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. **Naderi M,** Brylinski M. **Submitted**. eModel-BDB: A database of comparative structure models of drug-target interactions from the Binding Database.

2. 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.

3. **Naderi M,** Lemoine JM, Govindaraj RG, Kana OZ, Feinstein WP, Brylinski M. **Submitted**. Binding site matching in rational drug design: Algorithms and applications.

4. **Naderi M,** Rider P, Coghill 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.

5. **Naderi M,** Govindaraj RG, Singha M, Lemoine J, Brylinski M. **In Press**. Large-scale computational drug repositioning to find treatments for rare diseases. NPJ Syst Biol Appl.

6. Brylinski M, **Naderi M,** Govindaraj RG, Lemoine J. **In Press**. eRepo-ORP: Exploring the opportunity space to combat orphan diseases with existing drugs. **J Mol Biol**.

7. Rider P, **Naderi M,** Bergeron S, Chouljenko VN, Brylinski M, Kousoulas KG. **2017**. Cysteines and N-glycosylation sites conserved among all alphaherpesviruses regulate membrane fusion in herpes simplex virus 1 infection. **J Virol.** 91(21)

8. **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.

9. 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.

10. **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.

11. 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.

12. 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 (PILRα). **Virol J.** 87(6):3305-13.

13. 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.

14. 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. "Integration of Pocket-Matching and Virtual Screening for Drug Repositioning" Poster Presentation, Biophysical Society Annual Meeting, San Francisco, CA , **February 2018**
2. "*e*Model-BDB: A Database of Comparative Structure Models of Drug-Target Interactions" Poster Presentation, SCALA meeting, Louisiana State University, **February 2018**
3. "Targeting Virus DNA-packaging motor"Poster Presentation, SCALA meeting, Louisiana State University, **February 2018**
4. "Structure-Based Drug-Binding Pocket Matching Computational Drug Repositioning to Treat Rare Diseases" Poster Presentation, SCALA meeting, Louisiana State University, **February 2018**
5. "Decomposing Small Molecules for Fragment-Based Drug Design with *e*MolFrag" Poster Presentation, SCALA meeting, Louisiana State University, **February 2018**
6. "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**
7. "Cheminformatics: Playing LEGO with chemical compounds for drug discovery" Oral Presentation at LSU Annual Biograd Symposium, **April 2017**.
8. "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**
9. "DNA Packaging motor protein models in Herpes Viruses" Poster Presentation at Barry Dellinger Symposium, Louisiana State University, **March 2017**
10. "A new pipeline for molecular fragmentation and construction for de novo drug design and targeted virtual screening" Poster Presentation at SLAS2017, **February 2017**
11. "Targeting Virus DNA-packaging motor" Poster presentation at The 4th Annual LA Conference on Computational Biology & Bioinformatics, **February 2016**
12. "A graph-based approach to targeted drug discovery" Poster presentation at The 4th Annual LA Conference on Computational Biology & Bioinformatics, **April 2015**
13. "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**
14. "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**
15. "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)
16. "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)
17. "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**
18. "Effect of Taxanes on Herpes Simplex Type-1 Infectious Virus Production." Oral presentation, Department of Pathobiological Sciences 7th Annual Graduate Student Symposium, **May 2011**