



## HemoShear Introduction

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### Contact:

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*VP R&D*

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**Jim Powers**

*Chief Executive Officer*

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**Rick White, CPA**

*VP Finance*

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## **HemoShear is a Biotechnology Research Company**

✧ Research Partnerships with Pharmaceutical and Biotechnology Companies

✧ Discover Safer and More Effective Medicines

✧ Reduce Risk of Costly Failures

✧ **Transformational, Human-Relevant Systems**

✧ **Accurately Replicate Human Organ System Biology and Diseases**

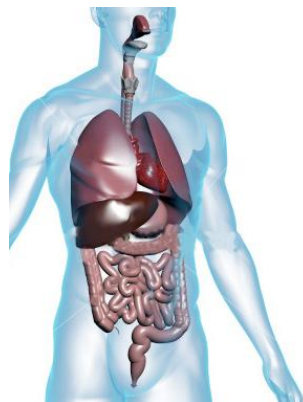
# HemoShear History

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- 2005** The Blackman/Hastings/Wamhoff Collaboration Began at UVa
- 2008** Company Founded
- 2009** NHLBI Phase I SBIR Vascular Inflammation System \$168,000
- 2011** NIDDK Phase 1 SBIR Liver System \$198,000  
NHLBI Phase 2 SBIR Vascular System \$4.3 million  
Five Customer Collaborations Initiated

# Existing Methods do not Reliably Predict Human Response

## 1. Cells isolated from Human Organs lose their *in vivo* characteristics



whole human  
tissue/organ



Isolated cells in culture

## 2. Experiments in animals rarely mimic the human response



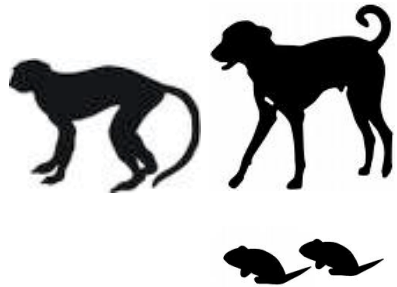
animals



humans

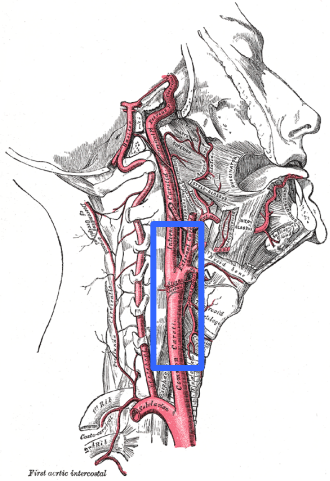
**92% Drugs that Pass Pre-Clinical Animal Studies Fail in Human Trials**

