

HYFT Technology

AI Bio-Native Framework for Drug Discovery



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Welcome | Why AI Bio-Native Matters

AI is transforming drug discovery, yet models remain limited by:

- ✗ Homology-based methodologies (MSA-dependent models fail in zero-shot discovery scenarios)
- ✗ Fragmented multi-omics data silos preventing AI generalization
- ✗ Static AI embeddings without contextual updates

HYFT's Bio-native approach addresses these issues by integrating:

- ✓ Biological indexing (sequence, structure, function in a unified system)
- ✓ Contrastive learning to resolve discrepancies in AI-generated embeddings
- ✓ Multi-LLM stacking + HYFT as a realignment layer

Lens^{ai} platform powered by HYFT technology

A unified AI bio-native framework for drug discovery

HYFT's core innovation - biological indexing for AI

HYFT Framework Overview:

- ◇ HYFT acts as a biological RAG system, enabling AI-driven retrieval at scale.
- ◇ Multi-modal indexing integrates sequence, structure, function.
- ◇ LLM stacking + HYFT as a biological alignment layer resolves discrepancies across AI models.

Comparison with other methods:

HYFT vs. Structural AI - MSA-based approaches (AlphaFold)

HYFT vs. Functional AI - Protein, DNA, RNA LLMs (ProteinBERT)



25+ Billion biologic connections

Challenge #1 | Bio-native readiness

The Big Picture

HYFT Transforms AI from “Bio-Unaware” to “Bio-Native”

- ◇ AI models trained from the “bottom-up” on HYFT patterns, retrieving biologically meaningful context.
- ◇ Refines AI predictions, rooting them in biological validity over statistical inference.
- ◇ AI is no longer just a tool—it’s a bio-native intelligence system that integrates, refines, and contextualizes biological knowledge across omics layers.

HYFT is the Missing AI Layer for Bio-Native Readiness

Transforming biology into a AI-ready format, eliminating reliance on outdated frameworks.

AI becomes truly bio-native through biologically native tokenization, multi-modal learning, contrastive AI refinement and retrieval-augmented discovery.

LENS^{ai} powered by HYFTS
Advantage | Enables biologic understanding



Challenge #2 | Cross modal retrieval

The Big Picture

HYFT Enables True Cross-Modal AI Learning

- ◇ AI models trained on HYFT retrieve biological insights across all data types (sequence, structure, function, text).
- ◇ AI predictions are no longer isolated —HYFT connects and validates them across modalities for greater reliability.
- ◇ AI finally operates across multiple biological dimensions, delivering deeper functional insights.

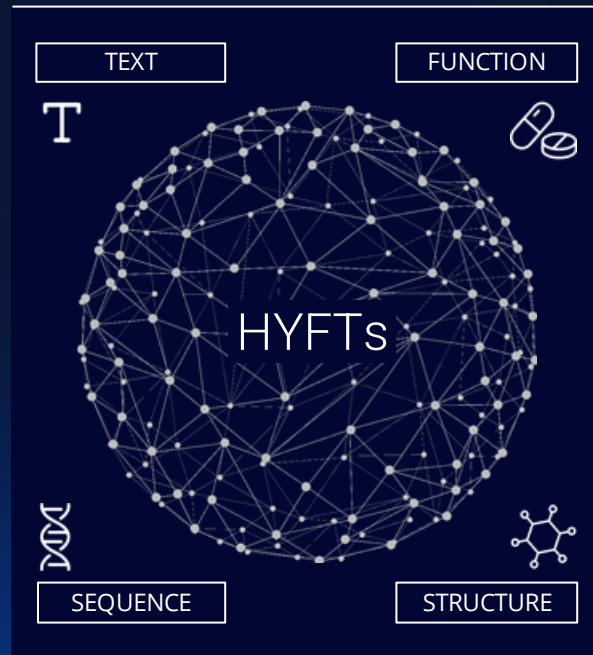
HYFT Unlocks the Full Scalability of AI in Biology

HYFT unifies AI models, merging their insights into a single biologically meaningful retrieval system.

With cross-modal AI-driven retrieval, multi-LLM alignment, and sequence-structure-function integration, HYFT enables AI to make sense of biology holistically.

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Advantage | Unifies sequence, structure, text and function.



