

CURRICULUM VITAE

JEFFREY DAVID AXELROD

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Place of Birth: White Plains, New York
Citizenship: USA
California Medical License: G85105

Education:

1981 Sc.B. Brown University, Providence, Rhode Island
Biochemistry
Undergraduate Honors Research mentored by
Dr. Michael P. Czech

1991 M.D., Ph.D. Washington University School of Medicine
St. Louis, Missouri, Molecular Biology and Biochemistry
Ph.D. thesis mentored by Dr. John Majors

Honors and Awards: Phi Beta Kappa, Elected in Junior Year
Sigma Xi
Sc.B. *Magna Cum Laude* with Honors in Biochemistry
NIH National Research Service Award, Medical Scientist
Alpha Omega Alpha

Postdoctoral and Residency Training:

7/1991-6/1994 Resident in Clinical Pathology
Brigham and Women's Hospital, Boston MA

7/1994-2/1998 Research Fellow in Pathology
Brigham and Women's Hospital, Boston MA

1/1994-6/1994 Chief Resident in Clinical Pathology
Brigham and Women's Hospital, Boston MA

7/1993-2/1998 Post-doctoral research fellow, Department of Genetics,
Harvard Medical School, Boston, MA
Mentored by Dr. Norbert Perrimon

Board Eligibility:

Clinical Pathology

Employment History:

9/1981-6/1982 Laboratory Technician for Dr. Paul F. Pilch
 Boston University School of Medicine
 Boston, MA

3/1998-1/2005 Assistant Professor, University Tenure Line
 Department of Pathology
 Stanford University School of Medicine
 Stanford, CA

2/2005-2/2013 Associate Professor, with Tenure
 Department of Pathology
 Stanford University School of Medicine
 Stanford, CA

2/2013-present Professor, with Tenure
 Department of Pathology
 Stanford University School of Medicine
 Stanford, CA

Public and Professional Service:

Washington University Medical Center:
 1983-1984 Member, Economic Grand Rounds Committee

Washington University School of Medicine:
 1982-1984 Member, Committee on Medical Education
 1983-1986 Medical Student Tutor
 1984-1985 Teaching Assistant in Medical Genetics
 1985-1987 Director, Graduate Student Seminar Series
 1986-1988 Director, Student Sponsored Seminar Series

Harvard Medical School:
 1994-1997 Member, Standing Committee on Post-doctoral Fellows

Stanford University School of Medicine:
 1998-present Faculty organizer, Current Concepts Conference
 (CME accredited)
 1998-present Medical Scientist Training Program Committee
 1998-2002 Medical Scholars Committee
 2000-present Various faculty search committees
 Department of Pathology
 2000-2016 Cancer Biology Program Steering Committee
 2002-2003 Chair, Medical Scholars Committee
 2002-2017 Pathology Residency Selection Steering Committee
 2003-2007 Cancer Biology Program, Admissions coordinator
 2003-2006 Senator-at-large, Stanford University School of Medicine
 Faculty Senate
 2003-present Advisory Committee for the Scholarly Concentration in the
 Molecular Basis of Medicine
 2005-2011 Director of the Scholarly Concentration in the
 Molecular Basis of Medicine

At large:
 1998-present Ad hoc reviewer for the following journals:
 BioEssays
 BMC Developmental Biology
 Cell
 Cell Reports
 Current Biology

Development
 Developmental Biology
 Developmental Dynamics
 Developmental Cell
 eLife
 EMBO Journal
 EMBO Reports
 Genes and Development
 Genetics
 Human Mutation
 Journal of Cell Biology
 Journal of Cell Science
 Journal of Neuroscience
 Journal of Theoretical Biology
 Mechanisms of Development
 Molecular Biology of the Cell
 Molecular and Cellular Biology
 Nature
 Nature Cell Biology
 Nature Communications
 Nature Genetics
 Nature Medicine
 Nature Reviews
 Proceedings of the National Academy of Sciences
 Public Library of Science, Biology
 Public Library of Science, Computational Biology
 Public Library of Science, Genetics
 Science
 Science Signaling
 Trends in Cell Biology
 Trends in Genetics
 Trends in Neuroscience

