

# Curriculum Vita

## Zeinab Yadegari, PhD

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### HIGHLIGHTS OF QUALIFICATIONS

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- PhD in Molecular Genetics, University of Guelph
- PCR, qPCR, cloning, vector design, plant transformation, Blast, DNA, RNA extraction
- Knowledge of next-generation sequencing including genome assembly and annotation
- Experience with installation and running of GBrowse, GBrowse\_syn and Circos
- Familiar with computer programming (Python), Shell scripting languages, R, SAS, CLC Main and Genomic Workbench, database management (mysql), and Amazon EC2
- Strong technical experience in molecular biology including gene cloning and VIGS (virus induced gene silencing)
- Molecular genetics skills including marker development (RFLP, SSR, SNP) and mapping
- Experienced in bright field, florescent and confocal microscopy
- Experienced in the design, planning and statistical analysis of laboratory and greenhouse experiments
- Experienced in physiology, genetics, behavior and neurobiology of *Caenorhabditis elegans*
- Strong communication, scientific presentation, and publishing skills
- Experienced in NSF grant writing
- Independent researcher with strong inter-personal and team working skills

### EDUCATION

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#### **Doctor of Philosophy (PhD) in Plant Molecular Genetics**

*University of Guelph, Ontario, Canada* 2006-2013

#### **Master of Science (MSc) in Medicinal plant**

*Tarbiat Modarres University, Tehran, Iran* 2000-2002

#### **Bachelor of Science (BSc) in Horticulture**

*University of Tehran, Tehran, Iran* 1996-2000

### TRAININGS OUTSIDE OF UNIVERSITY

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|---|--|------|
| Learn to Program: The Fundamentals                | Coursera (UNIVERSITY OF TORONTO)                   | 2012 |
| Introduction to Computer Science and Programming  | EDX.org (MIT)                                      | 2013 |
| Finding Hidden Messages in DNA (Bioinformatics I) | Coursera (UC SANDIEGO)                             | 2015 |
| Genome Sequencing (Bioinformatics II)             | Coursera (UC SANDIEGO)                             | 2015 |
| Genomic and Precision Medicine                    | Coursera (UCSF)                                    | 2015 |
| Introduction to Genomic Technologies              | Coursera (Johns Hopkins University)                | 2015 |
| SYSTEM BIOLOGY AND BIOTECHNOLOGY                  | Coursera (ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI) | 2016 |

## EMPLOYMENT

### Research Positions:

#### Assistant Professor

*Dept. of Physical and life science, School of Natural Sciences & Mathematics, Fisk university, Nashville, TN 2022-present*

#### Postdoctoral research fellow

*Dept. of Physical and life science, Fisk university, Nashville, TN 2019-2022*

Functional characterization of *Caenorhabditis elegans* FKH family member, FKH-8

- Locomotion characterization of fkh-8 loss of function mutants
- RNA induced gene silencing of the fkh-8 gene in RNAi sensitive worms
- Confocal microscopy of fluorescent tagged neurons of *C. elegans*

#### Graduate Research Assistant

*Dept. of Plant Agriculture, University of Guelph, Ontario, Canada 2006-2013*

Molecular characterization of the phenylpropanoid pathway genes in common bean (*Phaseolus vulgaris* L.)

- Designing primer for phenylpropanoid pathway gene amplification in bean
- Fine mapping of these genes on the linkage map of common bean as RFLP markers using Joinmap and Mapmaker
- Cloning and expression analysis of phenylpropanoid genes in common bean seed coat
- Screening of the common bean BAC library for phenylpropanoid genes using southern blotting
- Sequencing of the BAC clones using Roche 454
- Assembly and bioinformatics analysis of the BAC reads
- Bean and soybean synteny analysis and visualization using Mercator, Gbrowse\_syn and Circos

### Teaching Positions:

#### Assistant Professor

*Dept. of Physical and life science, Fisk university, Nashville, TN*

#### Biochemistry I NSCI36101 Fall 2022

- Supervising, lecturing (3-5hrs/week) and marking weekly assignment of 2<sup>nd</sup> and 3<sup>rd</sup> year undergraduates.
- Designing and supervising Biochemistry lab activities
- Mentoring and problem solving with students in one-on-one and group meetings

