Alexander Pisera

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Education:

University of California, Irvine, Irvine, CA *September 2020-Present*
PhD in Biomedical Engineering

Johns Hopkins University, Baltimore MD *May 2017*
Bachelors of Science in Chemical and Biomolecular Engineering with concentration in Bioengineering
Graduated with Honors

Skills:

Cloning, Assay Development, CRISPR Screening, Western Blot, qPCR, Flow Cytometry, ELISA, Bacterial Culture, Primary Cell Culture, Cell Line Culture, Next Gen Sequencing, DNA Sequencing, Protein Libraries, Directed Evolution, Gene Editing, siRNA, Virus Production, Electroporation, Transient Transfections, Gel Electrophoresis, MACS, Intermediate MATLAB, Data Analysis, ELN Software, Graphpad, Basic R

Experience:

MeiraGTX, Research Associate III *New York, NY, November 2019-August 2020*

- Designed and set up pooled lentiviral screen containing >30k sequences for the discovery of new promoters
- Developed protocols for the cloning of plasmid libraries, generating lentiviral libraries, and conducting screens in mammalian cells
- Optimized genomic DNA extraction protocol, and preparation of amplicons for NGS
- Assisted in the setup of a new research group as the first hire, including purchasing equipment, consumables, and an ELN

Quentis Therapeutics, Research Associate *New York, NY, August 2018-October 2019*

- Independently designed experiments to validate a novel tumor microenvironment related target utilizing primary human immune cells and techniques including qPCR, ELISA, and flow cytometry
- Designed and carried out siRNA knockdown in primary cells for validation of a new immuno-oncology drug target, leading to the initiation of a new drug development program
- Discovered role of target gene in the upregulation of additional cancer progression genes in conditions present in tumors
- Doubled throughput of routine in house screening assay, and decreased variability of assay with numerous improvements

Intellia Therapeutics Research Associate (eXtellia Team) *Cambridge MA, June 2017-August 2018*

- Crucial early member of a team in the development of a pipeline to discover new CRISPR targets for adoptive T-Cell therapies
- Optimized construction of pooled CRISPR screening libraries, including NGS primer design, reducing UMI swapping and increasing library transformation efficiency
- Devised troubleshooting experiments for low dropout of essential genes in CRISPR screen, and improved dropout from two-fold to over one hundred-fold
- Screened hundreds of individual CRISPR sgRNAs using functional assays and next gen sequencing data
- Developed lentivirus production protocol to generate and concentrate large quantities of high titer virus, up to $5*10^9$ TU/mL
- Extracted gDNA from in-vivo samples and prepared amplicons for MiSeq NGS
- Devised and implemented cloud-based reagent tracking system, dramatically reducing loss and increasing efficiency
- Founded and ran book club with fifteen members, organizing meetings and leading discussions

Ostermeier Laboratory, Student Researcher *Johns Hopkins University, August 2016-May 2017*

- Collaborated with post doc to initiate project constructing an allosterically inducible protein fusion of dCas9, utilizing directed evolution to develop an externally controllable gene repression system
- Created protein insertion library with over one million variants by varying insertion site, linker length, and insertion orientation
- Used inverse-PCR to construct protein library in an unbiased and complete manner and increased diversity of protein landscape using circular permutation on insertion protein
- Confirmed coverage of library with next-gen sequencing, and carried out selection on library utilizing directed evolution

Editas Medicine, Research Intern *Cambridge MA, May-August 2016*

- Developed and carried out strategy for confirming western blot antibodies to differentiate wild type and mutated proteins, to be used for testing efficacy of CRISPR therapy for retinal blindness, the world's first CRISPR therapy in clinical trials
- Independently researched strategies to improve efficiency of product testing and presented idea to supervisor, utilizing a retinoblastoma as a model for a terminally differentiated and difficult cell type
- Demonstrated expression of gene of interest in model cell type, and developed transfection protocol to enable gene editing

Synthetic Yeast Project, Student Researcher *Johns Hopkins University, February-May 2016*

- Practiced and gained experience in yeast culture in the context of creating a fully synthetic organism.
- Assembled multiple kilobase pieces of DNA using template-less PCR for use in a synthetic chromosome
- Researched and chose conditions for directed evolution of library of recombined yeast strains
- Performed qualitative judgements on growth conditions, and used them to inform rest of experiment
- Identified several interesting strains of recombined synthetic yeast and contributed to a repository of data in a multi-national research project

Wirtz Laboratory, Researcher *Johns Hopkins University, June 2015-August 2016*

- Developed independent proposal focused on integrating CRISPR method as a more efficient method of investigating role of genes and successfully pitched idea to professor, leading to initiation of project
- Designed and successfully integrated CRISPR workflow for the lab, ultimately teaching several PhD students and undergraduates the process of knocking out a gene
- Wrote a MATLAB program to convert short DNA sequences into correct form for protocol, decreasing the time to convert sequences from 30 minutes to less than a minute
- Successfully knocked out HIF expression, quantifying results using western blot

Protein Engineering Lab, Student Researcher *Johns Hopkins University, September-December 2015*

- Carried out point mutagenesis in an enzyme to research the effects on structure, stability, and activity as part of a project to characterize structure-function relationship of an enzyme
- Used transformation and induction to obtain and subsequently isolate enzyme using dialysis and SDS-Page
- Used Native-Page to assess purity and folded state of protein
- Assessed stability of mutated enzyme using circular dichromism and tryptophan fluorescence coupled with acid and chemical titrations, and assessed activity using a blue plate assay

Modular Genetics, NSF Funded Research Internship *Woburn MA, June-September 2014*

- Generated vectors for the purpose of increasing production of an industrial surfactant by bacteria
- Carried out bioreactor scale production of transformed bacteria
- Used separations processes such as acid-base precipitation, crystallization, centrifugation, and size exclusion to purify product

Betenbaugh Laboratory, Research Assistant *Johns Hopkins University, November 2013-May 2014*

- Conducted research on optimal growth conditions on various algae strains under different stressors
- Constructed liquid and solid growth media for live algae samples, and gained expertise in algal cell culture
- Used flow cytometry to carry out regular cell counts and track growth trends.
- Researched and presented on high value products to be extracted from algae in order to help identify project direction