

# Cardiovascular Innovations

## The Role of Engagement as a Driver for Change

Presented by Frances Johnson, MD  
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Cardiologist, Scientist, Inventor, Drug Developer,  
Founder



# Disclosures

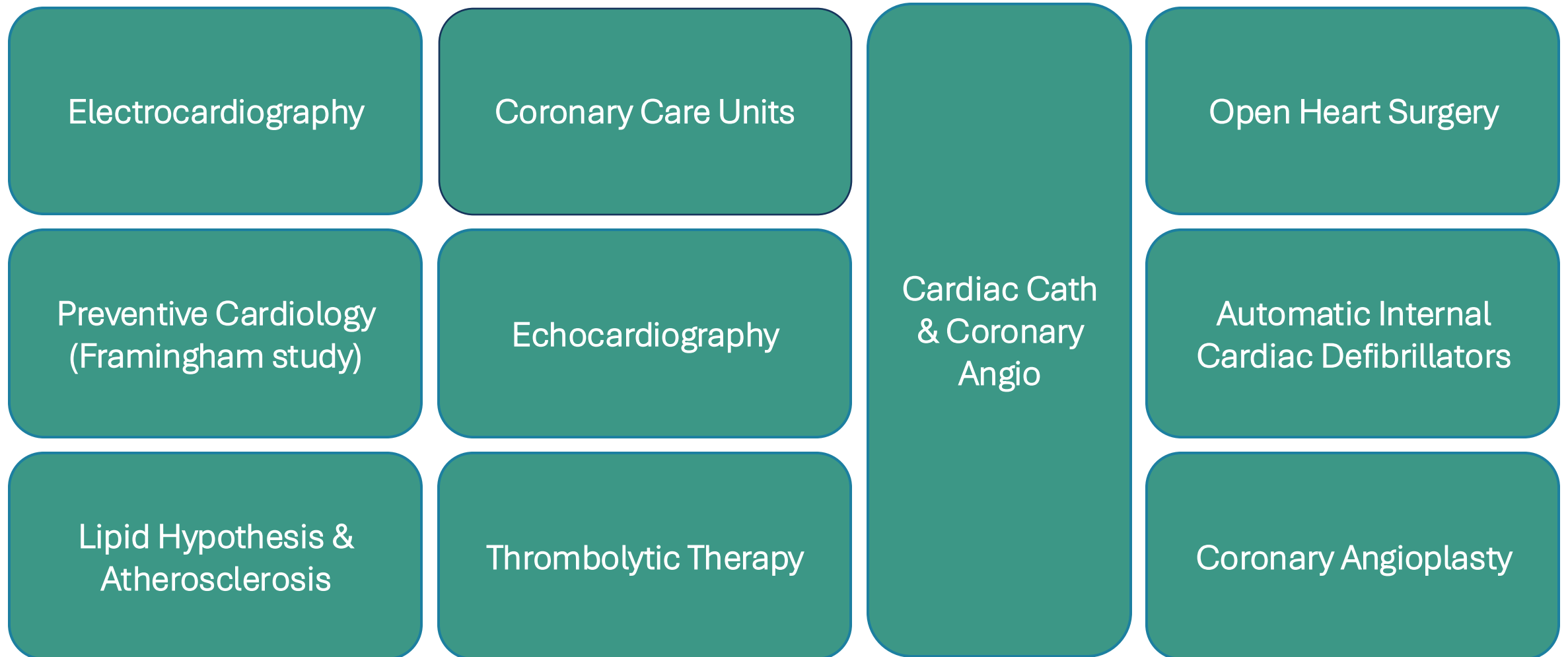
1. I have no relevant financial relationships to disclose pertaining to this presentation
2. I hold equity in Perspective Therapeutics, Inc., a radiopharmaceutical therapy company
3. I am a Director for the following entities:
  - Iowa Heart Foundation
  - University of Iowa Research Park
  - Voximetry, Inc.



