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'Horizons and Challenges in Organotypic Culture Models for Predictive Toxicology'

Satellite Session of the Society of Toxicology

Saturday - March 11, 2017

Baltimore (9:00 am – 5:00 pm)

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This research is funded by U.S. EPA - Science To Achieve Results (STAR) Program Grant #

Status of OCM-PT Co-Operatives with VTM Research

VPROMPT
Vanderbilt U / U Pittsburgh
#83573601

HMAPs
University of Wisconsin
#83573701

UW-PTC
Univ of Washington
#83573801

CT-AOP
Texas A&M / NCSU
#8358201

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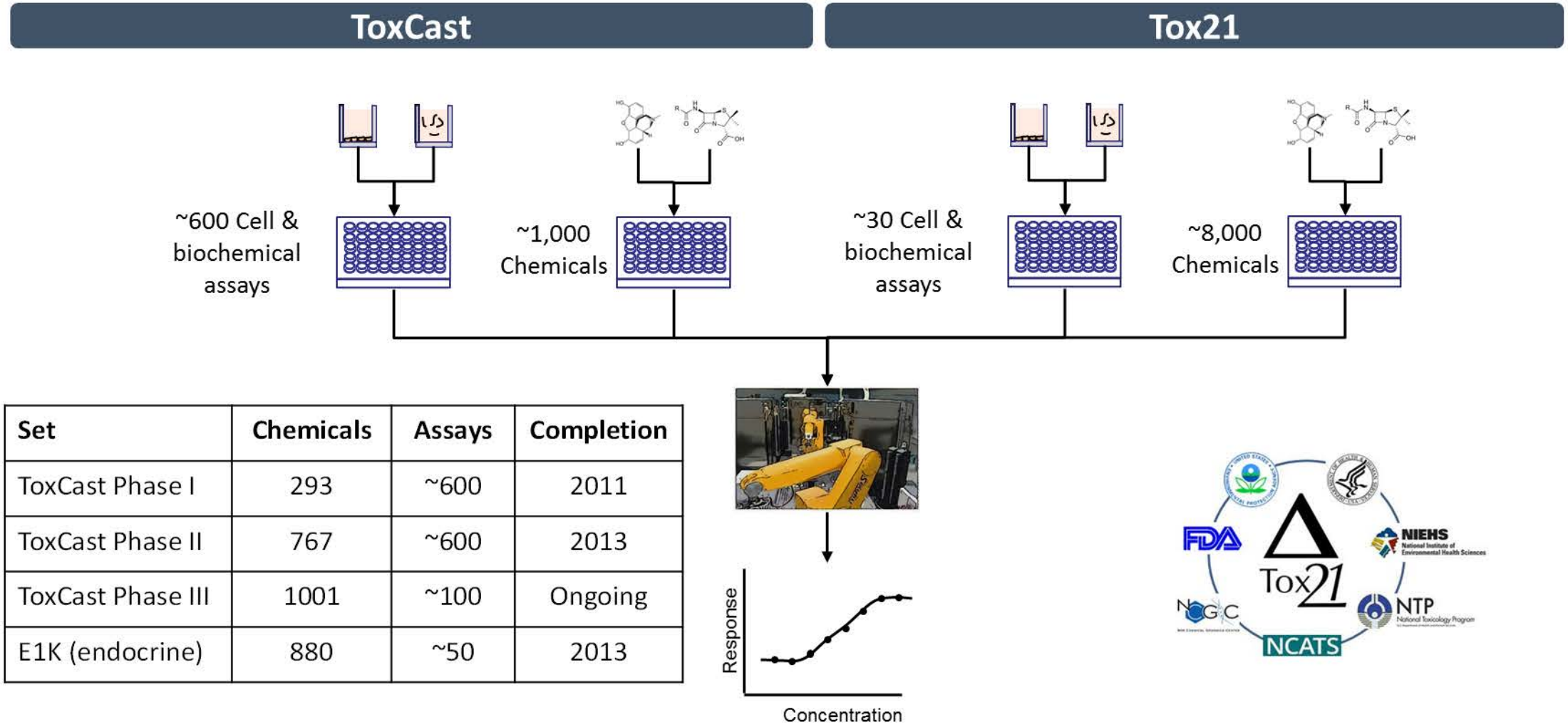
Shifting to Molecular/Pathway Approaches



