Liver and Intestinal Toxicology Model Innovation

NAMkind™ contract research for pharma of all sizes

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Investment Highlights

- **We create the most predictive non-animal models (NAMs), 3d models of human tissues**
- **We test Pharma's drugs for problems as a CRO high value service,**
  -Liver toxicity and intestinal side effects like diarrhea
- **We save Pharma major dollars on their failures - $50-$200M before finding out a drug is toxic and lost time**
- **We playing in the $3T Pharmaceutical Drug Market**
- **Drug industry annual R&D Spending: $350B (2029); Wasted spending on drugs that fail to achieve commercial launch: $322B per year**
- **Growth expected to $50-$100M in revenue within 4-7 years**

Source: McKinsey & Co.: Pharma's Rx for R&D

Competitive Landscape

	Low Cost	Top Tier Detection	Intestine side effects
InSphero	+	-	n/a
Emulate	-	+	n/a
VivoSim	+	+	Launching model

VivoSim offers the best combination of high-quality data and price point in the market

Value Proposition to Pharma

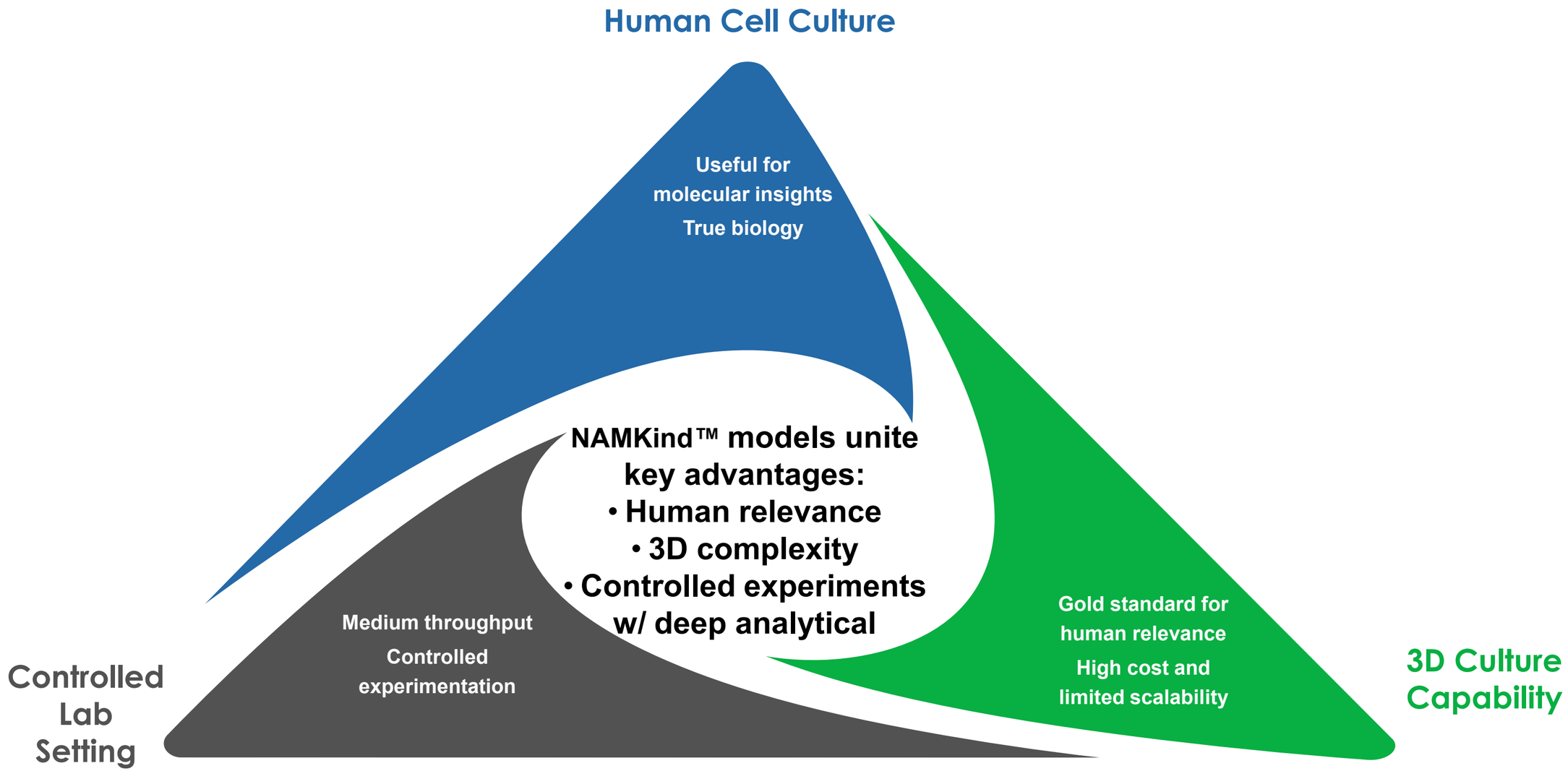
Costs of Drug Development for Typical Program	$340M
Risk-Adjusted Failure Cost	$79M
Liver Tox Failure Rate	5%
Per Program Liver Tox Expected Value Cost	$3.7M
VivoSim Liver Services to Remove 50-80% of risk of liver failure	$25k-$50k

