

# Troy A. Brier, PhD

COMPUTATIONAL CHEMIST · BIOPHYSICIST

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## Quest Diagnostics Recruitment Team

QUEST DIANOSTICS  
500 PLAZA DRIVE  
SECAUCUS NJ, 07094

### Job Application for Senior Bioinformatics Engineer

To whom it may concern,

I am a physical chemist by training with a background in scientific computing, specializing on biological systems. Specifically, I have integrated principles from chemistry, physics, and statistics to investigate diverse phenomena within bacterial life, such as regulatory mechanisms for stress response and the interplay between the transcriptome and proteome. In my career, I have achieved proficiency in a wide array of computational tools to design and implement analytical pipelines within multiple computing environments (HPC, AWS, Docker, Conda) on various operating systems (Linux, MacOS, Windows) leveraging both custom and pre-built software with standard coding languages (Python, R, Bash, etc). Additionally, I have developed skills in designing, managing, and contributing to exploratory multi-year projects that require flexibility, self-assessment, reproducibility, and publication-level documentation. I have extensive experience working in highly collaborative environments, both domestically and internationally, and I am well practiced in presenting technical material to audiences of varying subject-matter expertise. On a personal note, I view science as a tool I can use to make a real difference in the world. I am driven by this and strive to find a company in which I can make that a reality.

My former experience has given me a deep appreciation for scientific innovation and the need for more efficient and accelerated methods to translate innovation from the laboratory into real-world impact. I am motivated by the Quest Diagnostics's mission to restore Earth to a healthier state with bioscience and genetics. I am particularly drawn to Quest Diagnostics's desire to restore extinct species. Having previously contributed to fundamental science, I appreciate the quest for knowledge, but even more so the challenging opportunity it brings, which will lead to the development of new methods and tools for the future. I am excited at the opportunity to join the Quest Diagnostics team and contribute to its vision with my computational skills.

As a computational chemist and biophysicist, I would bring a deep understanding of biological research complemented by hands-on multi-year experience in scientific computing across diverse computing environments. I have significant experience with Python and BASH, and am proficient in R as tools to solve complex scientific questions such as developing custom code for simulation and data analysis. Throughout my career I have worked with many data sets of varying types and sizes, and am confident in my capacity to adapt, manage, and utilize new data sets to address challenging questions, regardless of data complexity. My experience in the construction of whole-cell models highlights my ability to synergize multi-omics data for biological phenotype prediction. Also, relevant to the position is my previous experience with NGS sequencing data from varying methodologies (Illumina, PacBio, and ONT), where I integrated various bioinformatics software and algorithms to compare and predict complex relationships between the transcriptome and proteome. My AI/ML experience is currently foundational. I have applied pre-built AI/ML approaches such as AlphaFold2 to aid in discovery. While I have no appreciable experience in constructing AI/ML solutions, I am eager to learn more about how their development. In summary, I believe my problem-solving abilities, commitment to learning and integrating novel techniques across disciplines, and aptitude for collaboration make me an ideal candidate for the **Senior Bioinformatics Engineer** position at Quest Diagnostics. Thank you for considering my application. I would welcome the opportunity to discuss my qualifications further.

Sincerely,

**Troy A. Brier, PhD**