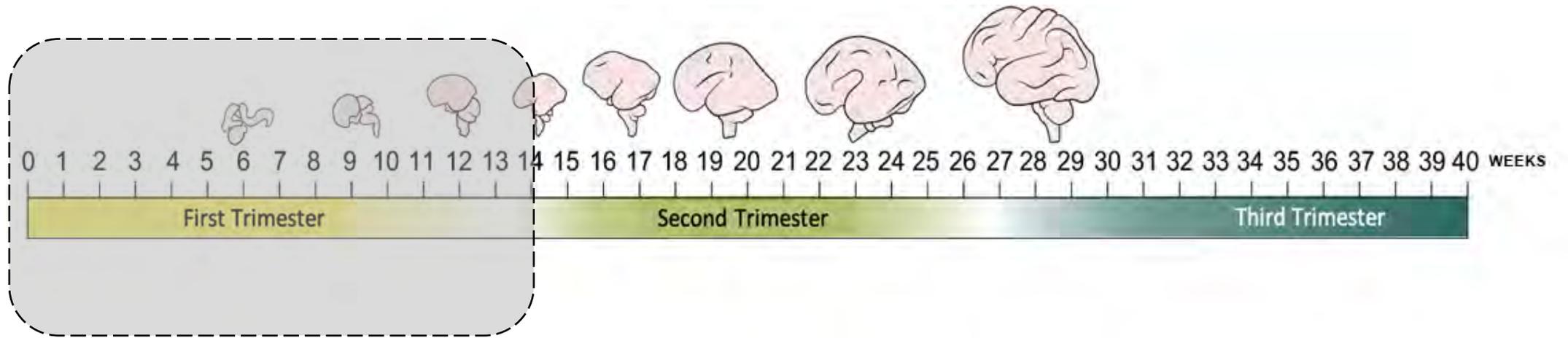
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# Problem: We cannot test on HUMAN embryos!

1. Thousands of agriculture and industrial chemicals in the market with **no data** on how they effect **HUMAN** brain and spinal cord development.
  - Increased risk of EPA-approved chemicals being restricted post-release; increased chemical development cost.
  - Increasing rate of neurodevelopmental disorders, e.g., Autism
2. Pharmaceutical companies have no cost-effective methods to test drug effects on **HUMAN** nervous system development.
  - Increased risk of candidate drug failures and FDA-approved drugs being restricted; increased drug development cost
3. No scalable methods to investigate how our genetics predispose us to increased risk for a neurodevelopmental disorder.
  - Lack of preventative precision medicine approaches
  - Increasing burden of neurological disease