What we save Pharma

What we charge Pharma

Source: LEK Consulting report performed for VivoSim, available upon request

NAMKind™ - Intersection of Key Advantages



Sample Customer Use Cases in Drug Development

Screen compounds in NAMkind™ Liver or Intestine Models to identify liabilities

De-risk finalists with deeper mechanistic panels and species-specific variants before expensive animal studies

Use NAMkind™ models to uncover mechanisms and assess human relevance in multiple donors

Maximizing Uptake Potential

- **VivoSim will customize service solutions to serve client needs**
- **Fee For Service**
  - **Screening and candidate prioritization**
  - **Pricing per compound per assay**
  - **FTE models available for in depth work- investigational toxicology and bespoke assays**
- **Research Collaborations**
  - **FTE payments for custom model development, mechanism of action studies, expansion of endpoints to suit development needs**

VivoSim Liver Tox Model

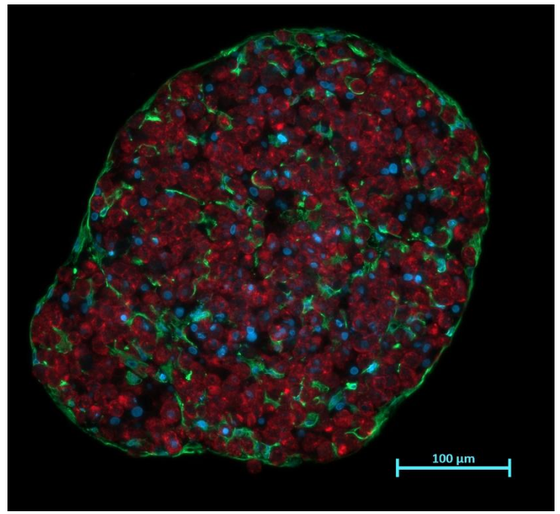
NAMkind Liver for DILI Predictive Testing

