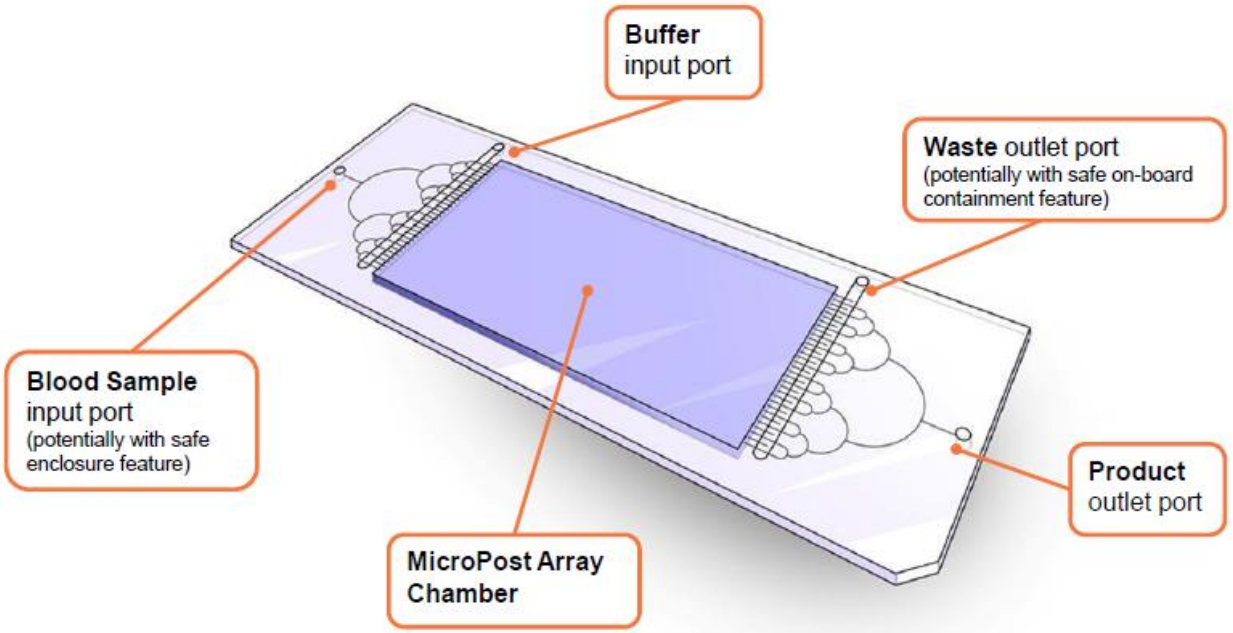

Innovative cell separation technology

gpb scientific

Michael Grisham, CEO
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Investment Highlights

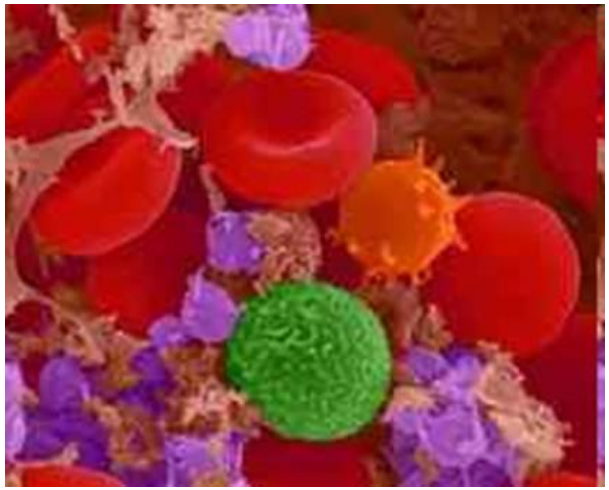
- **Multi-billion dollar market opportunity**
  - First target is $350M market for flow cytometry cell separation growing at 15%
  - Second generation product targets $700M cell separation and staining market
  - Ongoing R&D targeted toward several additional applications with $1B+ markets
- **Strong intellectual property position**
  - Ten issued patents, thirty patents pending provide broad international coverage for cell separation using “deterministic lateral displacement” and other methods
  - Core issued patents block through at least 2023
- **Clear path to commercialization**
  - Concept validation completed and prototypes created
  - Final product design, development, and manufacturing partners identified
  - One year to KOL prototype validation, two years to product launch
- **Multiple opportunities for value creation**
  - Go to market with proprietary cell separation system
  - License technology in various fields, e.g., “continuous flow” integrated offerings
  - Position company for acquisition by leading medical technology company