Human Brain and Spinal  
Development



Birth Defect



Childhood Onset



Adult Onset



## GENETIC MUTATIONS



## CHEMICALS / POLLUTANTS



Spina Bifida



Autism



Huntington's Disease

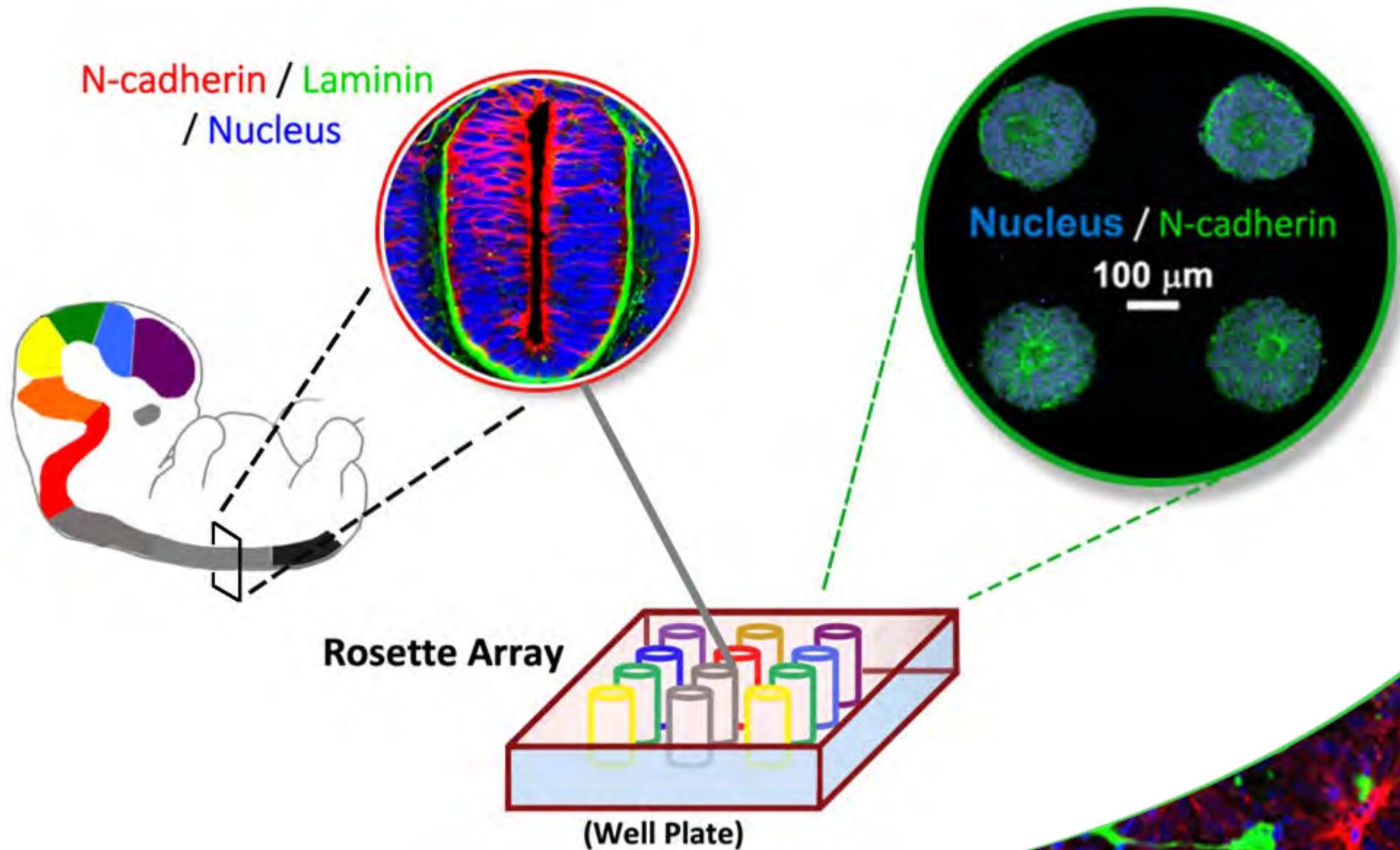


# The RosetteArray™ Solution

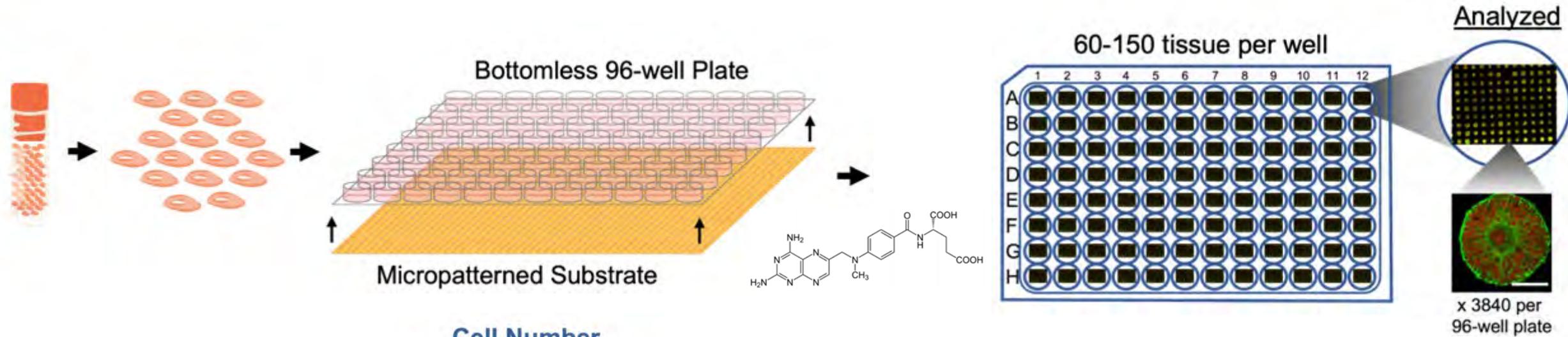
Quantitative high-throughput screening platform for modeling **HUMAN BRAIN AND SPINAL CORD DEVELOPMENT** and screening potential effects of chemical and drug exposures

