Paarth Parekh

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PROFESSIONAL SUMMARY

Bioinformatics & Computational Modeler with over 4 years of experience in analyzing multi-omics data, drug mechanism-of-action studies, developing and optimizing data pipelines and computational modeling drug kinetics using ODEs. Adept at integrating single-cell and bulk transcriptomics, proteomics, and public clinical datasets to drive in-vitro model development, disease profiling, and target discovery. Proven leader in project management and client engagement, having spearheaded the development of a client-facing software tool for predicting hepatic metabolism using Liver Chip and Multi-Organ Chip platforms.

EXPERIENCE

Javelin Biotech | Woburn, MA

Bioinformatics & Computational Modeler II   Jun 21 – Present

- Created a novel transcriptomic metric to accurately compare in-vitro models to Clinical samples, to inform MPS model development, driving in-vitro-to-Clinical-translation.
- Performed multi-omics data analysis to support the development of Liver Chip and Multi-Organ Chip platforms.
- Developed and optimized pipelines for processing single-cell and bulk transcriptomics and proteomics data, enabling rapid and reproducible multi-omics analysis.
- Developed ODE-based models to simulate complex dynamic systems for drug data in Liver and Multi-Organ Chips, improving IVIVC and IVIVE outcomes.
- Conducted disease characterization studies leveraging public clinical data to help develop, validate and refine MPS chip models representing key disease phenotypes stages.
- Developed Genome-Scale Metabolic Models for metabolic diseases to study facilitate new targets discovery and understand different drug's mechanism of action.
- Developed comprehensive experimental plans, in collaborative efforts with lab scientists, for diverse research projects.
- Collaborated with external teams to develop a client-facing software product that analyzes Liver Chip Data using predictive algorithms for hepatic metabolism, streamlining data analysis and decision-making processes.
- Coordinated cross-functional teams of software engineers, data scientists, and laboratory researchers to align deliverables with project goals and timelines.
- Presented technical insights and project updates to executive stakeholders and clients, effectively translating complex computational findings into actionable business solutions.
- Co-designed and developed a PostgreSQL-based database to optimize drug data retrieval for data analysis.
- Supported grant-seeking efforts by conducting literature reviews, contributing to research proposals, and collaborating with different CROs to to optimize grant application processes, budgets, and timelines.

GlaxoSmithKline | Rockville, Maryland

Bioinformatics Scientist, Pre-Clinical Vaccines Lab   Jun 20 – Dec 20

- Analyzed NGS long-read data to study vaccine mechanisms of action in self-amplifying mRNA-based platforms.
- Identified distinct immune response profiles in NHPs vaccinated with different formulations, revealing key mechanisms of vaccine efficacy.
- Implemented data visualization techniques and ERCC spike-ins throughout the RNA-seq workflow, contributing to improved data quality and reliable gene expression profiling for downstream functional studies.

Georgia Institute of Technology | Atlanta, Georgia

Graduate Teaching Assistant, Experiment Design and Statistics   Jan 21 – May 21

- Trained students to use R and R studio to perform basic statistical analysis.
- Organized class presentations, office hours and participated in grading of assignments for a class of 130 students.

Graduate Research Assistant, Storici Lab   Aug 19 – May 20

- Examined the ribonucleotide incorporated in the DNA of the Saccharomyces cerevisiae.
- Developed an ensemble model, to predict the firing time of autonomously replicating sites (ARS) assisting in understanding the process of DNA replication.

TECHNICAL SKILLS

- **Programming & Tools**: Python, R, Bash, SQL, AWS, Git, Docker, NextFlow.
- **Data Analysis & Modeling**: Multi-omics integration, RNA-seq, proteomics, systems biology, ODE-based PK/PD modeling, GEMs, machine learning frameworks, genome assembly, gene prediction, Ribo-seq, ChIP-seq, variant calling, GSEA
- **Web & Software Development**: Dash, R-Shiny, HTML5, CSS, React.js, PostgreSQL
- **Project Management**: Asana, JIRA, Scrum, stakeholder communication
- **Operating Systems**: Linux, Unix, Windows

EDUCATION
Georgia Institute of Technology, Atlanta, GA
M.S. in Bioinformatics (GPA: 4.0/4.0)
University of Mumbai, Mumbai, India
B.E. in Biomedical Engineering

SELECTED PUBLICATIONS

- Sherfey, J, Rajan, S. A. P., Nichols, L., **Parekh, P**., ... Cirit, M. A novel multi-organ tissue chip for Clinical pharmacokinetics applications. * (In-works)
- **Parekh P**, Sherfey J, Alaybeyoglu B, Cirit M. Pathway-Based Similarity Measurement to Quantify Transcriptomics Similarity Between Human Tissues and Preclinical Models. Clin Pharmacol Ther. October 8, 2024.
- Ohri S, **Parekh P**, Nichols L, Rajan SAP, Cirit M. Utilization of a Human Liver Tissue Chip for Drug-Metabolizing Enzyme Induction Studies of Perpetrator and Victim Drugs. Drug Metab Dispos. September 30, 2024.
- Rajan, S. A. P., Sherfey, J., Ohri, S., Nichols, L., **Parekh, P.**, ... Cirit, M. A novel Milli-fluidic liver tissue chip with continuous recirculation for predictive pharmacokinetics applications AAPS J. 2023;25(6):102. Oct 27, 2023.