1999 International Wnt Meeting, co-organizer
 Stanford University, July 17-19, 1999
 Organizers Jeff Axelrod and Roel Nusse

2001-2015 Faculty of 1000, Faculty Contributor

2001 Ad-hoc reviewer: Canada Foundation for Innovation,
 Innovation Fund, Funds for Research Infrastructure

2002 Ad-hoc reviewer: The Wellcome Trust
 Molecular and Cell Biology

2004 NIH/NIDCD Special Emphasis Panel/Initial Review Group
 ad hoc member

2005 Ad-hoc reviewer: International Research Fellowship
 Program

2005 Ad-hoc reviewer: March of Dimes Birth Defects
 Foundation

2005 Ad-hoc reviewer: The Wellcome Trust Project Grant

2005 NIH/NIDCD Special Emphasis Peer Review Panel

2006-2009 Editorial Board, Developmental Dynamics

2007-2010 Development Differentiation and Cancer Peer Review
 Committee of the American Cancer Society (Chair, 2009-
 2010)

2007 NIH/NICHD Developmental Biology Subcommittee
 Peer Review Panel, ad hoc member

2008	NSF Ad-hoc grant reviewer
2008	NIH ICI Special Emphasis Panel; ad hoc member
2009	NIH Special Emphasis Peer Review Panel; ad hoc member
2009	NIH Endocrinology, Metabolism, Nutrition and Reproductive Sciences Special Emphasis Review Panel; ad hoc member
2010	NIH DEV2 Grant Review Panel; ad hoc member
2011	NIH ICI Grant Review Panel; ad hoc member
2011	NIH Special Emphasis Panel: Biophysical and Biomechanical Aspects of Embryonic Development, Grant Review Panel Chair
2011	NIH DEV2 Grant Review Panel; ad hoc member
2012	NIH Special Emphasis Panel: Biophysical and Biomechanical Aspects of Embryonic Development, Grant Review Panel Chair
2012	United States-Israel Binational Science Foundation grant reviewer
2012-2017	NIH DEV2 Grant Review Panel: standing member, Acting Chair 2015 – 16, Committee Chair 2016-17
2012	US Army Peer Reviewed Medical Research Program, ad hoc reviewer
2014	Children's Tumor Foundation, ad hoc grant reviewer
2015	NIH Special Emphasis Panel: Polycystic Kidney Disease (PKD) Research and Translation Core Centers (P30), Acting Chair
2015	INSERM Plan Cancer grant review panel
2017	NSF Ad-hoc grant reviewer
2018	American Cancer Society Council for Extramural Grants, ad hoc
2019-present	American Cancer Society Council for Extramural Grants, standing member

Post-degree Honors and Awards:

7/1993-6/1996	NIH Clinical Investigator Award
1994	Academy of Clinical Laboratory Physicians and Scientists Paul E. Strandjord Young Investigator Award
1/1998-12/1999	Howard Hughes Medical Institute Junior Faculty Scholars Award
1/1999-12/2000	Cancer Research Fund of the Damon Runyon-Walter Winchell Foundation Damon-Runyon Scholar Award Connie and Bob Lurie Scholar
2/2004	American Society for Clinical Investigation – Election to Membership
2/2011	Association of American Physicians – Election to Membership
3/2014	American Association of University Pathologists (The Pluto Society) – Election to Membership
6/2014	NIH MERIT Award

Societies:

The Genetics Society of America

Society for Developmental Biology
The American Society for Cell Biology
American Association for the Advancement of Science
American Society for Clinical Investigation
Federation of American Societies for Experimental Biology

Publications:

Primary research papers

(1- 57)