Cell Separation Is Critical Step in Modern Cellular Analysis

- Cells contain **vital information** concerning human health, disease, and therapeutic effect

- Cells of interest must be **enriched in order to facilitate analysis** by flow cytometry or other methods

- **Broad range of uses** for innovations in cell separation:
  - Flow cytometry
  - Next generation DNA sequencing
  - Rare cell detection
  - Stem cell therapeutics



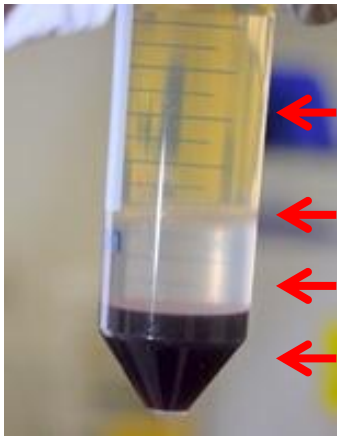
Current Methods of Cell Separation Are Flawed

Lysis

- Destroy red blood cells with cytotoxic reagents

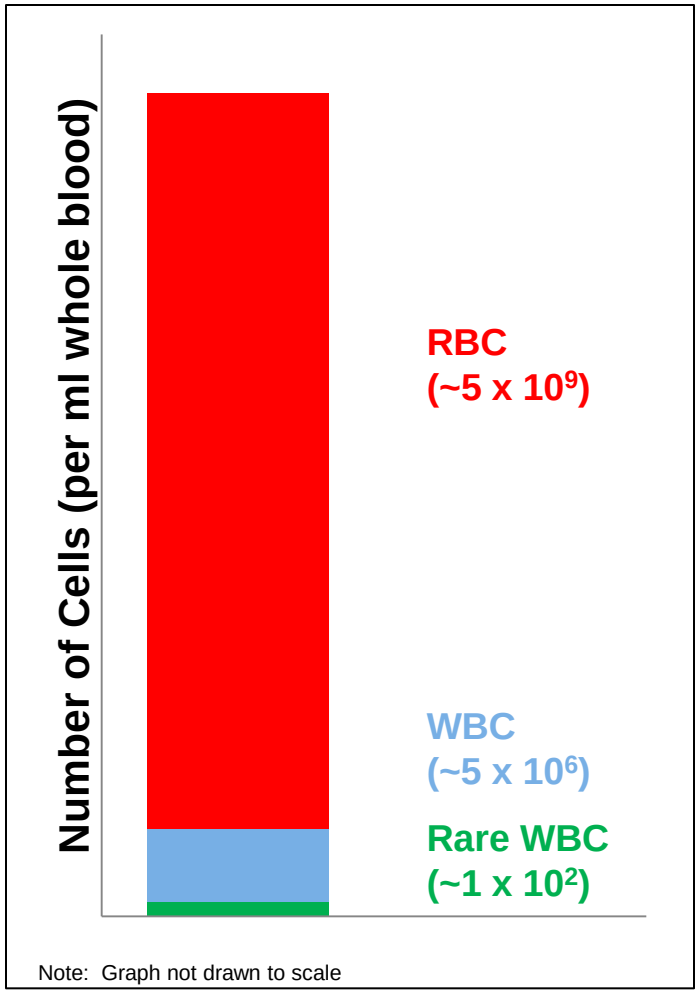
Gradient separation

- Separates blood components by density

