

Kyle C. Smith, Ph.D.

Cambridge, MA

kylecsmith.com

linkedin.com/in/kylecsmith

Executive Summary

R&D executive and technical founder who has twice built deep-tech platforms from concept to commercial product. At MicroMedicine, built the R&D organization as a founding team member and first employee, leading the development that secured \$38M in milestone-based funding for the Sorterra platform launch. At BendBio, invented foundational microfluidic IP and engineered a capital-efficient model that generated first revenues while preserving 100% founder equity. A hands-on technical leader with depth across every operating function, from device physics and predictive modeling to team building, strategic partnerships, and fundraising.

Core Competencies

- R&D Strategy & Execution
- Technology Commercialization
- Device & System Development
- Manufacturing & Tech Transfer
- Fundraising & Investor Relations
- IP Strategy & Portfolio Management
- Technical Due Diligence
- Financial Modeling & Budgeting
- 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)

- Spearheaded 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.
- 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 development of automated research platforms**, from novel device design and fluidic instrumentation to algorithmic CAD tools for rapid variant screening, and directed the tech transfer to scalable injection molding manufacturing.

Ventures & Advisory Roles

Leva Scientific | Cambridge, MA

2024 – Present

Principal & Founder

- **Deliver R&D strategy, technology assessment, and technical due diligence** for medtech ventures and institutional investors. Current engagements include Massachusetts General Hospital.

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, including custom Python-based financial automation.

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.

Technical Leadership & Domain Expertise

- **Leadership & Strategy:** Recruiting and directing multidisciplinary R&D teams; fostering a culture of scientific rigor and commercial focus while setting technical vision and managing annual budgets.
- **Data-Driven R&D:** Championing predictive modeling (CFD, FEA), data analysis (Python, R, DoE), and applied AI; building custom tools on LLM APIs (Anthropic, Google, OpenAI) to automate operational workflows, accelerate technical analysis, and augment R&D ideation.
- **System & Device Development:** Overseeing development of life science instrumentation and microfluidic devices, from algorithmic CAD and prototyping to tech transfer for scalable manufacturing.
- **Validation & Process Engineering:** Leading biological validation and process development; directing development of analytical methods (flow cytometry, immunoassays) for robust, user-independent workflows.

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.