

Kyle C. Smith, Ph.D. | Executive Profile

Cambridge, MA

• levasci.com

• linkedin.com/in/kylecsmith

Professional Biography

Kyle C. Smith, Ph.D., is an R&D executive and technical founder who has twice built deep-tech platforms from concept to commercial product. His career is defined by building and leading ventures through the entire life cycle, from initial concept and fundraising to strategic pivots and commercial launch.

As the first employee and founding team member at MicroMedicine, Dr. Smith built the R&D organization from scratch, led the development of the Sorterra cell processing platform, and directed the execution that secured \$38M in milestone-based funding. He also led a strategic partnership with a global pharma leader to validate the platform for cell therapy. That work created the technical foundation for his next venture.

As CTO and Co-Founder of BendBio, he invented core microfluidic IP and engineered a capital-efficient business model that generated first revenues and preserved 100% founder equity through a partnership-funded model. He structured a lean R&D operation combining manufacturing partners for device fabrication with biopharma and OEM partners running the devices in their own labs, holding full technical control at a fraction of typical hardware-startup overhead. This approach to R&D strategy, proven across both deep-tech hardware and bootstrapped service models, is rooted in de-risking novel platforms and building capital-efficient roadmaps. He also co-founded Bold Psych, applying the same systems engineering approach to build the operational and financial infrastructure for a psychotherapy practice scaled to 10 clinicians, showing the approach works regardless of domain.

Through his advisory practice, Leva Scientific, Dr. Smith applies this operational experience to help deep-tech ventures succeed. He partners with leadership teams and institutional investors to provide the technical clarity and strategic foresight needed to build defensible, high-value companies. Current engagements include Massachusetts General Hospital. Leva operates as a selective advisory practice, a vehicle for Dr. Smith's deep technical and strategic expertise. He engages where his experience in building and scaling R&D organizations creates the most value.

Core Competencies

- R&D Strategy & Execution
- Technology Commercialization
- Device & System Development
- Manufacturing & Tech Transfer
- Fundraising & Investor Relations
- IP Strategy & Portfolio Management
- Technical Due Diligence
- Capital-Efficient R&D
- Team Leadership & Mentoring
- Strategic Partnerships
- Venture Building
- Computational Modeling & AI

Professional Experience

BendBio | Cambridge, MA

2021 – Present

Chief Technology Officer & Co-Founder

- **Co-founded BendBio to commercialize a novel ultra-high-throughput microfluidics platform**, setting technical vision and IP strategy for cell therapy manufacturing.
- **Architected a strategic pivot from a capital-intensive instrument model to a high-margin consumables model**, securing first revenues and preserving 100% founder equity through a partnership-funded model.
- **Invented a novel microfluidic filtration device** that secured foundational IP, addressed a known platform risk, and strengthened the technology's position with strategic partners.
- **Engineered a lean R&D operation** combining manufacturing partners for device fabrication with biopharma and OEM partners running the devices in their own labs, holding full technical control at a fraction of typical hardware-startup overhead.
- **Secured and led strategic R&D partnerships with OEM and biopharma partners**, acting as primary technical interface across all collaborations and generating BendBio's foundational revenue.

MicroMedicine | Waltham, MA

2015 – 2020

Sr. Director, R&D (2020) | Director, R&D (2015 – 2019)

- **Headed the spin-out of core technology from MGH as a founding team member and first employee**, defining the initial technical strategy and building the technical foundation for product commercialization.
- **Directed the R&D execution that secured \$38M in milestone-based funding**, culminating in the successful commercial launch of the Class I Sorterra cell processing platform (disposables & instrumentation).
- **Built the R&D organization from the ground up as a member of the Leadership Team**, managing the annual R&D budget, recruiting a 12-person team, and establishing all lab infrastructure and operational processes.
- **Spearheaded the technology roadmap and application strategy**, demonstrating feasibility across research, diagnostic, and therapeutic areas and leading technical partnerships with pharma and life science leaders.
- **Led a strategic partnership with a global pharma leader to validate the platform for leukapheresis**, securing fully partner-funded R&D without diverting resources from the primary product timeline.
- **Championed the technology across the organization**, partnering with Commercial on product strategy, Clinical/Regulatory on FDA submissions, and the CEO on fundraising and IP strategy.

Massachusetts General Hospital | Boston, MA

2011 – 2015

Principal Scientist (2014 – 2015) | Senior Research Scientist (2011 – 2014)

- **Invented the foundational IP that launched several spinouts**, developing ultra-high-throughput microfluidics for cell sorting, concentration, staining, and imaging across research, diagnostic, and therapeutic markets.
- **Served as a lead inventor and contributor in a \$35M partnership with J&J**, developing the CTC-iChip platform for isolation of circulating tumor cells from blood using high-performance magnetic sorting.
- **Led the development of automated research platforms**, designing the novel microfluidic devices and the fluidic control instrumentation, while managing the team responsible for fabrication and testing.
- **Pioneered a data-driven R&D methodology**, creating algorithmic CAD tools to rapidly design and screen dozens of device variants and directing the tech transfer to an injection molding manufacturing process.