1. Pilch PF, Axelrod JD, Colello J, & Czech MP (1981) Unimpaired signal transduction by the adipocyte insulin receptor following its partial proteolytic fragmentation. **J Biol Chem** 256(4), 1570-1575.
2. Axelrod JD & Pilch PF (1983) Unique cytochalasin B binding characteristics of the hepatic glucose carrier. **Biochemistry** 22(9), 2222-2227.
3. Lacey DL, Axelrod J, Chappel JC, Kahn AJ, & Teitelbaum SL (1987) Vitamin D affects proliferation of a murine T helper cell clone. **J Immunol** 138(6), 1680-1686.
4. Axelrod JD & Majors J (1989) An improved method for photofootprinting yeast genes in vivo using Taq polymerase. **Nucleic Acids Res** 17(1), 171-183.
5. Axelrod JD, Majors J, & Brandriss MC (1991) Proline-independent binding of PUT3 transcriptional activator protein detected by footprinting in vivo. **Mol Cell Biol** 11(1), 564-567.
6. Axelrod JD, Reagan MS, & Majors J (1993) GAL4 disrupts a repressing nucleosome during activation of GAL1 transcription in vivo. **Genes Dev** 7(5), 857-869.
7. Benjamin RJ, Linsley L, Axelrod JD, Churchill WH, Sieff C, Shulman LN, Elias A, Ayash L, Malachowski ME, Uhl L, & et al. (1995) The collection and evaluation of peripheral blood progenitor cells sufficient for repetitive cycles of high-dose chemotherapy support. **Transfusion** 35(10), 837-844.
8. Axelrod JD, Matsuno K, Artavanis-Tsakonas S, & Perrimon N (1996) Interaction between Wingless and Notch signaling pathways mediated by Dishevelled. **Science** 271(5257), 1826-1832.
9. Klingensmith J, Yang Y, Axelrod JD, Beier DR, Perrimon N, & Sussman DJ (1996) Conservation of dishevelled structure and function between flies and mice: isolation and characterization of Dvl2. **Mech Dev** 58(1-2), 15-26.
10. Park M, Wu X, Golden K, Axelrod JD, & Bodmer R (1996) The wingless signaling pathway is directly involved in Drosophila heart development. **Dev Biol** 177(1), 104-116.
11. Rulifson EJ, Micchelli CA, Axelrod JD, Perrimon N, & Blair SS (1996) *wingless* refines its own expression domain on the *Drosophila* wing margin. **Nature** 384(6604), 72-74.
12. Axelrod JD, Miller JR, Shulman JM, Moon RT, & Perrimon N (1998) Differential recruitment of Dishevelled provides signaling specificity in the planar cell polarity and Wingless signaling pathways. **Genes Dev** 12(16), 2610-2622.
13. Axelrod JD (2001) Unipolar membrane association of Dishevelled mediates Frizzled planar cell polarity signaling. **Genes Dev** 15(10), 1182-1187.
14. Rousset R, Mack JA, Wharton KA, Jr., Axelrod JD, Cadigan KM, Fish MP, Nusse R, & Scott MP (2001) *naked cuticle* targets *dishevelled* to antagonize Wnt signal transduction. **Genes Dev** 15(6), 658-671.
15. Winter CG, Wang B, Ballew A, Royou A, Karess R, Axelrod JD, & Luo L (2001) Drosophila Rho-associated kinase (Drok) links Frizzled-mediated planar cell polarity signaling to the actin cytoskeleton. **Cell** 105(1), 81-91.

