Sophic Starlight: White Paper
A GenAI Game-Changer in Precision Medicine

Introduction

Developed in partnership with **Amazon Web Services** (AWS) and **Neo4j**, Sophic Starlight empowers healthcare professionals to unlock insights from complex genomic and clinical data—helping advance precision medicine with confidence.

The Need for Precision Medicine

With the growing complexity of genomics and personalized treatments, healthcare professionals face the challenge of consolidating and interpreting fragmented data from various sources. Traditional methods of clinical decision-making can fall short when it comes to leveraging the vast troves of genomic data and clinical trials. Starlight bridges this gap by integrating patient genomic test results with clinical data and leveraging human curated knowledge and AI-driven insights in an accessible and actionable format.

What is Sophic Starlight?

Sophic Starlight is an AI-powered platform designed to assist pathologists, oncologists, physicians, and researchers by surfacing critical knowledge that is often hidden or difficult to access.

Rather than telling healthcare professionals how to practice, Starlight makes valuable information easily available, enhancing decision-making and accelerating personalized care.

Starlight helps healthcare professionals:

- Consolidate and interpret patient genomic, pharmacogenomic, and clinical data
- Build a comprehensive, living model of each patient
- Identify clinical trials that are relevant to individual patients and provide key information allowing patients and healthcare professionals to select the best trial options for the patient
- Interact with trusted knowledge networks through a conversational AI interface
- Generate high-quality, editable consult reports to document tailored evidence supporting clinical decisions

STARLIGHT CAPABILITIES

Holistic Patient Model

At the core of Starlight is the **Holistic Patient Model**—an evolving, integrated view of key data about each patient required for different clinical decisions.

The model brings together data including:

- Genomic and pharmacogenomic test results
- Disease states and phenotypes
- Medications
- Unstructured data, including doctor's notes
- Other patient metadata (age, sex, co-morbidities, etc.)

This dynamic model evolves with the patient over time, ensuring healthcare providers always have the most up-to-date information to guide clinical decisions.

GenAI Evidence Engine

Starlight's **GenAI Evidence Engine** leverages Amazon Bedrock and Sophic's proprietary Knowledgebase to generate **draft consult narratives** for genomic and pharmacogenomic test results.

Healthcare professionals can:

- Quickly produce evidence-based reports
- Review, edit, and finalize genomic, drug, disease, and clinical trial content in each patient's Holistic Patient Model
- Accelerate the delivery of actionable insights to improve patient care

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Clinical Trials Navigator

The **Clinical Trials Navigator** intelligently matches patients to the most appropriate clinical trials, using advanced AI reasoning and **LLM (Large Language Model)** capabilities from Amazon Bedrock—integrated with knowledge stored in Neo4j's graph database.

How the Clinical Trial Navigator works:

- Starlight query engine leverages **data from the Holistic Patient Model**, including detailed genomic test results, patient metadata (age, sex, clinical notes) and other diagnostic data
- User defines **relevant clinical trials** by filtering on key patient-specific criteria (age, sex, diagnosed diseases, co-morbidities)
- Starlight **updates trial information** from clinicaltrials.gov and NCI trial databases.
- Starlight **assesses the overall match of each trial with the patient profile using genAI-driven ranking** (maximizing inclusion potential and minimizing exclusion factors)
- Starlight **evaluates the patient's match with each inclusion and exclusion criteria for each trial**
- Starlight **identifies missing patient data** needed to fully evaluate the trial (including the patient's genomic profile and prior therapy regimens)
- The resulting trial assessments are displayed in descending order of likelihood to match for easier clinical review

This process seamlessly integrates patient data with clinical trial databases, providing accurate trial matching with **Neo4j graph technology** and **advanced natural language processing tools**.

GenAI Intelligence

With **GenAI Intelligence**, healthcare professionals can interact with the Holistic Patient Model through an intuitive, natural language interface.

At any point while reviewing a patient's model, providers can "ask questions" via prompts and receive accurate, conversational answers—powered by **Amazon Bedrock Generative AI** and Neo4j graph technology.

The system surfaces trusted knowledge networks from:

- Genomic variants
- Disease states
- FDA-approved drug labels
- Clinical trial registries
- Other verified medical data

Key benefits:

- Rapid access to trusted information across disparate data sources
- No hallucinations—only validated content
- A simple, user-friendly interface that helps providers "see in the dark" and discover new insights that may impact care

Powered by AWS and Neo4j

Sophic Starlight combines the advanced capabilities of **Amazon Bedrock**, **Neo4j graph technology**, and **Sophic's proprietary knowledgebase and AI models**—delivering a uniquely powerful platform for advancing precision medicine.

Learn More

Interested in seeing how **Sophic Starlight** is transforming genomic test analysis? **Watch our on-demand webinar**—hosted by **CIO Online** and featuring experts from **AWS**, **Neo4j**, and **Sophic Alliance**—to explore how the groundbreaking Starlight platform is advancing precision medicine.

https://sophicalliance.com/products/starlight/

For more information or to discuss how Starlight can support your organization, contact:

Patrick Blake
📞 508-564-0386
✉️ pat@sophicalliance.com