

Misagh Naderi

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Education



Louisiana State University; Baton Rouge, USA

PhD, Biochemistry May 2018
Master of Science, Virology May 2018
Master of Science, Chemical Engineering May 2011

Sharif University of Technology; Tehran, Iran

Bachelor of Science, Chemical Engineering May 2008

Experience

Academic



Graduate Research Assistant, Biochemistry 2013-Present
Graduate Research Assistant, Virology 2010-2013
Teaching Assistant, Biological Sciences Spring 2015
Teaching Assistant, Chemical Engineering 2009-2010
American Society of Cell Biology Ambassador 2017

Leadership

Undergraduate research mentor 2016-2017
President of the board, Lake Plaza Condominiums homeowner association Nov 2017-Present
Student vice-president, Phi Kappa Phi Honor Society, LSU chapter 2013-2014
LSU representative, International Super Computing SC-13 exhibition 2013

Community Service



Science fair mentor, Upward Bound I3 program Fall & Spring 2011
Volunteer Judge at Mentorship Academy Science fair Fall & Spring 2011
Panelist speaker at student forum on World Peace Day October 2010
Peace ambassador, Interfaith Federation of Greater Baton Rouge May - September 2013
Founder & Teacher, "Meditation at LSU" 2011-Present
Reviewer "Journal of Infection in Developing Countries" and "Current Drug Targets" 2016-Present
Volunteer staff, Biophysical Society 61st Annual Meeting, New Orleans 2017
American Society of Cell Biology ambassador 2017-Present

Skills



Computational: Proficient in High Performance Computing, Python, R, Perl and bash.

Wet-lab: Design and execute *in vivo* and *in vitro* experimental protocols. Cell culture, PCR, Flow Cytometry & cell imaging.

Languages: Fluent in English and Farsi. intermediate in Arabic. Basic in French.

Research projects

Computational biochemistry

PhD thesis "Data driven approach to study bio-molecular interactions":



- Repurposed drugs to treat rare disease using large scale modeling of protein and known drugs.
- Developed two software tools for cheminformatics and *in silico* drug design.
- Modeled proteins in Viruses in collaboration with the LSU School of Veterinary Medicine.
- Lead a project in anti-viral drug discovery. Generated the initial idea, interview interested undergraduate students, planned the research, executed the plan, assisted the undergraduate students in presenting their research in local and national conferences.

Molecular Virology



- Tested synergistic application of chemotherapy and oncolytic virotherapy combination *in vivo* using cells and animal models for prostate and breast cancer.
- Implemented statistical analysis of the experimental data using SAS and GraphPad Prism package.

Collaborative

Worked with 13 scientists from 4 different disciplines Biochemistry, Computer Science, Virology and Evolutionary Biology on:



- Sequencing a new herpes virus strain
- Investigating novel mechanisms in HSV-1 entry into host cells
- Evolutionary analysis and structure prediction of HSV-1 glycosylation.

Honors and awards



- Graduate student travel award, Office of Graduate School, Louisiana State University, August 2017
- Selected participant to "Managing Sciences in Biotechnology" MBA course, Keck graduate institute & American Society of Cell Biology, Claremont, Ca, July 2017
- C.R. Komma Memorial Outstanding Graduate Student Award, Biological Sciences, Louisiana State University, May 2017
- McDaniel travel award, Biological Sciences, Louisiana State University, May 2017
- 3rd place oral presentation, Annual Biograd Symposium, Louisiana State University, April 2017
- 3rd place poster award: "DNA Packaging motor protein models in Herpes Viruses" Barry Dellinger Symposium, Louisiana State University, March 2017
- Tony B. Academic Travel Award, SLAS 2017 conference, Washington, D.C.
- "3 Minute Thesis" competition finalist, Louisiana State University, November 2016
- Finalist, Tiger Twelve 2017 award
- 2nd place award: Annual Symposium, Department of Pathobiological Sciences, LSU, May 2012
- 3rd place award: Phi Zeta Research Emphasis Day, Basic science research poster presentation at LSU, September 2012
- Phi Kappa Phi membership awarded 2012

Successful Grant Proposals



- Received 3,000,000 Service Units computing resources, Queen Bee Super Computer, LSU Center for Computation & Technology (CCT), 2014
- Received 1,500,000 Service Units computing resources, Super Computer Mike-II, LSU CCT, 2015