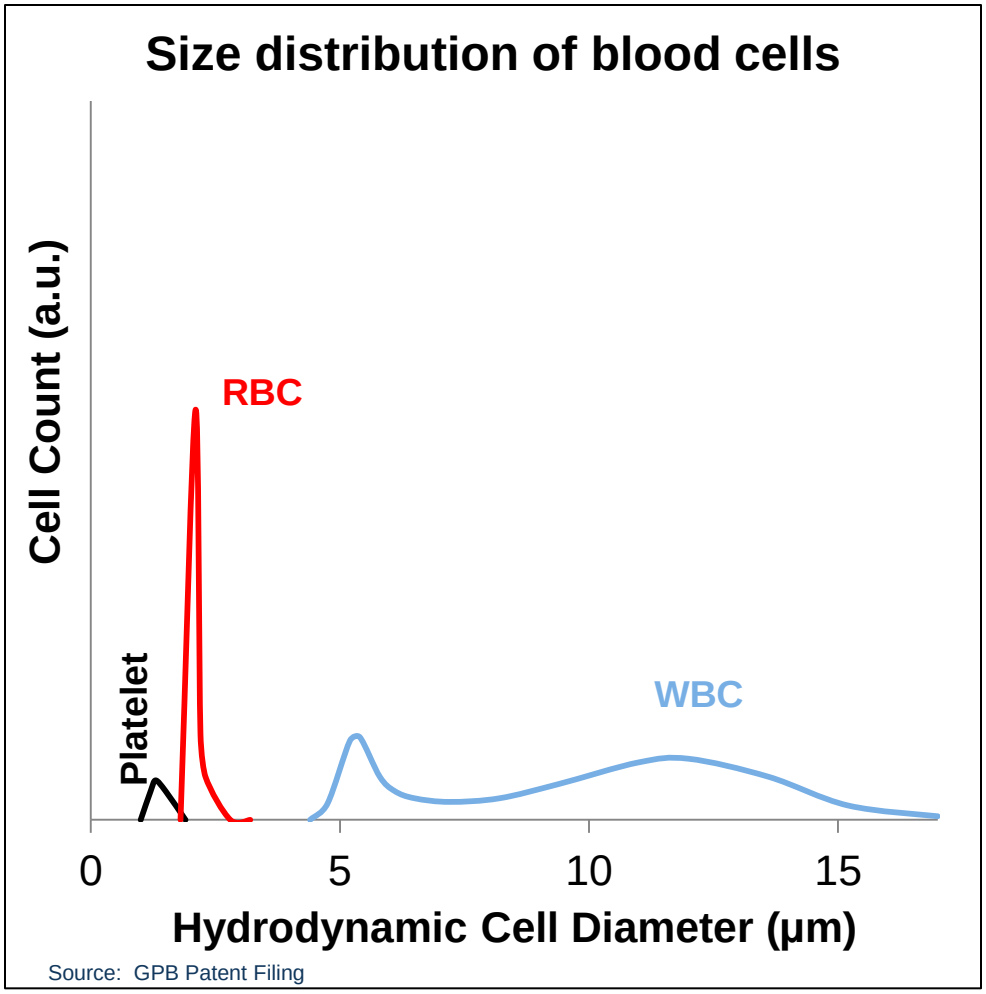


Both methods damage and lose cells of interest

Key Insight: Cells Are Distinguishable By Size

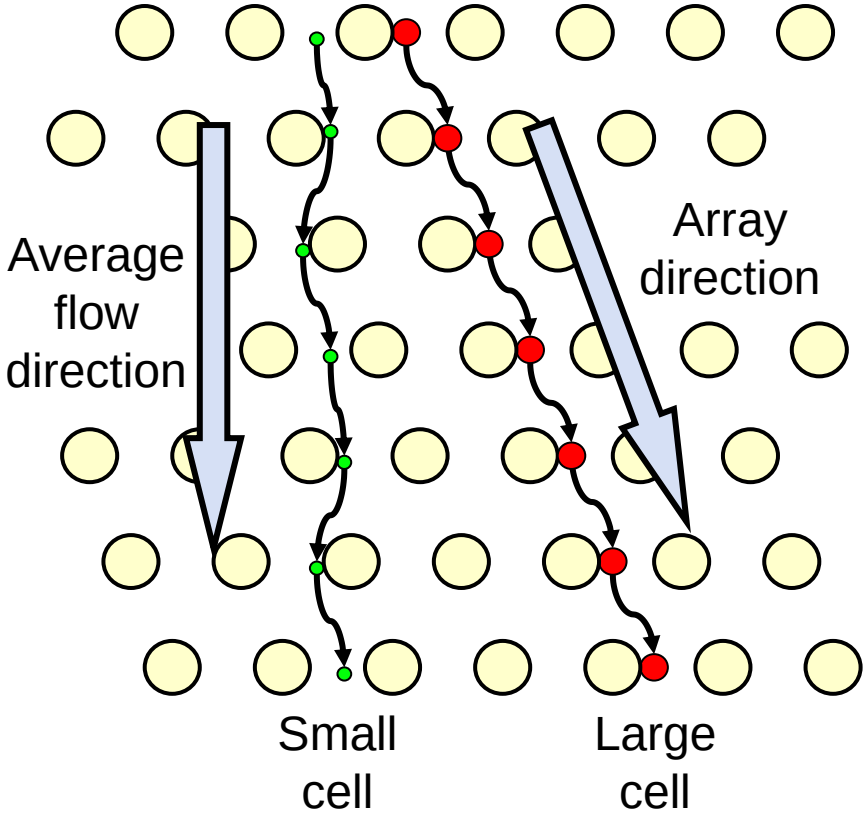


Note: Graph not drawn to scale



Source: GPB Patent Filing

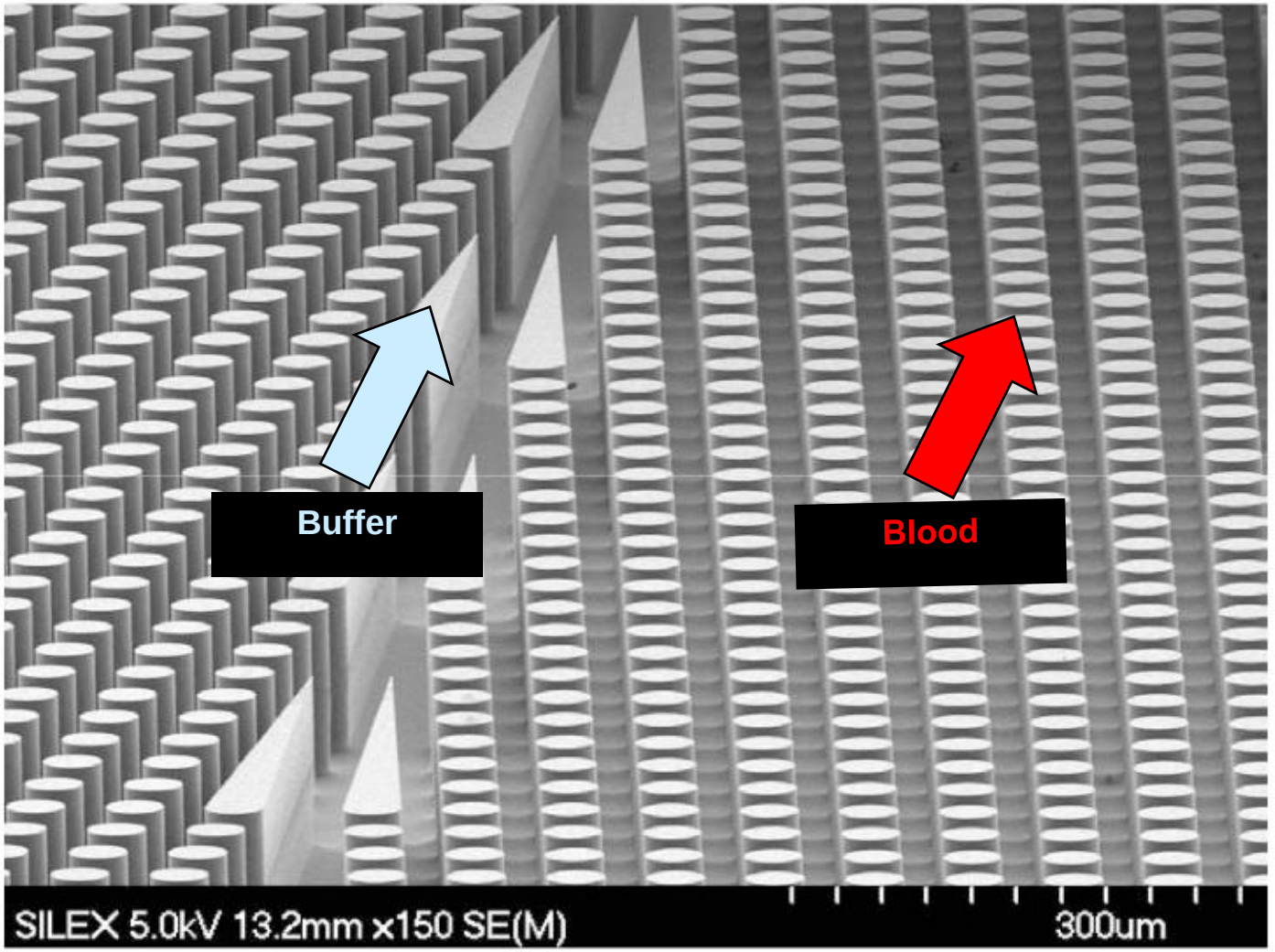
GPB Microfluidic “Bump Arrays” Separate Cells by Size



