Microrobotics Inside the Human Body

Torrey Smith
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The original PillCam passive device sold for almost $1B in 2014.

Endiatx is ushering in a new era in diagnostic & interventional medicine using Microrobotics Inside the Human Body.

It’s time for pill cameras to move, and to sprout surgical instruments.
PROBLEMS WITH CURRENT TECH

GI TRACT DIAGNOSTICS

SCOPES
- Requires clinic visit
- Requires sedation (time/cost)
- Can cause tears/complications

PILL CAMERAS
- Limited by passive nature
- Small niche market

PATIENT RESULT
- Expensive and invasive endoscopy on third visit
INTRODUCING PILLBOT™

A multivitamin-sized intrabody robot

PILL CAMERA WITH ACTIVE CONTROL

- Swims using 4 Pump-jets
- Forward facing Video Camera
- Secure Data transmission
- Existing hardware and No custom ASIC
  - 915MHz Radio penetrates tissue
  - Multi-board flex circuit
  - Lithium Ion Battery
CORE TECHNOLOGY

Differential thrust provided by 4 individual pump-jets

Provides forward and backward thrust, as well as Pitch, Roll, & Yaw

Inexpensive, easy-to-use control system

Quad Pump-jet propulsion system

- 5 full Patent applications underway (first provisional: June 28, 2019)
**FOUNDING TEAM**

**TORREY SMITH**  
CO-FOUNDER & CEO  
Aerospace Engineering, Cal Poly, SLO  
14 years designing med devices

3 exits:  
Ensure Medical to Cordis: $110M*  
AtheroMed to Volcano: $150M*  
Volcano to Philips: $1.2B

**JAMES ERD**  
CO-FOUNDER & PRINCIPLE R&D ENGINEER  
Automata and biomechanical motion  
Expert Machinist & Maker  
Master on 40,000lbs of machine tools  
Founder, ERD Machining Services

**DAN MOYER**  
CO-FOUNDER & CTO  
MS EE & CE, WPI  
Medical Devices, Gene sequencing, biomedical signal acquisition  
Apple Special Projects Group

**ALEX LUEBKE**  
CO-FOUNDER & CHAIRMAN, BOD  
PhD Aerospace Engineering, Stanford  
20+ years in Military & Aerospace; Google X, C level roles, BOD for multiple startups

* Including upfront & milestone payments
PROGRESS TO DATE

- **3.19** Incorporated
- **4.19** Graduated Founder Institute
- **5.19** Developed 1st prototype - "PoolBot"
- **6.19** Raised $185K - Friends & Family
- **6.19** Filed 5 patents - (3 US, 2 Int.)
- **7.19** Initiated Trademark - "PillBot" and "PillSurgeon"
- **6.20** First in-human trial
- **6.20** [Angel Round $600k]
- **11.20** 18 in-human trials complete [140% oversubscribed]
- **11.20** Received $1M VC commitment

Raised $185K from Friends & Family

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Passive Capsule

No active control for diagnostics

- Travel the entire GI Tract but no active control

Endoscopes
(Current Standard)

- Clinic setting
- Oral/Rectal entry
- Difficult to access certain regions (e.g. small bowel, pancreas)

Physician Effectiveness

- Active Control
- No high cost capital required
- Low risk

Patient Experience

- Convenient procedure with no sedation
- Affordable and Low risk

Physician Effectiveness

- Active Control
- No high cost capital required
- Low risk

Magnetic Capsule
(Active control w/ MRI-like capital equipment)

- Closest competitors, ANKON & Jifu out of China

COMPETITION

PillBot™
Potential to disrupt

- Active diagnostic power of a scope in the form of a pill

Passive Capsule
No active control for diagnostics

- Travel the entire GI Tract but no active control
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<th>Feature</th>
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<th>Endoscopes</th>
<th>Magnetic Capsule</th>
<th>Passive Capsule</th>
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<td>Sedation-Free</td>
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<td>At-Home Enabled</td>
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<td>No Capital Equipment</td>
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New Category: Microrobotics

