TRACE LAIL, MS

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BIOINFORMATICS SCIENTIST

Expert In RNA Sequencing • Nextflow • Pipeline Curation

Dedicated biotechnology specialist with 5 years of industry experience in advanced genetic research and process optimization. Also passionate to apply technical expertise in bioinformatics to contribute to wildlife conservation, driven by a deep commitment to the natural world. Enjoying collaboration with smart, talented teams for shared goals in meaningful work. Applying a robust skill set in computational genetics, data analysis, and scientific communication. Career progress defined by consistent track record in improving efficiency, delivering strategic insights, and solving complex scientific challenges through meticulous research and innovative problem-solving.

Seqera Platform | Python | Python OOP | Functional Enrichment | Differential Abundance

Data Visualization, Wrangling | AWS | Podman | Gene Ontology | nf-core | R

PROFESSIONAL EXPERIENCE

BridgeBio Gene Therapy, Raleigh, NC   **2021 - 2024**
Senior Associate Scientist ~ Computational Genetics   **May 2023 - Sept. 2024**
Key provider of computational genetics support to gene therapy affiliates
- Identified small molecule targets to increase AAV yields by developing custom plasmid GTF creation workflow using Python OOP, leveraging GitHub, AWS EC2
- Optimized production efficiency by identifying critical molecular pathways for small molecule intervention screening
  - Applied Nextflow nf-core/rnaseq and nf-core/differential abundance pipeline analyses of AAV9 transfection methods across Seqera platform and local environments
- Key contributor in effort to significantly reduce costs via Nextflow nf-core/rnaseq analysis, revealing cellular pathway for transfection reagent intervention to 2x AAV5 optimization
- Identified low target gene expression in AAV9-treated mouse brain tissue through comprehensive RNA sequencing and gene ontology
  - Used Jupyter Notebook, generating targeted recommendations for subsequent investigation
- With published datasets, validated target, providing strategic recommendations for follow-up through iPSC CRISPR KO screening before advocating to investment committee
- Engineered R Shiny dashboard, consolidating data from cell culture passaging, production bioreactors, analytical assays
  - Empowered project teams to accelerate AAV experimental design and optimize particle production with real-time, integrated data visualization for strategic decision-making
- Recognized for supporting senior leadership drug pipeline strategy, scientific market analysis, by compiling OMIM, Ensembl, GlobalData data into comprehensive indication for AAV therapy

BridgeBio Gene Therapy, Raleigh, NC (con't)   **2021 - 2024**

Senior Associate Scientist   **Jan. 2023 – Sept. 2024**

Responsible for experimental design, implementation of AAV gene therapy process optimization
- Key contributor in increasing scalable AAV5 ddPCR yields 4x, maintaining percent full target for downstream purification
- Praised by management for authoring scale agnostic CMC/TDO Upstream process description for AAV9 gene therapy product for technical transfer
- Acknowledged by leadership for providing critical data verification for AAV9 development report on experimental findings
- Enabled high-throughput screening, efficient DoE experimental design by setting up a new AMBR15 with experimental protocols
    o Accurately replicated 2L and 200L bioreactor conditions, creating custom triple transfection scripts, enabling systematic AAV5/9 yield optimization for production scales
- Supported compliance for FDA target guidelines by designing multiple AAV5/9 harvest lysate filtration method, reducing hcDNA, HCP, and residual plasmids

Scientific Associate II   **Apr. 2021 – Jan. 2023**

Focused on 2L scale up of AAV gene therapy products
- Expert resource for 2L bioreactors assisting leading to promotion to Senior Associate Scientist
- Reduced gene therapy costs 5x using endonuclease screening experimentation
- Achieved AAV9 product manufacturability and profitability within a year by identifying a transfection reagent to resolve inconsistent AAV9 capsid generation across production scales

Seqirus, Holly Springs, NC   **2019 – 2021**

Scientific Associate I   **Oct. 2019 – Mar. 2021**

Supporting influenza strain screening for bi-annual manufacturing campaign
- Contributed to 4 vaccine campaigns: Ambr15 screening, Sartorius 50L material generation
- Used DOE and JMP for AMBR liquid handler scale down model screening for 2,000L bioreactor
- Managed SOP and Good Documentation Practices for pre pandemic influenza campaign support

NC State University, Raleigh, NC   **2018 – 2019**

Lab Assistant ~ Volunteer   **Jan. 2018 – Jan. 2019**

Focused on laboratory experimentation and cell culturing
- Maintained, cultured Caco-2 and IPEC-j2 cells
- Conducted plasmid DNA extraction and purification
- Performed real-time PCR and gel electrophoresis

EDUCATION | CERTIFICATIONS

MS Physiology, North Carolina State University, Raleigh, NC

BS Biological Sciences, North Carolina State University, Raleigh, NC

Biotechnology Certificate, North Carolina State University, Raleigh, NC

R Data Scientist Certificate, Datacamp