

Rajat Rohatgi MD, PhD
Curriculum Vitae

Associate Professor of Biochemistry and Medicine
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POSITION

6/1/16-present Associate Professor (with tenure)
Department of Biochemistry
Department of Medicine, Division of Oncology
Member, Stanford Cancer Institute
Member, Bio-X
Stanford University School of Medicine

EDUCATION

June 1994 A.B. *summa cum laude* in The Biochemical Sciences. Harvard College.
June 2002 M.D. Harvard Medical School.
June 2002 Ph.D. in Cell and Developmental Biology. Harvard Medical School.
2002-2003 Intern in Internal Medicine. Stanford University Medical Center.
2003-2004 Resident in Internal Medicine. Stanford University Medical Center.
2004-2008 Fellow in Oncology. Stanford University Medical Center.

LICENSURE AND CERTIFICATION

2003 Full California Medical License.
2005-2015 American Board of Internal Medicine Certification in Internal Medicine.
2008-2018 American Board of Internal Medicine Certification in Medical Oncology.

RESEARCH

1992-1994 Undergraduate research and senior thesis. Laboratory of Jack W. Szostak, Professor of Genetics, Massachusetts General Hospital/Harvard Medical School. Thesis: *Non-Enzymatic Template-Directed Ligation Reactions of Ribooligonucleotides*.

1997-2000 Doctoral research. Laboratory of Marc W. Kirschner, Professor and Chairman. Department of Cell and Developmental Biology, Harvard Medical School. Thesis: *Biochemical Dissection of a Signaling Pathway that Controls Actin Assembly*.

2001-2002 Post-Doctoral Research. Laboratory of Marc W. Kirschner, Professor and Chairman. Department of Cell and Developmental Biology, Harvard Medical School. Project: *Biochemical purification of Toca-1, a Novel factor required for Cdc42-induced actin assembly*.

2005-2008 Post-Doctoral Fellow. Laboratory of Matthew P. Scott, Professor of Developmental Biology. Department of Developmental Biology, Stanford University School of Medicine. Project: *Biochemical mechanisms of Hedgehog signaling*.

TEACHING

1993	Teaching Fellow for the undergraduate course <i>Principles of Biochemistry and Cell Biology</i> , Harvard University. Cited by students for quality of teaching in the annual Course Evaluation Guide.
1997	Teaching Fellow for the graduate course <i>Principles of Genetics</i> , Harvard Medical School.
2003-2005	Resident in Medicine and Fellow in Oncology, Stanford University School of Medicine. Supervised medical interns and residents in the care of patients admitted to the internal medicine and oncology services.
2009, 2014	Literature discussion section leader for medical student course <i>Cells to Tissues</i> (Bioc 205), Stanford University School of Medicine.
2012-2015	Literature discussion section leader for graduate student course <i>Advanced Cell Biology</i> (Bioc 224).
2015	Lecturer in graduate student course <i>Advanced Cell Biology</i> (Bioc 224).
2009-present	Supervision and teaching of medical students, residents, oncology fellows, and graduate students in the Departments of Medicine and Biochemistry at Stanford.

TRAINEES

High School Students

1. Griffin Koontz, Woodside Priory School, Portola Valley, CA. Summer, 2011.

College Students

1. Sohini Khan. Undergraduate student, Caltech Summer Undergraduate Research Fellowship (SURF) Program. 6/15/2011-9/1/2011.
2. Bhaven Patel. Undergraduate student, Stanford University. 6/2013-present.
3. Lea Hampton-O'Neil. Undergraduate student, Cambridge University, U.K. 6/2012-8/2012.

Graduate and Medical Students

1. Joseph Wassei, medical student, Johns Hopkins School of Medicine, 6/2010-8/2010.
2. Siggie Nachtergaele, graduate student (National Science Foundation graduate fellow), Dept. of Biochemistry. 6/2010-7/2014.
Current Position: Damon Runyon Post-Doctoral Fellow, University of Chicago.
3. Karolin Dorn, graduate student, University of Dusseldorf, Germany. 1/2010-3/2013.
Current Position: Post-Doctoral Fellow, German Cancer Research Center, Heidelberg.
4. Giovanni Luchetti, graduate student (Ford Foundation Fellow), Department of Biochemistry. 4/2012-present.
5. Priscilla Sugianto, medical student, Stanford University School of Medicine. 8/2012-6/2013.
6. Maia Kinnebrew, graduate student, Stanford University School of Medicine, 4/2015-present.

