Granton A. Jindal

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EDUCATION

Princeton University — Princeton, NJ
Ph.D., Chemical Engineering — Nov. 2017
Certificate, Bioengineering — Aug. 2017
M.A., Chemical Engineering — Apr. 2014
Thesis: "Analyzing pathogenic MEK variants in zebrafish"

California Institute of Technology — Pasadena, CA
B.S., Bioengineering, with Honor — Jun. 2012
Research Title: "Investigating AND gate topologies to aid in proteomic analysis"

RESEARCH EXPERIENCE

Department of Medicine, University of California San Diego — La Jolla, CA
Postdoctoral Researcher; Advisor: Prof. Emma K. Farley — Nov. 2017 – Present
Understanding how mutations in noncoding areas of the genome affect heart-specific gene expression using high-throughput assays in *Ciona* and human iPSC-cardiomyocytes. Demonstrated that affinity-optimizing mutations within cardiac enhancers disrupt heart development.

Lewis-Sigler Institute, Princeton University — Princeton, NJ
Graduate Researcher; Advisors: Prof. Stanislav Y. Shvartsman, Prof. Rebecca D. Burdine — Jan. 2013 – Sep. 2017
Demonstrated a ranking of MEK1 mutations found in RASopathies, human developmental disorders, using functional assays in the embryonic zebrafish. Showed context-dependent ERK signaling with these MEK1 mutations in the embryonic zebrafish.

Kavli Institute for Theoretical Physics, University of California Santa Barbara — Goleta, CA
Santa Barbara Advanced School of Quantitative Biology 2016 Summer Research Course — Jul. 2016 – Aug. 2016
Quantifying BMP4 and Nodal signaling dynamics in human embryonic stem cells – Advisor: Prof. Aryeh Warmflash
Effects of mechanical forces on somite formation and gene oscillators in zebrafish – Advisor: Prof. Andrew C. Oates

California Institute of Technology — Pasadena, CA
Undergraduate Researcher; Advisor: Prof. David A. Tirrell — Jun. 2010 – Jun. 2012
Demonstrated split mutant Methionyl-tRNA Synthetase activity for split sites with in-gel fluorescence images using bacterial cell culture methods, molecular cloning, and Western blots. Showed that a HIS tag fused to an alkyne can be used to separate azide-labeled proteins using a Nickel-NTA column.

Louisiana State University — Baton Rouge, LA
Undergraduate Researcher; Advisor: Prof. Grover L. Waldrop — Jun. 2009 – Sep. 2009
Learned laboratory skills including polymerase chain reaction, molecular cloning, site-directed mutagenesis, and protein expression. Introduced specific mutations into the Biotin Carboxylase protein using these techniques.

FELLOWSHIPS AND FUNDING

Hartwell Postdoctoral Fellowship, The Hartwell Foundation — Nov. 2020 – Oct. 2022
AHA Postdoctoral Fellowship, American Heart Association — Jan. 2019 – Oct. 2020
Chancellor's Research Excellence Scholarship, UC San Diego — Jan. 2018 – Sep. 2019

Cardiology Postdoctoral Training Program Fellow, National Institutes of Health Jan. 2018 – Dec. 2018
Graduate Research Fellowship, National Science Foundation Jul. 2013 – Jun. 2015, Jul. 2016 – Jun. 2017
Amgen Scholars Research Fellowship, Amgen Foundation Jun. 2011
Summer Undergraduate Research Fellowship, Caltech Jun. 2010

AWARDS

Schulman Award for Cardiovascular Research, UCSD Division of Cardiovascular Medicine Jun. 2022
Hilde Mangold Postdoctoral Symposium Participant, Society for Developmental Biology Jul. 2020
Poster Award, 11th Structural Birth Defects Meeting, Bethesda, MD Apr. 2017
DeLill Nasser Award for Professional Development in Genetics, Genetics Society of America May 2016
Schowalter Travel Award, Princeton University Chemical & Biological Engineering Mar. 2016
Valedictorian of Class of 2008, Baton Rouge Magnet High School May 2008
Intel Science Talent Search Semifinalist, Society for Science and the Public Jan. 2008

PUBLICATIONS

Postdoctoral Research (Advisor: Emma Farley)

14. **Jindal GA**, Tellez K, Song BP, Lim F, Farley EK. Enhancer libraries to test sufficiency of transcription factor binding sites. ***In revision*** at ***STAR Protocols.***