Ventures & Advisory Roles

Leva Scientific | Cambridge, MA

2024 – Present

Principal & Founder

- **Strategic Advisory:** Provide independent guidance for medtech and life science ventures and institutional investors, serving as a dedicated partner to founders, executives, and investors. Current engagements include Massachusetts General Hospital.
- **R&D Roadmap & IP Strategy:** Align technology development with corporate goals, competitive landscapes, and long-term intellectual property strategy.
- **Technical Due Diligence:** Deliver deep technical assessments for venture capital, M&A, and strategic partnerships to validate technology and identify potential risks.
- **Platform De-risking & Validation:** Guide key experiments to address critical scientific and engineering challenges, ensuring core technology is robust, scalable, and fundable.

Bold Psych | Cambridge, MA

2021 – Present

Strategic Advisor & Co-Founder

- **Co-founded and scaled a psychotherapy practice** to 10 clinicians by designing the business strategy, financial model, and operational systems.
- **Built a custom Python-based financial automation system** to manage complex variable compensation, track key business metrics, and generate automated performance dashboards.

Technical Leadership & Domain Expertise

Leadership & R&D Strategy

- **Team Leadership & Development:** Led and mentored multidisciplinary R&D teams of up to 12 scientists and engineers, fostering a culture of scientific rigor, innovation, and commercial focus.

- **Strategic Alignment:** Set the technical vision and R&D roadmap to align with strategic business objectives, partnering with executive leadership, commercial teams, and investors.
- **Operational Management:** Managed annual R&D budgets, established all lab infrastructure, and implemented operational processes to support scalable growth and execution.

Systems Engineering & Device Development

- **Instrumentation & Systems Integration:** Directed the end-to-end development of complex life science instrumentation, from concept to prototype, including the integration of optics, fluidics, electronics, and software.
- **Device Architecture & Tech Transfer:** Oversaw the development of novel microfluidic devices, from algorithmic CAD and BioMEMS prototyping through to tech transfer for scalable manufacturing (e.g., injection molding).
- **Predictive Modeling & Simulation:** Deployed predictive, first-principles models (fluidic, magnetic, electrical) to accelerate R&D cycles and de-risk technical decisions, with expertise spanning from rapid analytical models to complex multiphysics simulations (CFD, FEA).

Data Science & Biological Validation

- **Data-Driven Methodology:** Championed a data-driven R&D methodology using advanced experimental design (DoE) and custom algorithm development for data analysis and visualization (Python, R, MATLAB).
- **Applied AI & Automation:** Leverage AI tools, building custom tools on LLM APIs (Anthropic, Google, OpenAI), alongside traditional computational methods to automate operational workflows, accelerate technical analysis, and augment R&D ideation.
- **Assay & Application Development:** Oversaw the development and validation of a portfolio of analytical methods (flow cytometry, immunoassays, cell-based assays) to support product performance claims and guide application development.
- **Process Engineering & Characterization:** Leveraged a deep understanding of key system variables to engineer robust, user-independent workflows that deliver highly reproducible and reliable results.

Publications and Patents

- **27 peer-reviewed papers** in journals including Science Translational Medicine.
 - **18 issued US utility patents** and numerous international patents on high-throughput methods and devices for magnetic and flow-based microfluidic cell sorting, concentration, and filtration.
 - **20 peer-reviewed posters and proceedings** at major industry and scientific conferences.
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Academic Research & Education

Massachusetts Institute of Technology | Cambridge, MA

Ph.D. in Biomedical and Electrical Engineering (Harvard-MIT Health Sciences & Technology)

S.M. in Electrical Engineering and Computer Science

NSF Graduate Research Fellow & Whitaker Foundation Graduate Research Fellow

- **Architected novel, deterministic, multiscale models of cell and tissue electroporation**, linking continuum models of membrane-level pore dynamics with cell-level molecular transport. This platform became the foundation for all subsequent modeling research in the Weaver Research Group.
- **Pioneered the use of high-throughput *in silico* experiments** to explore advanced therapeutic strategies, including the use of ultra-short, high-intensity pulses to induce targeted apoptosis for cancer therapy.

Duke University | Durham, NC

B.S.E. with Distinction in Biomedical Engineering

Pratt Engineering Undergraduate Research Fellow

- **Published first-author research in leading journals** and received the Helmholtz Award (best undergraduate research project) for developing computational models of membrane pore dynamics.