



August 2022

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Forward-Looking Statements (con't)

Because actual results are affected by potential risks, contingencies and uncertainties, the Company cautions investors that actual results may differ materially from those expressed or implied in any forward-looking statement. The Company assumes no obligation to update forward-looking statements as circumstances change. Investors are advised to consult further disclosures that the Company makes or has made on related subjects in the Company's most recent periodic reports filed with the Securities and Exchange Commission, including Organovo's Annual Report on Form 10-K for the year ended March 31, 2022 and subsequent Quarterly Reports on Form 10-Q filed with the Securities and Exchange Commission, including the risk factors set forth in those filings.

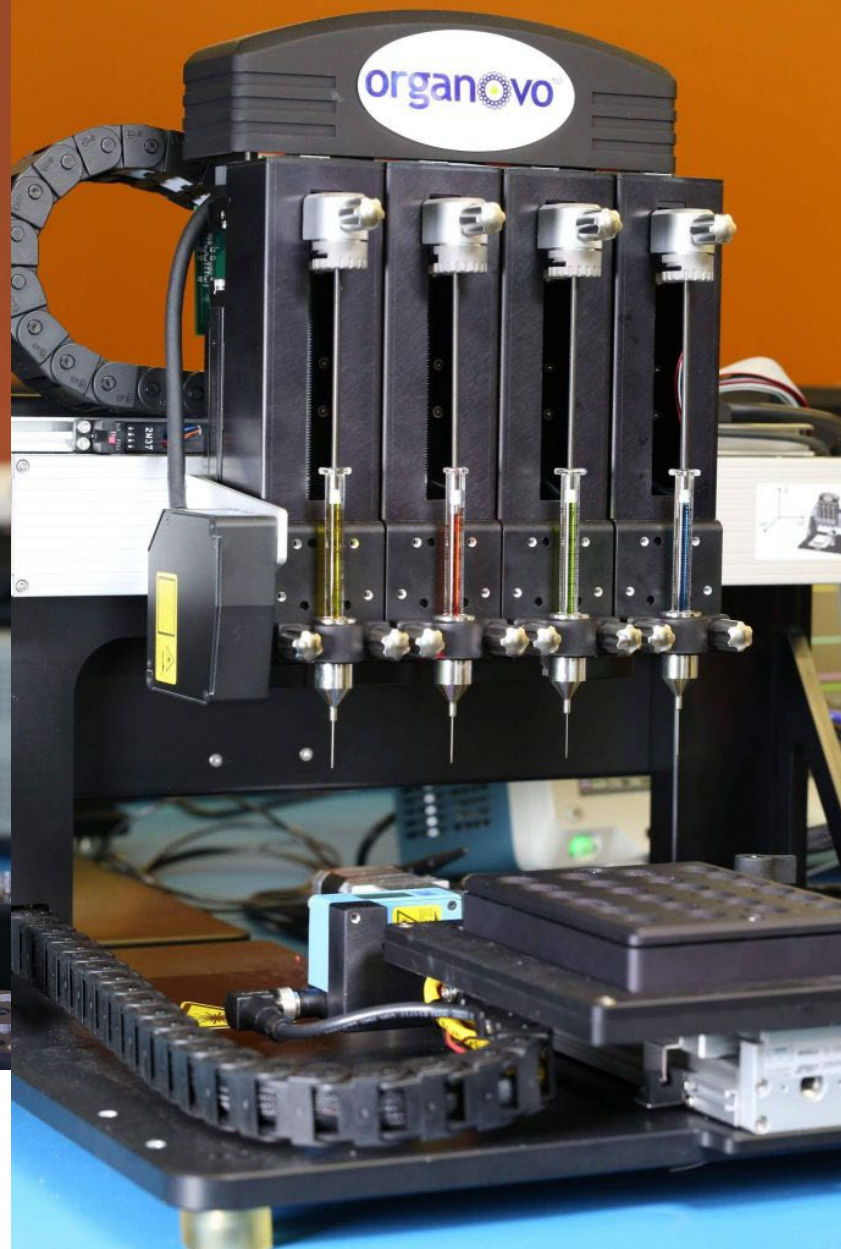
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Custom Disease Models Using 3D Bioprinting

First Opportunity: Inflammatory Bowel Disease

Goal of Multiple INDs by End of 2025



Replacing animal models with 3D
bioprinted human disease models



Drug Discovery in 3D

Animal Testing – The Problem

- 92% of drugs fail during clinical trials
- 50% of those failures are due to human-animal gap
- Treatments show potential cure in rodents but fail in human clinical trials
- “We test them [drugs] on animals, and it’s not reliable... Ultimately, the ability to develop and test medicines will be you on a chip” – Francis Collins, NIH Director, at TEDMED, discussing the challenges with animal models and the new developments in 3D tissue models

Arrowsmith, J., Miller, P. *Nat Rev Drug Discov* **12**, 569 (2013).

