Kyle C. Smith, Ph.D.

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Executive Summary

Accomplished R&D executive who has twice translated novel platforms from concept to commercial product. As a founding team member of MicroMedicine, architected the core technology that secured $38M in funding milestones and drove the company to its first commercial launch. This deep medtech experience is complemented by hands-on success building a profitable service-based venture from the ground up. A proven leader who builds high-performing teams and forges the technical and strategic partnerships essential for commercial success. Seeking a senior leadership role to scale the next generation of impactful life science platforms.

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
- Financial Modeling & Budgeting
- Team Leadership & Mentoring
- Strategic Partnerships
- Venture Building
- Data Science & Analytics

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 advice** for medtech and life science ventures, focusing on R&D strategy, technology de-risking, and technical due diligence.

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.

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 high-performing, 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 data-driven R&D using predictive modeling (CFD, FEA) and advanced data analysis (Python, R, DoE) to accelerate development cycles and de-risk technical decisions.
- **System & Device Development:** Overseeing development of life science instrumentation and microfluidic devices, from algorithmic CAD and prototyping to successful tech transfer for scalable manufacturing.
- **Validation & Process Engineering:** Leading biological validation and process development; overseeing creation 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 (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.