CytoHub

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JOB DESCRIPTION

Vice President, Engineering & AI (Head of CytoHub.AI)

Department: Engineering and AI | **Reports to:** Chief Executive Officer

Location: San Diego or San Francisco, California (on site)

Employment type: Full-time, exempt

Level: Vice President; member of the executive leadership team, with a path to Chief Technology Officer as the company scales

Position Summary

CytoHub is seeking an experienced technical leader to build and scale CytoHub.AI, the analytical and modeling platform at the core of the company's human-tissue drug safety and discovery business. The VP, Engineering & AI is accountable for the technical strategy, architecture, delivery and team across CytoHub's engineering and AI organization, including the CytoHub.AI platform. The role owns the full path from raw laboratory data to validated models and customer-facing software, and will lead the development of CytoHub.AI into a multimodal, production-grade platform that supports pharmaceutical partners in cardiac safety and discovery decisions.

Company Overview

CytoHub Inc. is a San Diego life sciences company founded in 2023 and based at J&J JLABS @ San Diego. CytoHub produces CardioVive, a 3D human cardiac assembloid system derived from induced pluripotent stem cells, and conducts drug safety and discovery studies on it for pharmaceutical customers. Each study generates paired, high-dimensional readouts from the same human tissue. CytoHub.AI is the analytical and modeling layer built on this data.

Technical Scope

The VP will own the following systems and their roadmap:

Data	Paired multimodal readouts from CardioVive studies: high-content imaging, contractility video, MEA electrophysiology, scRNA-seq, and process and batch metadata.
Automation	Planned closed-loop automation module (culture, dosing, imaging and MEA readout, sequencing) designed to produce standardized, fully annotated experimental runs.
Foundation model	CytoRNA-FM, CytoHub's single-cell foundation model. The next phase is adaptation and validation on CytoHub's proprietary cardiac data.
Platform	Shared multimodal embedding space, data lake and vector database, semantic integration and agentic workflows, deployed on cloud infrastructure (AWS).
Applications	CytoRNA (single-cell analysis), CytoVision (image analysis), CytoMotion (contractility analysis) and CytoGPT (natural-language and agentic queries over process and omics data).

Planned extensions include predictive cardiotoxicity models (CytoTwin); expansion to additional human tissue types; and cell-manufacturing analytics.

Key Responsibilities

- Define and maintain the CytoHub.AI reference architecture: ingestion, data model and lineage, feature and embedding stores, training and inference services, and the application layer.
- Own the engineering and AI budget, including headcount, and lead build, buy and partner decisions on models, compute and tooling.
- Direct multimodal model development across scRNA-seq, imaging, contractility and electrophysiology, including adaptation of CytoRNA-FM to cardiac data with benchmarks and acceptance criteria aligned with ICH S7A/S7B and CiPA.
- Integrate laboratory automation with the data platform and enforce data quality, versioning, provenance and reproducibility across experimental and customer data.
- Own release, CI/CD, model registry, monitoring and security, including multi-tenant isolation, access control and audit trails that meet pharmaceutical data-governance reviews.

- Build, lead and develop a high-performing team of software engineers, ML engineers and computational scientists, and set engineering standards.
- Serve as the senior technical executive to customers, partners, the board and investors, including technical due diligence and IP strategy.
- Partner with biology, laboratory operations and commercial teams to prioritize the roadmap against scientific value and customer demand.

Objectives for the First 18 Months

1. CytoHub.AI modules deployed in paid use with pharmaceutical customers.
2. CytoRNA-FM adapted to CytoHub cardiac data and validated against defined, documented benchmarks.
3. Automated data flow from laboratory instruments to models and customer reports.
4. Integrated multimodal representation across imaging, contractility, electrophysiology and single-cell data.
5. Security and data-governance controls in production that meet pharmaceutical review requirements.
6. A high-performing AI and engineering team hired, onboarded and operating to documented standards.

Qualifications

Required

- PhD or MS in computer science, machine learning, computational biology or a related field, or equivalent experience.
- 12 or more years building and shipping ML or data products, including at least 6 years leading engineering or scientific teams and experience managing managers.
- Advanced proficiency in Python and PyTorch; demonstrated delivery of models from research into production.
- Hands-on experience with at least two of: single-cell or other omics data, biomedical image analysis, time-series or signal data, foundation or multimodal models.
- Production experience with AWS, distributed GPU training and inference, containerized services and MLOps tooling, including secure systems for sensitive or regulated data.
- Proven executive-level scope, including ownership of budgets, hiring and technical strategy.
- Exceptional written and verbal communication, with the ability to convey complex technical work to scientists, executives, customers and investors.

Preferred

- Experience in drug discovery or safety pharmacology, or with iPSC-derived or organoid models.
- Experience with single-cell foundation models (e.g., scGPT, Geneformer), high-content imaging, MEA or contractility data, or agentic LLM systems over scientific data.
- Familiarity with GxP or 21 CFR Part 11 data practices; patents or peer-reviewed publications in ML for biology; prior experience building and scaling a technical function at an early-stage company.

Compensation and Benefits

CytoHub offers competitive cash compensation, a significant equity position and comprehensive benefits, with details discussed during the interview process.

How to Apply

Submit a CV and a brief statement describing the most significant ML system you have designed and led to **hr@cytohub.com**, with the subject line "VP, Engineering & AI".

The process includes an introductory call, a technical deep dive, a system design session, leadership meetings and reference checks.

CytoHub Inc. is an equal opportunity employer and considers all qualified applicants without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, disability, veteran status or any other characteristic protected by federal, state or local law. Applicants who require a reasonable accommodation during the hiring process may contact hr@cytohub.com. Qualified applicants with arrest and conviction records will be considered in accordance with the California Fair Chance Act and the San Francisco Fair Chance Ordinance.