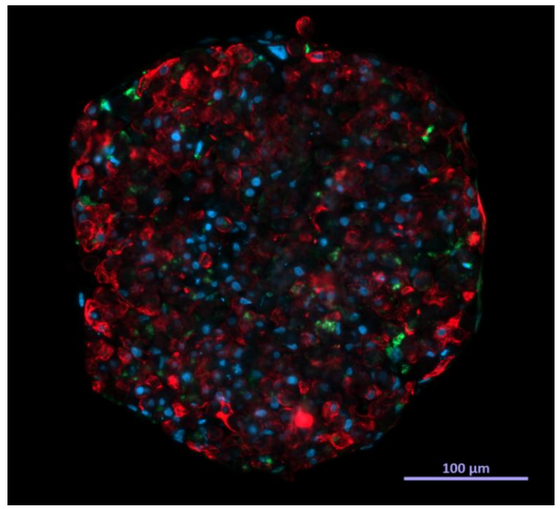
Donor Liver Tissue

Isolate, expand, and freeze high quality cells

Proprietary multicellular 3D models in 96-well plates for drug testing

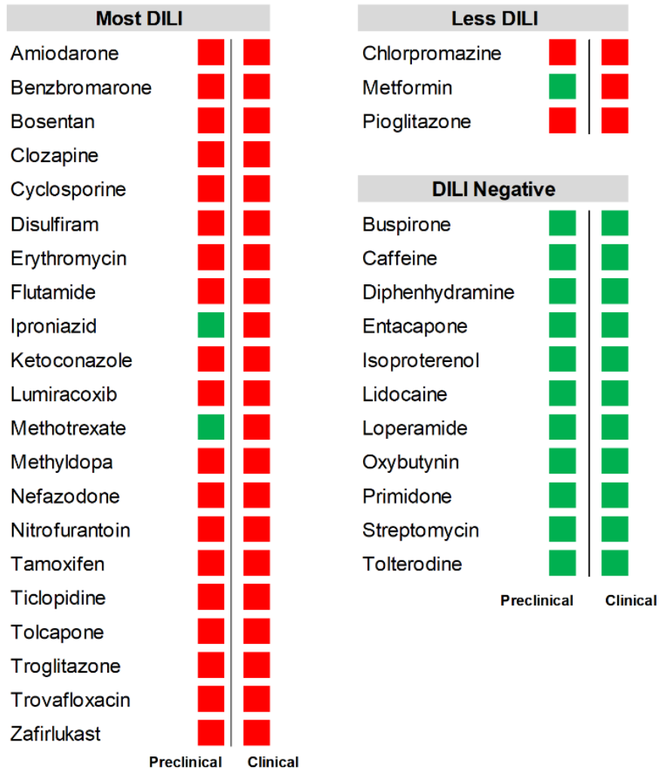
Hepatocyte Stellate cell Kupffer cell Endothelial cell





3D Liver Models Offer Additional Insight Into Liver Function

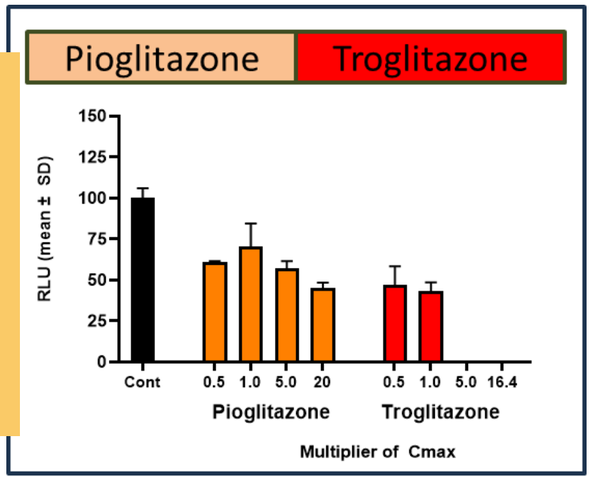
	Model Prediction
Accuracy	**92%** overall detection
Selectivity	**88%** detect true problem
False positive rate	**0%** predict problem falsely

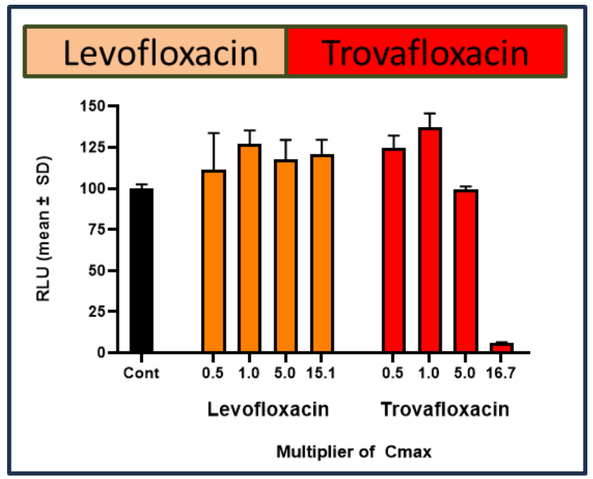


- **We find 87.5%+ of difficult to see liver toxicity issues, many of which are missed by animal models and traditional testing**
- **We don't have false positives – we're not flagging any drugs that are safe**

3D Liver Spheroids Accurately Predict Differential Toxicity Between Structurally Similar Compounds

