Mohamad Nayal

Senior Bioimager

Profile

Bioimaging scientist with extensive microscopy experience and image analysis with diverse technical skills looking for opportunity to integrate data science skills.

Education

Masters of Applied Data Science, Syracuse University, Online - Syracuse, NY

December 2020 — June 2022

Bachelor of Science in Biological Sciences, Drexel University, Philadelphia, PA

September 2011 — July 2015

Concentration of Organismal Biology Physiology

Cumulative GPA: 3.66

Employment History

Senior Bioimager Histologist Spark Therapeutics, Philadelphia, PA

November 2021 — Present

- Create slide scanning automated image acquisition pipelines
- Conduct confocal image acquisition for all platform studies
- Conduct 2D and 3D image analysis by leveraging software packages such as HALO and Imaris
- Help investigate and onboard new imaging technologies and image analysis software
- Manage cloud storage of large imaging files and ensure access to images throughout the organization with the help of Cloud Data Engineers
- Create automated image segmentation algorithms of acquired images
- Streamline automated batch processing of image analysis

Contractor - Intermediate Cell Biologist at Janssen JnJ, Spring House, PA

June 2021 — November 2021

- Conduct high throughput compound screening on mammalian cells
- Analyze in vitro drug toxicity data

Supv Research Scientist at UPMC, Pittsburgh, PA

January 2020 — June 2021

- Designed quintuple labeled immunohistochemisty assay to look at neuronal spine degradation in schizophrenia patients in large scale study
- Optimized confocal microscopy imaging protocol
- Adapted and implemented algorithms for image processing and basic analysis in MATLAB
- Aided in the acquisition and processing of human post mortem brains in the Pittsburgh Brain Bank
- Mentored new technicians in proper lab technique and assay develoment

Laboratory Manager at University of Pittsburgh, Pittsburgh, PA

Details

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Highlighted Skills

R

Python

SQL

Image Analysis

Confocal Microscopy

Immunohistochemistry

RNAscope

January 2019 — January 2020

- After leaving this job created a database for maintaining mouse colony in MS SQL Server
- Establish mouse colony by submitting IACUC protocols, amending IBC protocols, ordering animals monitoring animal health, setup breeding, weaning, and culling animals
- Performed lentiviral gene knockouts in mammalian cells
- Characterize cell lines for use in aging study assays through western blot and RT-PCR
- Differentiated neurons from neuroblasts
- Cultured HiPSC
- Placed all lab orders and stayed within quarterly budget
- Mentored undergraduate and high school students

Research Specialist at Gene Therapy Program at University of Pennsylvania , Philadelphia, PA

July 2015 — December 2018

- Analyzed slide images for levels of tissue expression levels and relative area of expression
- Presented findings to teams Neuologists, Pathologists, and Core Directors
- Acted as a liaison between Pathology core and Quality Assurance Group
- Established protocols for special stains and performed duties under GLP / GxP conditions
- Acquire quality images through Widefield and Confocal microscopy for analysis and morphometry
- Performed Specialty Stains such RNA in-Situ, DNA in Situ
- Performed variety of histological techniques including tissue harvesting, embedding, and sectioning
- Stained tissues using immunohistochemistry, immunofluorescence, X-Gal, and H&E methods
- Performed rodent, dog, cat, and non-human primate necropsies
- Received STAR "Special Thanks and Recognition" Award from Orphan Disease Center

Student Researcher at GlaxoSmithKline, Upper Merion, PA

April 2018 — August 2014

- Analyzed cell images for drug efficacy
- Analyzed statistics and created presentations with Graph-pad Prism
- Maintained records of all experiments i electronic notebook
- Prepared and maintain mammalian cell culture for drug screening
- Treated human cells with drug compounds to test for efficacy and toxicity
- Performed Immunohistochemistry staining and enzyme linked immune-staining assays on mammalian cells
- Pulverized and homogenized tissue for RNA and miRNA extraction and purification
- Perform quantitative PCR for validation of drug screening efficacy