## Objectives

- Highlight important innovations in cardiovascular medicine
- Illustrate how engagement, not brilliance, is the main driver of innovation, drawing from personal observations in science, medicine, and technology
- Inspire YOU to become engaged in important work happening TODAY

# Top Breakthroughs in Cardiology - 20<sup>th</sup> Century



Mehta NJ, Khan IA. Cardiology's 10 greatest discoveries of the 20th century. Tex Heart Inst J. 2002;29(3):164-71.

## Some Top Breakthroughs in the 21<sup>st</sup> Century

Advanced CV imaging  
techniques  
MRI, 3D echo, and  
cardiac CT

Arrhythmia ablation  
techniques  
Afib, VT, WPW

Mechanical circulatory  
support devices  
LVADs

Wearable monitoring  
technology

Drug eluting stents

Direct Oral  
Anticoagulants

Subcutaneous cardiac  
defibrillators

Minimally invasive valve  
repair or replacement  
TAVR, MitraClip

Angiotensin receptor –  
neprilysin inhibitors  
SGLT2 inhibitors



# A Changing Healthcare Landscape

Challenge/Disruption	Current Impact	Likely future impact
Hospital and healthcare system financial constraints from labor, supply chains, increasing complexity of care	<b>Hospitals and healthcare systems are increasingly focusing on “operational survival”</b>	Longer sales cycles, fewer pilots, more “prove ROI in 90 days” requirements, and higher switching-cost resistance
Workforce “burnout” and labor shortages	<b>Reduced capacity to adopt new tools and workflows</b>	Clearly beneficial innovations can fail because organizations lack the capacity to implement, train, and sustain change
Payment delivery systems are forcing harder evidence standards	<b>CMS models aimed at total cost of care and accountability</b>	Shifts investment toward solutions with measurable near-term savings
Federal research funding volatility	<b>NIH operating continuing resolutions constrain new starts and creates planning uncertainty</b>	Lower grant cycles, delayed program ramp-ups, fewer risky/high-variance bets—especially painful for early translational work
Need for cybersecurity enhancement - HIPAA Security Rule updates	<b>Interoperability enforcement (information blocking) and nationwide exchange frameworks (TEFCA) push the system toward more data liquidity—but with meaningful compliance work</b>	More spending on security, audits, vendor risk management, and legal review—often diverting resources from R&D; increased integration burden for digital health

"The impediment to action  
advances action, what stands in  
the way becomes the way".

- *Marcus Aurelius*

Aurelius, Marcus. *Meditations*. Translated by Gregory Hays, Modern Library, 2002

# A Path for Cultivating Innovation

## Meeting the Challenges of Today and Tomorrow

Personal observations from fieldwork in science, medicine and technology





*The seed of invention lies within  
each of us, waiting to be nurtured  
and brought forth.*