# HemoShear Bridges the Translational “Gap”

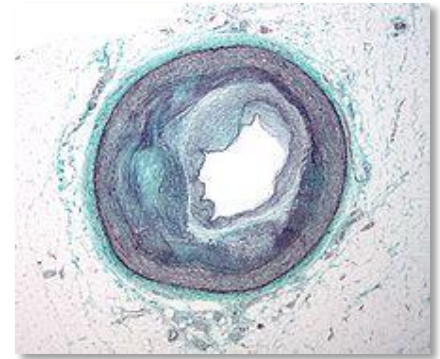
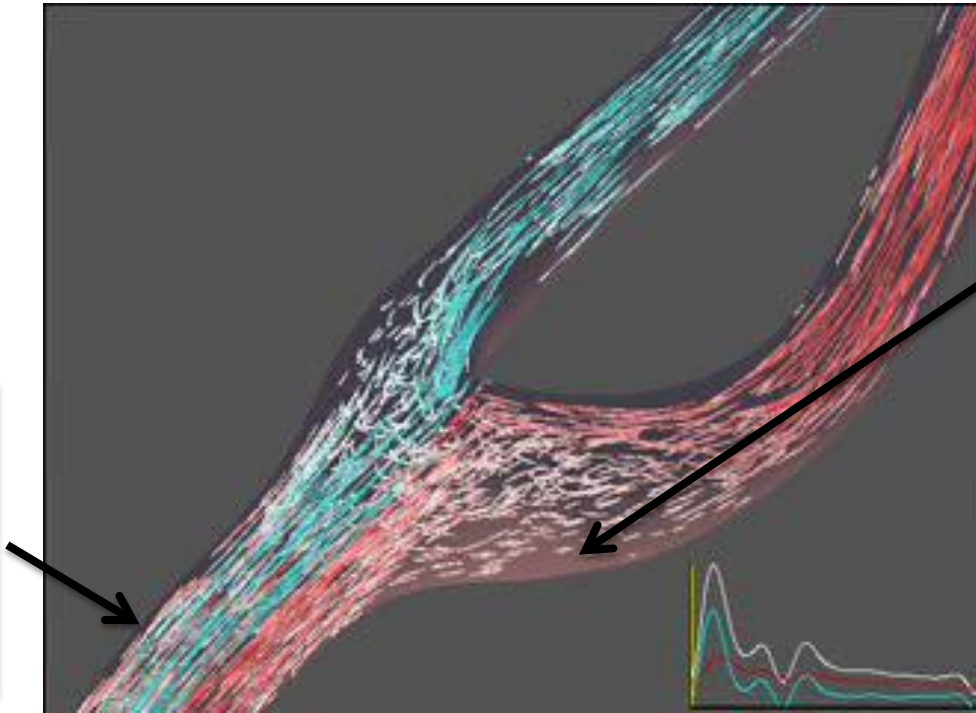
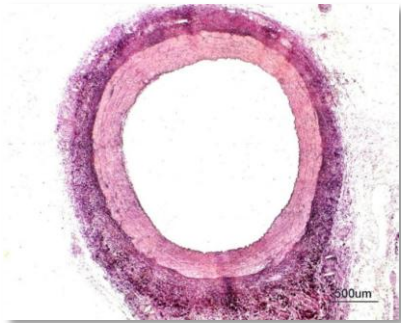


Human-Relevant Systems for Confidence in Decision-Making

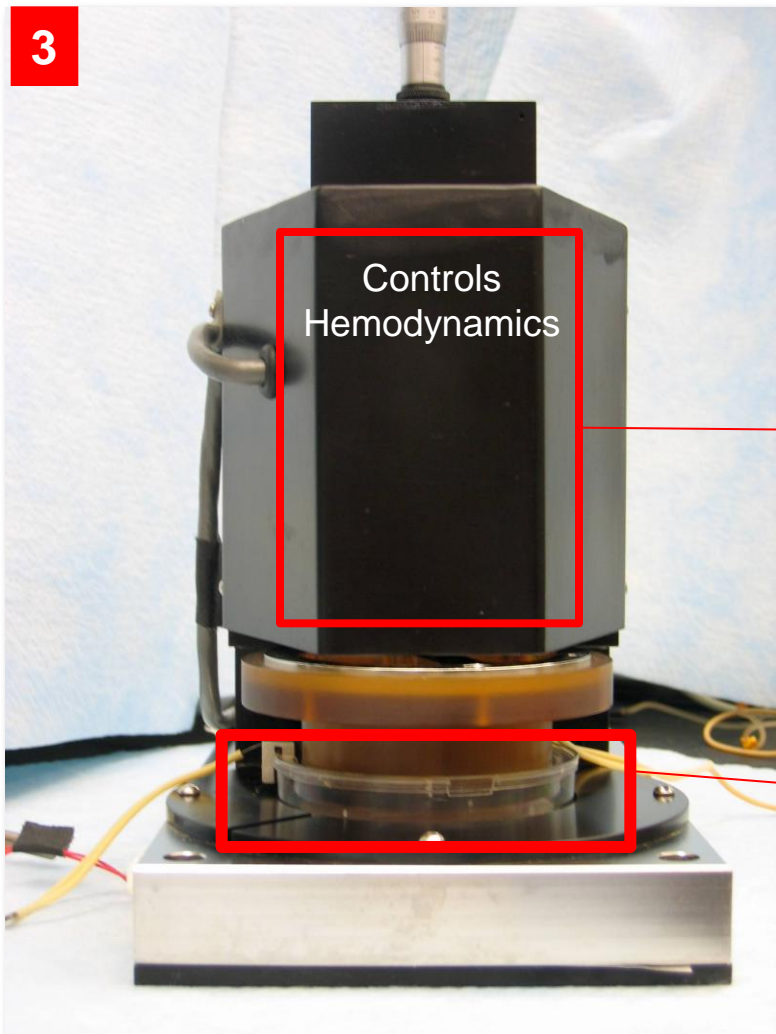
# Vascular Inflammation is Primed by Regional Blood Flow Forces



