

Omid Haji-Ghassemi

Assistant Professor



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Education

2009 - 2015 University of Victoria – Victoria, BC, Canada

Supervisor: Stephen Evans

2005 - 2009 University of Victoria – Victoria, BC, Canada

Honours Supervisor: John Taylor

Ph.D Biochemistry

B.Sc. Microbiology

(Honours) *Graduated with distinction*

Employment

2022 - current University of Calgary – Calgary, AB, Canada

2016 - 2021 University of British Columbia – Vancouver, BC, Canada.

Supervisor: Filip Van Petegem

2015 - 2016 University of Victoria – Victoria, BC, Canada

2009 - 2009 University of Victoria Genome BC Proteomics Centre

Victoria, BC, Canada

Assistant Professor

Postdoctoral Fellow

Postdoctoral Fellow

Research Associate

Funding (as principal applicant)

2024 - 2025 UCalgary VPR Catalyst Grant with FoS matching

\$19,000 (CAD)

2024 - 2024 NSERC Research Tools and Instruments

\$114,407 (CAD)

2023 - 2026 Heart and Stroke New Investigator award (NIA)

\$190,000 (CAD)

2023 - 2028 John R. Evans Leaders Fund CFI

\$375,000 (CAD)

2022 - 2027 NSERC Discovery Grant (2022-2027)

\$197,500 (CAD)

2022 - 2025 University Startup

\$200,000 (CAD)

Total

\$1,018,407 (CAD)

Awards

2023 - 2026 Heart and Stroke New Investigator award (NIA) and McDonald Scholarship (top-ranked NIA)

\$180,000 + \$10,000 (CAD)

2017 - 2021 Canadian Institutes of Health Research Fellowship

\$150,000 (CAD) incl. allowance

2016 - 2019 Michael Smith Foundation for Health Research Award

\$146,000 (CAD) incl. allowance

Research Highlights

- **23** Peer-reviewed publications (full list below)
- **13 first or co-first** articles published in Q1 journals, including *Molecular Cell*, *Nature Chemical Biology*, *Science Advances*, *Nature Communications*, and *Journal of Biological Chemistry*
- First author review with 174 citations
- **H-index: 14, 700 citations** (as of August 2025)
- Supervised **18** trainees as a PI

Conference Organisation and Chairing

2024	The Sharpest New Tools in the Box, Part 1 Session Co-Chair. Protein Society Meeting (July 23-26).	Vancouver, BC
2023	Organizing committee for the Canadian Biophysical Society meeting (May 23-26).	Calgary, AB
2019	Co-chaired a session at Gordon Research Seminar: Excitation-Contraction Coupling (May 19 – 24).	Barga, Italy

Faculty, Departmental and Professional Service Activities

2025	Internal Examiner, PhD Defence (Mariia Borbuliak, PI: Peter Tieleman)	University of Calgary
2025	Internal Examiner, PhD Defence (Maya Zanardini, PI: Hamid Habibi)	University of Calgary
2025	CIHR invited Reviewer Biochemistry & Molecular Biology – A (BMA) panel, Spring 2025.	
2025	Internal Examiner, MSc Defence (Marielle Uy, PI: Justin MaCallum)	University of Calgary
2025	Neutral Chair (Travis Issler, PI: Elmar Prenner).	University of Calgary
2025	Neutral Chair (Michael Williamson, PI: Sam Yeaman).	University of Calgary
2024	Candidacy Examiner (Tamkeen Urooj Paracha, PI: Mark A. Giembycz)	University of Calgary
2024	Candidacy Examiner (Lee Barrell, PI: Dae-Kyun Ro)	University of Calgary
2024	Candidacy Examiner (Daniel P. Ramirez-Echemendia, PI: Peter Tieleman)	University of Calgary
2024	Candidacy Examiner (Shanshan Tian, PI: Wayne Chen)	University of Calgary
2024	Candidacy Examiner (Rehnuma Sejuty, PI: Joe Harrison)	University of Calgary
2024	Neutral Chair (Fateme Taridashti, PI: Kelly Munkittrick).	University of Calgary
2024	NSERC DG external reviewer for 1501 - Genes, Cells and Molecules for the Fall 2023 competition.	Remote
2024 - current	Research Cluster Chair for Biochemistry in the Department	University of Calgary
2024 - current	Department Head Advisory Committee	University of Calgary
2024	Candidacy Examiner (Steve Sparksman, PI: Peter Facchini)	University of Calgary
2023	CIHR Reviewer in training for the Biochemistry & Molecular Biology – A (BMA) panel, Fall 2023.	Remote
2023	Search committee member for 3 tenure-track positions in data science and quantum computing.	University of Calgary
2023 - 2023	Graduate award competition committee member	University of Calgary
2023	Neutral Chair (Anna-Marie Lewrenz, PI: Elmar Prenner).	University of Calgary
2022	Neutral Chair (Colin Unruh, PI: Elmar Prenner).	University of Calgary
2022 - 2024	Undergraduate IDEAS Fund award committee	University of Calgary