Post-Doctoral Fellows

1. Pawel Niewiadomski. Post-doctoral fellow and Research Associate. 1/2010-12/2012.
Current Position: Group Leader, Center of New Technologies, University of Warsaw, Poland.
2. Yan Ma. Post-doctoral fellow. 12/2009-8/2013.
3. Andres Lebensohn. Post-doctoral fellow (Helen Hay Whitney Foundation). 6/2010-present.
4. Sara Peyrot. Post-doctoral fellow. 1/2011-7/2012.
Current Position: Research Associate, UCSF.
5. Ganesh Pusapati. Post-doctoral fellow, 3/2013-present.
6. Ramin Dubey. Post-doctoral fellow, 1/2014-present.
7. Hermann Broder Schmidt. Post-doctoral fellow, 9/2014-present.
8. Ria Sircar. Post-doctoral fellow, 9/2014-present.

Clinical Fellows and Instructors

1. Eric Humke, Oncology fellow and Instructor of Medicine. 1/2009-7/2011. Received a top-tier score on his NIH/NCI KO8 application (declined).
Current Position: Medical Director, Genentech/Roche.

2. Atul Kumar. Instructor of Medicine. 9/2009-5/2015. Funded by a NIH/NCI KO8 award.

GRADUATE STUDENT COMMITTEES

Thesis defense committees

1. Ryan Nottingham (Committee Chair), Department of Biochemistry (Pfeffer Lab), 4/2/10.
2. Corey Meyer, Department of Biochemistry (Straight Lab), 9/30/11.
3. Ben Moree, Department of Biochemistry (Straight Lab), 4/19/12.

Thesis advisory committees

1. Tyler Hillman (Scott Lab), Department of Developmental Biology (defended 7/12/2010).
2. Michelle Rengarajan (Theriot Lab), Department of Biochemistry (defended 5/2014).
3. Akiko Seki (Meyer Lab), Department of Chemical and Systems Biology (defended 3/2015).
4. Daniel Patrick Van De Mark (Stearns Lab), Department of Biology (defended 5/2014).
5. Jude Lee (Shen lab), Department of Biochemistry (ongoing).
6. Victoria Johnson (Pfeffer lab), Department of Biochemistry (ongoing).
7. Caleb Chan (Theriot lab), Department of Biochemistry (ongoing).
8. Steven Barrett (Salzman lab), Department of Biochemistry (ongoing).
9. Brian Alford (Brandman lab), Department of Biochemistry (ongoing).
10. Ahmad Nabhan (Krasnow lab), Department of Biochemistry (ongoing).
11. Fabian Ortega (Theriot lab), Department of Biochemistry (ongoing).

HONORS AND AWARDS

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| 1990 | National Merit Scholarship. |
| 1991 | Detur Prize, Harvard College. Awarded to the top 50 students in the freshman class. |
| 1991 | CRC Freshman Chemistry Award, Harvard College. |
| 1992 | John Harvard Scholarship, Harvard College. |
| 1993 | <i>Phi Beta Kappa</i> . One of top 24 students at Harvard College, class of 1994. |
| 1994 | <i>Summa cum laude</i> . Harvard College. |
| 1994 | Thomas T. Hoopes Prize, Harvard College. Awarded for excellence in scholarly work and research based on the undergraduate senior thesis. |
| 1994 | Lawrence J. Henderson Prize, Harvard College. Awarded to the best undergraduate senior thesis in the Biochemical Sciences. |
| 1994 | Medical Scientist Training Program Grant, National Institutes of Health. |
| 1999 | Invited Minisymposium speaker at the American Society for Cell Biology Annual Meeting. |
| 2002 | Henry Asbury Christian Award for outstanding performance in research and scholarly activities, Harvard Medical School. |
| 2002 | Soma Weiss Prize. Harvard Medical School. |
| 2006-2007 | Damon Runyon Cancer Research Foundation Fellowship. |
| 2007-2008 | Pilot/Feasability Award, Stanford Digestive Diseases Center. |
| 2007-2009 | Young Investigator Award, American Society for Clinical Oncology. |
| 2007-2012 | Howard Temin Pathway to Independence Award (K99/R00), National Cancer Institute. |
| 2009 | Josephine Q. Berry Faculty Scholar in Cancer Research. Stanford University |
| 2009-2011 | Martin D. Abeloff Scholar of the V foundation for Cancer Research. Research project received the highest rating from the Scientific Advisory Board in 2009. |
| 2010-2013 | Stand Up To Cancer Innovation Research Grant. American Association for Cancer Research. |
| 2010-2012 | Basil O' Connor Starter Scholar Award. March of Dimes Foundation. |
| 2010-2014 | Pew Scholar in the Biomedical Sciences. |
| 2010-2014 | Distinguished Scientist Award. The Sontag Foundation. |
| 2012 | Best poster prize (with student Karolin Dorn), Hedgehog 2012, Biopolis, Singapore. |
| 2012 | NIH Director's New Innovator Award, NIH Common Fund. |

