Biotech's Misplaced Bet

The industry funded discovery AI. The most immediate bottleneck was always operations.

Capital Flooded Into Discovery While Operational Leakage Persisted.

- $20B+ in AI-biotech deal value announced since 2020[1] - concentrated heavily in drug discovery
- Development timelines exceed 10 years
- Failure rates remain >90%
- R&D costs reached ~$2.2B per-asset in 2024

Even sophisticated biology remains difficult to predict

Even Elite Biology Organizations Still Face High Translational Uncertainty

VERTEX

Vertex Program	*Outcome*
VX-264 (T1D cell therapy)	Discon. after Phase 1/2 with $379 Q1 25 charge
NaV1.8 pain programs	Mixed clinical outcomes
AATD programs	Multiple setbacks/ discontinuations

Vertex remains one of biotechnology's most successful mechanism-driven companies, yet repeated translational setbacks reinforce how difficult biological prediction remains even within highly rational scientific frameworks.

Clinical Operations Is Biotech's Largest Unaddressed Value Leak.

- ~80% of trials have enrollment delays[4]
- 9 in 10 trials end up doubling their planned timeline to meet enrollment goals[4]
- 11% of sites enroll zero patients[4]
- ~$55,700/day Phase III cost (Tufts CSDD, 2024)[5]

Operational AI generates fast feedback:

- Enrollment forecasts validated in months
- Site selection models improve trial over trial
- Workflow data compounds with every implementation

Signal: AI Adoption Is Moving Toward Operations

- Enrollment forecasting validated in months
- Site optimization improves trial-over-trial
- Workflow data compounds continuously
- Economic feedback emerges faster than biological feedback
- Synthetic control arms

A 3-6 month acceleration in development timelines can create more near-term value than incremental gains in discovery accuracy.

Discovery captured the narrative.
Operations retained the bottleneck.

¹ Announced AI-biotech deal value since 2020 includes partnerships such as Isomorphic Labs/Lilly ($1.7B), Isomorphic Labs/Novartis, BMS/Exscientia ($1.2B), and others. Sources: European Biotechnology, Nature, FierceBiotech, 2024–2025. ² Deloitte. "Measuring the Return from Pharmaceutical Innovation." 2024. Average per-asset R&D cost for top-20 pharma companies. Via FierceBiotech, March 2025. ³ Vertex Pharmaceuticals. Q1 2025 Earnings Release, May 2025. VX-264 discontinued; $379M charge recorded in Q1 2025.

BLACKLIGHT PARTNERS

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Durable Advantage Will Be Built on Infrastructure, Not Algorithms.

Models commoditize. Embedded infrastructure compounds.

Discovery AI	*Operational AI*
Long-duration optionality	Measurable ROI today
Delayed validation cycles	Fast operational feedback
Model-centric differentiation	Infrastructure accumulation
Capital-intensive scaling	Workflow-driven compounding

Operational AI compounds through workflow adoption, proprietary data accumulation, and embedded infrastructure.

Where AI Creates Value in Biopharma — by Time Horizon

Tier	Functional Areas	Value Creation & ROI Potential
Near-Term (0–2 yrs) *High Evidence Maturity*	• Regulatory & Medical Writing • Pharmacovigilance & Safety • Commercial & Field Force • Corporate Functions	20–70% productivity gains across drafting, case processing, content generation, targeting, and support functions
Near-to-Medium-Term (1–3 yrs) *Medium-High Evidence Maturity*	• Clinical Trial Operations • Manufacturing & Supply Chain • Real-World Evidence & Data Analytics	Reduced enrollment timelines, lower trial and operating costs, improved site selection and yields, faster evidence generation
Medium-to-Long-Term (3–10+ yrs) *Low-to-Medium Evidence Maturity*	• Drug Discovery & Target ID • Molecule Design & Lead Optimization • Clinical Development Decision-Making • AI-Native Drug Creation	Faster discovery, improved candidate quality, better trial design, and the theoretical potential to create entirely new therapeutic assets

Conclusion

The unanswered question is not which companies have the best models, but which are building the infrastructure that will define durable advantage in AI-enabled biotech.

Discovery AI may reshape biology over the next decade. **Operational AI is already consolidating infrastructure advantage today.**

Operational AI creates durable advantage through infrastructure accumulation, not model superiority.

[4] *ACRP; Antidote.me, "25+ Useful Clinical Trial Recruitment Statistics"; Applied Clinical Trials Online. Citing consistent industry data across multiple sources.* [5] *Tufts Center for the Study of Drug Development (CSDD). June 2024. Average direct daily cost of a Phase III trial: $55,716 (2023 USD). Via IntuitionLabs Clinical Trial Start-Up Costs Report, 2026; Blacklight analysis / internal synthesis.*