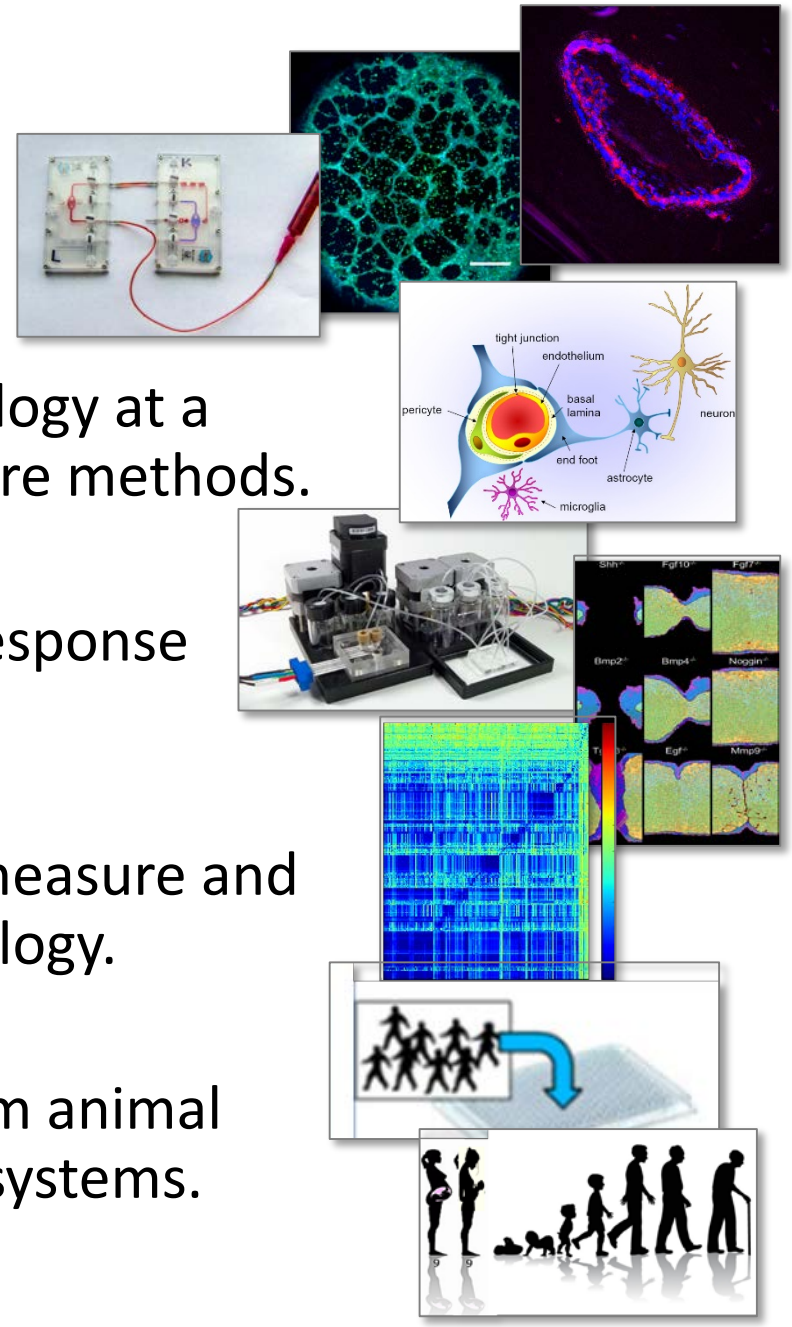
Set	Chemicals	Assays	Completion
ToxCast Phase I	293	~600	2011
ToxCast Phase II	767	~600	2013
ToxCast Phase III	1001	~100	Ongoing
E1K (endocrine)	880	~50	2013

SOURCE: Rusty Thomas, Director - NCCT

OCM-PT & human microsystems research

Novel scientific capacity to advance:

- **Predictive toxicology -** mobilize HTS/HCS data into human biology at a more physiological level than possible with conventional culture methods.
- **Critical transitions -** elucidate 'point of departure' in a dose-response relationship and 'tipping point' in a time-resolved trajectory.
- **AOP models -** experimental and computational platforms to measure and simulate complex cellular behavior(s) and human microphysiology.
- **Translation -** shift reliance on descriptive apical endpoints from animal studies to pathway-level changes in engineered human microsystems.



