

Barbara Hill – Engineering Lead

hill.barbara.a@gmail.com | (603)781-6935 | [linkedin.com/in/barbara-a-hill](https://www.linkedin.com/in/barbara-a-hill)

SUMMARY

Experienced engineering leader, deeply involved throughout the software stack and organization. Particularly focused on team leadership, process, and holistic decision-making. Looking for a role where I can nourish my passion for building and maintaining high-performing, happy, and collaborative teams.

EXPERIENCE

Broad Institute, Data Sciences Platform, Cambridge, MA

Senior Software Engineer, Software Engineer

April 2022 - July 2025

- **Project & Technical Leadership:**
 - **Led strategic infrastructure modernization and cost optimization**, migrating the Human Cell Atlas (HCA) ingest workflow from legacy to modern Dagster, a workflow orchestration tool.
 - **Led architectural planning** for a custom cloud-agnostic workflow tool (YAML, Kubernetes, Docker) to optimize team capacity and focus.
 - **Drove critical cross-functional collaborations**, guiding the HCA Managed Access data pilot through design, implementation, and validation, and managing stakeholder relationships, securing the first ingestion of controlled-access HCA data into the Terra Data Repository.
 - Provided **technical review** for Data Sciences Platform (DSP) projects and **mentored** DSP and institute colleagues and team members, including engineers and project managers.
 - Implemented iterative **agile processes** to determine goals and ensure measurable delivery.
 - **Chaired the Software Engineering at Broad professional affinity group**, re-establishing and leading the annual SoftEng@Broad retreat for over 100 software engineers, directing bi-weekly steering meetings, presenting at seminars, fostering a cross-institute culture of inclusion and shared knowledge, and serving as treasurer.
- **Product Development & Impact:**
 - **Achieved significant cost savings, reducing HCA and DSP storage spend by approximately 100TiB** through proactive cleanup and migration to autotclass storage, collaborating with FinOps.
 - **Enhanced data security and compliance**, resolving controlled access data security incidents and refactoring a legacy Python and Scala codebase for FISMA and FedRAMP compliance, enabling controlled data ingestion.
 - Ensured HCA ingest pipeline compliance, while supporting monthly production releases.
 - As **Tech Lead** for AnVIL Data Submission, streamlined the hand-off to the Data Use Oversight System (DUOS) team, identified bottlenecks, removed the AnVIL data access process from monolithic Terra releases, and automated ingestion tasks via Jupyter notebooks.
- **Software Development & Engineering:**
 - **Engineered robust and scalable solutions**, maintaining and improving HCA infrastructure and codebase, focusing on tech debt reduction, code hygiene, and security patching.
 - **Streamlined development and operational processes**, creating a Docker environment to improve Mac M1 compatibility and simplify onboarding.
 - **Provided essential technical support and platform stability**, taking ownership of a suite of ingest workflows.
 - Enabled **optimized ATAC-seq data indexing, achieving a 60% speed improvement** by suggesting the Single Cell Portal team integrate bedtools during a code review.

Broad Institute, Mesirov Lab, Cambridge, MA and San Diego, CA

Senior Test Engineer and Product Owner

August 2007 - April 2022

- **Project & Technical Leadership:**
 - **Directed the migration** of the GenePattern workflow engine server from on-premise VMs to Amazon AWS, **overseeing a team of 2+ engineers**.
 - Served as **Tech and Project Lead** for the GenePattern suite of modules (scientific methods & workflows written in Bash, C++, Java, MATLAB, Python, and R, wrapped in Docker images), **coordinating 3+ engineers, computational biologists, and external contributors**.
- **Software Quality Assurance & Testing:**
 - **Led comprehensive Software Quality Assurance (SQA)** for GenePattern and associated bioinformatics applications, driving quality and functionality through **over 250 module and pipeline releases** (e.g., GISTIC, IGV, GSEA, DESeq).
 - **Spearheaded Continuous Integration and automated testing** in Jenkins, optimizing resource utilization and

- balancing test frequency with compute costs.
- Conducted rigorous **scalability and regression testing** on AWS cloud deployments and new file system implementations, providing crucial data for strategic technical decisions.
- **Product Development & Impact:**
 - Served as **Tech Lead** for the GenePattern Reproducible Research add-in for Microsoft Word, **managing remote Microsoft contractors**. This initiative culminated in a publication in *Science* and the selection of GenePattern as the preferred analytic tool for BioLinux.
- **Software Development & Engineering:**
 - Transitioned focus to advanced software development and module engineering.
 - Wrapped and deployed critical GenePattern modules (e.g., HTSeq.Count, CellFie, Hisat2Aligner), **enhancing platform capabilities and streamlining scientific workflows**.
- **System Administration:**
 - Assumed **System Administrator** responsibilities for the GenePattern server (Java & AWS) and notebooks (Jupyter), ensuring secure and efficient hosting and resolving critical security-related issues.
- **User Support & Education:**
 - Managed **high-volume user support**, including help desk and forum design and administration, consistently resolving inquiries and **improving user satisfaction for a global user base**.
 - Developed and delivered GenePattern **workshops, presentations, and training materials across national and international venues**, educating hundreds of users, both in-person and remotely, on complex bioinformatics tools and programming concepts.

CA (formerly Computer Associates), Framingham, MA

QA Engineer

May 2006 - July 2007

- **Provided SQA leadership and mentorship, including the supervision of 3 remote Software Engineers located in Minsk, Belarus.**
- Lead the establishment of **comprehensive test plans, strategic test approaches, and detailed Statements of Work** for all new feature testing initiatives.
- **Directed and monitored regression and validation testing efforts** to ensure product quality.
- Configured and maintained **demo and test environments** for eHealth's representation at **CA WORLD**.

Concord Technology Group (formerly Aprisma), Portsmouth, NH

Senior Associate/Individual Contributor QA

September 2004 - May 2006

- **Developed and executed comprehensive test plans** for the Spectrum product.
- Authored **user guides and presentations** utilized for in-house training, customer education, and technical documentation.
- Provided direct support and assistance to customers, technical support teams, and sales engineers, both domestically and internationally.

University of New Hampshire, Interoperability Lab, Durham, NH

IP-Routing Development Team

November 2000 - September 2004

- **Tested** and validated **OSPF, VLAN, and VRRP** for **interoperability issues** and **conformance with IETF standards**.
- **Developed comprehensive test suites** for **IS-IS, OSPF NSSA Extension, OSPFv3, and VRRP**.
- Provided **training to new employees** on network testing methodologies.
- Delivered a **preliminary presentation to the IEEE** on **OSPF-RSTP convergence times**.

EDUCATION

Bachelor of Arts, Music Performance Study (Voice) with Minor in Philosophy, UNIVERSITY OF NEW HAMPSHIRE, Durham, NH

AWARDS & HONORS

20 Publications (as reported via Research Gate) <https://www.researchgate.net/profile/Barbara-Hill-6>

GRAMMY Award for Best Choral Performance, The Crossing – Gavin Bryars: The Fifth Century (2018)

SKILLS

YAML, Kubernetes, Docker, AWS, GCP, Python, MATLAB, C++, Java, JavaScript, HTML, CSS, Agile