- The technology uses an array of posts, designed to establish laminar flows
- The arrays deflect large cells in one direction and small cells in another
- Cells can be sorted continuously according to size as they flow through the array

Result is 99.9% separation with high yield and minimal cell damage

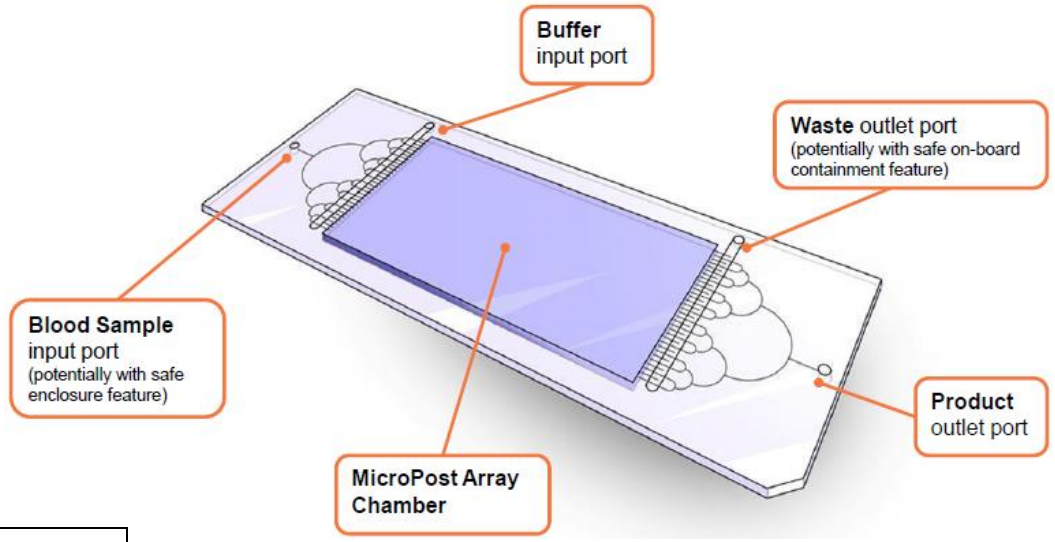
“Bump Array” Under a Scanning Electron Microscope



GPB Product Consists of Instrument and Disposables

Desktop Instrument

Disposable Cell Separation Module



Up to 8 cell separation modules, with up to 14 samples per module

GPB Competitive Advantage

Technique	Density gradient centrifugation	Red blood cell lysis	GPB cell separation by size
Cytotoxin-free processing	No (Ficoll)	No (Hypotonic solution)	**YES** (Physiological buffers are used)
Automated cell isolation	No (Spins and washes)	No (Spins and washes)	**YES** (One-step separation)
Recovery of entire leukocyte fraction	No (Poor recovery)	Yes (up to 20% loss per wash)	**YES** (>95% retained in product)
Preserved lymphocyte subsets	No	Yes	**YES**
Removal of red blood cells	Good	Good (RBC debris and hemoglobin contamination)	**Excellent** (>99% RBC removal)