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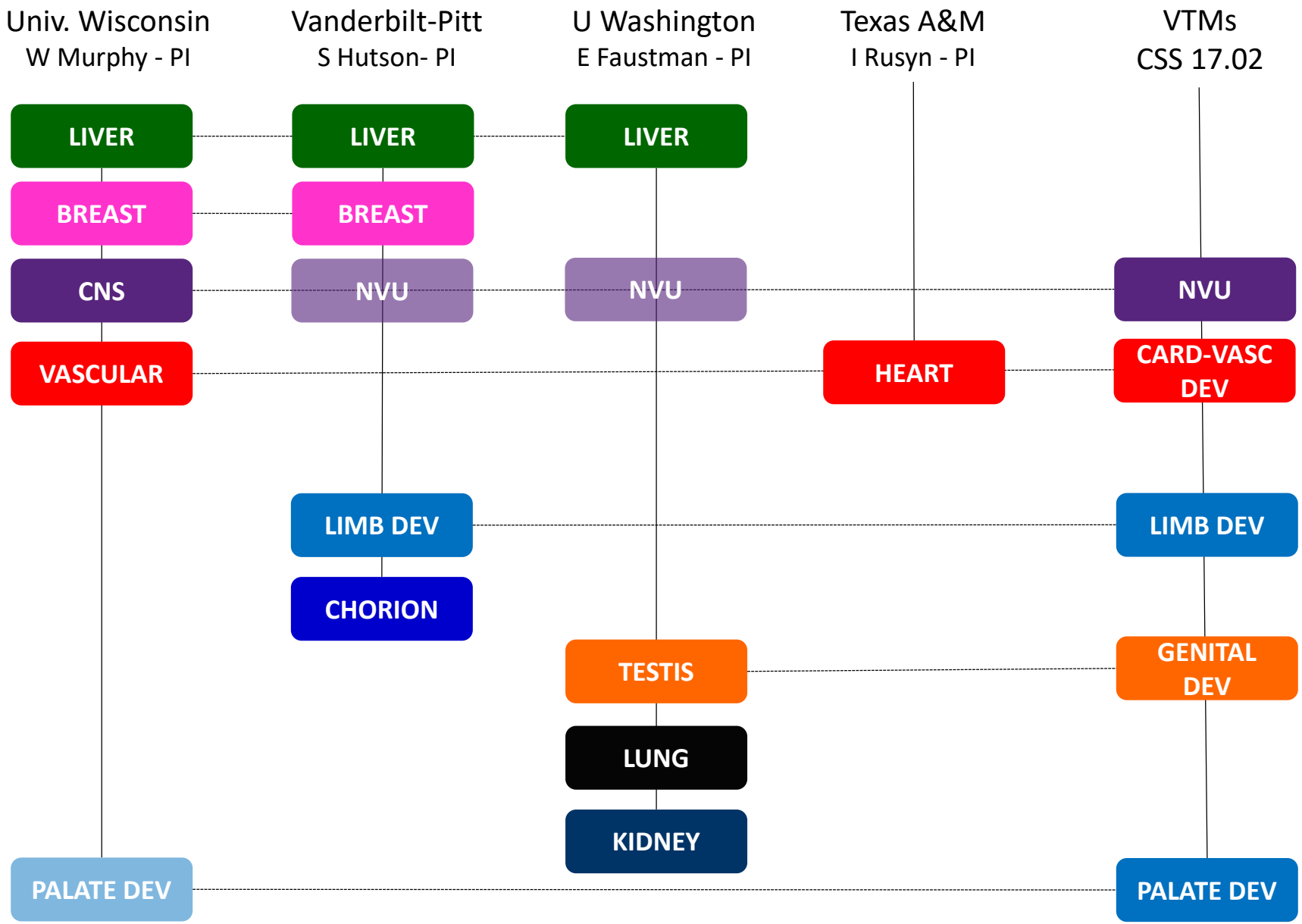
Weekly VTM Meetings -- Wednesday 10 am – 12 noon (EST)
Webinar: https://epawebconferencing.acms.com/vtm/



COVERAGE OF BIOLOGICAL SPACE

- Neurogenesis
- Angiogenesis
- Neurovascular unit
- Blood-Brain Barrier
- Chondrogenesis
- Spermatogenesis
- Mammogenesis
- Pulmonary function
- Renal function
- Hepatic function
- Cardiovascular function
- Thyrotropic Neurodevelopment
- Biological Pathway Analysis
- Microfluidic Devices
- Microphysiological Systems

COVERAGE OF TOXICOLOGICAL SPACE

- Xenobiotic Metabolism
- Breast Cancer
- Preterm Labor
- Diabetic Retinopathy
- Inflammation
- Cardiotoxicity
- Hepatotoxicity
- Renal Toxicity
- Testicular Toxicity
- Valvulo-Septal Defects
- Limb Defects
- Hypospadias
- Cleft Palate
- Microcephaly
- Risk Assessment Modeling

Engagement for enhanced collaboration and amplified impact for CSS and Predictive Toxicology efforts

SOT 2015: OCM-PT Center Directors (2 hr session, kick-off meeting)
SOT 2016: Project Lead presenters (half-day session, '3D or not 3D')

SOT 2017: Graduate students / Postdoctoral Fellows (full-day session):

1. Mammary Development and Breast Cancer (3)
2. Novel Bioengineering Platforms for Developmental Toxicity (4)
3. Cardiovascular Development and Toxicity (4)
4. Paired Microphysiological Systems and Integrative Simulation (5)
5. Poster Session from across project collaborators

This satellite meeting is an FY17 'Key Product' for CSS 17.02:.