CTG Cell Titer Glo





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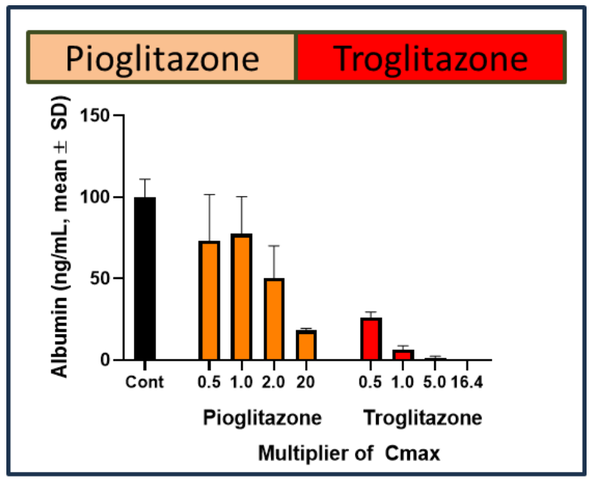
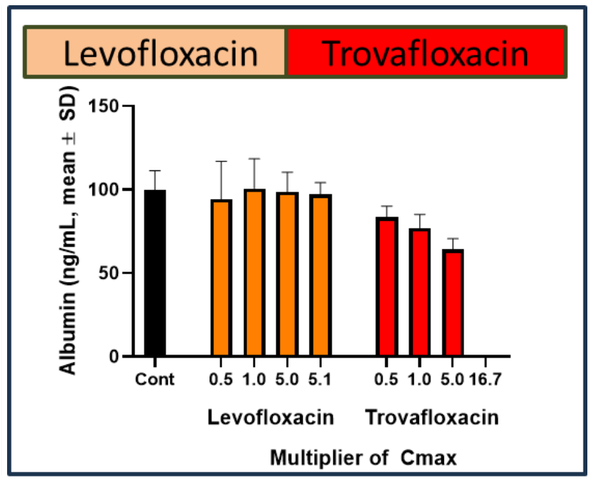




Troglitazone: caused severe drug induced liver injury and deaths, pulled from market. Our model shows it kills liver cell function, and it would never have been developed with these insights.
Pioglitazone: safer alternative to troglitazone developed and used today, shows as much safer in our models.

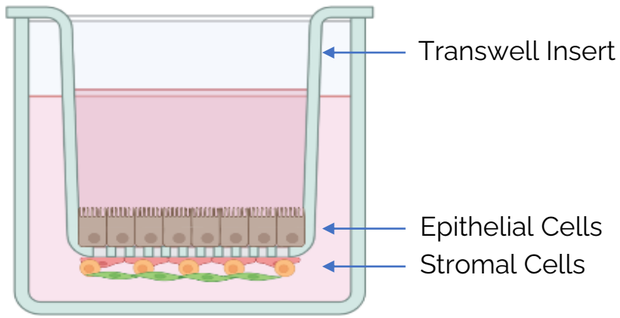
Trovafloxacin: caused severe drug induced liver injury and deaths, pulled from US market. Our model shows it kills liver cell function, and it would never have been developed with these insights.
Levofloxacin: safer alternative to trovafloxacin developed and used today, shows as much safer in our models.