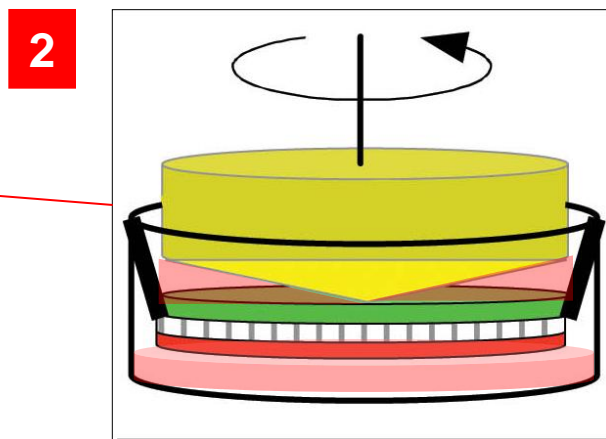
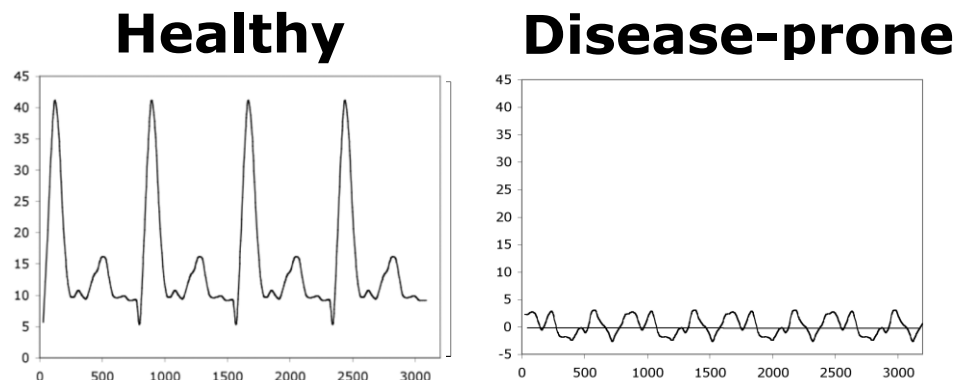
First aortic intima



# The Technology Combines Multi-Cellular Structure and Regional Arterial Hemodynamics To Recalibrate Cell Phenotypes *Ex Vivo*



**1** The Technology transposes human hemodynamics onto human endothelium in culture with smooth muscle cells



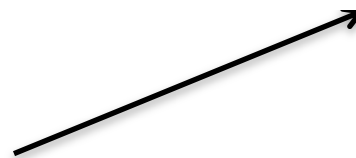
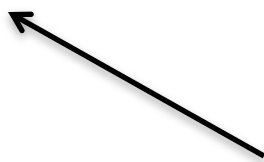
First Human Surrogate Model of Vascular Health & Disease