Moving Past the Animal Testing Paradigm

- Our 3D Bioprinted tissues offer a **fully human** system that shows better biology
- Strategy – Organovo is advancing novel drugs discovered with 3D tissues
- Biotech therapeutics company – We will advance drugs to clinical trials, building investor value by:
 - Advancing drugs to IND and clinical trials
 - Developing pharma partnerships

3D Tissues Allow for Better Biology

- Minimizes plastic interaction
- More relevant cell-cell interaction
- Four or more cell types



- Cells in full contact with plastic
- One or two cell types



After Initial Target Discovery, Our Drug Development Parallels Normal Steps of Pharma Drug Development

The Benefits of 3D Human Tissues Apply Across the Range of Drug Development Steps

Target
Selection

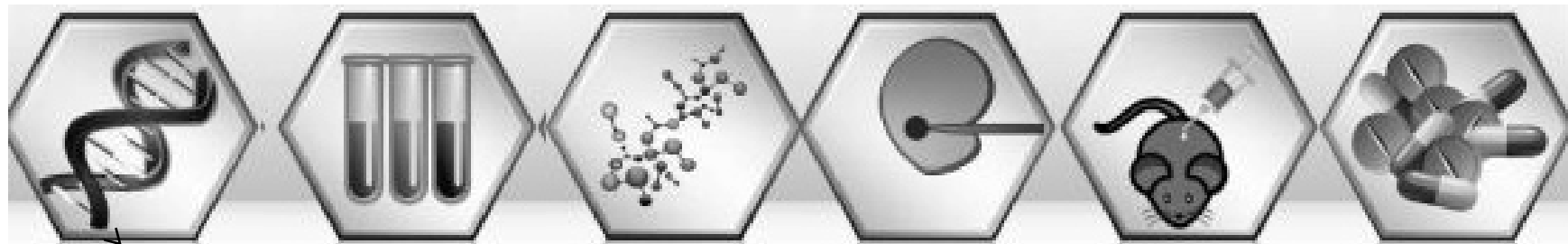
Lead
Discovery

Medicinal
Chemistry

In Vitro
Studies

In Vivo
Studies

Clinical
Trials