# 1. Know Your Seed Characteristics



# It Begins with You

## Understand who You Are



Student/Athlete



Transplant Cardiologist

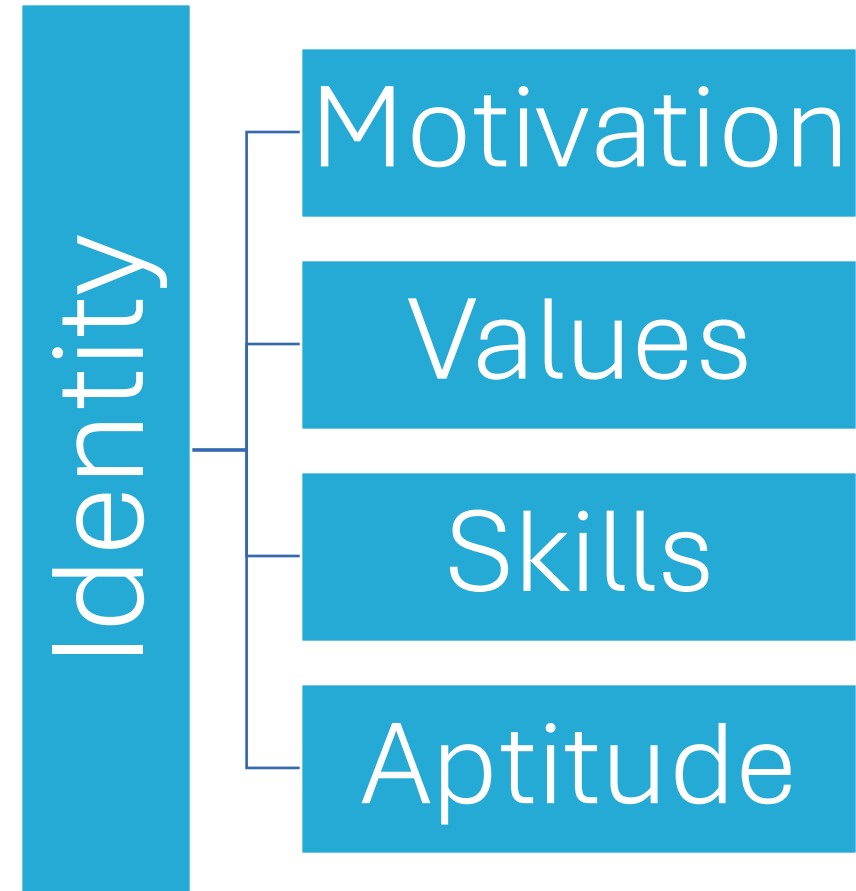


Entrepreneur /Founder

# Identity - Important but Impermanent

“In the process of developing an accurate assessment of who you actually are, you need to appreciate the disparity between how you appear to your own mind and how you indeed exist.”

— Dalai Lama XIV, [How to See Yourself As You Really Are](#)



*Understand the realities of your professional AND personal landscape. It is the prerequisite to making informed and strategic decisions necessary for meaningful contributions.*

## 2. Know Your Soil & Climate

# Find Conditions for Success

## Try to accurately assess current surroundings

- What supports your creativity?
- What supports your growth?
- What gives you enough stability and opportunity?

## Seek information about environments that are foreign to you

- Get information from every source
- Fight the power of ignorance
- Give **firsthand** information the greatest value!