# Applications of HemoShear Technology

Drug Discovery

Drug Development



HemoShear Applications

\$ → Value to Pharma Companies → \$\$\$\$



**U.S. Patent 7,811,82**

Rights Fully Acquired from University of Virginia

Application Covers Wide Range of Organ Systems  
and Disease Models

No Competition in Vascular Systems

Novel Approach to Liver



# HemoShear's Contracts in 2012

Atherosclerosis

Thrombosis

Diabetes

Calcification

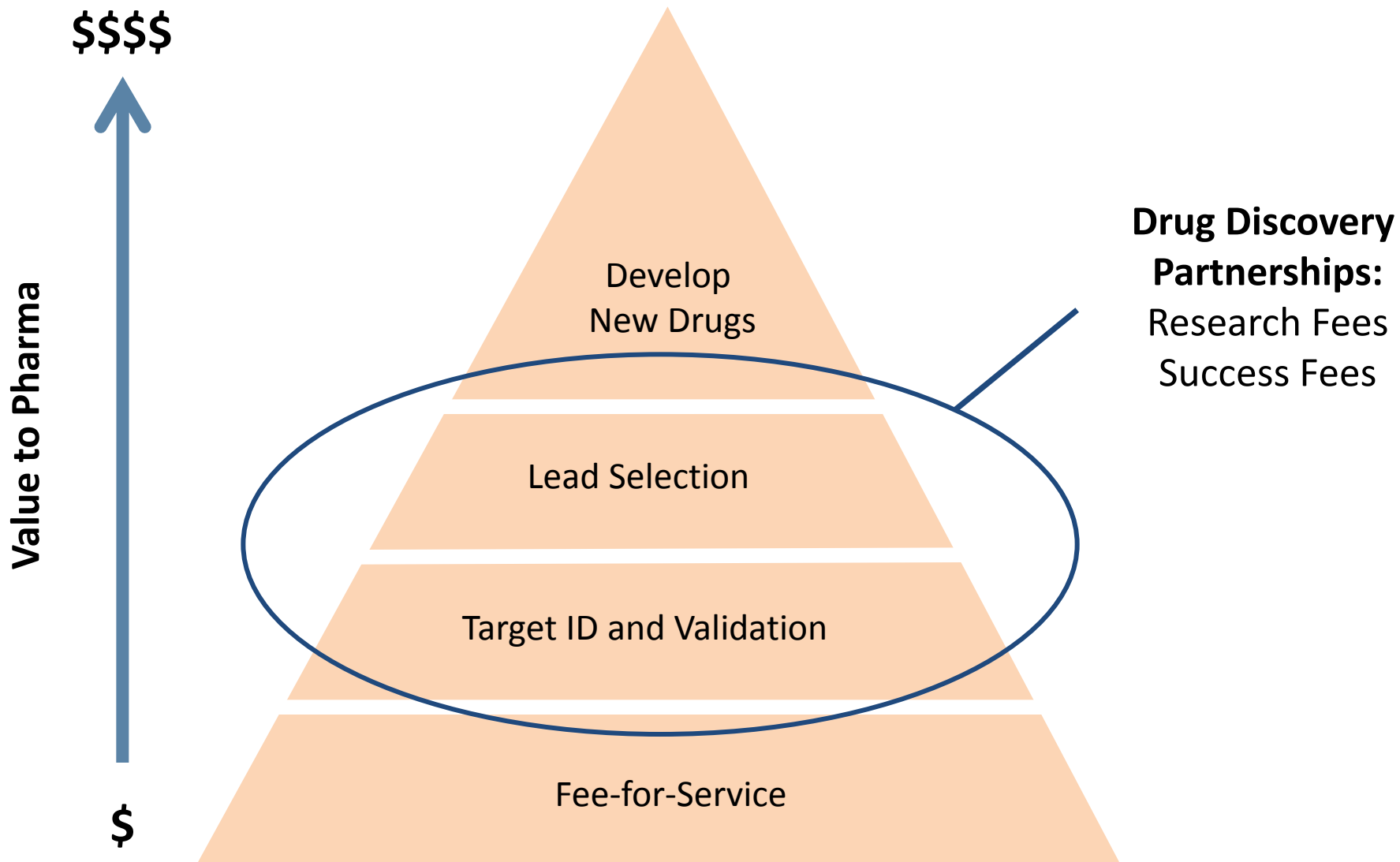
