

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

Cambridge, MA

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Professional Biography

Kyle C. Smith, Ph.D., is an accomplished R&D executive and founder who translates breakthrough science into market-defining commercial products. 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 a founding team member of MicroMedicine, Dr. Smith architected the R&D engine that secured \$38M in funding and delivered the company's first commercial platform. Subsequently, as CTO and Co-Founder of BendBio, he engineered a critical strategic pivot to a capital-efficient model, achieving operational self-sufficiency while preserving 100% of founder equity. This operator-first approach to R&D strategy – proven across both deep-tech hardware and scalable service-based models – is rooted in de-risking novel platforms and building capital-efficient roadmaps.

Through his advisory practice, Leva Scientific, Dr. Smith codifies this experience to help the next generation of ambitious ventures succeed. He partners with leadership teams and investors to provide the technical clarity and strategic foresight needed to build defensible, high-value companies. Leva operates as a selective advisory practice, enabling Dr. Smith to engage deeply with a small number of ventures while maintaining his primary operational leadership roles.

Core Competencies

- R&D Strategy & Execution
- Technology Commercialization
- Device & System Development
- Manufacturing & Tech Transfer
- Fundraising & Investor Relations
- IP Strategy & Portfolio Management
- Quality Systems & Design Controls
- Capital-Efficient R&D
- Team Leadership & Mentoring
- Strategic Partnerships
- Venture Building
- Data-Driven Decision Making

Professional Experience

BendBio | Cambridge, MA

2021 – Current

Chief Technology Officer & Co-Founder

- **Co-founded BendBio to capitalize on the cell therapy manufacturing market needs**, setting technical vision and IP strategy for a novel, ultra-high-throughput microfluidics platform.
- **Pivoted the company from a capital-intensive instrument model to a capital-efficient consumables model** in direct response to VC market shifts and learnings from prior ventures, preserving the company's viability.
- **Engineered a de-risked business model that secured the company's first revenues**, achieved operational self-sufficiency, and preserved 100% founder equity by focusing on core technical strengths.
- **Led the development of a new class of microfluidic devices**, specifically architected for high performance and seamless, low-cost integration into commercial partners' existing instrumentation platforms.
- **Secured and managed strategic R&D partnerships**, serving as primary technical lead for all external collaborations and validation efforts that generated foundational revenue.

MicroMedicine | Waltham, MA

2015 – 2020

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

- **Led 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.
- **Drove 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.
- **Championed technology across the business**, partnering with Commercial on product roadmap, Clinical/Regulatory/Quality on FDA submissions, and CEO on fundraising and IP strategy (7 new patents).

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 microfluidic technologies for cell sorting, concentration, staining, and imaging with applications across a range of research, diagnostic, and therapeutic applications.
- **Served as a key inventor and contributor in a \$35M partnership with Johnson & Johnson**, creating high-sensitivity magnetic sorting devices for the isolation of circulating tumor cells (CTCs) from blood.
- **Led the development of complete, 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 – Current

Principal & Founder

- **Provide independent strategic advisory for medtech and life science ventures**, serving as a dedicated partner to founders, executives, and investors.
- **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**: Guide key experiments to address critical scientific and engineering challenges, ensuring core technology is robust, scalable, and fundable.

Bold Psych | Cambridge, MA

2021 – Current

Strategic Advisor & Co-Founder

- **Co-founded and scaled a psychotherapy practice** to 10 clinicians by architecting the business strategy, financial model, and operational systems.
- **Developed a custom backend data analytics system** to 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 successful 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).
- **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 (Division of 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 in the department) for developing computational models to elucidate the dynamics of membrane pore creation and resealing.