

# Granton A. Jindal

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Postdoctoral Scholar • University of California San Diego

[grantonjindal.github.io](https://grantonjindal.github.io)

## EDUCATION

<b>Princeton University</b>	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”	
<b>California Institute of Technology</b>	Pasadena, CA
B.S., Bioengineering, with Honor	Jun. 2012
Research Title: “Investigating AND gate topologies to aid in proteomic analysis”	

## RESEARCH EXPERIENCE

<b>Department of Medicine, University of California San Diego</b>	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 <i>Ciona</i> and human iPSC-cardiomyocytes. Demonstrated that affinity-optimizing mutations within cardiac enhancers disrupt heart development.	
<b>Lewis-Sigler Institute, Princeton University</b>	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.	
<b>Kavli Institute for Theoretical Physics, University of California Santa Barbara</b>	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	
<b>California Institute of Technology</b>	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.	
<b>Louisiana State University</b>	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

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

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

## AWARDS

<b>Schulman Award for Cardiovascular Research</b> , UCSD Division of Cardiovascular Medicine	Jun. 2022
<b>Hilde Mangold Postdoctoral Symposium Participant</b> , Society for Developmental Biology	Jul. 2020
<b>Poster Award</b> , 11 <sup>th</sup> Structural Birth Defects Meeting, Bethesda, MD	Apr. 2017
<b>DeLill Nasser Award for Professional Development in Genetics</b> , Genetics Society of America	May 2016
<b>Schowalter Travel Award</b> , Princeton University Chemical & Biological Engineering	Mar. 2016
<b>Valedictorian of Class of 2008</b> , Baton Rouge Magnet High School	May 2008
<b>Intel Science Talent Search Semifinalist</b> , 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. *Accepted in principle* at **Nature**.
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<sup>#</sup>, Shvartsman SY<sup>#</sup>. 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

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Jan 2024 (upcoming)	Ethel Browne Harvey Postdoctoral Seminar Series, Society for Developmental Biology (Virtual)
Jan 2024 (upcoming)	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

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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	11 <sup>th</sup> Structural Birth Defects Meeting, Bethesda, MD
July 2015	4 <sup>th</sup> International RASopathies Symposium, Seattle, WA

### LEADERSHIP EXPERIENCE AND SERVICE

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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 <i>Human Mutation</i> , <i>Biophys. J.</i> , <i>Mol. Ecol. Resour.</i> , <i>Journal of Experimental Zoology Part B: Mol. and Dev. Evol.</i>	
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

<b>Instructor of Record</b> , BISP 194 undergraduate class on evolutionary developmental biology	July 2023 – Sep 2023
<b>Discussion leader</b> , Monthly journal club on evolutionary developmental biology	Jan 2018 – Dec 2019
<b>Completion of Pathways to Scientific Teaching course</b> , taught by Diane Ebert-May	Mar 2018
<b>Assistant in Instruction</b> , Introduction to Chemical Engineering Principles undergraduate course	Fall 2015
<b>Instructor</b> , Introduction to Biotechnology intersession course	Wintersession 2015
<b>Research Mentor</b>	
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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 Department of Medicine/Molecular Biology  
 9500 Gilman Drive, Mail Code: 0613  
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### Rebecca D. Burdine (Ph.D. advisor)

Professor  
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### Stanislav Y. Shvartsman (Ph.D. advisor)

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### Gertrud M. Schupbach (Collaborator)

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