- 2014 Outstanding paper selection for “Structure and function of the Smoothened extracellular domain in vertebrate Hedgehog signaling.” *eLife* editorial board.
- 2016 Maximizing Investigators’ Research Award (MIRA) for established investigators from the NIH/NIGMS.

PROFESSIONAL MEMBERSHIPS

- 1995-present Massachusetts Medical Society
- 2012-present American Society for Cell Biology
- 2005-2006 American Association for Cancer Research
- 2006-2011 American Society of Clinical Oncology (ASCO)

TALKS

- 1999 American Society for Cell Biology Annual Meeting (selected).
- 2002 Soma Weiss Speaker Award, Harvard Medical School (selected).
- 2007 Regenerative Medicine at Stanford (REMS) Series. Stanford University (invited).
- 2007 Department of Hematology and Oncology, University of California, San Diego (invited).
- 2007 Massachusetts General Hospital Cancer Center (invited).
- 2007 Department of Biochemistry, Stanford University School of Medicine (invited).
- 2007 Department of Cancer Biology, Memorial Sloan Kettering Cancer Center (invited).
- 2008 Department of Hematology and Oncology, University of California, San Francisco (invited).
- 2008 Department of Molecular Biology, Massachusetts General Hospital (invited).
- 2008 Department of Stem Cell and Regenerative Medicine, Harvard University (invited).
- 2008 Department of Cell Biology, University of Texas Southwestern Medical Center (invited).
- 2009 13th World Conference on Lung Cancer, San Francisco, CA (invited).
- 2010 FASEB summer research conference: The Biology of Cilia and Flagella (invited).
- 2010 The Fourth Comprehensive Cancer Research Training Program at Stanford University (invited).
- 2011 Pew Scholars Annual Meeting, Cozumel, Mexico (grant related).
- 2011 Sontag Foundation Winter Retreat (grant related).
- 2011 Laboratory of Respiratory Biology, National Institute of Environmental Health Sciences, NIH (invited).
- 2011 Department of Biological Chemistry, Johns Hopkins University School of Medicine (invited).
- 2012 Sontag Foundation Winter Retreat (grant related).
- 2012 Regenerative Medicine at Stanford (REMS) Series. Stanford University (invited).
- 2012 Hedgehog 2012: Hedgehog Signaling in Development, Evolution and Disease (International Meeting), Biopolis, Singapore (invited).
- 2012 St. Jude’s Children’s Research Hospital Cancer Center (invited).
- 2012 Department of Cell and Developmental Biology, Vanderbilt University School of Medicine (invited).
- 2012 Early Research and Development, Genentech (invited).
- 2012 Special session on the Biology of Cilia and Flagella, American Society for Cell Biology (invited).
- 2013 Sontag Foundation Winter Retreat (grant related).
- 2013 Department of Developmental Biology, Washington University School of Medicine (invited).

