

## Joshua H. Cook

80 Gordon St., Apt. 2  
Brighton, MA, 02135  
(818)-437-7904  
[jhcook@g.harvard.edu](mailto:jhcook@g.harvard.edu)  
[josh.hr.cook@gmail.com](mailto:josh.hr.cook@gmail.com)  
<https://github.com/jhrcook>  
ORCID: 0000-0001-9815-6879

## EDUCATION

### Harvard University (2017-Present)

Biological and Biomedical Sciences Ph.D. Program  
GPA: 3.87

### University of California, Irvine (2013-2017)

Biochemistry & Molecular Biology, B.S. (with Honors)  
Chemistry, B.S.  
Cumulative GPA: 3.94 (Magna Cum Laude)

## CURRENT RESEARCH

### Research Advisors

#### Professor Kevin Haigis

Director, Cancer Genetics, Beth Israel Deaconess Medical Center  
Associate Professor of Medicine, Harvard Medical School

#### Professor Peter Park

Director, Bioinformatics and Integrative Genomics PhD program, HMS  
Director, Center for Stem Cell Bioinformatics, Harvard Stem Cell Institute  
Co-leader, Cancer Data Sciences Program, Dana-Farber/Harvard Cancer Center

### Investigating the mutational relationships in colorectal cancer

With Dr. Giorgio Melloni in the Park Lab, I am working to understand why some mutations co-occur at a frequency above that expected by chance alone using a pathway-level approach.

### Tissue specificity of *KRAS* mutations

In collaboration with the Gygi (Dept. of Cell Bio., HMS) and Lauffenburger (MIT) Labs, we are searching for the reasons underpinning the results of *KRAS* mutations in different tissues. The question we are asking is, "Why are some *KRAS* mutations only oncogenic in a subset of tissues?" with the desire to better understand the mechanisms by which *KRAS* mutations induce oncogenesis.

## PREVIOUS RESEARCH

### ***Toxoplasma gondii* disrupts $\beta$ 1 integrin signaling and focal adhesion formation during monocyte hypermotility (PMID: 29295815)**

Undergraduate Researcher — August 2014 - August 2017 — UC Irvine

In the laboratory of Professor Melissa Lodoen, I investigated the patterns and mechanisms of dissemination by which *Toxoplasma gondii*, an obligate, intracellular parasite, infects a human host.

### **Loss of *Magel2* impairs the development of hypothalamic anorexigenic circuits (PMID: 27288456)**

Research Internship — Summer of 2014 — Saban Research Institute, Los Angeles

I studied the underlying causes of developmental disruptions within the hypothalamus that are characteristic of Prader-Willi syndrome under Dr. Sebastien Bouret.

### **The role of hepatic stem cells in the development of Alagille syndrome and biliary atresia**

Research Internship — Summer of 2012 — Saban Research Institute, Los Angeles

Under the guidance of Dr. Kasper Wang, I researched the role of liver progenitor cells in these two rare, yet deadly, early onset diseases.

## PUBLICATIONS

Emily J. Poulin, Asim K. Bera, Jia Lu, Yi-Jang Lin, Samantha Dale Strasser, Joao A. Paulo, Tannie Q. Huang, Carolina Morales, Wei Yan, **Joshua Cook**, Jonathan A. Nowak, Douglas K. Brubaker, Brian A. Joughin, Christian W. Johnson, Rebecca A. DeStefanis, Phaedra C. Ghazi, Sudershan Gondi, Thomas E. Wales, Roxana E. Iacob, Lana Bogdanova, Jessica J. Gierut, Yina Li, John R. Engen, Pedro A. Perez-Mancera, Benjamin S. Braun, Steven P. Gygi, Douglas A. Lauffenburger, Kenneth D. Westover, Kevin M. Haigis. Tissue-Specific Oncogenic Activity of KRAS<sup>A146T</sup>. *Cancer Discovery*. (PMID: 30952657)

**Joshua H. Cook**<sup>1</sup>, Norikiyo Ueno<sup>1</sup>, Melissa B. Lodoen, Jan. 2, 2018. *Toxoplasma gondii* disrupts  $\beta$ 1 integrin signaling and focal adhesion formation during monocyte hypermotility. *Journal of Biological Chemistry*. (PMID: 29295815)

Julien Maillard, Soyoung Park, Sophie Croizier, Charlotte Vanacker, **Joshua H. Cook**, Vincent Prevot, Maithe Tauber, Sebastien G. Bouret. June 9, 2016. Loss of *Magel2* Impairs the Development of Hypothalamic Anorexigenic Circuits. *Human Molecular Genetics*. (PMID: 27288456)

## HONORS & AWARDS

April 8, 2019 — NSF Graduate Research Fellowship Program Honorable Mention

June 19, 2017 — Honors in Biological Sciences

May 19, 2017 — Phi Lambda Upsilon

“A national chemistry honorary society into which a few select graduating chemistry students are invited.”

May 19, 2017 — American Chemical Society Polymer Education Award

May 10, 2017 — Jayne Unzelman Scholarship (\$3,000)

“Undergraduate student, academic excellence and service to the School of Biological Sciences and/or the University, and service to the community.”

May 5, 2017 — UC Irvine Chancellor’s Award of Distinction

May 3, 2017 — Phi Beta Kappa

March 15, 2017 — Fulbright Fellowship Alternate

January 19, 2017 — Undergraduate Research Opportunities Program (UROP) Fellow and Grant Recipient (\$400)

October 12, 2016 — Malcolm R. Stacey Memorial Scholarship (\$500)

“Awarded to meritorious students of Jewish descent with financial need.”