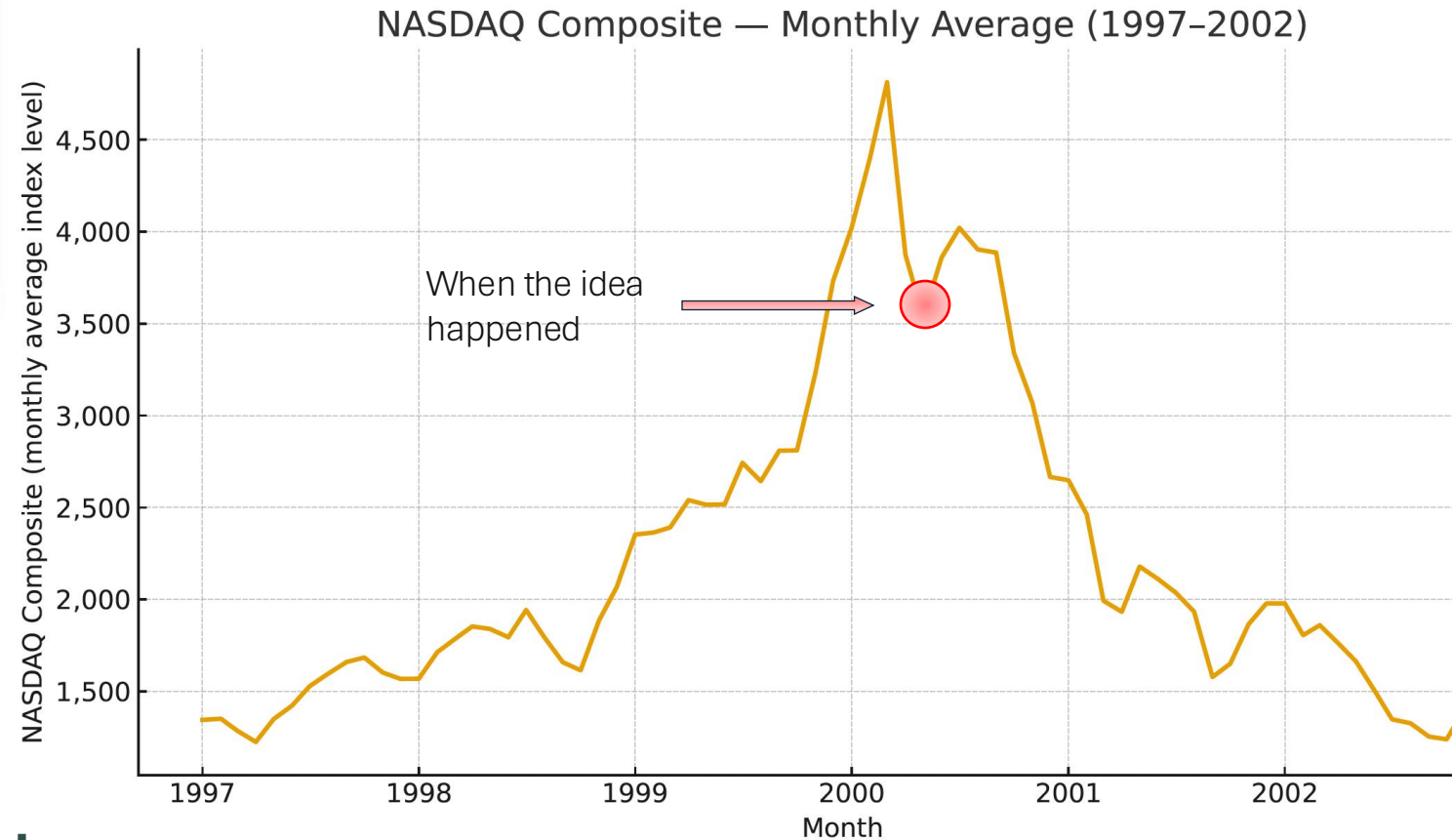


# Unexpected Results Can Arise from Tough Conditions

## Case in Point – My First Co.

- Company creation 1999
- Dotcom financial crash of 2000
- Nasdaq fall 75% with estimated losses of over \$6 billion.
- Particularly painful for tech-heavy Silicon Valley

## Surprise – XDx pivots and survives under new management



Financial Forecast Center. "NASDAQ Composite Stock Index — Monthly Average." *Forecasts.org*, Financial Forecast Center, accessed 15 Sept. 2025, <https://www.forecasts.org/data/data/nasdcampM.htm>.

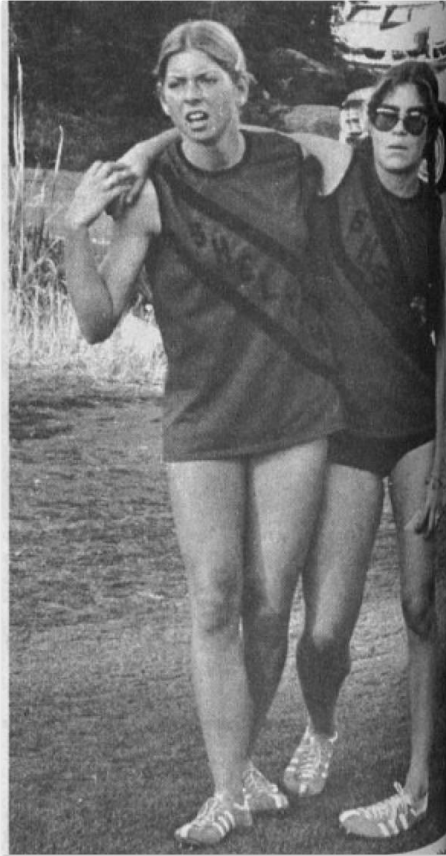
“The ultimate goal of farming is not the growing of crops, but the cultivation and perfection of human beings.”<sup>1</sup>

– *Masanobu Fukuoka*, natural-farming pioneer

### 3. Learn & Refine Proper Cultivation Techniques

1. Fukuoka, Masanobu. *The One-Straw Revolution*. Translated by Chris Pearce, Frances Moore Lappé, and Larry Korn, Rodale Press, 1978, p. 119.