- 2013 Molecular Biology Institute, UCLA (invited).
- 2013 Department of Molecular, Cellular and Developmental Biology, University of Colorado at Boulder (invited).
- 2014 Pew Scholars Annual Meeting, Costa Rica (grant related).
- 2014 Department of Physiological Chemistry, Genentech (invited).
- 2014 Broad Center for Regenerative Medicine and Stem Cell Research, University of Southern California (invited).
- 2014 Hedgehog 2014: Hedgehog Signaling in Development and Disease, Ann Arbor, Michigan (invited).
- 2014 Cell Press Lablinks meeting entitled “9+n in Health and Disease,” Stanford University (invited).
- 2015 Integrated Biomedical Seminar Series, University of California at Davis School of Medicine (invited).
- 2015 Dana Farber/Harvard Cancer Center, Harvard Medical School (invited).
- 2015 Institute for Cellular and Molecular Biology, University of Texas at Austin (invited).
- 2015 Gordon Research Conference on the Cellular and Molecular Biology of Lipids, Waterville Valley, NH (invited).
- 2015 Hedgehog 2015: Mechanisms of Hedgehog Signaling in Development, Tissue Repair and Cancer, Puerto Varas, Chile (invited). *Declined due to conflict.*
- 2015 Department of Molecular and Cellular Oncology, MD Anderson Cancer Center (invited).
- 2015 Department of Developmental Biology, Washington University School of Medicine (invited).
- 2015 Department of Molecular Oncology, Genentech (invited).
- 2015 16'th Annual Great Lakes GPCR Retreat, Hockley Valley, Canada (invited). *Declined due to conflict.*
- 2015 Fifth Annual International CAESAR Conference, “The Omnipresent Cilum—Structure, Signalling and Motion,” Bonn, Germany (invited). *Declined due to conflict.*

SERVICE

- 2009-2014 Graduate Student Admissions Committee, Department of Biochemistry, Stanford.
- 2010-present First Proposal Committee for graduate students, Department of Biochemistry, Stanford.
- 2011-present MSTP admissions committee, Stanford University School of Medicine.
- 2009-present Ad hoc interviewer for oncology fellowship applicants and internal medicine residency applicants.
- 2013 Co-Chair for Minisymposium on “Cell-Cell/Cell-Matrix Interactions and Intracellular Signaling”, American Society for Cell Biology Annual Meeting, New Orleans.
- 2014 Guest Editor (with Isabel Guerrero) of the “Hedgehog Signaling” issue of *Seminars in Cell and Developmental Biology*.

AD HOC REVIEWER

Journal of Clinical Investigation, Proceedings of the National Academy of Sciences, EMBO Journal, PLOS Biology, Developmental Cell, Molecular Biology of the Cell, Nature Structural and Molecular

Biology, Science, Nature Chemical Biology, EMBOReports, Nature Cell Biology, Cell Reports, Elife, Molecular and Cellular Biology.

PUBLICATIONS (an asterisk * denotes co-first or co-corresponding authors)

1. **Rohatgi R**, Bartel DP, and Szostak JW. Kinetic and mechanistic analysis of non-enzymatic, template-directed oligoribonucleotide ligation. *Journal of the American Chemical Society* 118, 3332-3339 (1996).
2. **Rohatgi R**, Bartel DP, and Szostak JW. Non-enzymatic, template-directed ligation of oligoribonucleotides is highly regioselective for the formation of 3'-5'-Phosphodiester bonds. *Journal of the American Chemical Society* 118, 3340-3344 (1996).
3. Ma L, **Rohatgi R**, and Kirschner MW. The Arp2/3 complex mediates actin polymerization induced by the small GTP-binding protein Cdc42. *Proceedings of the National Academy of Sciences USA* 95, 15362-15367 (1998).
4. **Rohatgi R***, Ma L*, Miki H, Lopez M, Kirchhausen T, Takenawa T, and Kirschner MW. The interaction between N-WASP and the Arp2/3 complex links Cdc42-dependent signals to actin assembly. *Cell* 97, 221-231 (1999).
Selected by the "The Scientist" magazine as one of the most frequently cited papers in the field.
5. **Rohatgi R***, Ho HY*, and Kirschner MW. Mechanism of N-WASP activation by CDC42 and phosphatidylinositol 4, 5-bisphosphate. *Journal of Cell Biology* 150, 1299-1310 (2000).
6. Martinez-Quiles N, **Rohatgi R**, Anton IM, Medina M, Saville SP, Miki H, Yamaguchi H, Takenawa T, Hartwig JH, Geha RS, and Ramesh N. WIP regulates N-WASP-mediated actin polymerization and filopodium formation. *Nature Cell Biology* 3, 484-91 (2001).
7. **Rohatgi R**, Nollau P, Ho HY, Kirschner MW, and Mayer BJ. Nck and phosphatidylinositol 4,5 bisphosphate synergistically activate actin polymerization through the N-WASP-Arp2/3 pathway. *Journal of Biological Chemistry* 276, 26448-52 (2001).
8. Ho HY*, **Rohatgi R***, Ma L, and Kirschner MW. CR16 forms a complex with N-WASP in brain and is a novel member of a conserved proline-rich actin-binding protein family. *Proceedings of the National Academy of Sciences USA*. 98, 11306-11311 (2001).
9. Eden S, **Rohatgi R**, Podtelejnikov AV, Mann M, and Kirschner MW. The mechanism of regulation of WAVE1-induced actin nucleation by Rac1 and Nck. *Nature* 418, 790-793 (2002). *Selected as "Must Read" by The Faculty of 1000.*
10. Feldheim DA, Nakamoto M, Osterfield M, Gale NW, DeChiara TM, **Rohatgi R**, Yancopoulos GD, and Flanagan JG. Loss-of-function analysis of EphA receptors in retinotectal mapping. *Journal of Neuroscience*. 24, 2542-50 (2004).