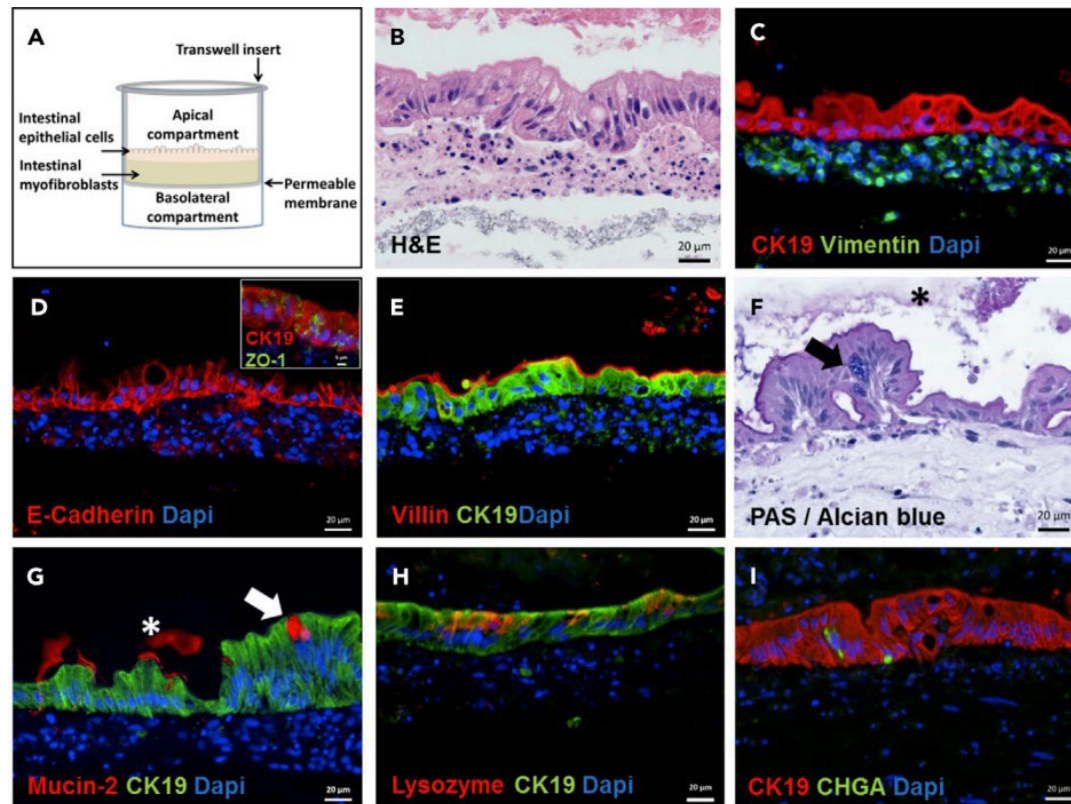
Increasing Value for Investors



Areas of Opportunity in 3D

First Opportunity: Crohn's and Ulcerative Colitis Using 3D Models – Inflammatory Bowel Disease (IBD)

Organovo can create accurate 3D tissue models for IBD



IBD Market is Attractive Commercially

- 15.5B market globally by 2026¹
- Projected 6% CAGR²
- Treatments offer value for patients but considered to be strong opportunity for improvement
- Main treatments today: TNF inhibitors, aminosalicyclates, integrin antagonists, and corticosteroids

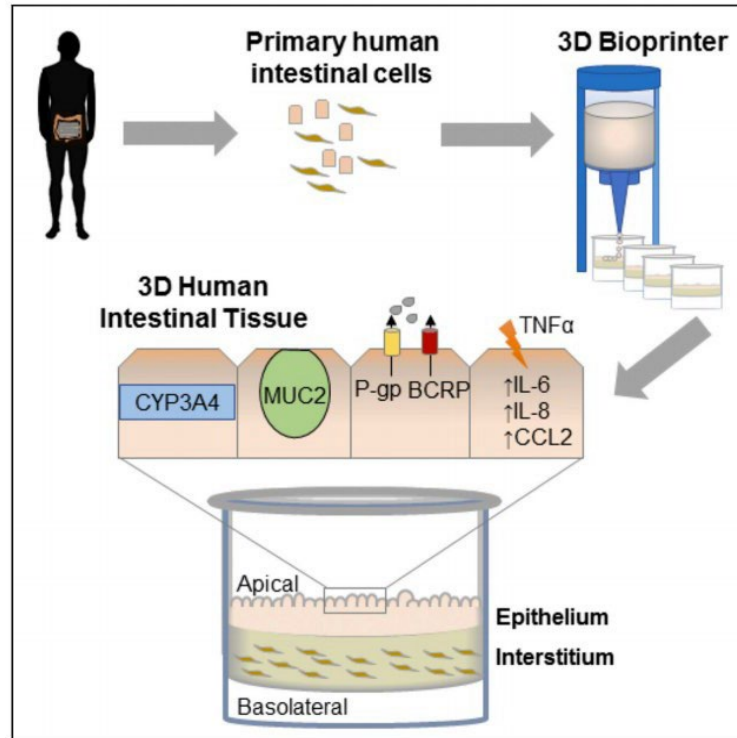
¹Grandviewresearch market analysis report on Inflammatory Bowel Disease Treatment By Type (Ulcerative Colitis, Crohn's Disease), By Route of Administration, By Distribution Channel, And Segment Forecasts, 2019 - 2026

²Transparency Market Research report on the IBD (ulcerative colitis and Crohn's disease) treatment market for the forecast period of 2019–2027.