Journal Reviewer

2023	Reviewer, Editor: Gerald Zamponi	Channels
2022	Reviewer, Editor: Hans Vogel	Biomaterials
2020	Co-reviewer, Editor: Katarzyna Marcinkiewicz	Nature Communications
2017	Invited reviewer, Editor: Prof. Paul A Ramsland	Molecular Immunology
2017	Invited reviewer, Editor: Prof. Linda Hsieh-Wilson	Biochemistry

Professional Affiliations

2024 - 2025	American Society for Biochemistry and Molecular Biology
2023 - current	Canadian Biophysical Society
2023 - current	Arnie Charbonneau Cancer Institute

2022 - current Libin Cardiovascular Institute
2022 - 2024 Canadian Society for Molecular Biosciences
2017 - current Biophysical Society

Teaching Activities (up to August 2025)

2025 - current Guest lecturer (6 lectures on cryo-EM), winter or fall terms. **BCEM 551 Structural Biology**
2022 - current Guest lecturer (4 lectures on ion channels), winter term. **BCEM 555 Biomembranes**
2024 - current Designed a custom biochemistry graduate course (12 - 3 hr lectures or dry lab work/workshop), Summer term. **BCEM 601 Tools in Struct. Biol.**
2023 - current Course co-ordinator (30-36 lecture-hours) in the fall term. **BCEM 431 Proteins & Proteomics**
2019 Guest lecturer (4 lectures on ion channels) at UBC **BIOC450, Membrane proteins**
2017 - 2019 Organized workshops for students, postdocs, and researchers on different structural biology tools **Vancouver, BC, Canada**

Graduate-Thesis Student Committees (N=5)

2025 - current Gabriella Mullin (PI: Mathilakath Vijayan)
2024 - current Gerardo Balderas (PI: Scott Ryan)
2024 - current Jeremiah Odagwe (PI: Marie Fraser)
2024 - current Fasih Rehman (PI: Peter Facchini)
2024 - current Amir Ghaemian (PI: Mathilakath Vijayan)

Past Trainees (N=7)

2022 - 2024 Oleg Khassan (co-supervised with Hans Vogel) **MSc**
2022 - 2025 Joshua Steward **MSc**
2024 - 2025 Julia Kaawach-Mohareb **Honours**
2023 - 2024 Megan Torres (co-supervised with Mathilakath Vijayan) **Postdoctoral Fellow**
2023 - 2024 Chase Talarico (now a Graduate student at UBC)
2023 - 2024 Nicole Hansed **Honours student**
2023 - 2023 Isabel Zhao (NSERC USRA) **Summer**

Current trainees (N=11)