11. Ho HY*, **Rohatgi R***, Lebensohn A, Ma L, Li L, Gygi SP, Kirschner MW. Toca-1 mediates Cdc42- dependent actin nucleation by activating the N-WASP-WIP complex. *Cell* 118, 203-216 (2004).
12. Ho HY, **Rohatgi R**, Lebensohn A, Kirschner MW. In vitro reconstitution of cdc42-mediated actin assembly using purified components. *Methods in Enzymology* 406, 174-90 (2006).
13. **Rohatgi R***, Milenkovic L*, and Scott MP. Patched1 regulates Hedgehog signaling at the primary cilium. *Science* 317, 372-376 (2007). *Highlighted in Science, Cell, and Nature Reviews in Cell and Molecular Biology.*
14. **Rohatgi R** and Scott MP. Patching the gaps in Hedgehog signaling. *Nature Cell Biology* 9, 1005-1009 (2007).
15. **Rohatgi R** and Scott MP. Arrestin' Movement in Cilia. *Science* 320, 1726 – 1727 (2008).
16. **Rohatgi R***, Milenkovic L*, Corcoran RB, and Scott MP. Hedgehog signal transduction by smoothed: pharmacological evidence for a two-step activation process. *Proceedings of the National Academy of Sciences USA* **106**:3196-201 (2009).

The papers listed following this were published as an independent investigator.

17. Milenkovic L, Scott MP*, and **Rohatgi R***. Lateral Transport of Smoothed from the plasma membrane to the membrane of the cilium. *Journal of Cell Biology* 187(3), 365-374 (2009).
18. Humke EW, Dorn KV, Milenkovic L, Scott MP, and **Rohatgi R**. The output of Hedgehog signaling is controlled by the dynamic association between Suppressor of Fused and the Gli proteins. *Genes and Development*. 24(7):670-82 (2010).
19. **Rohatgi R** and Snell WJ. The Ciliary Membrane. *Current Opinion in Cell Biology* 22(4):541-6 (2010).
20. Yavari A, Nagaraj R, Owusu-Ansah E, Follick A, Ngo K, Hillman T, Call G, **Rohatgi R**, Scott MP, Banerjee U. Role of lipid metabolism in smoothed derepression in hedgehog signaling. *Developmental Cell*. 20;19(1):54-65 (2010).
21. Smith EF and **Rohatgi R**. Cilia 2010: The surprise organelle of the decade. *Science Signaling* 4(155):mr1 (2011).
22. Nachtergaele S, Mydock L, Krishnan K, Rammohan J, Schlesinger P, Covey DF*, **Rohatgi R***. Oxysterols are allosteric activators of the oncoprotein Smoothed. *Nature Chemical Biology* 8(2): 211-220 (2012).