16. Tree DR, Shulman JM, Rousset R, Scott MP, Gubb D, & Axelrod JD (2002) Prickle mediates feedback amplification to generate asymmetric planar cell polarity signaling. **Cell** 109(3), 371-381.
17. Yang CH, Axelrod JD, & Simon MA (2002) Regulation of Frizzled by Fat-like cadherins during planar polarity signaling in the *Drosophila* compound eye. **Cell** 108(5), 675-688.
18. Ma D, Yang CH, McNeill H, Simon MA, & Axelrod JD (2003) Fidelity in planar cell polarity signalling. **Nature** 421(6922), 543-547.
19. Amonlirdviman K, Khare NA, Tree DR, Chen WS, Axelrod JD, & Tomlin CJ (2005) Mathematical modeling of planar cell polarity to understand domineering nonautonomy. **Science** 307(5708), 423-426.
20. Kooroor A, Seyffarth P, Ebert J, Barghshoon S, Chen CK, Schwarz S, Axelrod JD, Cheyette BN, Simon MI, Lester HA, & Schwarz J (2005) D2 dopamine receptors colocalize regulator of G-protein signaling 9-2 (RGS9-2) via the RGS9 DEP domain, and RGS9 knock-out mice develop dyskinesias associated with dopamine pathways. **J Neurosci** 25(8), 2157-2165.
21. Deans MR, Antic D, Suyama K, Scott MP, Axelrod JD, & Goodrich LV (2007) Asymmetric distribution of Prickle-like 2 reveals an early underlying polarization of vestibular sensory epithelia in the inner ear. **J Neurosci** 27(12), 3139-3147.
22. Guan J, Li H, Rogulja A, Axelrod JD, & Cadigan KM (2007) The *Drosophila* casein kinase Iepsilon/delta Discs overgrown promotes cell survival via activation of DIAP1 expression. **Dev Biol** 303(1), 16-28. S0012-1606(06)01320-0 [pii] 10.1016/j.ydbio.2006.10.028
23. Bassuk AG, Wallace RH, Buhr A, Buller AR, Afawi Z, Shimojo M, Miyata S, Chen S, Gonzalez-Alegre P, Griesbach HL, Wu S, Nashelsky M, Vladar EK, Antic D, Ferguson PJ, Cirak S, Voit T, Scott MP, Axelrod JD, Gurnett C, Daoud AS, Kivity S, Neufeld MY, Mazarib A, Straussberg R, Walid S, Korczyn AD, Slusarski DC, Berkovic SF, & El-Shanti HI (2008) A Homozygous Mutation in Human PRICKLE1 Causes an Autosomal-Recessive Progressive Myoclonus Epilepsy-Ataxia Syndrome. **Am J Hum Genet** 83(5), 572-581. PMID: 2668041 S0002-9297(08)00538-7 [pii] 10.1016/j.ajhg.2008.10.003
24. Chen WS, Antic D, Matis M, Logan CY, Povelones M, Anderson GA, Nusse R, & Axelrod JD (2008) Asymmetric homotypic interactions of the atypical cadherin flamingo mediate intercellular polarity signaling. **Cell** 133(6), 1093-1105. PMID: 2446404 S0092-8674(08)00680-6 [pii] 10.1016/j.cell.2008.04.048
25. Ma D, Amonlirdviman K, Raffard RL, Abate A, Tomlin CJ, & Axelrod JD (2008) Cell packing influences planar cell polarity signaling. **Proc Natl Acad Sci U S A** 105(48), 18800-18805. PMID: 2585485 0808868105 [pii] 10.1073/pnas.0808868105
26. Raffard R, Amonlirdviman K, Axelrod JD, & Tomlin CJ (2008) An Adjoint-based Parameter Identification Algorithm applied to Planar Cell Polarity Signaling. **Joint special issue of IEEE Transactions on Circuits and Systems and IEEE Transactions on Automatic Control** pp. 109-121. <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4439823&isnumber=4439798>
27. Vincent S, Perrimon N, & Axelrod JD (2008) Hedgehog and Wingless stabilize but do not induce cell fate during *Drosophila* dorsal embryonic epidermal patterning. **Development** 135(16), 2767-2775. PMID: 2585068 dev.017814 [pii] 10.1242/dev.017814
28. de Jesus Perez VA, Alastalo TP, Wu JC, Axelrod JD, Cooke JP, Amieva M, & Rabinovitch M (2009) Bone morphogenetic protein 2 induces pulmonary angiogenesis via Wnt-beta-catenin and Wnt-RhoA-Rac1 pathways. **J Cell Biol** 184(1), 83-99. PMID: 2615088 jcb.200806049 [pii] 10.1083/jcb.200806049