AAA

Animal Systems

Liver



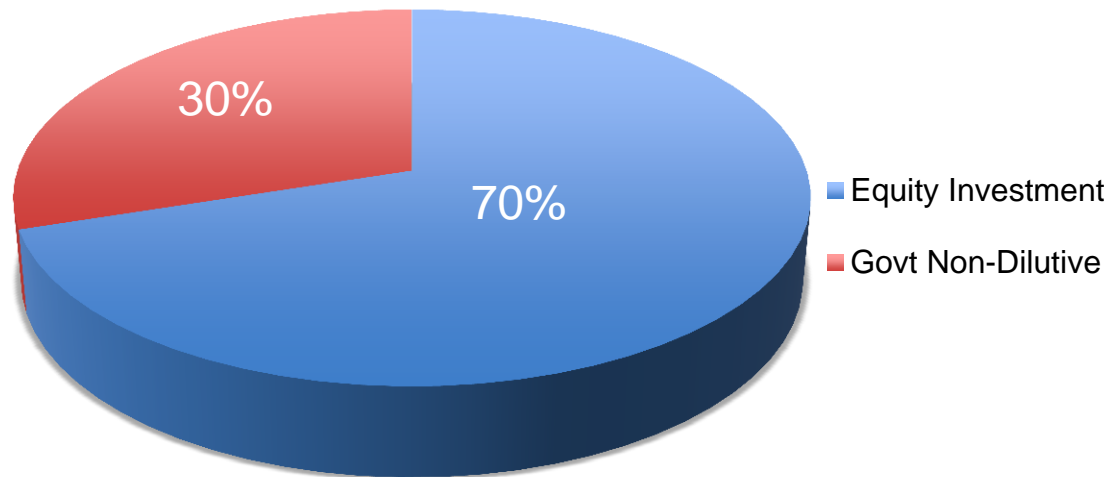
# Advancing the Business Model



# Capital Contributed

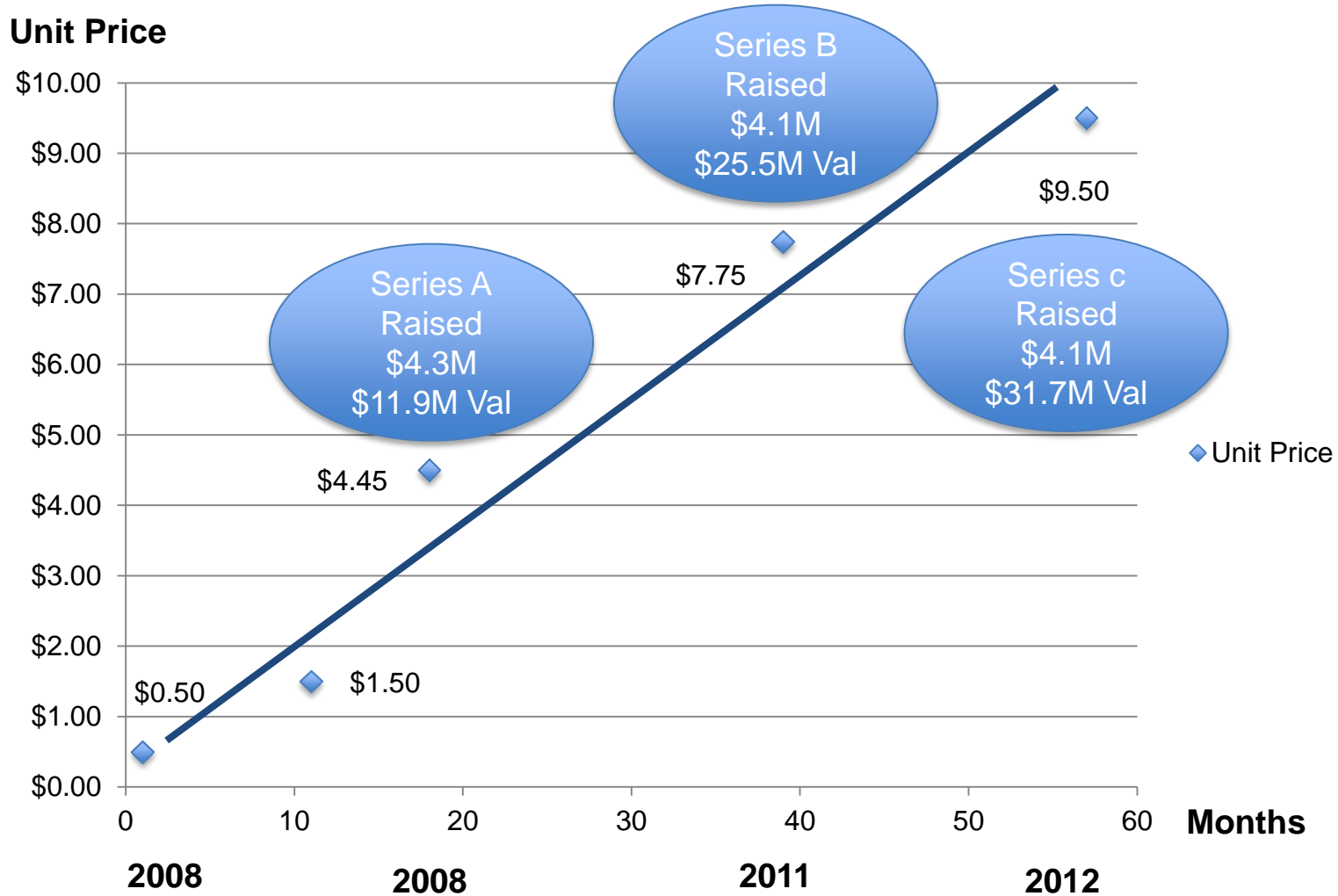
\$13.1 Million Total Private Equity Raised