Multiple Attractive Segments for GPB Technology

Market Segment	Potential or Actual Size	Annual Growth	Comments
Flow cytometry sample preparation			
• Separation Only	$350 million	12 – 15%	Low hanging fruit for GPB; existing market with unmet needs
• Separation and Staining	$700 million ($350M incremental)	12 – 15%	2nd generation GPB bump array
Next generation sequencing sample prep	$1B+	20%	Sample prep time/cost is currently limiting adoption—currently seeking solutions
Stem cell therapeutics	$1B+	Rapid growth	STTR Phase I collaboration with Princeton and University of Maryland
Rare cell detection	$1B+	Emerging	Increasing focus on biomarkers for personalized medicine
Infectious disease	$1B+	Emerging	Enables decentralized screening

Significant Interest From Prospective Partners

Company	Status
Beckman Coulter	NDA, MTA Met performance specs Requests evaluation of polymer bump arrays as next step
Becton-Dickinson	NDA, MTA Met performance specs Requests evaluation of polymer bump arrays as next step
Life Technologies	NDA CMO is a champion of GPB technology
Merck KgaA	NDA Requests evaluation of plastic bump arrays as next step

One Year to KOL Product Validation, Two Years to Product Launch, Three Years to Positive Cash Flow

	Year 1				Year 2			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Instrument								
Product specs and architecture								
System-level prototype complete								
Production unit completed								
OEM transfer, tooling, validation								
Disposable Microchips								
Microchip development (polymer)								
Cartridge design and prototyping								
Cartridge completed								
OEM transfer, tooling, validation								
Marketing								
KOL validation of prototypes								
KOL installations								
Submission of journal articles								
Distribution								
Select distribution partners								
LAUNCH								

GPB Capital Plan

	Seed Financing	Series A	Series B
Equity Raised	$2.8M	$5M	$7-8M
Timing	Completed	4Q12	Q1Y2
Runway		Q2Y2	Q4Y3
Uses ($K)			
• Net Operating Loss	950	930	300
• Intellectual Property	600	220	100
• R&D (sponsored)	500	950	1,800
• Product Development	750	2,500	2,200
• Commercialization	--	300	2,500
Total Uses ($K)	2,800	4,900	6,900
Milestone Targeted	Proof of Concept Market Validation	KOL validation of product prototype	Cash flow positive operations

Company expects to be cash flow positive by Q4Y3

Experienced Management Team

Mike Grisham *President & CEO*	• Built four venture backed companies in health care and medical diagnostics • Raised over $70M, returning over $300M to investors to date • Stanford MBA
Martin Fuchs *VP of Manufacturing and Product Development*	• 25+ years developing and commercializing technology products in both large and early-stage companies • Deep domain expertise in MEMS, microfluidics and Bump Arrays
Herb Heyneker *Chief Science Officer*	• One of first scientists at Genentech. Deep domain expertise in instrumentation • Co-founder and CTO of EOS Biotechnology, board member at Guava
Travis Massey *Director of Technical Marketing*	• Molecular biology and technical marketing • Princeton AB, Darden MBA
Jeff Edmiston, PhD *Director of Cell Biology*	• 15 years in academic and industry research, focus on cell separation and flow cytometry • 2+ years hands-on experience with Bump Arrays
Jim Farinholt *Acting CFO*	• Founding managing partner of Tall Oaks Capital, an early-stage venture fund • Co-founded several life sciences companies, including Allos, DiaKine, and PluroGen
Curt Civin, MD *SAB Chairman*	• Leads medical research for GPB • Assistant Dean for Research, University of Maryland School of Medicine • Director, Center for Stem Cell Biology and Regenerative Medicine
Jim Sturm, PhD *SAB*	• Leads MEMS research for GPB. Co-invented Bump Arrays • Director of Princeton Institute for Science and Technology of Materials (PRISM)
Paul Billing, MD SAB	• Chief Medical Officer, Life Technologies • Formerly SVP Development at LabCorp, CEO of GeneSage, CellectiveDx
Janette Phi-Wilson *Sales and Marketing Consultant*	• SVP, Commercial Operations, Intelicyt • 20+ years experience in life sciences instrumentation and commercialization (Bioscale, ForteBio, Guava, BD Biosciences)

Investment Highlights

- Multi-billion dollar market opportunities
- Strong intellectual property position
- Clear path to commercialization
- Multiple opportunities for value creation

GPB Scientific, LLC

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