2024 - current Irfan Popal (PURE award) **Summer, Honours**
2025 - current Shraavni Patankar **Volunteer**
2024 - current Iqra Abylklam **Summer, Honours**
2024 - current Magdalene Gieschen **Honours**
2024 - current Josie Sharpe (NSERC USRA) **Summer, Honours**
2024 - current Michael Schieman **Honours, MSc**
2024 - current Jakob Gorodetsky (Alberta Innovates awardee) **Honours, PhD**
2024 - current Eliany Arias del Rio **MSc**
2024 - current Alex Roberts (co-supervised with Justin MacCallum) **PhD**
2024 - current Michael Schieman (PURE awardee) **Summer, Honours**
2022 - current Rachi Panchal (now PhD student in the lab) **Honours, PhD**

Invited Talks (N=12)

2024 "Cryo-EM analysis of scorpion toxin binding to Ryanodine Receptors reveals sub-conductance that is abolished by PKA phosphorylation". American Society for Biochemistry and Molecular Biology Meeting, San Antonio, TX, United States [could not attend due to visa restrictions]
2021 "An interdisciplinary approach to understanding the function and biology of the ryanodine receptor". University of Windsor, Dept. of Chemistry and Biochemistry. Windsor, ON, Canada

- 2021 "Molecular basis for diamide insecticide binding to the ryanodine receptor and development of insect resistance". European Calcium Society Webinar. Chaired by Malene Brohus, Aalborg University, Denmark.
- 2020 "Human Cardiac Voltage-Gated Calcium Channel Phosphorylation by cAMP-Dependent Protein Kinase A" Biophysical Society Meeting, San Diego, CA, United States
- 2020 "Regulation of Heart Channel Proteins via Stress Signaling". University of British Columbia, Dept. of Chemistry., Vancouver, BC, Canada.
- 2019 "Modification of heart channel proteins via stress signalling". Postdoc Research Day Competition, The University of British Columbia, Vancouver, BC, Canada. *Won first place.*
- 2019 Invited speaker and discussion group leader at IGNITE undergraduate conference at the University of British Columbia, Vancouver, Canada.
- 2019 "Structural Insights into Recognition of Ryanodine Receptors by PKA". Biophysical Society Meeting, Baltimore, MD, United States.
- 2019 "The cardiac ryanodine receptor phosphorylation hotspot embraces PKA in a phosphorylation-dependent manner". GRC for Muscle: Excitation-Contraction Coupling, Barga, Italy.
- 2017 "Probing the role of PKA and CaMKII phosphorylation on the cardiac Ryanodine Receptor (RyR2)". Gordon Research Seminar for Muscle: Excitation-Contraction Coupling, Les Diablerets, Switzerland. *Awarded best talk at the GRS.*
- 2015 "Antibody recognition of lipid A and ssDNA". 11th National Carbohydrate Symposium, Banff, AB, Canada.
- 2015 "Structural basis for antibody recognition of lipid A: Insights into polyspecificity towards single stranded DNA". 20th Annual Graduate Student Symposium, University of Victoria, Victoria, BC, Canada.

Publications as a principal investigator (trainees underlined)