23. Briscoe J and **Rohatgi R**. Singapore Signalling: the 2012 Hedgehog pathway cocktail. *EMBO Rep.* 13(7):580-3 (2012).
24. Dorn K, Hughes C and **Rohatgi R**. A Smoothened-Evc2 complex transduces the Hedgehog signal at primary cilia. *Developmental Cell* 23(4):823-35 (2012).
25. Carragee EJ, Chu G, **Rohatgi R**, Hurwitz EL, Weiner BK, Yoon ST, Comer G, Kopjar B. Cancer risk after use of recombinant bone morphogenetic protein-2 for spinal arthrodesis. *Journal of Bone and Joint Surgery* 95(17), 1537-45 (2013).
26. Earhart CM, Hughes CE, Gaster RS, Ooi CC, Wilson RJ, Zhou LY, Humke EW, Xu L, Wong DJ, Willingham SB, Schwartz EJ, Weissman IL, Jeffrey SS, Neal JW, **Rohatgi R**, Wakelee HA, Wang SX. Isolation and mutational analysis of circulating tumor cells from lung cancer patients with magnetic sifters and biochips. *Lab on a Chip.* 14(1), 78-88 (2013).
27. Lin YC, Niewiadomski P, Lin B, Nakamura H, Phua SC, Jiao J, Levchenko A, Inoue T, **Rohatgi R**, Inoue T. Chemically inducible diffusion trap at cilia reveals molecular sieve-like barrier. *Nature Chemical Biology* 9(7):437-443 (2013).
28. Nachtergaele S, Whalen DM, Mydock LK, Zhao Z, Malinauskas T, Krishnan K, Ingham PW, Covey DF, Siebold C*, **Rohatgi R***. Structure and function of the Smoothened extracellular domain in vertebrate Hedgehog signaling. *Elife* 2:e01340 (2013).
29. Niewiadomski P*, Kong JH, Ahrends R, Ma Y, Humke EW, Khan S, Teruel MN, Novitch BG, **Rohatgi R***. Gli protein activity is controlled by multi-site phosphorylation in vertebrate Hedgehog signaling. *Cell Reports* 6(1):168-81 (2014).
30. Pusapati GV, Hughes CE, Dorn KV, Zhang D, Sugianto P, Aravind L*, and **Rohatgi R***. EFCAB7 and IQCE regulate Hedgehog signaling by tethering the EVC-EVC2 complex to the base of primary cilia. *Developmental Cell* 28(5):483-496 (2014).
31. Montgomery SR, Nargizyan T, Meliton V, Nachtergaele S, **Rohatgi R**, Stappenbeck F, Jung ME, Johnson JS, Aghdasi B, Tian H, Weintraub G, Inoue H, Atti E, Tetradis S, Pereira RC, Hokugo A, Alobaidan R, Tan Y, Hahn TJ, Wang JC, Parhami F. A Novel Osteogenic Oxysterol Compound for Therapeutic Development to Promote Bone Growth: Activation of Hedgehog Signaling and Osteogenesis through Smoothened Binding. *Journal of Bone and Mineral Research* 29(8):1872-85(2014).
32. Peyrot SM, Nachtergaele S, Luchetti G, Mydock-McGrane LK, Fujiwara H, Scherrer D, Jallouk A, Schlesinger PH, Ory DS, Covey DF, **Rohatgi R**. Tracking the Subcellular Fate of 20(S)-hydroxycholesterol with Click Chemistry Reveals a Transport Pathway to the Golgi. *Journal of Biological Chemistry*, 289(16):11095-11110 (2014).
33. Mukhopadhyay S and **Rohatgi R**. G-protein-coupled receptors, Hedgehog signaling and primary cilia. *Seminars in Cell and Developmental Biology* 33C:63-72 (2014).