VivoSim Intestinal Model

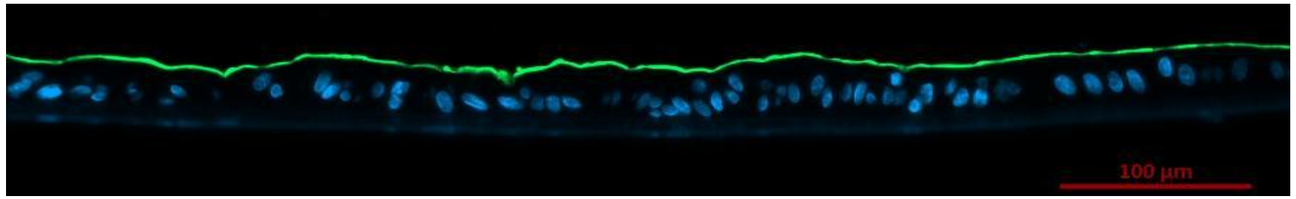
NAMkind GI for Predictive Testing

Accurate Intestinal Structure With Intact Epithelium

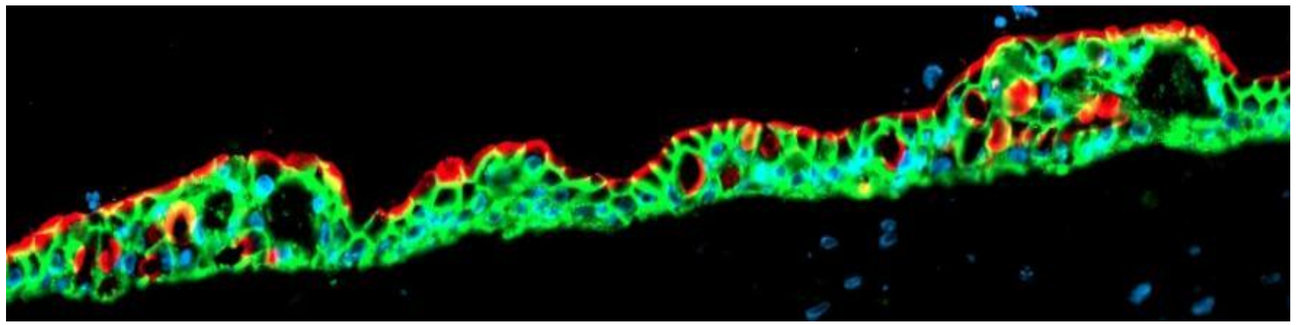
- Tissue consists of human primary epithelial, smooth muscle, fibroblast, and endothelial cells, from healthy donors.
- Physiological barrier function:
  - Polarized epithelium.
  - Tight junctions – cadherin (orange).
- Specialized epithelial cell types.
- Functional, inducible CYP450 enzymes.
- Functional P-gp and BCRP transporters.



Alcian Blue (mucin)