13. **Jindal GA**, Lim F, Tellez K, Song BP, Bantle AT, Farley EK. Electroporation of Ciona embryos. ***In revision*** at ***STAR Protocols.***

12. Lim F*, Solvason JJ*, Ryan GE*, Le SH, **Jindal GA**, Steffen P, Jandu SK, Farley EK. Affinity-optimizing enhancer variants disrupt development. ***Nature*** (2024). https://doi.org/10.1038/s41586-023-06922-8

11. **Jindal GA**, Bantle AT, Solvason JJ, Grudzien JL, D'Antonio-Chronowska A, Lim F, Le SH, Song BP, Ragsac MF, Klie A, Larsen RO, Frazer KA, Farley EK. Single nucleotide variants within heart enhancers increase binding affinity and disrupt heart development. ***Developmental Cell***. 58, 2206-2216 (2023).

10. Song BP*, Ragsac MF*, Tellez K, **Jindal GA**, Grudzien JL, Le SH, Farley EK. Diverse logics and grammar encode notochord enhancers. ***Cell Reports***; 42(2):11052 (2023).

9. **Jindal GA** and Farley EK. Enhancer grammar in development, evolution, and disease: dependencies and interplay. ***Developmental Cell***; 56:575-587 (2021).

Graduate Research (Advisors: Stanislav Shvartsman and Rebecca Burdine)

8. Marmion RA, Yang L, Goyal Y, **Jindal GA**, Wetzel JL, Singh M, Schüpbach T, Shvartsman SY. Molecular mechanisms underlying cellular effects of human MEK1 mutations. ***Molecular Biology of the Cell***; 32:974-983 (2021).

7. Pelliccia JL, **Jindal GA**, Burdine RD. Gdf3 is required for robust Nodal signaling during germ layer formation and left-right patterning. ***eLife***; 6:e28635 (2017).

6. **Jindal GA***, Goyal Y*, Humphreys JM, Yeung E, Tian K, Patterson VL, He H, Burdine RD, Goldsmith EJ#, Shvartsman SY#. How activating mutations affect MEK1 regulation and function. ***Journal of Biological Chemistry***; 292:18814-18820 (2017).

5. Goyal Y*, **Jindal GA***, Pelliccia JL, Yamaya K, Yeung E, Futran AS, Burdine RD, Schüpbach T, Shvartsman SY. Divergent effects of intrinsically active MEK variants on developmental Ras signaling. ***Nature Genetics***; 49:465-469 (2017).

4. **Jindal GA***, Goyal Y*, Yamaya K, Futran AS, Kountouridis I, Balgobin CA, Schüpbach T, Burdine RD, Shvartsman SY. In vivo severity ranking of Ras pathway mutations associated with developmental disorders. ***Proc. Natl. Acad. Sci. U.S.A.*** 114:510-515 (2017).

3. **Jindal GA***, Goyal Y*, Burdine RD, Rauen KA, Shvartsman SY. RASopathies: unraveling mechanisms with animal models. ***Disease Models and Mechanisms***; 8:769-782 (2015).

Undergraduate Research (Advisor: David Tirrell)

2. Mahdavi A, Hamblin GD, **Jindal GA**, Bagert JD, Dong C, Sweredoski MJ, Hess S, Schuman EM, Tirrell DA. An engineered aminoacyl-tRNA synthetase for cell-selective analysis of mammalian protein synthesis. ***J. Am. Chem. Soc.*** 138:4278-4281 (2016).

1. Mahdavi A, Segall-Shapiro TH, Kou S, **Jindal GA**, Hoff KG, Liu S, Chitsaz M, Ismagilov RF, Silberg JJ, Tirrell DA. A Genetically Encoded AND Gate for Cell-Targeted Metabolic Labeling of Proteins. ***J. Am. Chem. Soc.*** 135:2979-2982 (2013).