#### Biochemistry II NSCI36201 Spring 2022 and 2023

- Supervising, lecturing (3-5hrs/week) and marking weekly assignment of 3<sup>rd</sup> and 4<sup>th</sup> year undergraduates.
- Designing and supervising Biochemistry lab research project
- Mentoring and problem solving with students in one-on-one and group meetings

### **Undergraduate Teaching Assistant (Plant Tissue Culture course PBIO\*3750)**

*University of Guelph, Guelph, Ontario, Canada* 2008

- Supervising, lecturing (2-3hrs/week) and marking reports of 3<sup>rd</sup> and 4<sup>th</sup> year undergraduates
- Mentoring and problem solving with students in one-on-one and group meetings
- Lab preparation and management, including all necessary steps required in a tissue culture lab, such as media preparation, sterilization, and setting growth conditions.

### **RESEARCH AND TEACHING SKILLS AND KNOWLEDGE**

- Strong interdisciplinary research skills
- Next-generation sequencing technology (DNA extraction, library development, and data analysis)
- Strong molecular biology skills including: DNA and RNA extractions, primer design, routine PCR, agarose gel electrophoresis, molecular marker analysis, Reverse Transcription-PCR, Real-time quantitative PCR, DNA sequencing, plasmid and binary vector construction, plasmid preparation, DNA digestion and ligation, Southern blotting, candidate gene identification, RNA induced gene silencing
- DNA sequencing with Beckman 2000 machine; familiar with Q-PCR with Applied Biosystems Real-Time PCR equipment
- The *C. elegans* neurobiology techniques including strain maintenance, construction of double mutant strains, fluorescent microscopy and confocal microscopy
- Knowledge of computer software, database and statistical analysis tools including Unix, CLC Genomics Workbench, Python and Shell scripting, database management (mysql), genome browsers, Circos, Joinmap, Wormbase, ImageJ, web-based gene analysis programs and SAS
- Strong communication, scientific presentation and publishing skills
- Fully fluent in oral, written, and spoken English (common and scientific). Development and presentation of poster and oral presentations at scientific, technical, and industry meetings; writing and publishing of technical reports and research manuscripts in peer-reviewed journals in collaboration with other scientists
- independent researcher with strong team player and strong inter-personal skills

### **GRANTS**

- National Science Foundation, 2200488, \$298,336, 2022- 2025  
**Research Initiation Award:** Development and utilization of fluorescent biosensors for dopamine sensing in *Caenorhabditis elegans*

### **AWARDS AND SCHOLARSHIPS**

- University Graduate Scholarship, University of Guelph, Canada 2007
- Top-ranked (2nd highest) student in MSc degree, Tarbiat Modarres University 2002
- Top-ranked (2nd place) student in Horticulture in BSc., University of Tehran 1997

### **PUBLICATIONS (Peer reviewed):**

Devkota A., Pandey A., Yadegari Z., Dumenyo K. and Taheri A. (2021) Glucosamine/b-Alanine carbon dots use as DNA carriers into *E. coli* cells. *Frontiers in Nanotechnology*. November 2021, Vol. 3, Article 768487, doi: 10.3389/fnano.2021.777810

Devkota A., Pandey A., Yadegari Z., Dumenyo K. and Taheri A. (2021) Amine-coated carbon dots (NH<sub>2</sub>-FCD)s as novel antimicrobial agent for gram negative bacteria. *Frontiers in Nanotechnology*. November, Vol. 3, Article 768487. doi: 10.3389/fnano.2021.768487

Pandey A, Devkota A, Yadegari Z, Dumenyo K, Taheri A. (2021) Antibacterial Properties of Citric Acid/ $\beta$ -Alanine Carbon Dots against Gram-Negative Bacteria. *Nanomaterials (Basel)*. Aug 6;11(8) PubMed Central PMCID: PMC8400432

Espina, M.J., Ahmed, C.M.S., Bernardini, A., Adeleke, E., Yadegari, Z., Arelli, P., Pantalone, V., Taheri, A. (2018)  
Development and Phenotypic Screening of an Ethyl Methane Sulfonate Mutant Population in Soybean. *Front Plant Sci* 9:394

Reinprecht, Y., Yadegari, Z., Perry, G.E., Siddiqua, M., Wright, L.C., McClean, P.E. and Pauls, K.P. (2013) In silico comparison of genomic regions containing genes coding for enzymes and transcription factors for the phenylpropanoid pathway in *Phaseolus vulgaris* L. and *Glycine max* L. Merr., *Front Plant Sci* 4:1-25

Yadegari Z, Pauls K. (2010) Molecular mapping of genes involved in the phenylpropanoid pathway in bean (*Phaseolus vulgaris* L.). *Annu. Rep. Bean Improv. Coop.* 01/0; 51.