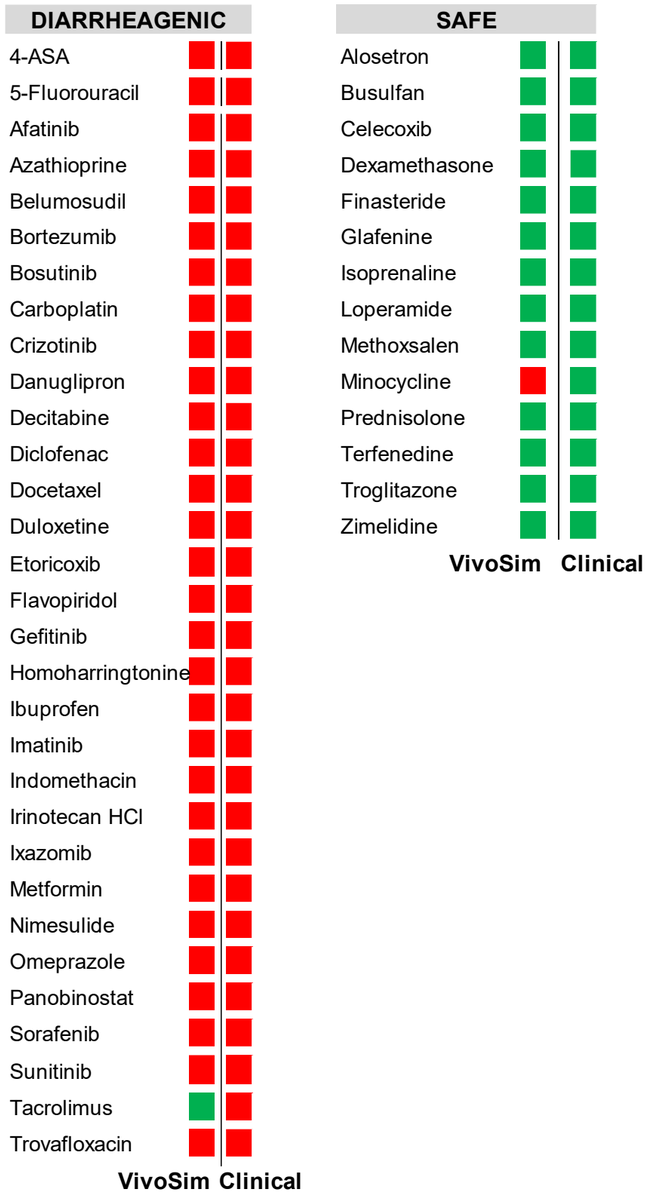


Villin Stain (apical) and DAPI Stain (nuclearo



Stain for multiple cell types

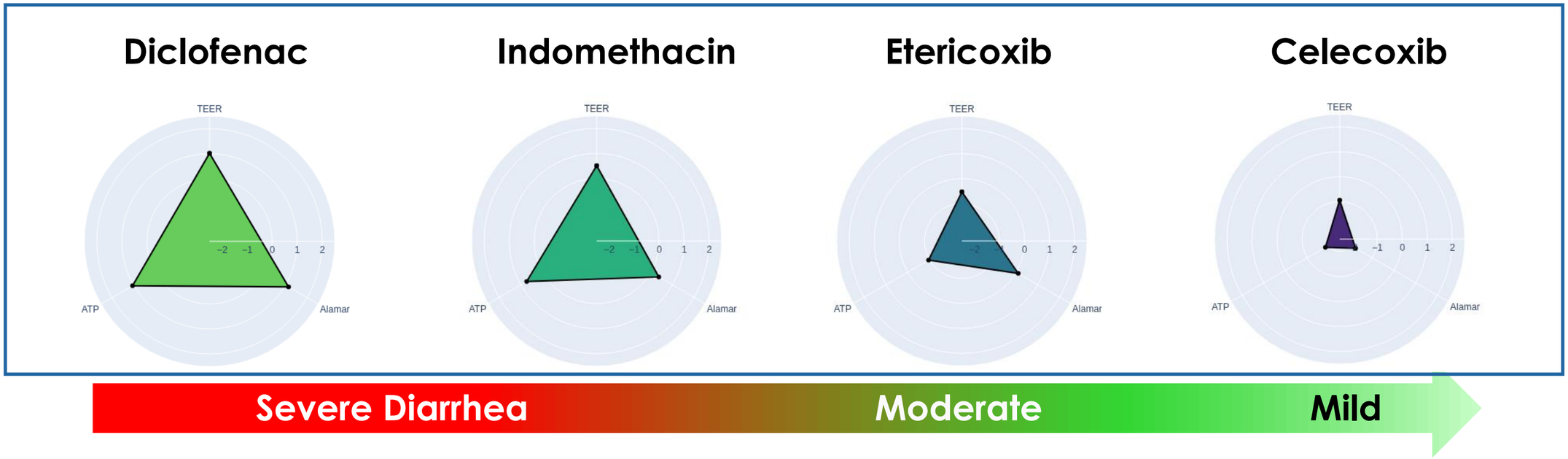
Validation of GI Model



	Model Prediction
Accuracy	96% overall detection
Selectivity	93% detect real problem
False positive rate	3% predict problem falsely

- Intestine models are used to predict likelihood of diarrhea causation by a client's drug
- Highly predictive AI-based model with lab assay inputs
- Especially useful in oncology to distinguish drugs by achieving superior safety profiles and create patient preference w/ low side effects

Differential Diarrhea Causation of Anti-Inflammatory Drugs Is Seen in Intestine Models

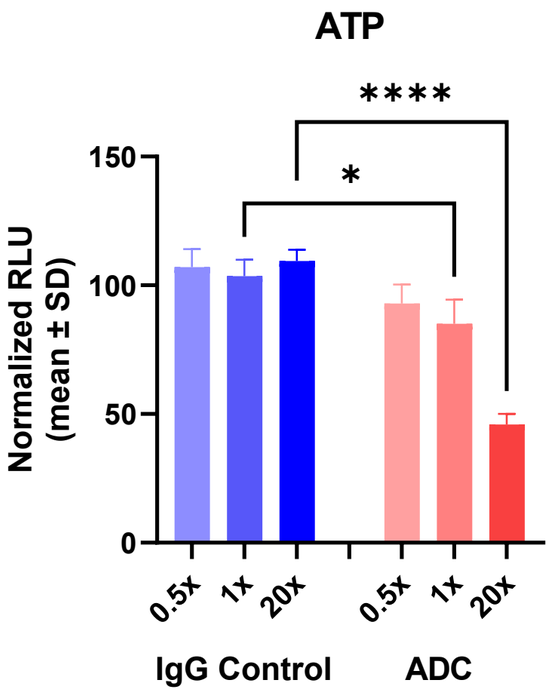


The relative polygon areas in radar plots highlight differences between diarrheagenic drugs and their safer structural analogs. Four (4) NSAID drugs profiled