34. Pusapati GV and **Rohatgi R**. Location, location and location: compartmentalization of Hedgehog signaling at primary cilia. *EMBO Journal* 33(17): 1852-1854 (2014).
35. Kong JH, Yang L, Dessaud E, Chuang K, Moore DM, **Rohatgi R**, Briscoe J, Novitsch BG. Notch activity modulates the responsiveness of neural progenitors to sonic hedgehog signaling. *Developmental Cell* 33(4):373-87 (2015).
36. Niewiadomski P, **Rohatgi R**. Measuring Expression Levels of Endogenous Gli Genes by Immunoblotting and Real-Time PCR. *Methods in Molecular Biology* 1322:81-92 (2015).
37. Niewiadomski P, **Rohatgi R**. Rapid Screening of Gli2/3 Mutants Using the Flp-In System. *Methods in Molecular Biology* 1322:125-130 (2015).
38. Ahrends R, Niewiadomski P, Teruel MN, **Rohatgi R**. Measuring Gli2 Phosphorylation by Selected Reaction Monitoring Mass Spectrometry. *Methods in Molecular Biology* 1322:105-123 (2015).
39. Marada S, Navarro G, Truong A, Stewart DP, Arensdorf AM, Nachtergaele S, Angelats E, Opferman JT, **Rohatgi R**, McCormick PJ, Ogden SK. Functional Divergence in the Role of N-Linked Glycosylation in Smoothed Signaling. *PLoS Genetics* 20;11(8):e1005473 (2015).
40. Zhao Z, Lee RT, Pusapati GV, Iyu A, **Rohatgi R**, Ingham PW. An essential role for Grk2 in Hedgehog signalling downstream of Smoothed. *EMBO Reports* 17(5):739-52 (2016).
41. Byrne EF, Sircar R, Miller PS, Hedger G, Luchetti G, Nachtergaele S, Tully MD, Mydock-McGrane L, Covey DF, Rambo RP, Sansom MS, Newstead S, **Rohatgi R***, Siebold C*. Structural basis of Smoothed regulation by its extracellular domains. *Nature* 535(7613):517-22 (2016).
42. Schmidt HB*, **Rohatgi R***. *In Vivo* Formation of Vacuolated Multi-phase Compartments Lacking Membranes. *Cell Reports* 16(5):1228-36 (2016).
43. Dubey R, Lebensohn A, Bahrami-Nejad Z, Marceau C, Champion M, Gevaert O, Sikic BI, Carette JE*, **Rohatgi R***. Chromatin-remodeling complex SWI/SNF controls multidrug resistance by transcriptionally regulating the drug efflux pump ABCB1. *Cancer Research* Epub ahead of print, August 8 (2016).

GRANT SUPPORT
PRESENT

- 9/30/12-7/31/17 Innovator Award, NIH Common Fund (DP2 GM105448)
Title: Reconstructing Primary Cilia
Role: PI
- 6/1/13-5/31/18 March of Dimes Foundation (6-FY13-104)
Title: The Pathophysiology of Cilia-related Skeletal Dysplasias
Role: PI
- 1/1/2015-12/31/18NIH/NIGMS (RO1 GM112988)
Title: Molecular Dissection of Signal Transduction at Primary Cilia
Role: PI
- 10/1/2014-8/31/18 NIH/NIGMS (R01GM106078)
Title: Signal Transduction by Oxysterols
Role: co-PI with Douglas Covey
- 07/1/2014-6/30/15 NIH/NCI (R15 CA186046)
Title: Mode of Action of the Amaryllidaceae Alkaloid Lycorine - Promising Anticancer Agent
Role: co-Investigator (PI is Alexander Kornienko)
- 07/2/2016-06/31/21 NIH/NIGMS Maximizing Investigators Research Award (R35 GM118082)
Title: Biochemical and Cell Biological Mechanisms of Signaling Through the Hedgehog Pathway
Role: PI
- COMPLETED
- 9/01/09-8/31/12 NCI/NIH (R00 CA129174)
Title: Biochemical Mechanisms of Hedgehog Signaling
Role: PI
- 10/01/09-9/30/12 V Foundation for Cancer Research (Scholar Award)
Title: Dissecting the Role of the Tumor Suppressor Sufu in Hedgehog-driven Cancers
Role: PI
- 1/01/10-12/31/12 Stand Up to Cancer Foundation/AACR (Innovation Award)
Title: Endogenous Small Molecules that Regulate Signaling Pathways in Cancer Cells
Role: PI
- 2/01/10-1/31/13 March of Dimes Foundation (Basil O'Connor Award)
Title: Primary Cilia: Nerve Centers for Developmental Signaling
Role: PI

- 4/01/10-3/31/13 NCI/NIH (R33 CA138330)
Title: Cancer Sample Preparation with Micromachined Magnetic Sifter and Nanoparticles
Role: Co-investigator (PI is Shan X. Wang)
- 4/01/11-3/01/13 NINDS/NIH (R21 NS074091)
Title: High-Throughput Imaging of Hedgehog Pathway Components at Primary Cilia.
Role: PI
- 7/1/10-6/30/14 Pew Scholars Award, Pew Charitable Trusts
Title: Signal Transduction at Primary Cilia
Role: PI
- 10/1/10-9/30/14 Distinguished Scientist Award, Sontag Foundation
Title: Regulation of Gli proteins in Medulloblastoma
Role: PI