(*,# Equal contribution)

TALKS

Jan 2024	Ethel Browne Harvey Postdoctoral Seminar Series, Society for Developmental Biology (Virtual)
Jan 2024	Virtual Gastrulation Zoom Talks, VGZT (Virtual)
Sep 2023	2023 DiverseScholar Postdoctoral Conference, DiverseScholar, Irvine, CA
Jan 2023	qBio Monthly Meetings, UC San Diego, San Diego, CA
May 2022	Cardiology Fellows Research Day, UC San Diego, San Diego, CA
July 2020	Hilde Mangold Postdoctoral Symposium, Society for Developmental Biology (Virtual)
October 2018	Chancellor's Research Excellence Scholarship Symposium, UC San Diego, San Diego, CA
April 2017	BioEngineering Colloquium, Princeton University, Princeton, NJ
July 2016	The Allied Genetics Conference, Orlando, FL
May 2016	Mid-Atlantic Society for Developmental Biology Meeting, Washington, DC
May 2016	Icahn Seminar Series, Princeton University, Princeton, NJ
November 2015	Developmental Colloquium, Princeton University, Princeton, NJ
October 2015	CBE Graduate Student Symposium, Princeton University, Princeton, NJ
October 2014	Molecular Biology Department Retreat, Princeton University, Princeton, NJ
April 2011	SoCal Undergraduate Research Conf. in Chemistry and Biochemistry, Santa Barbara, CA

POSTERS

July 2023	Society for Developmental Biology, Chicago, IL
March 2022	Systems Biology: Global Regulation of Gene Expression, Laurel Hollow, NY.
May 2019	Cardiology Fellows Research Day, San Diego, CA
July 2018	Society for Developmental Biology, Portland, OR
April 2017	11th Structural Birth Defects Meeting, Bethesda, MD
July 2015	4th International RASopathies Symposium, Seattle, WA

LEADERSHIP EXPERIENCE AND SERVICE

Poster Judge, UC Leads symposium and BUMMP Annual Student Symposium	Apr. 2023 - Present
Research Area Safety Coordinator, Farley Lab at UC San Diego	Mar. 2023 - Present
Mentor, Biology Undergraduate and Master's Mentorship Program	Oct. 2022 - Present
Reviewer, The Catalyst @UCSD	Jan. 2022 - Present

Peer reviewer for *Human Mutation, Biophys. J., Mol. Ecol. Resour., Journal of Experimental Zoology Part B: Mol. and Dev. Evol.*
Moderator, The Annual Summer Research Conference UC San Diego Aug. 2020
Alumni Volunteer Interviewer, Princeton University Alumni Schools Committee Feb. 2017 – Mar. 2020
AHA Reviewer in training Sep. 2019
Member, Princeton University Graduate Engineering Council Feb. 2016 – Jun. 2017
Caltech Upper Class Counselor Sep. 2011 – May 2012
Co-Editor-in-Chief, Caltech Undergraduate Research Journal Jun. 2011 – May 2012
Associate Editor, Caltech Undergraduate Research Journal Oct. 2008 – May 2011
Caltech RISE Tutoring Program, Tutored Pasadena High School Students Oct. 2010 – May 2012
Caltech Dean's Tutoring Program, General and Organic Chemistry Oct. 2009 – Mar. 2010, Jan. 2011 – Mar. 2011

TEACHING AND MENTORING EXPERIENCE

Instructor of Record, BISP 194 undergraduate class on evolutionary developmental biology July 2023 – Sep 2023
Discussion leader, Monthly journal club on evolutionary developmental biology Jan 2018 – Dec 2019
Completion of Pathways to Scientific Teaching course, taught by Diane Ebert-May Mar 2018
Assistant in Instruction, Introduction to Chemical Engineering Principles undergraduate course Fall 2015
Instructor, Introduction to Biotechnology intersession course Wintersession 2015
Research Mentor

- Alexis Bantle, UCSD Biological Sciences graduate rotation student Jan. 2021 – Feb. 2021
- Joe Solvason, UCSD Bioinformatics graduate rotation student Oct. 2018 – Dec. 2018
- Sally Lee, '19; Summer Molecular Biology Princeton undergraduate Jun. 2017 – Aug. 2017
- Iason Kountouridis, '17; Mathematics Princeton undergraduate Jun. 2015 – Sep. 2016
- Aleena L. Patel, Chemical Engineering Princeton graduate rotation student Dec. 2015 – Jun. 2016
- Ji-Sung Kim, '18; Computer Science Princeton undergraduate Feb. 2015 – May 2015
- Courtney Balgobin, '15; Senior Thesis Molecular Biology Princeton undergraduate Apr. 2014 – May 2015
- Hope Xu, '15; Summer Molecular Biology Princeton undergraduate Jun. 2013 – Aug. 2013

PROFESSIONAL REFERENCES

Emma K. Farley (Postdoctoral advisor)
Assistant Professor
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