3D Toolkit

Organovo uses multiple 3D technologies to maximize fidelity with human disease to identify and drug validated targets

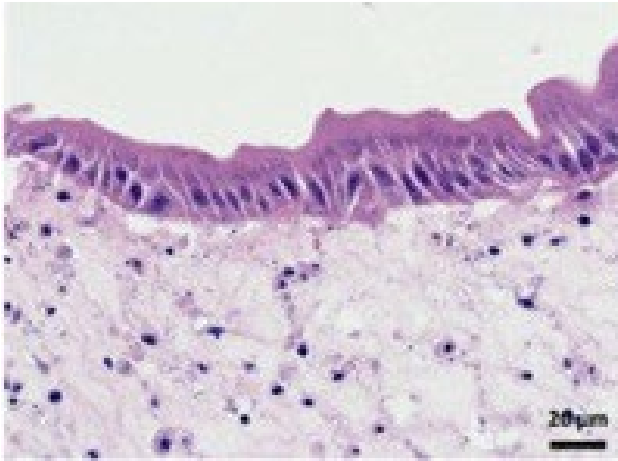


By careful selection of cells, handling during processing, conditions during culture, we believe the disease can be reproduced “in a dish”

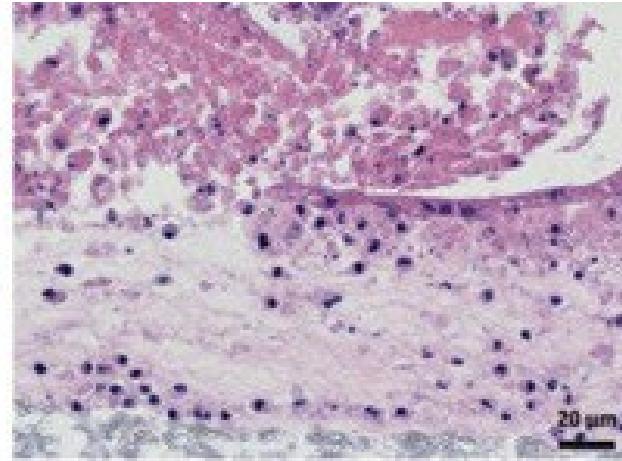


Organovo's 3D Tissues Model IBD

Organovo's intestinal modeling efforts already have demonstrated solid results



Bioprinted control intestine



Bioprinted diseased model

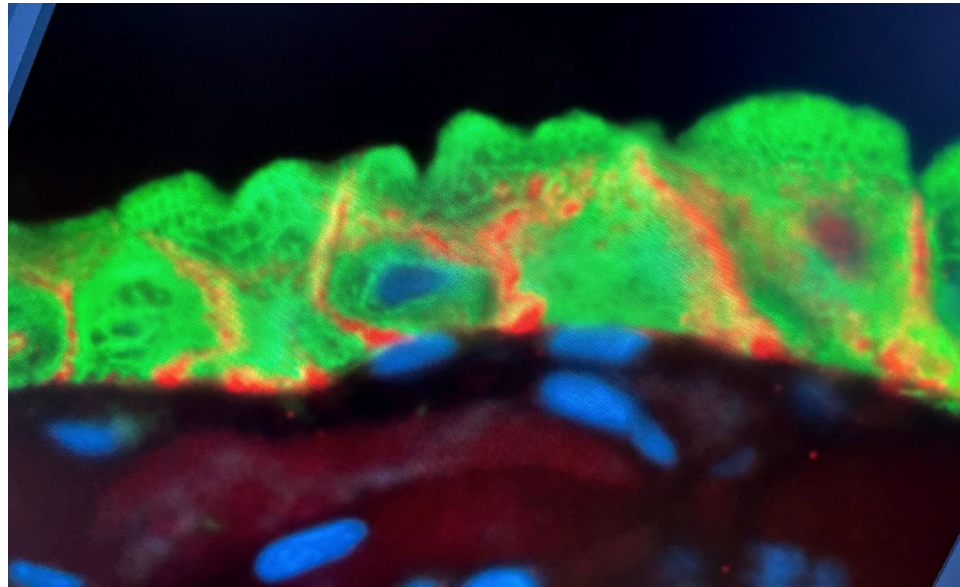
“Bioprinted 3D Primary Human Intestinal Tissues Model Aspects of Native Physiology and ADME/ Tox Functions”

Lauran R. Madden, Theresa V. Nguyen, Salvador Garcia-Mojica, ..., Sharon C. Presnell, Deborah G. Nguyen, Kelsey N. Retting