Inside the Human Body: Endiatx becomes known as the SpaceX of med device

MARKET OPPORTUNITY

$67B+
Endoscopy devices market: PillBot™ becomes disruptive force

$810M Global
Smart Pills: First revenue from PillBot™

BUSINESS MODEL

- INITIAL CUSTOMERS - GI DEPARTMENTS
  - Hospitals & Outpatient Clinics

- 95% GROSS MARGIN
- REIMBURSABLE
  - $500 single-use disposable

- DATA ANALYTICS
- INEXPENSIVE SOFTWARE
- UNIVERSAL FORMATS
- NO CAPITAL EQUIPMENT
- TELEMEDICINE 2.0
  - AT-HOME ENDOSCOPY

Dominating old markets while creating new ones
- Leverage Medtronic’s PillCam™ reimbursement & regulatory groundwork to quickly penetrate GI market
G.I. GO TO MARKET STRATEGY

REGULATORY & REIMBURSEMENT APPROACH
- Leverages previous Pill Cameras

JUNE 2020
R&D demo proves concept of “upper endoscopy in pill”

Q1-Q2 2021
Evolve R&D demo prototype into MVP

Q3 2021 - Q2 2022
~100 patients

Q3 2022
FDA Approval

Q4 2022
Early adopters
PRODUCT ROADMAP

PILLBOT™
- MVP
- Sedation-free upper endoscopy in a pill

PILL SURGEON™
- Remove small polyps
- Tissue biopsy
- Cauterize bleeds
- Scan bile duct for Pancreatic Cancer

MICRO SURGEON
- Pill Surgeon the size of a rice grain
VISIONARY BOARD (1/2)

Lt Col Benjamin Bonnes, MD, (Chairman VB)
- ER Physician
- Johns Hopkins University
- Flight Surgeon & Chief of Clinical Services, 144th

Paul Escudero, Medical Device Industry
- Co-Founder - AtheroMed (sold to Volcano)
- Philips, Ensure, Abbott, Perclose
- Cal Poly - Mechanical Engineering

“Matty” Goodman, Embedded Firmware
- Co-Founder - 3Scan (M&A with Strateos 2019)
- PhD., Biomedical Engineering
- Co-Founder - Orage/Coup de Foudre art collectives

Nancy Lincé, Reg/Clin/Quality
- 20 years of exp for RCQ for medical products
- 160 submissions & extensive FDA negotiations

Heather Gallagher, Augmented Reality
- Magic Dev/Public Speaker - Enklu
- Head of Technology - Burning Man
- MS CS - George Mason U
- BS CIS - James Madison U

Ilya Polyakov, Robotics Industry Expert
- Head of Hardware - Doordash
- Co-Founder & CTO - Revolve
- “Blade Runner” - BattleBots
- Co-Founder, Icarus art collective

Dan Raymer, Designer, Author, Futurist
- Vulcan, Lockheed Martin, Aerojet, Rockwell
- PhD Aerospace Engineering, KTH
- Royal Institute of Technology

Todd Huffman, Biotech / Deep Tech
- VP Prod Mgmt Prellis Biologics
- Co-Founder & CEO - 3Scan
- Computational Biosciences
- Neuroscience
Bu’Hussain Hayee, PhD Gastroenterology
GI, King's College Hospital
Fellow, Royal College of Physicians
King's Institute of Therapeutic Endoscopy
Fellow, American GI Association

Matthew Schultz, Art / Tech / Design / Vision
Founder, Pier Group
Lead Artist, Pier 2 / La Llorona
Lead Artist, Embrace
Lead Artist, Head Maze

Darold Cummings, Designer, YF-23
Designer, YF-23 Advanced Tactical Fighter
BS Industrial Design, CSU LB

Mike Suprovici, Fundraising Advisor
Founder Institute – Entrepreneur in Residence
Founder & CEO – Explorence

Seth Warhaftig, BusDev Advisor
BS Computer Science, Cornell
Life Sciences Tech Executive

Elizabeth “Liz” Hwang, Gastroenterology
Assoc. Chief of GI @ Santa Clara Medical Center
Clinical Affl. Assoc. Professor @ Stanford School of Medicine

Nathan “Poppins” Altman, Finance / Politics
Partner, Altman Investments
BCM, Purdue University

Adeo Ressi, FI Select Portfolio
CEO & Founder: Founder Institute
Founder – TheFunded
Board Member – XPRIZE
THANK YOU!

Does anyone have any questions?

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