23. Gorodetsky J; Monych N; Turner RJ; **Haji-Ghassemi O**; Booth SC†. (2025). Role of AprA and Pyocyanin from *Pseudomonas aeruginosa* on *Staphylococcus aureus* Tolerance to Silver. **Microbiology**. [accepted pending proofs, †co-senior author].
22. Stykel MG; Siripala SV; Soubeyrand E; Camargo S, Lu P, Coackley CL, Panchal R, So RWL, Stuart E, Joseph J, Akrioti EK, **Haji-Ghassemi O**, Taoufik E, Akhtar T, Watts JC, Ryan SD. (2025). G6PD deficiency triggers dopamine loss and the initiation of Parkinson's Disease pathogenesis. **Cell Reports**. 44(1): 115178.
21. Joseph TT; Bu W; **Haji-Ghassemi O**; Chen S; Woll K; Allen PD; Brannigan G; van Petegem F; Eckenhoff RG. (2024) Propofol directly binds and inhibits skeletal muscle ryanodine receptor 1 (RyR1). **Br J Anaesth**. 133(5): 1093-1100.
20. Yoo R*; **Haji-Ghassemi O***; Bader M; Xu J; McFarlane C; van Petegem F. (2023). Crystallographic, kinetic, and calorimetric investigation of PKA interactions with L-type calcium channels and Rad GTPase. **J Biol Chem**. 301(1):108039. **Co-first and co-corresponding author.**
19. Cholak S; Saville JW; Zhu X; Berezuk AM; Tuttle KS; **Haji-Ghassemi O**; Alvarado F; Van Petegem F; Subramaniam S. (2023). Allosteric Modulation of Ryanodine Receptor RyR1 by Nucleotide Derivatives. **Structure**. 31(7): 790-800.e4.
18. **Haji-Ghassemi O**; Yu SC; Woll K; Gurrola GB; Valdivia CR; Cai W; Li S; Valdivia HH; van Petegem F. (2023). Cryo-EM analysis of scorpion toxin binding to Ryanodine Receptors reveals a sub-conductance state that is abolished by PKA phosphorylation. **Sci Adv**. 9(21): eadf4936.
17. Qin, J; Zhang, J; Lin, L; **Haji-Ghassemi, O**; Lin, Z; Woycechowsky, KJ; Van Petegem, F; Zhang, Y; Yuchi, Z. (2022). Structures of PKA-phospholamban complexes reveal a mechanism of familial dilated cardiomyopathy. **eLife**. 11: e75346.

16. Rayani, K; Hantz, E; **Haji-Ghassemi, O**; Yueh, AL; Spuches, A; Van Petegem, F; Solaro, JR; Lindert, S; Tibbits GF. (2022). The effect of magnesium on calcium binding to cardiac troponin C related hypertrophic cardiomyopathy mutants. *FEBS J.* 289(23): 7446-7465.

Publications as a Trainee (* Denotes Co-First)

