
BIOGRAPHICAL SKETCH

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NAME: **Aydin, Halil**

eRA COMMONS USERNAME: **HALILAYDIN**

POSITION: **Assistant Professor**

Education/Training

Institution and Location	Degree	End Date	Field of Study
Istanbul University, Istanbul, Turkey	D.V.M.	06/2007	Veterinary Medicine
University of Ottawa, Ottawa, Ontario, Canada	M.Sc.	08/2011	Biochemistry and Immunology
University of Toronto, Toronto, Ontario, Canada	Ph.D.	09/2016	Biochemistry and Biophysics
University of California San Francisco, San Francisco (UCSF), California, USA	Postdoc	12/2020	Biochemistry and Structural Biology

A. Personal Statement

How do cellular compartments acquire and alter their shapes in support of their tasks? Starting with my work as a graduate student and continuing into my independent career, I am inspired by this question and interested in understanding how dynamic cellular compartments adapt their morphology and spatial distribution to changing cellular conditions and how proteins and protein complexes that are associated with membranes regulate the structure and function of these compartments in cells. Currently, my research interests are largely directed towards exploring the molecular mechanism of membrane remodeling for developing a molecular understanding of regulated cell morphology and function. My lab utilizes a multi-disciplinary approach that integrates structure determination by electron cryo-microscopy (cryoEM) with biochemistry, biophysics, and cell biology techniques to bridge detailed structural studies with a deeper knowledge of cell physiology to advance our understanding of how cellular machines function normally, and how they are corrupted by disease. My long-term goals are to decipher the link between cell structure and function and understand the precise molecular details of membrane dynamics that will enable us to therapeutically manipulate key cellular processes in the future. An integrative understanding of how protein networks function has implications for targeting a wide range of neurodegenerative diseases, cancers, metabolic disorders, and cardiac dysfunction. Building on my experience in structural biochemistry and interest in biomolecular machines, I aim to develop a molecular understanding of cellular membrane dynamics in cells.

B. Positions and Honors

Positions and Employment

- 01/2021–Present** Assistant Professor, Department of Biochemistry, University of Colorado Boulder, Boulder, Colorado, USA
- 10/2016–12/2020** Postdoctoral Scholar, Department of Biochemistry and Biophysics, University of California, San Francisco (UCSF), San Francisco, California, USA
(Supervisor: Dr. Adam Frost)

Honors

- 2023** Invited Speaker – Three Dimensional Electron Microscopy Gordon Research Conference in Newry, ME, USA
- 2022** Invited Speaker - Mitochondrial Biochemistry in Health and Disease Keystone Symposia in Breckenridge, CO, USA
- 2021** Invited Speaker – Carleton College, Northfield, MN, USA
- 2018** Keystone Symposia Future of Science Fund Scholarship
- 2017** Human Frontiers Science Program Postdoctoral Fellowship
- 2017** Stuart Alan Hoffman Prize for best Ph.D. thesis, University of Toronto
- 2015** Invited Speaker - BHT Structural Biology Symposium in Hamilton, ON, Canada
- 2015** Poster Presentation Award 1st Place (Ph.D. Category), University of Toronto
- 2015** Ontario Graduate Scholarship (OGS) International
- 2014** Invited Speaker - The Ins and Outs of Viral Infection: Entry, Assembly, Exit and Spread Keystone Symposia in Breckenridge, CO, USA
- 2014** University of Toronto Fellowship
- 2013** Training Award, Univ. of Toronto, Dept. of Laboratory Medicine and Pathobiology
- 2013** School of Graduate Studies Conference Grant, University of Toronto
- 2013** Poster Presentation Award 1st Place (Ph.D. Category), University of Toronto
- 2011** University of Toronto Fellowship
- 2002** Istanbul Metropolitan Municipality Scholarship

Other Experience and Professional Memberships

- 2019 – Present** Member, American Heart Association
- 2017 – Present** Member, Biophysical Society
- 2016 – Present** Member, American Society for Cell Biology
- 2011 – 2016** Member, American Crystallographic Association

C. Contributions to Science

1. *Bennett, J. A., *Steward, L. R., Rudolph, J., Voss, A. P., **Aydin, H.** (2022) The structure of the human LACTB filament reveals the mechanisms of assembly and membrane binding. **PLOS Biology** 20(12): e3001899. doi: 10.1371/journal.pbio.3001899.
*These authors contributed equally.
2. *Manicki, M., ***Aydin, H.**, Abriata, L. A., Overmyer, K. A., Guerra, R. M., Coon, J. J., Dal Peraro, M., Frost, A., Pagliarini, D. J. (2022) Structure and functionality of a multimeric

human COQ7:COQ9 complex. **Molecular Cell** 82, 1-17. doi: 10.1016/j.molcel.2022.10.003

*These authors contributed equally.

3. **Aydin, H.**, Sultana, A., Li, S., Thavalingam, A., Lee, J. E. (2016) Molecular architecture of the human sperm IZUMO1 and egg JUNO fertilization complex. **Nature** Jun 15;534(7608): 562-565. doi: 10.1038/nature18595.
4. ***Aydin, H.**, *Azimi, F. C., *Cook, J. D., Lee, J. E. (2012) A Convenient and general expression platform for the production of secreted proteins from human cells. **The Journal of Visualized Experiments** Jul 31;(65). pii: 4041. doi: 10.3791/4041.
*These authors contributed equally.
5. **Aydin, H.**, Smrke, B.M., Lee, J.E. (2013) Structural characterization of a fusion glycoprotein from a retrovirus that undergoes a hybrid 2-step entry mechanism. **The FASEB Journal** Dec;27(12):5059-71. doi: 10.1096/fj.13-232371.
6. **Aydin, H.**, Cook, J.D., Lee, J. E. (2014) Crystal structures of beta- and gammaretrovirus fusion proteins reveal a role for electrostatic stapling in viral entry. **Journal of Virology** Jan;88(1):143-53. doi: 10.1128/JVI.02023-13.
7. **Aydin, H.**, Al-Khooly, D., Lee, J. E. (2014) Influence of hydrophobic and electrostatic residues on SARS-coronavirus S2 protein stability: Insights into mechanisms of general viral fusion and inhibitor design. **Protein Science** May;23(5):603-617. doi: 10.1002/pro.2442.
8. Bélanger, K., Savoie, M., **Aydin, H.**, Renner, T.M., Montazeri, Z., Langlois, M.-A. (2014) Deamination intensity profiling of human APOBEC3 protein activity along the near full-length genomes of HIV-1 and MoMLV by hyperHRM analysis. **Virology** Jan 5;448:168-75. doi: 10.1016/j.virol.2013.10.008.
9. ***Aydin, H.**, *Taylor, M. W., Lee, J. E. (2014) Structure-guided analysis of the human APOBEC3-HIV restrictome. **Structure** May 06;22(5):668-684. doi:10.1016/j.str.2014.02.011.
*These authors contributed equally.
10. Rosales Gerpe, M.C., Renner, T.M., Bélanger, K., Lam, C., **Aydin, H.**, Langlois, M.-A. (2015) N-linked glycosylation protects gammaretroviruses against deamination by APOBEC3 proteins. **Journal of Virology** Feb;89(4):2342-57. doi: 10.1128/JVI.03330-14.

Complete List of Published Work in MyBibliography:

<https://www.ncbi.nlm.nih.gov/sites/myncbi/1xgEwwaTqUVQR/bibliography/41069864/public/?sort=date&direction=ascending>.