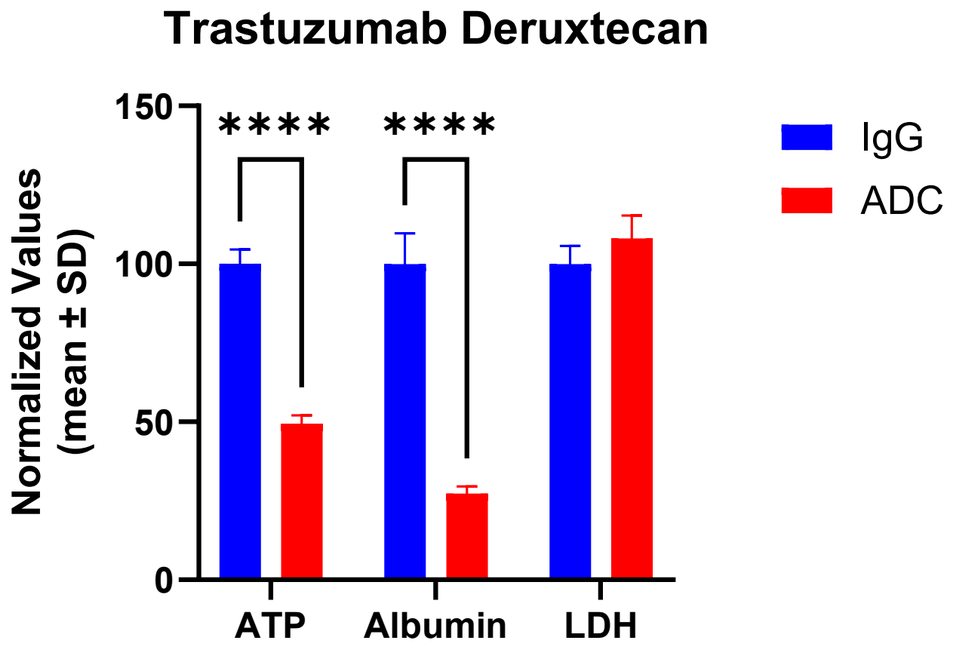
Antibody Drug Congugates

Antibody-Drug Conjugagtes (ADCs) toxic in human liver also show as clearly toxic in NAMkind Liver

Gemtuzumab Ozogomycin



1x = Clinical Plasma Cmax = 0.35 ug/mL



Tested at Plasma Cmax level

ADC testing opportunity

- **65% of Oncology pipelines have one or more ADCs**
- **Fast growing modality, with almost 20 ADCs approved in recent years**
- **Limited by non-specific toxicity (liver etc)**
- **Benefit tremendously from counter-screening in VivoSim models**
- **We are developing solutions for all drug types (antibodies, ADCs, gene therapy, etc.) to serve widest customer needs**

FDA NAMs Initiative

We benefit from a strong rising tide, the FDA initiative: Phasing Out Animal Testing

FDA's New Approach announced April 2024
- Launching a plan to modernize drug development practices.
- Focused on reducing and replacing animal testing requirements.

Goals of the Initiative
- Improve drug safety and predictive accuracy.
- Accelerate the drug evaluation and approval process while lowering R&D costs and drug prices
- Decrease reliance on animal experimentation.

Key Strategies
- Introduce human-relevant methods in preclinical testing.
- Use laboratory-based cell lines and organoid toxicity assays.
- Leverage New Approach Methodologies (NAMs) to refine and replace animal studies.

Impact on the Industry
- Faster, safer, and more cost-effective drug development.
- Support for innovation in testing technologies.
- Alignment with ethical considerations and public expectations.

CONTACT DETAILS

Norm Staskey, CFO
nstaskey@organovo.com

NASDAQ: VIVS