29. Antic D, Stubbs JL, Suyama K, Kintner C, Scott MP, & Axelrod JD (2010) Planar Cell Polarity Enables Posterior Localization of Nodal Cilia and Left-Right Axis Determination during Mouse and *Xenopus* Embryogenesis. **PLoS ONE** 5(2), e8999. PMID: PMC2814853
30. Silletti A, Abate A, Axelrod JD, & Tomlin CJ (2010) Versatile spectral methods for point set matching. **Pattern Recognition Letters** 32(5), 731-739.
31. Tao H, Manak JR, Sowers L, Mei X, Kiyonari H, Abe T, Dahdaleh NS, Yang T, Wu S, Chen S, Fox MH, Gurnett C, Montine T, Bird T, Shaffer LG, Rosenfeld JA, McConnell J, Madan-Khetarpal S, Berry-Kravis E, Griesbach H, Saneto RP, Scott MP, Antic D, Reed J, Boland R, Ehaideb SN, El-Shanti H, Mahajan VB, Ferguson PJ, Axelrod JD, Lehesjoki AE, Fritzsche B, Slusarski DC, Wemmie J, Ueno N, & Bassuk AG (2011) Mutations in prickle orthologs cause seizures in flies, mice, and humans. **Am J Hum Genet** 88(2), 138-149. PMID: PMC3035715 S0002-9297(10)00648-8 [pii] 10.1016/j.ajhg.2010.12.012
32. Abate A, Vincent S, Dobbe R, Silletti A, Master N, Axelrod JD, & Tomlin CJ (2012) A mathematical model to study the dynamics of epithelial cellular networks. **IEEE/ACM transactions on computational biology and bioinformatics / IEEE, ACM** 9(6), 1607-1620. 10.1109/TCBB.2012.126
33. Matis M, Axelrod JD, & Galic M (2012) A universal analysis tool for the detection of asymmetric signal distribution in microscopic images. **Developmental dynamics : an official publication of the American Association of Anatomists** 241(8), 1301-1309. 10.1002/dvdy.23818
34. Peng Y, Han C, & Axelrod JD (2012) Planar polarized protrusions break the symmetry of EGFR signaling during *Drosophila* bract cell fate induction. **Dev Cell** 23(3), 507-518. 10.1016/j.devcel.2012.07.016
35. Stubbs JL, Vladar EK, Axelrod JD, & Kintner C (2012) Multicilin promotes centriole assembly and ciliogenesis during multiciliate cell differentiation. **Nat Cell Biol** 14(2), 140-147. 10.1038/ncb2406
36. Tao H, Inoue K, Kiyonari H, Bassuk AG, Axelrod JD, Sasaki H, Aizawa S, & Ueno N (2012) Nuclear localization of Prickle2 is required to establish cell polarity during early mouse embryogenesis. **Dev Biol** 364(2), 138-148. 10.1016/j.ydbio.2012.01.025
37. Vladar EK, Bayly RD, Sangoram AM, Scott MP, & Axelrod JD (2012) Microtubules enable the planar cell polarity of airway cilia. **Current biology : CB** 22(23), 2203-2212. 10.1016/j.cub.2012.09.046
38. Ducuing A, Mollereau B, Axelrod JD, & Vincent S (2013) Absolute requirement of cholesterol binding for Hedgehog gradient formation in *Drosophila*. **Biol Open** 2(6), 596-604. 10.1242/bio.20134952
39. Tan FE, Vladar EK, Ma L, Fuentealba LC, Hoh R, Espinoza FH, Axelrod JD, Alvarez-Buylla A, Stearns T, Kintner C, & Krasnow MA (2013) Myb promotes centriole amplification and later steps of the multiciliogenesis program. **Development** 140(20), 4277-4286. 10.1242/dev.094102
40. Vladar EK & Brody SL (2013) Analysis of ciliogenesis in primary culture mouse tracheal epithelial cells. **Methods in enzymology** 525, 285-309. 10.1016/B978-0-12-397944-5.00014-6
41. Ehaideb SN, Iyengar A, Ueda A, Iacobucci GJ, Cranston C, Bassuk AG, Gubb D, Axelrod JD, Gunawardena S, Wu CF, & Manak JR (2014) prickle modulates microtubule polarity and axonal transport to ameliorate seizures in flies. **Proc Natl Acad Sci U S A** 111(30), 11187-11192. 10.1073/pnas.1403357111
42. Matis M, Russler-Germain DA, Hu Q, Tomlin CJ, & Axelrod JD (2014) Microtubules provide directional information for core PCP function. **eLife**, e02893. 10.7554/eLife.02893
43. Olofsson J & Axelrod JD (2014) Methods for studying planar cell polarity. **Methods** 68(1), 97-104. 10.1016/j.ymeth.2014.03.017