Challenge #3 | Scalability in AI-Driven Biological Discovery

The Big Picture

HYFT is Making AI Scalable for Real-World Biological Discovery

- ◇ Removes computational bottlenecks by optimizing retrieval, indexing, and cloud-based inference.
- ◇ AI models no longer require constant retraining—they adapt dynamically with real-time biological updates.
- ◇ Scales AI-driven biological research beyond just sequence alignment—advancing into fully AI-native, multi-modal drug discovery.

HYFT Unlocks the Full Scalability of AI in Biology

HYFT solves the scalability problem by creating an AI-native biological retrieval layer, distributing compute efficiently, and optimizing AI workflows for biological discovery.

Instead of being limited by compute, storage, and retrieval bottlenecks, HYFT enables real-time, AI-augmented biological reasoning at massive scale.

LENS^{ai} powered by HYFTS
Advantage | Accelerates AI-powered discovery workflows



Challenge #4 | AI-Driven Knowledge Generalization for Biology

The Big Picture

HYFT Makes AI Smarter, More Adaptive, and Generalized for Biology

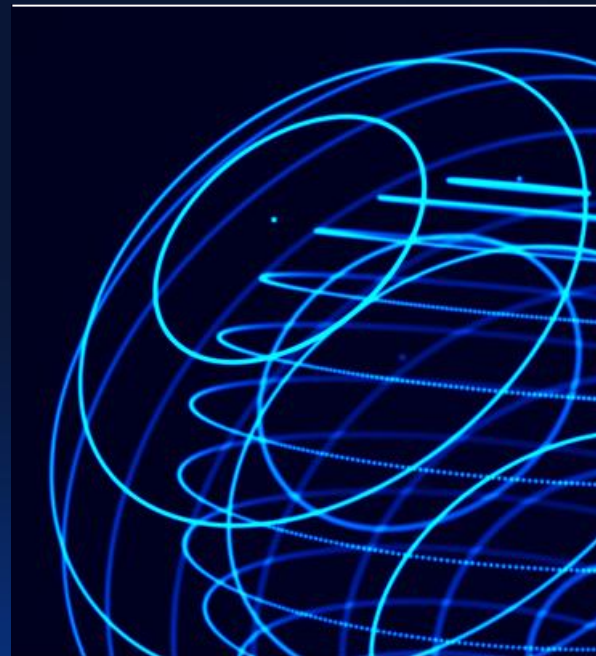
- ◇ AI models go beyond memorizing biology — they generate new biological knowledge.
- ◇ Allowing AI to transfer insights across species, molecular types, and disease contexts.
- ◇ AI evolves from static predictions to an intelligent biological inference system, expanding knowledge beyond pre-existing labels.

HYFT is the Missing AI Layer for Generalized Biological Intelligence

Going beyond simple knowledge retrieval—helping AI make sense of biology as a whole.

By combining biological retrieval, multi-LLM alignment, real-time updating, and hypothesis-driven AI learning, it drives the next generation of AI-driven biological reasoning.

LENS^{ai} powered by HYFTS
Advantage | Enables adaptive learning



BioStrand

Video Demo

Powering AI Bio-Native at Scale

The Compute Backbone Behind HYFT's AI-Driven Discovery

How HYFT Leverages NVIDIA & VULTR to Drive AI Bio-Native Biology



NVIDIA Accelerated Computing Platforms

- ✓ NVIDIA GPUs power HYFT's high-speed, large-scale retrieval & AI inference.
- ✓ NVIDIA TensorRT, CUDA, and DGX enable ultra-fast AI-driven inference and training.
- ✓ Scalable LLM inference: HYFT overlays multiple LLMs & structural AI models at once, requiring high-performance GPU compute.



Cloud-Native Scalability with VULTR

- ✓ VULTR's high-performance cloud enables low-latency, AI-powered biological retrieval.
- ✓ Real-time indexing and inference across multi-modal biological datasets (sequence, structure, function).
- ✓ Fully optimized for HYFT's contrastive AI-driven model refinement.



Bridging Biology & AI Through Compute

- ✓ NVIDIA Hopper and A100 GPUs allow HYFT to process billions of relationships across protein sequences, structures, and biological functions.
- ✓ VULTR's scalable cloud deployment ensures HYFT's AI-driven workflows remain cost-efficient & globally accessible.

THANK YOU



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Leverage NVIDIA-powered AI cloud
compute with VULTR