Publications



1. Pu L, **Naderi M**, Liu T, Wu HC, Mukhopadhyay S, Brylinski M. **Submitted**. eToxPred: A machine learning-based approach to estimate the toxicity of drug candidates.
2. **Naderi M**, Govindaraj R, Lemoine J, Brylinski M. **Submitted**. Large-scale computational drug repositioning to find treatments for rare diseases
3. **Naderi M**, Rider P, Coghil L, Brown J, Brylinski M, Kousoulas KG. **Submitted**. Phylogenetics and structural modeling of herpes simplex virus glycoprotein K (gK) identify functionally important domains and residues critical for alphaherpesvirus pathogenesis
4. Brylinski M, **Naderi M**, Govindaraj R, Lemoine J. **Submitted**. eRepoORP: Exploring the opportunity space to combat orphan diseases with existing drugs.
5. Rider P, **Naderi M**, Brylinski M, Kousoulas KG. **In Press**. Conserved Cysteines and N-glycosylation Sites among all Alphaherpesviruses Regulate Membrane Fusion in Herpes Simplex Virus Type-1 Infection. J Virol.
6. **Naderi M**, Liu T, Alvin C, Mukhopadhyay S, Brylinski M. **2017**. Break down in order to build up: Decomposing small molecules for fragment-based drug design with eMolFrag. J Chem Inf Model. 57(4):627-631.
7. Chouljenko D, Jambunathan N, Chouljenko VN, **Naderi M**, Brylinski M, Kousoulas KG. **2016**. Herpes Simplex Virus Type 1 UL37 protein tyrosine residues conserved among all alphaherpesviruses are required for interactions with glycoprotein K (gK), cytoplasmic virion envelopment, and infectious virus production. J Virol. 90(22):10351-10361.
8. **Naderi M**, Alvin C, Ding Y, Mukhopadhyay S, Brylinski M. **2016**. A graph-based approach to construct target-focused libraries for virtual screening. J Cheminform. 8:14.
9. Jambunathan N, Charles AS, Subramanian R, Saied AA, **Naderi M**, Rider P, Brylinski M, Chouljenko VN, Kousoulas KG. **2016**. Deletion of a predicted β -sheet domain within the amino terminus of herpes simplex virus glycoprotein K conserved among alphaherpesviruses prevents virus entry into neuronal axons. J Virol. 90(5):2230-9.
10. Chowdhury S, Chouljenko VN, **Naderi M**, Kousoulas KG. **2013**. The amino terminus of herpes simplex virus type-1 (HSV-1) glycoprotein K (gK) is required for virion entry via the paired immunoglobulin-like type-2 receptor alpha (PILR α). Virol J. 87(6):3305-13.
11. Chowdhury S, **Naderi M**, Chouljenko VN, Walker JD, Kousoulas KG. **2012**. Amino acid differences in glycoproteins B (gB), C (gC), H (gH) and L (gL) are associated with enhanced herpes simplex virus type-1 (McKrae) entry via the paired immunoglobulin-like type-2 receptor α . Virol J. 9:112.
12. Chowdhury S, **Naderi M**, Chouljenko VN, Kousoulas KG. **2012**. Nucleotide sequence of herpes simplex virus type-1 (HSV-1) McKrae glycoproteins involved in virus entry and virus-induced cell fusion - gB, gC, gD, gH, gL, gK and UL20. GenBank.

Presentations



1. "Drug discovery by Playing LEGO and Jigsaw Puzzle: Data Driven Approach to Study Bimolecular Interactions" Oral Presentation at Lunch and Science, LSU school of Vet. Med., **September 2017**
2. "Cheminformatics: Playing LEGO with chemical compounds for drug discovery" Oral Presentation at LSU Annual Biograd Symposium, **April 2017**.
3. "A new pipeline for molecular fragmentation and construction for de novo drug design and targeted virtual screening" Poster Presentation at Barry Dellinger Symposium, Louisiana State University, **March 2017**
4. "DNA Packaging motor protein models in Herpes Viruses" Poster Presentation at Barry Dellinger Symposium, Louisiana State University, **March 2017**
5. "A new pipeline for molecular fragmentation and construction for de novo drug design and targeted virtual screening" Poster Presentation at SLAS2017, **February 2017**

6. "Targeting Virus DNA-packaging motor" Poster presentation at The 4th Annual LA Conference on Computational Biology & Bioinformatics, **February 2016**
7. "A graph-based approach to targeted drug discovery" Poster presentation at The 4th Annual LA Conference on Computational Biology & Bioinformatics, **April 2015**
8. "Synthetic Libraries of Drug-Target Complexes for Structure-Based Drug Design", Poster presentation at the High Performance Computing annual symposium at Louisiana State University Center of Computation and Technology, **November 2014**
9. "Synthetic Libraries of Drug-Target Complexes for Structure-Based Drug Design", Poster presentation at the annual Biological Sciences graduate research Symposium at Louisiana State university, **November 2013**
10. "Paclitaxel and Oncolytic Herpes Simplex Virus Type-1 Synergistic Treatment of Breast and Prostate Cancer Cells." Poster presentation at Phi Zeta research emphasis day, School of Veterinary Medicine, LSU, **September 25th, 2012** (Third Place)
11. "Paclitaxel Enhances Oncolytic Herpes Simplex Virus Type-1 Destruction of Breast Cancer Cells." Oral presentation, Department of Pathobiological Sciences 8th Annual Graduate Student Symposium, **May 2012** (Second Place)
12. "Oncolytic Herpes and Taxol Co-Therapy: The in vitro effects of Taxol on Oncolytic Herpes Virus OSVP.", **Misagh Naderi** , Jason D. Walker, Sona Chowdhury and Konstantin G. Kousoulas. Poster Presentation at Phi Zeta research emphasis day, by Tau chapter of Phi Zeta society, School of Veterinary Medicine, LSU, **September 2011**
13. "Effect of Taxanes on Herpes Simplex Type-1 Infectious Virus Production." Oral presentation, Department of Pathobiological Sciences 7th Annual Graduate Student Symposium, **May 2011**