\$5.6 Million Non-Dilutive

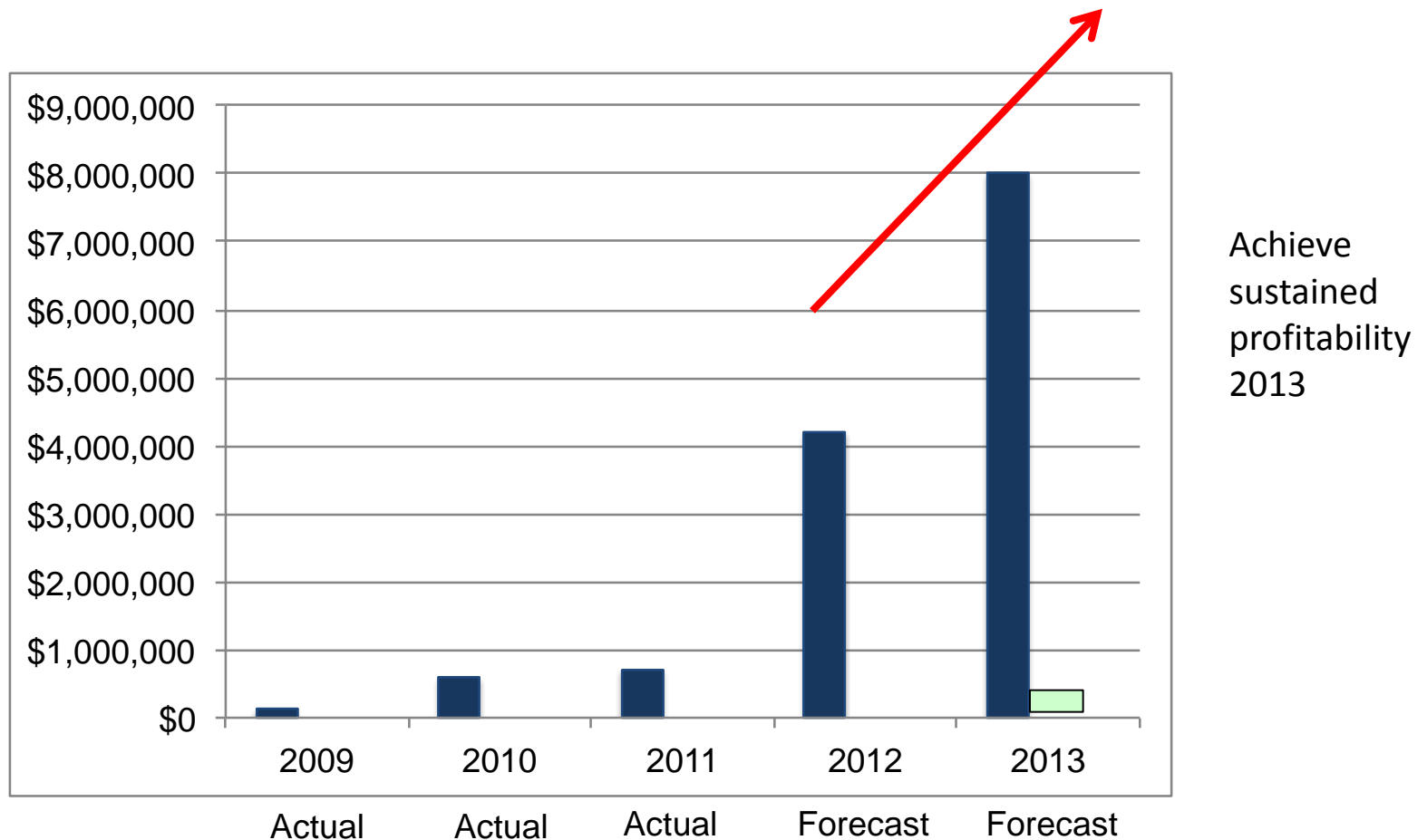


No Preferences Among Equity Holders

# History of HemoShear Capital Raises



# HemoShear's Revenue Development



Expect ongoing EBITDA > 2014 above 30%

# HemoShear has a Strong Management Team And Advisors

## Management Team

Jim Powers, CEO

Brett Blackman, Ph.D.,  
Chief Scientific Officer

Brian Wamhoff, Ph.D.,  
Vice President R&D

Brian Campbell, Chief  
Financial Officer

John Tagliamonte  
Chief Business Officer

Nicole Hastings, Ph.D.,  
Vice President, Operations

Wendy Yarno, Chief  
Marketing Officer

Ajit Dash, Ph.D.,  
Director, Liver Systems

Rick White, CPA  
Vice President, Controller

## Directors and Advisors

Robert Ruffolo, Ph.D.  
f-President Wyeth R&D

John LaMattina, Ph.D.  
f-President, Pfizer R&D

Mervyn Turner, Ph.D.  
f-Merck, CSO

John Brooks  
CEO, Joslin Diabetes

Mehmood Khan, M.D.  
CSO, Pepsico

Fred Brown  
f-IBM Pharma Consult

## Operations

30 Employees

15 Ph.D. Scientists

8,000 Sq. Ft. Office & Lab

80 Validated Systems





# Major Business Milestones

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2013 First Multi-Year Pharma Collaboration

2013 Sustained Profitability

2014 Begin Next Organ System Development

2014 First Drug Discovery Joint Venture

2015 First License HemoShear Science for Non-Pharma Application

# The Future

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Next Capital Raise 2 Years: \$10 – 20 Million

Uses of Funds: New Locations, New Organ Systems, JVs

Not a Quick Exit (5+ years)

Invest to Build a Great Company

Exit Alternatives: Major R&D Services Organization, Pharma, IPO



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