- Scalable and cost-effective screening of:
  - a chemical's/drug's risk of causing human neurodevelopmental disorders
  - neurodevelopmental risk based on a person's genetic background
- Scalable modeling of neurodevelopmental disorders for precision medicine drug discovery
  - Increase prediction of neurodevelopmental toxicity
  - Reduce risk, and thereby cost, of chemical and drug development pipelines
  - Enable novel neurodevelopmental disease modeling and discovery of precision medicine therapies

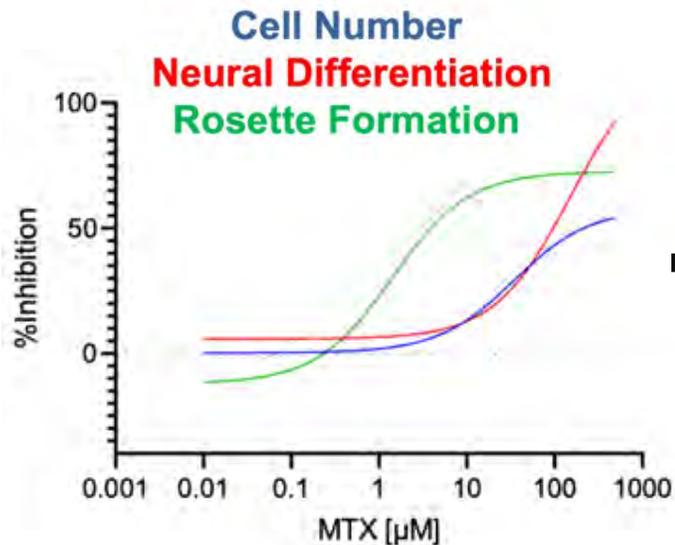
# RosetteArray technology



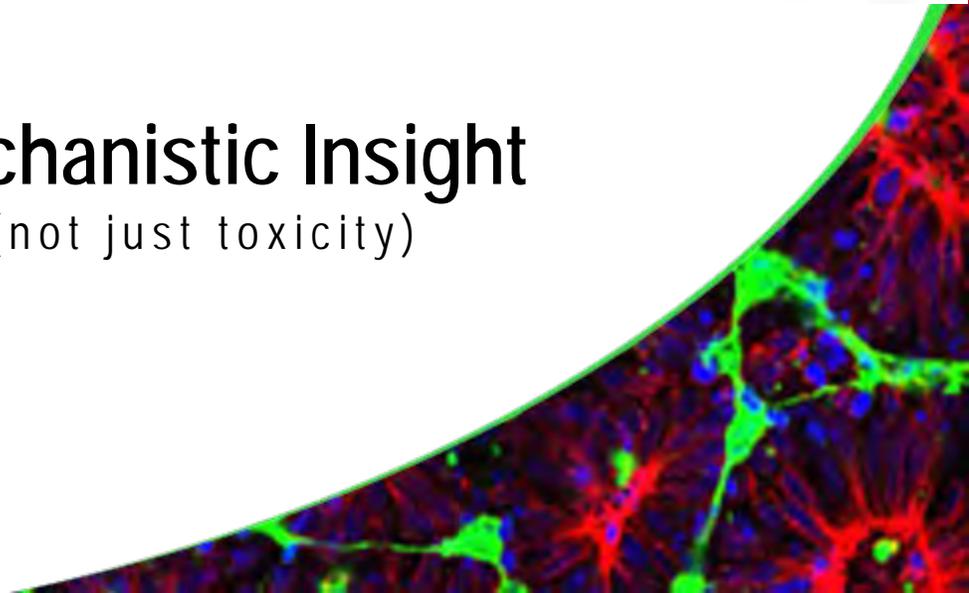
# Stem Cell Engineering + Materials Science + Computer Science