### **Conferences and non-reviewed papers:**

**Zeinab Yadegari** and Brian Nelms (2019) Functional characterization of *Caenorhabditis elegans* FKH family member, FKH-8. Vanderbilt Program in Developmental Biology Retreat XXII, September 5-6, Counce, TN, USA (oral presentation)

**Zeinab Yadegari** and Brian Nelms (2019) Functional characterization of *Caenorhabditis elegans* FKH family member, FKH-8. 22nd International *C. elegans* Conference, June 20-24, Los Angeles, CA, USA (poster)

**Yadegari, Z.**, Reinprecht, Y., Perry, G.E., Siddiqua, M., Wright, L.C., McClean, P.E. and Pauls, K.P. (2013) Association of genes coding for phenylpropanoid pathway enzymes and regulatory elements with flower and seed coat colour in *Phaseolus vulgaris*. Biennial meeting of the bean improvement cooperative, October 27- 30, Portland, Oregon, USA (oral presentation)

**Zeinab Yadegari** and K. Peter Pauls (2010) Molecular characterization of the chalcone synthase (CHS) gene in common bean (*Phaseolus vulgaris* L.), The joint annual meeting of the American Society of Plant Biologists and the Canadian Society of Plant Physiologists, July 31-August 4, Montreal, QC, Canada (poster)

**Zeinab Yadegari** and K. Peter Pauls (2009) Molecular characterization of the dehydroflavonol4-reductase (DFR) gene in common bean (*Phaseolus vulgaris* L.), CSPP Eastern Regional Meeting, December 4-5, Guelph, ON, Canada (poster)

**Zeinab Yadegari** and K. Peter Pauls (2008) Seed coat color in bean (*Phaseolus vulgaris* L.): molecular analysis of the phenylpropanoid pathway genes, Plant Development Workshop & Canadian Society of Plant Physiologists Eastern Regional Meeting, December 5th and 6th, Toronto, ON, Canada (poster)

**Zeinab Yadegari** and K. Peter Pauls (2008) Phenylpropanoid pathway genes and their association with seed coat color in bean (*Phaseolus vulgaris* L.), 7th Canadian Pulse Research Workshop, November 5 – 7, Winnipeg, Manitoba, Canada (poster)

**Zeinab Yadegari** and K. Peter Pauls (2008) Candidate phenylpropanoid pathway genes and their association with seed coat color in bean (*Phaseolus vulgaris* L.), CSPP/SCPV Eastern Regional Meeting and 50th Annual Meeting, June 14-17, Ottawa, ON, Canada (poster)

**Zeinab Yadegari** and K. Peter Pauls (2007) Molecular analysis of genes controlling natural variation of seed coat colors in common bean (*Phaseolus vulgaris* L.), CSPP Eastern Regional Meeting, December 1st, London, ON, Canada (poster)

**Zeinab Yadegari** and K. Peter Pauls (2007) Molecular mapping of the phenylpropanoid pathway genes in bean (*Phaseolus vulgaris* L.), The 50th anniversary of the Bean Improvement Cooperative, October 29-31, Madison, Wisconsin, USA (oral presentation)

**Zeinab Yadegari** and K. Peter Pauls (2006) What makes the beans so colorful? CSPP Eastern Regional Meeting and 40th Plant Development Workshop, December 2, Hamilton, ON, Canada (oral presentation)

**Zeinab Yadegari** and K. Peter Pauls (2006) Mapping of genes involved in the phenylpropanoid pathway in bean (*Phaseolus vulgaris* L.), 6th Canadian Pulse Research Workshop, November 1-3, Saskatoon, SA, Canada (oral presentation)

**Zeinab Yadegari** and K. Peter Pauls (2006) Mapping of genes involved in the phenylpropanoid pathway in bean (*Phaseolus vulgaris* L.), The 2006 joint annual meeting of the American Society of Plant Biologists and the Canadian Society of Plant Physiologists, August 5-9, Boston, MA, USA (poster)