15. Woll, KA*; **Haji-Ghassemi, O***; Van Petegem F. (2021). Pathological conformations of disease mutant Ryanodine Receptors revealed by cryo-EM. *Nat commun.* 12(1): 1-13.
14. Stringer, RN; Jurkovicova-Tarabova, B; Huang, S; **Haji-Ghassemi, O**; Idoux, R; Liaschenko, A; Souza, IA; Rzhpetsky, Y; Lacinova, L; Van Petegem, F; Zamponi, GW; Pamphlett, R; Weiss, N. (2020). A rare CACNA1H variant associated with amyotrophic lateral sclerosis causes complete loss of Ca v 3.2 T-type channel activity. *Mol brain.* 13(1): 1-11.
- 13.; Ma, R*; **Haji-Ghassemi, O***; Ma, D*; Jiang, H*; Lin, L; Yao, L; Samurkas, A; Li, Y; Wang, Y; Cao, P; Wu, S; Zhang, Y; Murayama, T; Moussian, B; Van Petegem, F; Yuchi Z. (2020). Structural basis for diamide modulation of ryanodine receptor. *Nat Chem Biol.* 16(11): 1246-1254.
12. **Haji-Ghassemi, O**; Yuchi, Z; Van Petegem, F. (2019). The cardiac ryanodine receptor phosphorylation hotspot embraces PKA in a phosphorylation-dependent manner. *Mol Cell.* 75(1): 39-52.
11. **Haji-Ghassemi, O**; Müller-Loennies, S; Brooks, CL; MacKenzie, CR; Caveney, N; Van Petegem, F; Brade, L; Kosma, P; Brade, H; Evans, SV. (2018). Subtle Changes in the Combining Site of the Chlamydiaceae-Specific mAb S25-23 Increase the Antibody–Carbohydrate Binding Affinity by an Order of Magnitude. *Biochemistry.* 58(6): 714-726.
- 10.; Roston, T*; **Haji-Ghassemi O***; LaPage, MJ; Batra, AS; Bar-Cohen, Y; Anderson, C; Lau, YR; Maginot, K; Gebauer, RA; Etheridge, SP; Potts, JE; Van Petegem, F; Sanatani S. (2018). Catecholaminergic polymorphic ventricular tachycardia patients with multiple genetic variants in the PACES CPVT Registry. *Plos One.* 13(11): e0205925.
9. Blackler, RJ; López-Guzmán, A; Hager, FF; Janesch, B; Martinz, G; Gagnon, SML; **Haji-Ghassemi, O**; Kosma, P; Messner, P; Schäffer, C; Evans, SV. (2018). Structural basis of cell wall anchoring by SLH domains in *Paenibacillus alvei*. *Nat Commun.* 9(1): 3120.
8. Gagnon, SML; Legg, MSG; Polakowski, R; Letts, JA; Persson, M; Lin, S; Blake Zheng, R; Rempel, B; Schuman, B; **Haji-Ghassemi, O**; Borisova, SN; Palcic, MM; Evans, SV. (2018). Conserved residues Arg188 and Asp302 are critical for active site organization and catalysis in human ABO(H) blood group A and B glycosyltransferases. *Glycobiology.* 28(8): 624-636.
7. **Haji-Ghassemi, O**; Gilbert, M; Spence, J; Schur, MJ; Parker, MJ; Jenkins, ML; Burke, JE; van Faassen, H; Young, MN; Evans, SV. (2016). Molecular basis for recognition of the cancer glyco-biomarker, GalNAc(β1-4)GlcNAc (LacdiNAc) by *Wisteria floribunda* agglutinin. *J Biol Chem.* 291(46): 24085-24095.
6. **Haji-Ghassemi, O**; Müller-Loennies, S; Rodriguez, T; Brade, L; Grimmecke, HD; Brade, H; Evans, SV. (2016). The Combining Sites of Anti-lipid A Antibodies Reveal a Widely Utilized Motif Specific for Negatively Charged Group. *J Biol Chem.* 291: 10104-10118.
5. **Haji-Ghassemi, O**; Müller-Loennies, S; Rodriguez, T; Brade, L; Kosma, P; Brade, H; Evans, SV. (2015). Structural basis for antibody recognition of lipid A: insights to polyspecificity toward single stranded DNA. *J Biol Chem.* 290: 19629-196240.
4. **Haji-Ghassemi, O**; Blackler, RJ; Young, MN; Evans, SV. (2015). Antibody recognition of carbohydrate epitopes. *Glycobiology.* 25(9): 920-952. [Review]
3. Gagnon, SML; Meloncelli, PJ; Zheng, RB; **Haji-Ghassemi, O**; Johal, AR; Borisova, SN; Lowary, TL; Evans, SV. (2015). High resolution structures of the human ABO(H) blood group enzymes in complex with donor analogs reveal that the enzymes utilize multiple donor conformations to bind substrates in a step-wise manner. *J Biol Chem.* 290(45): 27040-27052.

2. **Haji-Ghassemi, O**; Müller-Loennies, S; Saldova, R; Muniyappa, M; Brade, L; Rudd, PM; Harvey, DJ; Kosma, P; Brade, H; Evans, SV. **(2014)**. Groove-type recognition of chlamydiae-specific lipopolysaccharide antigen by a family of antibodies possessing an unusual variable heavy chain N-linked glycan. *J Biol Chem*. 289(24): 16644-16661.

Book chapter

1. **Haji-Ghassemi, O**; Gagnon, SML; Müller-Loennies, S; Evans, SV. **(2017)**. Polyspecificity of anti-lipid A antibodies and its relevance to the development of autoimmunity. M. Zouhair Atassi. Protein Reviews. *Adv Exp Med Biol*. (18): 181-202.

Patents

1. The application of diamide compounds for treatment of central core disease. China. 21C52253. **2021/07/01**. Patent Status: Pending