**Neurosetta, LLC**  
Tissue detection  
image processing  
software



**Mechanistic Insight**  
(not just toxicity)

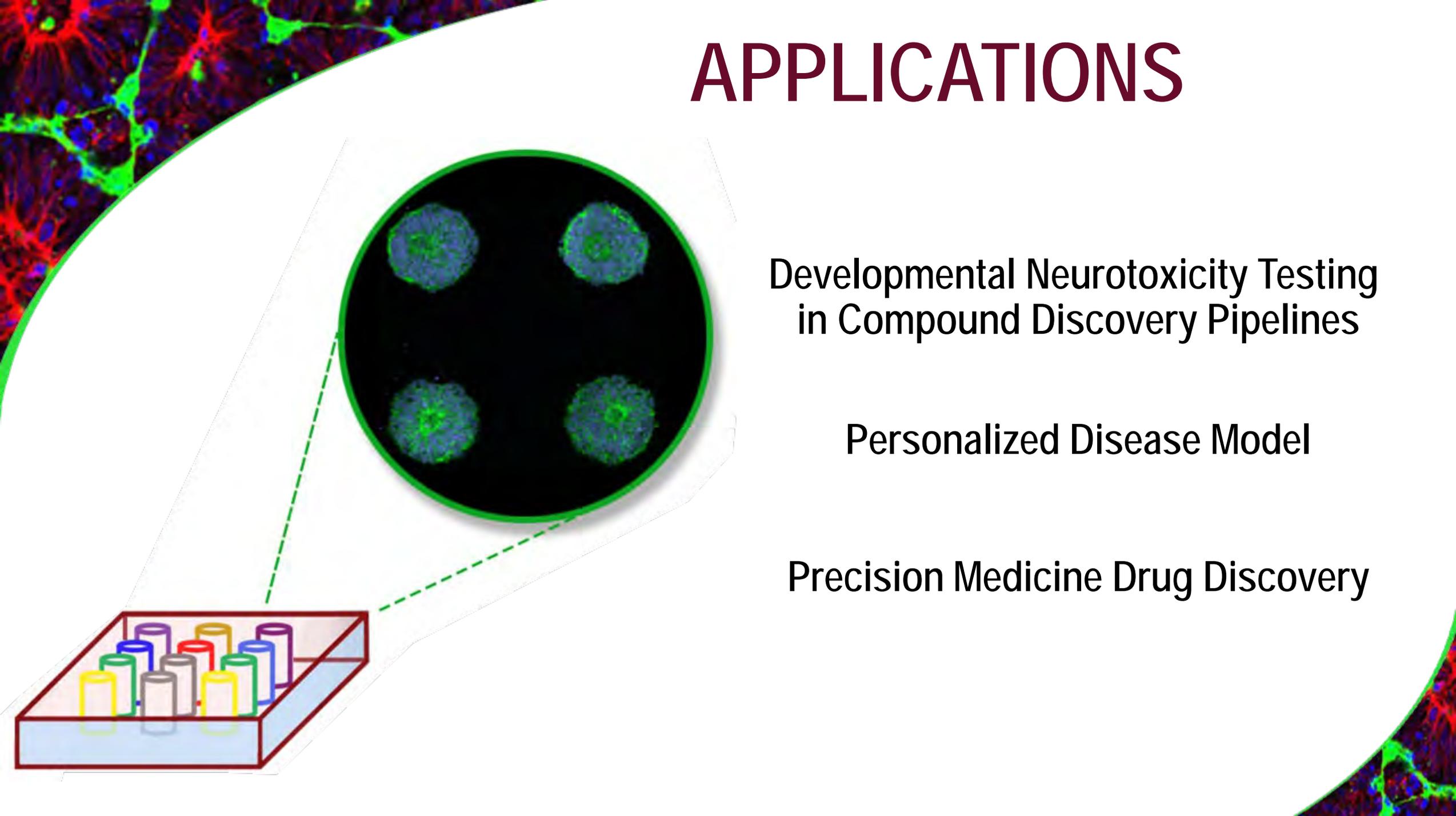


# APPLICATIONS

Developmental Neurotoxicity Testing  
in Compound Discovery Pipelines

Personalized Disease Model

Precision Medicine Drug Discovery



# WHAT IS OUR MARKET?

**\$4.6B**

*\* Global Human Organoids Market, 2025*

*\* Global Animal Models Market, 2030*

Chemical

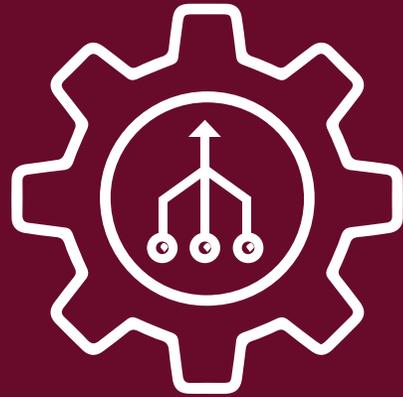
Chemical

Pharmaceutical

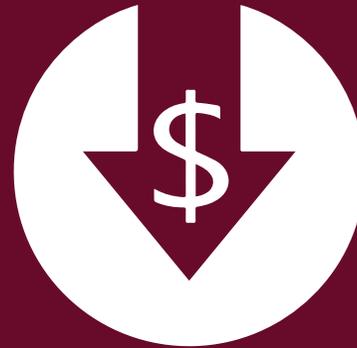
# Value



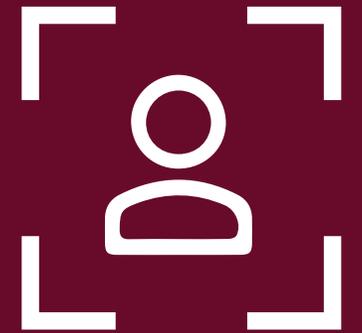
HUMAN  
MODEL



STREAMLINED  
SCREENING



RISK & COST  
DECREASE



PERSONALIZED  
SCREENING

## Prof. Randolph S. Ashton



- Co-founder and CEO
- Co-inventor of Rosette Array technology
- Associate Professor of Biomedical Engineering at UW-Madison
- Over 20 years of experience

## Dr. Gavin T. Knight



- Co-founder and CTO
- Co-inventor of Rosette Array technology
- Over 10 years of experience

## Prof. Rebecca Willett



- Co-founder and CIO
- Inventor of Rosette Array analysis algorithms.
- Professor of Statics and Computer Science at Univ. of Chicago
- Over 20 years of experience



THE UNIVERSITY OF  
CHICAGO

# RosetteArray™

Transforming Human Neurodevelopmental Risk Assessment

✓>\$4M funding

✓3 patents filed

✓>10 publications

✓Early collaborations: EPA & industry

✓Neurosetta awarded \$1.7M Fast-Track STTR grant from the  
National Institute of Environmental Health Sciences

BURROUGHS  
WELLCOME  
FUND 



# Neurosetta Products

- ✓ Contract developmental neurotoxicity screening services
- ✓ Off-the-shelf RosetteArray kits
- ✓ Custom/personalize disease model development
- ✓ Precision Medicine Drug Discovery



Regulatory agencies  
Chemical and Drug companies  
Contract Research Organizations  
Research institutes and labs

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**\*\* Seeking Corporate Collaborators & Beta-Testers \*\***