# Do the Work – Learn and Repeat



Student/Athlete



Transplant Cardiologist



Entrepreneur /Founder

# Stay Focused – Lessons on Performance

## K. Anders Ericsson

- Key findings from studies of human performance in music, chess, athletics, doctoring, and memory
- Later popularized in Malcom Gladwell's book *Outliers* as the **10,000-hour rule**

Aspect	Ericsson Research Findings
Core Concept	Expertise develops through deliberate practice — focused and structured with feedback and progressive challenge.
Origin of 10,000 Hours	Top Berlin violinists had ~10,000 hours by age 20; this varied across fields and individuals.
Role of Practice	Quality > Quantity. Only deliberate, effortful, feedback-driven practice improves performance.
Role of Talent	Talent exists but plays a smaller role than structured practice
Role of Opportunity	Environment, access, and resources are crucial.

Ericsson, K. Anders, and Robert Pool. *Peak: Secrets from the New Science of Expertise*. Houghton Mifflin Harcourt, 2016.



# Perspective Therapeutics – From Discovery to Clinic

Active patent applications: 73

Granted/allowed patents: 15

- Platform technologies
- Compounds
- Methods of use
- Formulation
- Clinical dosage regimen



# From Discovery to Clinical Study

*The momentum of developing theranostic assets*

Program (Target)	Target Disease	Candidate evaluation	Human Clinical Imaging	Phase 1/2	Registration Enabling Study
VMT01/02 (MC1R)	Melanoma (MC1R Imaging & Therapy)	Monotherapy			IP✓
		Combination with Nivolumab			
VMT-α-NET (SSTR2)	Neuroendocrine Tumors				IP✓
	Other SSTR2 Expressing Tumors				
PSV359 (FAP-α)	Multiple Solid Tumors				IP✓
PSV4XX (PSMA)	Prostate (PSMA Imaging & Therapy)				
Undisclosed Program 5	Multiple Solid Tumors				
Undisclosed Program 6	Multiple Solid Tumors				
Undisclosed Program 7	Multiple Solid Tumors				
Pre-Targeting Platform	Multiple Solid Tumors				



The Hard Part  
Phase II/III to Approval



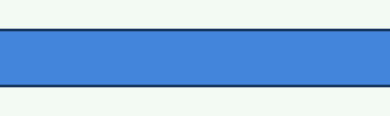
*“The greatest form of maturity is at harvest time. This is when we must learn how to reap without complaint if the amounts are small and how to reap without apology if the amounts are big.”*

- Jim Rohn

## 5. Harvest Fully & On Time

# Finishing is a Seismic Shift






- Time
  - Intensity
- 
- Resources
  - Skills
  - Mind Set



# The “Last 10%” Problem

## Across domains

Preparation dominates calendar time; finishing takes a smaller share of calendar time but a large share of effort, coordination, and risk.

	Domain	Lead Up Time (%)	Completion Time (%)	Resources for Completion
 1	Agriculture (commodity)	~ 85-95	~ 5-15	70% (machinery only)
 2	Research (academic)	~ 60-80	~ 20-40	1-2% (publication cost) * writing/reviewing often uncompensated but 20-40%
 3	Product Development (software)	~ 65-80	~ 20-35	Cost weighted for time 20-35% (labor only)

1. USDA NASS Crop Progress; Iowa State Enterprise Budgets; Purdue/FINBIN labor benchmarks; ASABE machinery studies.
2. Runde et al. 2021 (publication lags); Aczel et al. 2021 (peer review hours); reviews of peer-review process.
3. Boehm, Software Engineering Economics; Capers Jones metrics; phase-distribution studies; Standish CHAOS reports.

# The Last 10% of Medical Research

## Clinical Trials

Iowa Heart Trials	Description	Impact
TAVR Program Studies	Transaortic endovascular aortic valve replacement	<b>Safer, faster recovery, wider AVR eligibility</b>
Renal Denervation	Catheter-based ablation of renal artery sympathetic nerves	<b>BP control independent of drug treatment, evidence of impact ongoing</b>
BEST Trial in Peripheral Vascular Disease	Endovascular vs. open surgery for critical limb ischemia, based on vein graft quality	<b>Evidence guides first intervention to reduce major adverse events (MALE)</b>
CCTA Screening	CT angiography plus coronary calcium scoring to risk stratify for CAD	<b>More tailored use of statins, clinical benefit if stable CP syndrome</b>
EV-ICD and S-ICD	Extravascular ICDs (no leads in the heart or vessels)	<b>Lower pacemaker lead complications with non-inferior efficacy, better QOL</b>
Pulse Field Ablation	Non-thermal arrhythmia ablation	<b>Reduced procedural morbidity, increased procedural efficacy and durability</b>