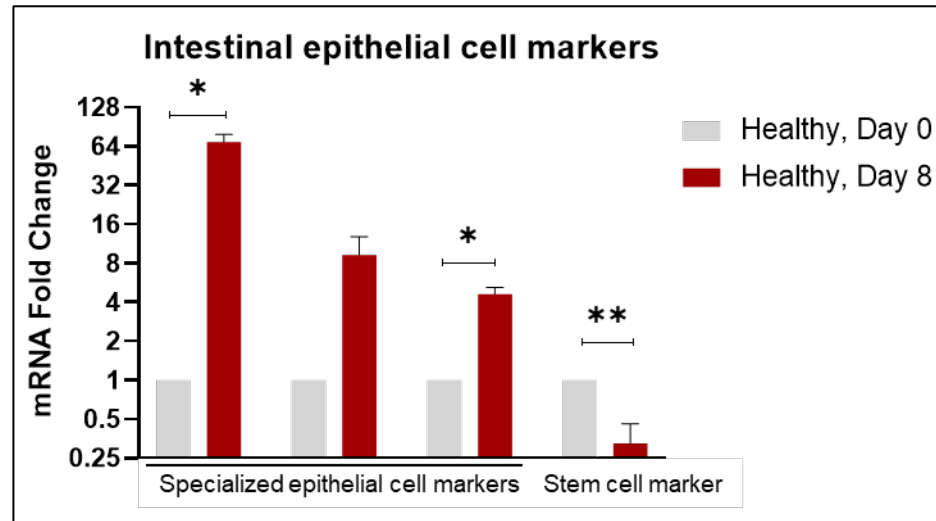
iScience 2, 156–167, April 27, 2018

Epithelial layer forming in 3D cultures of diseased and healthy intestinal cell donors

- Polarized epithelium
- Tight junctions
- Specialized epithelial cell types
- Expresses functional, inducible CYP450 enzymes
- Physiological barrier function
- Functional P-gp and BCRP transporters.

