**Jagannath Silwal**

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Lansing, MI 48840

**EDUCATION**

**Michigan State University** East Lansing, MI

* *PhD, Biological Chemistry* Dec 2018

***Thesis:*** *Molecular Basis of Complement Factor-H recruitment by the Lyme Disease Pathogen Borrelia Burgdorferi*

**Kent State University** Kent, OH

* BS, Biotechnology, Chemistry (Minor) 2012

**RESEARCH EXPERIENCE**

**Postdoctoral Fellow** East Lansing, MI

*Biochemistry and Molecular Biology, Michigan State University* Dec 2018-Present

* Expression, purification and characterization (structural and biophysical) of transcription factors involved in anthocyanin biosynthesis
* Screening and characterizing protein-protein, protein-small molecules and protein DNA interactions involved in regulation of MYB-bHLH transcription factor

**Graduate Research** East Lansing, MI

*Biochemistry and Molecular Biology, Michigan State University* Aug 2013–Dec 2018

* Carried out extensive mutagenesis and thermodynamics studies using ITC to characterize interaction between human and mouse complement factor-H (FH) proteins with *B.burgdorferi* surface proteins. This led to identification of a unique protein-protein interaction involved in pathogenesis of Lyme disease, further improving understanding of molecular basis of Lyme disease pathogenesis
* Engineered, overexpressed, and purified libraries of all truncated complement control modules of human and mouse complement factor-H proteins
* Established robust protocol to successfully increase the solubility and expression of the active form of FH proteins. Each module of this protein contains two disulfide bonds, adding additional challenges

**Research Intern, Molecular Bacteriology** Kalamazoo, MI

*Zoetis. Inc (VMRD, Global Biologics Research)* May 2018-Aug 2018

* Independently executed experiments to successfully design, express, purify, and scale-up a challenging chimeric (multimeric) recombinant protein to use in vaccines and diagnostic assays
* Designed and optimized ELISA based immunoassays to screen peptides as potential novel therapeutic targets
* Interacted with bioinformaticians and diagnostics experts to generate, review, interpret and integrate high-quality protocols and reports to support novel bacterial diagnostic technology
* Presented research poster titled “Utilizing NXT-DX Assays to Identify Novel Targets for *E.canis* Vaccine Development” to the Zoetis community at the end of the internship

**Undergraduate Senior Thesis** Kent, OH

*Department of chemistry, Kent State University* Sep 2010-Aug 2013

* Studied the effect of cationic porphyrin meso-5,10,15,20-Tetrakis-(N-methyl-4-pyridyl) porphine (TmPyP4) to RNA G-Quadruplexes and examined its effect on translation in eukaryotic cells (**Published**)

**Individual Investigation Research** Kent, OH

***Department of Biology, Kent State University*** Jan 2010-Aug 2010

* Studied relationship between microbial community and the leaf litter diversity on decomposition

**Research Experience for Undergraduate (REU)** Kent, OH

***National Science Foundation (NSF), Kent State University*** June 2009-Aug 2009

* Studied interaction of a model exchangeable apoLpIII lipoprotein with lipid interfaces

**RELEVANT EXPERIENCES**

**Reviewer, Protein Expression and Purification, Elsevier**

* Review manuscripts submitted to the journal with prompt feedbacks and comments to executive editors.

**Graduate School Writing Fellow, College of Natural Science, MSU** East Lansing

* Organize writing groups comprising chemistry graduate and postdoctoral students Aug 2016-Aug 2018

**Spartan Innovation Fellow** East Lansing

***Spartan innovations Center, Michigan State University***Sep 2016–May 2017

* Developed frameworks to commercialize and license an MSU technology designed to improve efficiency of commercially available biofuel cells

**Summer Research Internship** East Lansing, MI

***Prof. Jennifer Carter-Johnson, MSU College of Law*** May 2016–Aug 2016

* Examined patent laws and regulations concerning use of cDNA and CRISPR technology in genetically modified organisms (GMOs)

**LEADERSHIP ROLES & VOLUNTEER WORK**

**Academic Coach** Aug 2016-Oct 2018

***Charles Drew Science Scholars, MSU***

* Led and collaborate groups of undergraduate students to foster successful academic skills

**Undergraduate Research Mentor** Aug 2013-Oct 2018

***Department of Biochemistry and Molecular Biology, MSU***

* Supervised 6 undergraduates and 2 high school students as members of research team collaborating on multiple projects

**Student Advisory Council, Member**

***College of Natural Science, MSU*** Aug 2016-Oct 2018

* + Advised deans and chairs on issues concerning undergraduate and graduate students

**University Teaching Assistant Program (TAP), Facilitator, MSU** Aug 18th, 2016

* Helped implement various new effective programs, agendas and trainings for the new teaching assistants

**Graduate Student Research Evaluator, UURAF, MSU** April- 2014, 2015, 2016 & 2017

* Judged oral and poster presentations presented by undergraduate researchers with prompt feedbacks/suggestions

**FELLOWSHIPS/AWARDS**

* Dissertation Completion Fellowship, *The Graduate School, Fall 2018*
* Outstanding Graduate Student Teaching Award, *Biochemistry and Molecular Biology, Spring 2018*
* NIH BEST Fellowship, *The Graduate School, Fall 2017*
* People’s Choice Award (Eli Broad Science Business Model Competition), *Fall 2016*
* Graduate School Writing Fellowship, *The Graduate School, Fall 2015*
* Excellence in Teaching and Leadership Award. *Department of Chemistry, Fall2014*