*“The value of a tomato depends on its location.”*

*- Ben Hartman*

## 6. Go-to-Market or Hand off



# Timing Know Yours



Viewpoint Molecular Targeting, Oct 10, 2018



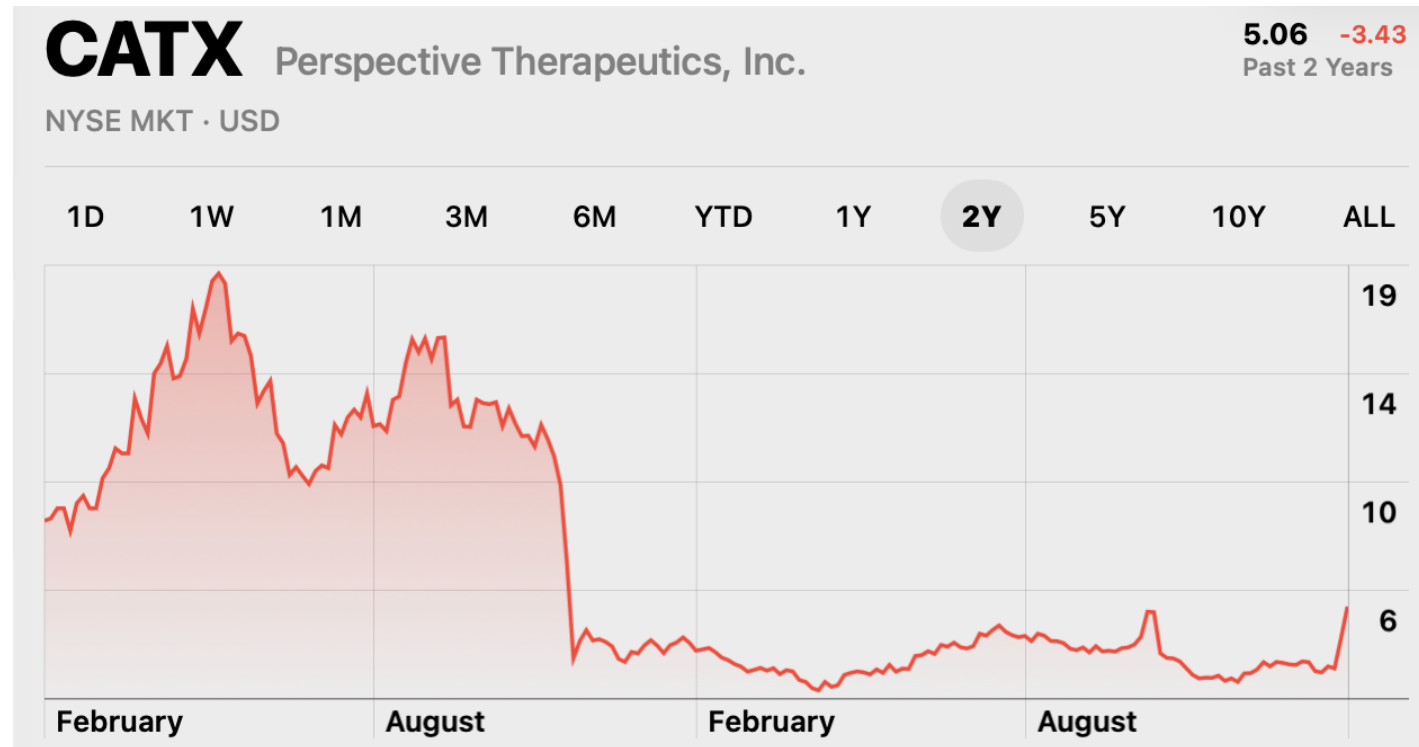
Perspective Therapeutics, May 29, 2024



*“Your stock will rise, and your stock will fall ...”*

## Strengthen Fundamentals

- Re-assess value
- Honestly assess market conditions
- Adapt
- Improve



# Go to Market – A Different Journey

## Generally Accepted Go-to-Market Essentials (Real World Stuff)

- **Define the playing field:** Target segments, ICP, personas
- **Clarify the value:** Problem-solution fit, differentiated value proposition
- **Positioning & messaging:** Tailored messages for personas & stages
- **Pricing & packaging:** Align with perceived value, test early
- **Routes to market:** Direct, self-serve, marketplaces, partners
- **Demand generation:** Campaigns, channels, launch calendar
- **Sales enablement:** Stages, qualification, assets, SLAs
- **Customer journey & lifecycle:** Pre- & post-sale adoption, advocacy
- **Readiness & operations:** Governance, compliance, support, analytics
- **Metrics & feedback loops:** CAC/LTV, pipeline coverage, NRR

References: 1) Harvard Business School – GTM Overview; 2) Gartner – Go-to-Market Strategies; 3) McKinsey – B2B GTM Research; 4) Moore, Crossing the Chasm; 5) HubSpot – GTM Guide; Web accessed September 12, 2025

# Professional Society and Foundation Impacts on Value

## **Pre-Post Adoption Studies**

Society Quality Improvement programs that can be linked to outcomes, such as AHA “Get with the Guidelines” Initiatives

## **Population-Level Evaluations**

Events prevented modeling and cost-impact analyses such as CDC/ CMS “Million Hearts” and British Heart Foundation impact studies.

## **Registry-Linked Outcomes and Reporting Analyses**

Surgical/procedural domains showing risk-adjusted outcome improvement over time (large specialty databases)

## **Registry Trend Studies**

Health outcomes researchers utilizing multi-institutional databases

## **Public Awareness and Education**

CPR training, STEM education modules, conferences, fund-raising events

# Finding Purpose and Joy in Engagement

*“I believe that the very purpose  
of our life is to seek happiness.  