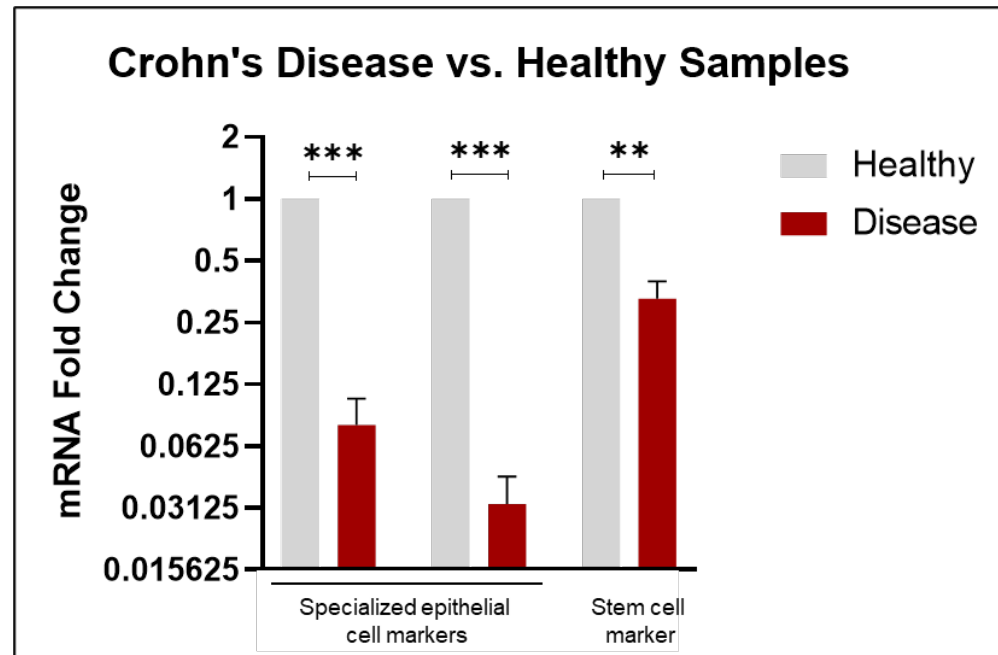


Culture in 3D enhances differentiation markers for epithelial cells



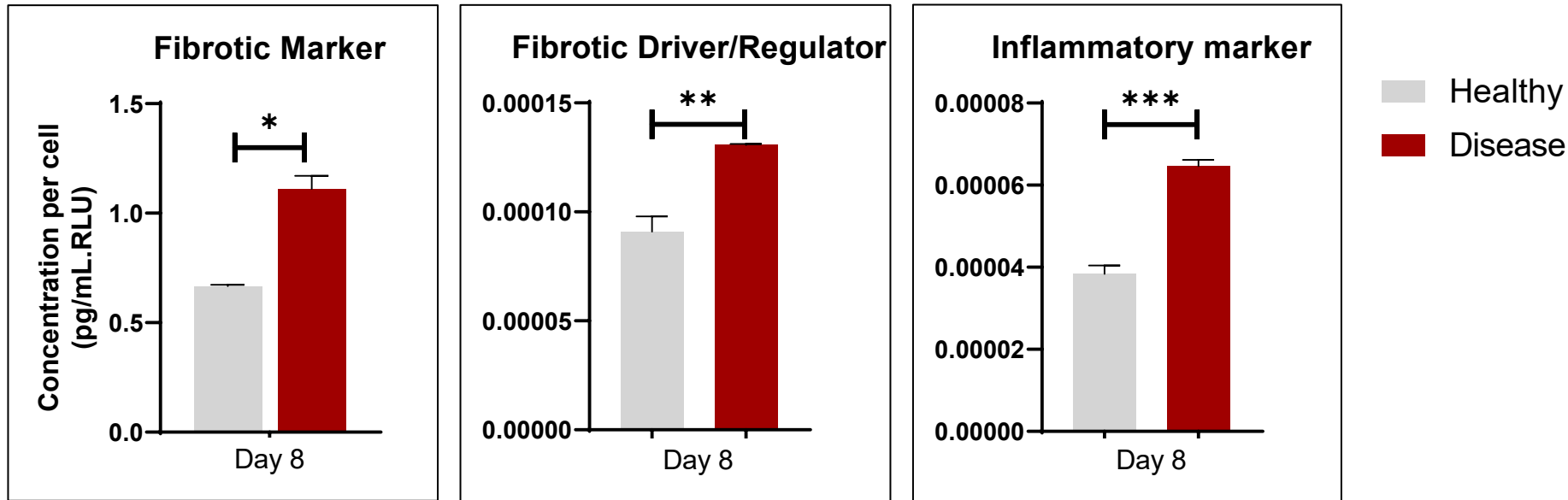
- Our epithelial cells in the model behave like epithelial cells in the human intestine

Epithelial gene expression profiles in disease and healthy 3D models closely mimic the subjects profiles



- Markers of epithelial cell damage in Crohn's disease are lower in our model
- This matches what happens in the diseased human intestine

3D models built from IBD patients secrete a higher level of fibrotic and inflammatory markers than healthy samples



- Markers of fibrosis and inflammation are higher in our model
- This matches what happens in the diseased human intestine



Value Proposition

Moving drugs towards the clinic is a major valuation driver

- Disease Model Building in Inflammatory Bowel Disease, Crohn's Disease (CD) and Ulcerative Colitis (UC)
 - 2022 ([first CD model advanced May 2022](#))
- Target Validation and Selection
 - 2022
- Screening and Lead Compound Selection
 - 2023
- Investigative New Drug (IND) Enabling Studies
 - 2024
- IND Filings with FDA
 - 2024-2025
- Clinical trials (Crohn's Disease and/or Ulcerative Colitis)
 - 2025



Increasing Value for Investors

We have opportunities for pharma partnerships as added valuation catalyst

- Disease Model Building
 - 2022
- Target Validation and Selection
 - 2022

We Expect to be able to do Pharma Partnerships on Targets

- Pharma partner pays up front and milestones
- Pharma partner owns molecule, pays royalty to us
- Pharma partner does chemistry to select drug
- Organovo supports all chemistry and development with 3D models

Significant Potential Impact of 3D Human Disease Models Overall

- Clinical trial overall failure rate is >92%
- Many of the failures are due to use of animals in testing not
- Largest cause of failure in Phase 2-3 is Efficacy issues
- Our approach addresses those issues, promises potential for greater chance of clinical trial success

Causes of Phase 2/3 failure



Arrowsmith, J., Miller, P. *Nat Rev Drug Discov* **12**, 569 (2013).

Stock and Financial Information

Stock & Financial Information

Share & Stock Price Summary

Ticker	Nasdaq: ONVO
Shares Outstanding	8.71 M
Avg Daily Volume	50,059
52-Week Range	\$1.71 - \$8.92
Year End	March 31st

Financial Summary

Cash (as of 6/30/22)	\$15.7 M
ST Investments (as of 6/30/22)	\$9.9 M
Cash Burn (3 mos. ended 6/30/22)	\$2.2 M
Debt	None

Thank You!

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