44. Olofsson J, Sharp KA, Matis M, Cho B, & Axelrod JD (2014) Prickle/spiny-legs isoforms control the polarity of the apical microtubule network in planar cell polarity. **Development** 141(14), 2866-2874. 10.1242/dev.105932
45. Cho B, Pierre-Louis G, Sagner A, Eaton S, & Axelrod JD (2015) Clustering and negative feedback by endocytosis in planar cell polarity signaling is modulated by ubiquitylation of prickle. **PLoS genetics** 11(5), e1005259. 10.1371/journal.pgen.1005259
46. Vladar EK, Lee YL, Stearns T, & Axelrod JD (2015) Observing planar cell polarity in multiciliated mouse airway epithelial cells. **Methods in cell biology** 127, 37-54. 10.1016/bs.mcb.2015.01.016
47. Gibbs BC, Rao Damerla R, Vladar EK, Chatterjee B, Wan Y, Liu X, Cui C, Gabriel GC, Zahid M, Yagi H, Szabo-Rogers HL, Suyama KL, Axelrod JD, & Lo CW (2016) Prickle1 mutation causes planar cell polarity and directional cell migration defects associated with cardiac outflow tract anomalies and other structural birth defects. **Biol Open**. 10.1242/bio.015750
48. Morgan SL, Seggio JA, Nascimento NF, Huh DD, Hicks JA, Sharp KA, Axelrod JD, & Wang KC (2016) The Phenotypic Effects of Royal Jelly on Wild-Type *D. melanogaster* Are Strain-Specific. **PLoS One** 11(8), e0159456. 10.1371/journal.pone.0159456
49. Sharp KA & Axelrod JD (2016) Prickle isoforms control the direction of tissue polarity by microtubule independent and dependent mechanisms. **Biol Open**. 10.1242/bio.016162
50. Vladar EK, Nayak JV, Milla CE, & Axelrod JD (2016) Airway epithelial homeostasis and planar cell polarity signaling depend on multiciliated cell differentiation. **JCI Insight** 1(13). 10.1172/jci.insight.88027
51. Boscke R, Vladar EK, Konnecke M, Husing B, Linke R, Pries R, Reiling N, Axelrod JD, Nayak JV, & Wollenberg B (2017) Wnt Signaling in Chronic Rhinosinusitis with Nasal Polyps. **Am J Respir Cell Mol Biol** 56(5), 575-584. 10.1165/rcmb.2016-0024OC
52. Kunimoto K, Bayly RD, Vladar EK, Vonderfecht T, Gallagher AR, & Axelrod JD (2017) Disruption of Core Planar Cell Polarity Signaling Regulates Renal Tubule Morphogenesis but Is Not Cystogenic. **Current biology : CB** 27(20), 3120-3131 e3124. 10.1016/j.cub.2017.09.011
53. Dobens LL, Shipman A, & Axelrod JD (2018) FijiWingsPolarity: An open source toolkit for semi-automated detection of cell polarity. **Fly (Austin)** 12(1), 23-33. 10.1080/19336934.2017.1409927
54. Vladar EK, Stratton MB, Saal ML, Salazar-De Simone G, Wang X, Wolgemuth D, Stearns T, & Axelrod JD (2018) Cyclin-dependent kinase control of motile ciliogenesis. **eLife** 7. 10.7554/eLife.36375
55. Smith P, Godde N, Rubio S, Tekeste M, Vladar EK, Axelrod JD, Henderson DJ, Milgrom-Hoffman M, Humbert PO, Hinck L. (2019) VANGL2 regulates luminal epithelial organization and cell turnover in the mammary gland. **Sci Rep**. 9(1):7079. doi: 10.1038/s41598-019-43444-8.
56. Cho B, Song S, & Axelrod JD (2020) Prickle isoforms determine handedness of helical morphogenesis. **eLife** 9. doi: 10.7554/eLife.51456
57. Weiner AT, Seebold DY, Torres-Gutierrez P, Folker C, Swope RD, Kothe GO, Stoltz JG, Zalenski MK, Kozlowski C, Barbera DJ, Patel MA, Thyagarajan P, Shorey M, Nye DMR, Keegan M, Behari K, Song S, Axelrod JD, & Rolls MM (2020) Endosomal Wnt signaling proteins control microtubule nucleation in dendrites. **PLoS Biol** 18 (3): e3000647. <https://doi.org/10.1371/journal.pbio.3000647>