June 21, 2016 — UCI Alumni Association 2016-17 Distinguished Anteaters<sup>1</sup> Award (\$1,500)

June 14, 2016 — Summer Undergraduate Research Program (\$1,300)

May 11, 2016 — UCI School of Bio Sci Brian Atwood Scholarship (\$3,000)

“Awarded to a Junior-level Biological Sciences major who has demonstrated outstanding achievement in both scholarship and service to the UCI community.”

May 3, 2016 — Robert Ernst Prize for Excellence in Research in the Biological Sciences (\$250)

April 27, 2016 — Excellence in Research

A UCI School of Biological Sciences undergraduate competition whereby each student submits a manuscript of their research project, gives an oral presentation, and holds a poster session.

March 31, 2016 — Barry Goldwater Scholar (\$7,500)

January 13, 2016 — UROP Fellow and Grant Recipient (\$500)

June 15, 2015 — UROP Honorary Fellowship

January 9, 2015 — UROP Fellow and Grant Recipient (\$500)

2014-2016 — UCI Dean’s Honor List (all 12 academic quarters)

2014-present — UCI Campuswide Honors Program

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<sup>1</sup> The anteater is the UC Irvine mascot.

## PRESENTATIONS

May 14, 2016 — UCI Undergraduate Research Opportunities Program Symposium (poster): *Toxoplasma gondii*-induced hypermotility in human primary monocytes through the dysregulation of  $\beta$ 1 integrins

April 19, 2016 — UCI Excellence in Research (poster): *Toxoplasma gondii*-induced hypermotility in human primary monocytes through the dysregulation of  $\beta$ 1 integrins

April 12, 2016 — UCI Excellence in Research (oral): *Toxoplasma gondii*-induced hypermotility in human primary monocytes through the dysregulation of  $\beta$ 1 integrins

April 9, 2016 — West Coast Biological Sciences Undergraduate Research Conference (oral): Hypermotility of human primary monocytes through the dysregulation of  $\beta$ 1 integrins by *Toxoplasma gondii*

May 16, 2015 — UCI Undergraduate Research Opportunities Program Symposium (oral): Destabilization of cell adhesion in human monocytes infected with *Toxoplasma gondii*

## LEADERSHIP EXPERIENCE

### LARC Tutor

August 2015 - September 2016

I led group tutoring sessions for undergraduate students as part of the Learning and Academic Resource Center (LARC) at UCI. I have tutored an Introductory Biology course, Biochemistry, Molecular Biology, and Calculus.

### LARC Tutor Advisor

March 2016 - June 2017

I instructed LARC tutors in improving their tutorials and teaching methods. In addition, I spent a lot of time interacting with the tutors to make sure they were managing their course load and job in an efficient and healthy manner. I had an administrative role, as well. In particular, I orchestrated the scheduling and creation of LARC tutorials and handled day-to-day problems that inevitably arose.

### Irvine Little League Manager

February 2016 - June 2016, January 2017 - July 2017

My first year, I co-managed a Majors division (11 - 12 year olds) baseball team in the Irvine Ranch Little League and co-managed the 11 year-old's All Star Team over the summer. My second season, I managed my own team in the AA division (8-10 year olds). I fulfilled several administrative roles including attending league meetings, organizing parent volunteers, and scheduling practices and games. My goal as a manager of these young boys was to emulate maturity, determination, and level-headedness, especially when under pressure. Excitingly, my AA team was season champion and won the Irvine City Championship Tournament!

## Campuswide Honors Program Peer Mentor

August 2016 - June 2017

I assisted four incoming freshmen in acclimating to UC Irvine. I supported them by alerting them to useful resources, answering questions they have about classes, and helping them work through a stressful period in their academic career.

## Scholarship and Opportunities Program (SOP) Peer Scholars Mentoring Program

September 2016 - January 2017

I helped three UCI Barry Goldwater Scholarship applicants prepare their applications. Though the applicants had research experience and strong academic standing, they are inexperienced in drafting national scholarship applications. As I have won the Goldwater Scholarship and applied for the Churchill Scholarship and Fulbright Fellowship, my goal was to guide these students through the process and assist them in crafting a strong application.

## Private Tutoring

September 2018 - Current

I am a general tutor for a high school freshman. Therefore, in any one night, we will range from history to physics to computer science. Mainly, I ensure that he understands the material and help him grasp topics he finds difficult. While I have a good handle on most of the information covered, sometimes his course material stretches well beyond my comfort level (for example, his Mandarin course). When I find myself in these scenarios, I probe his understanding by asking questions and having him teach me the material.

## PROGRAMMING LANGUAGES

- R
- Python
- Swift
- Bash
- Matlab

## ADDITIONAL SKILLS

- Basic electrical engineering
- 3D modeling and Printing/Rapid-prototyping

## REFERENCES<sup>2</sup>

### Kevin Haigis, PhD.

**Affiliation:** Principal Investigator  
Director, Cancer Genetics, Beth Israel  
Deaconess Medical Center  
Associate Professor of Medicine, Harvard  
Medical School  
khaigis@bidmc.harvard.edu

### Melissa B. Lodoen, PhD.

**Affiliation:** Principal Investigator  
Dept. of Molecular Biology & Biochemistry  
University of California, Irvine  
(949) 824-7805  
mlodoen@uci.edu

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<sup>2</sup> More available upon request.