That is clear, whether one  
believes in religion or not ...”*

- The 14<sup>th</sup> Dalai Lama



“What could I do that I actually would do to relieve some unnecessary suffering around here?”

Peterson, Jordan B. *12 Rules for Life: An Antidote to Chaos*. Random House Canada, 2018, p.161

# A Few Tips

1. Understand what you find meaningful
2. Choose engagement that suits your personal style and abilities
3. Feed yourself first or you will burn out
4. Identify risks and secure against threats
5. Have faith in the cycle of the seasons
6. Develop practices that inspire you and move you to action



# Remember: So little can mean so much

## Clinical Trial Invitation Insights (Cancer)

- Roughly 9% of the general population invited
- 56% face lack of local trial options
- 47%-55% of invited patients agree to participate
- Invitation rate may reach 20% in some studies
- More invitations for Non-Hispanic Black individuals
- Higher invites for those with high school education
- 7.1% cancer patients participate in treatment trials

Unger, Joseph M et al. ““When Offered to Participate”: A Systematic Review and Meta-Analysis of Patient Agreement to Participate in Cancer Clinical Trials.” *Journal of the National Cancer Institute* vol. 113,3 (2021): 244-257.

"I have been impressed with the urgency of doing. Knowing is not enough; we must apply.

Being willing is not enough; we must do."

– Generally attributed to Leonardo da Vinci



The Vitruvian Man, also known as Leonardo's Man, is a detailed illustration based on the work of Leonardo da Vinci, inspired by the ancient manuscript of the Roman architect Marcus Vitruvius Pollio.

# Acknowledgements





# Micheal K. Schultz, Ph.D.

## Spouse & Love of My Life

- 20 years of daily commitment

## Best person to talk to about science

- “Do you think this would be clinically relevant?”
- “Yes” and 15 granted patents and counting to prove it

## Best business partner imaginable

- On so many levels.

## Wonderful father & grandfather

- Makes our blended family a crazy, happy adventure

# A Few Among Multitudes

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## Viewpoint Molecular Targeting “Old Guard”

- Heyward Coleman, Mengshi Li, Edwin Sagastume, Jessica Miller, Brenna Marks, Alexa Jans





Q & A