Research Assistant at Drexel University , Philadelphia, PA

October 2011 — April 2014

- Prepared immunohistochemistry staining to identify localization of neuronal proteins
- Performed whole body lysates of Drosophila and run western blots to quantify protein expression levels
- Designed and present research proposal and research poster for STAR program

- Prepared and maintain mendelian genetic crosses of transgenic flies
- Ran behavioral assays on adult and larval Drosophila melanogaster
- Dissected larvae for neuromuscular junction imaging

Skills

Tissue Work

- Immunohistochemistry, RNA In-Situ / RNAscope, Necropsy, Tissue harvesting, Embedding, Sectioning, X-Gal, Alcian Blue, Tissue pulverization, Homogenization, H&E, Confocal and Widefield Microscopy, Laser Capture MicroDissection

Image Analysis

- Confocal microscopist with experience in Halo Indica Labs, Slidebook - 3i, Imaris, Apperio Image Scope, Harmony – Perkins Elmer, ImageJ, Fiji

Computer languages

- Proficient in SQL and R. Fundamental knowledge of Python and Matlab.

Molecular Work

- Western Blot, SDS-Page, ELISA, PCR, RT-PCR, qPCR, DNA and RNA isolation, RNA purification, miRNA extraction, cDNA synthesis

Cell Work

- Human cell culture, mouse primary cell culture, HiPSC
- Chemical compound toxicity screening
- Chemical compound efficacy screening

Publications

Hinderer C, Katz N, Louboutin JP, Bell P, Tolar J, Orchard PJ, Lund TC, **Nayal M**, Weng L, Mesaros C, de Souza CFM, Dalla Corte A, Giugliani R, Wilson JM. Human Molecular Genetics. October 2017. Abnormal polyamine metabolism is unique to the neuropathic forms of MPS: potential for biomarker development and insight into pathogenesis.

Dr. Peter Bell, Dr. Lili Wang, Dr. Shu-Jen Chen, Ms. Hongwei Yu, Ms. Yanqing Zhu, Mr. **Mohamad Nayal**, Ms. Zhenning He, Mr. John White, Ms. Deborah Lebel-Hagan, and Dr. James M. Wilson. Human Gene Therapy Methods. November 2016, ahead of print. Effects of self-complementarity, codon optimization, transgene, and dose on liver transduction with AAV8

Mr. Christian Hinderer, Mr. Nathan Katz, Dr. Jean-Pierre Louboutin, Dr. Peter Bell, Ms. Hongwei Yu, Mr. **Mohamad Nayal**, Dr. Karen F Kozarsky, Dr. W Timothy O'Brien, Dr. Tamara Goode, and Dr. James M. Wilson. Human Gene Therapy. August 2016, ahead of print.. Delivery of an adeno-associated virus vector into CSF attenuates central nervous system disease in mucopolysaccharidosis type II mice

Mitchell D'Rozario, Ting Zhang, Edward A. Waddell, Yonggang Zhang, Cem Sahin, Michal Sharoni, Tina Hu, **Mohamad Nayal**, Kaveesh Kutty, Faith Liebl, Wenhui Hucorrespondenceemail, Daniel R. Marenda. Cell Volume 15, Issue 2, p386–397, 12 April 2016. Type I bHLH Proteins Daughterless and Tcf4 Restrict Neurite Branching and Synapse Formation by Repressing Neurexin in Postmitotic Neurons

Pu Qin,Pelin Arabacilar, Roberta Bernard, Weike Bao,Alan Olzinski,Yuanjun Guo, Hind Lal,Stephen Eisennagel, Michael Platchek, Wensheng Xie, Julius del Rosario, **Mohamad Nayal**, Quinn Lu, Theresa Roethke, Christine

Schnackenberg, Fe Wright, and Robert Willette. August 9, 2016. Journal of the American HeartAssociation. Activation of the Amino Acid Response Pathway Blunts the Effects of Cardiac Stress.