Invited reviews and commentaries

(1- 21)

1. Shulman JM, Perrimon N, & Axelrod JD (1998) Frizzled signaling and the developmental control of cell polarity. **Trends Genet** 14(11), 452-458.
2. Axelrod JD (2002) Strabismus comes into focus. **Nat Cell Biol** 4(1), E6-8.
3. Axelrod JD & McNeill H (2002) Coupling planar cell polarity signaling to morphogenesis. **ScientificWorldJournal** 2(2), 434-454.
4. Tree DR, Ma D, & Axelrod JD (2002) A three-tiered mechanism for regulation of planar cell polarity. **Semin Cell Dev Biol** 13(3), 217-224.
5. Veeman MT, Axelrod JD, & Moon RT (2003) A second canon: functions and mechanisms of b-catenin-independent Wnt signaling. **Dev Cell** 5(3), 367-377.
6. Tomlin CJ & Axelrod JD (2005) Understanding biology by reverse engineering the control. **Proc Natl Acad Sci U S A** 102(12), 4219-4220.
7. Axelrod JD (2006) Cell shape in proliferating epithelia: a multifaceted problem. **Cell** 126(4), 643-645.
8. He X & Axelrod JD (2006) A WNTer wonderland in Snowbird. **Development** 133(14), 2597-2603.
9. Tomlin CJ & Axelrod JD (2007) Biology by numbers: mathematical modelling in developmental biology. **Nat Rev Genet** 8(5), 331-340.
10. Axelrod JD (2008) Basal bodies, kinocilia and planar cell polarity. **Nat Genet** 40(1), 10-11. ng0108-10 [pii] 10.1038/ng0108-10
11. Axelrod JD (2008) Bad hair days for mouse PCP mutants. **Nat Cell Biol** 10(11), 1251-1253. ncb1108-1251 [pii] 10.1038/ncb1108-1251
12. Vldar EK & Axelrod JD (2008) Dishevelled links basal body docking and orientation in ciliated epithelial cells. **Trends Cell Biol** 18(11), 517-520. S0962-8924(08)00215-8 [pii] 10.1016/j.tcb.2008.08.004
13. Axelrod JD (2009) Progress and challenges in understanding planar cell polarity signaling. **Semin Cell Dev Biol** 20, 964-971. S1084-9521(09)00158-X [pii] 10.1016/j.semcdb.2009.08.001
14. Vldar EK, Antic D, & Axelrod JD (2009) Planar cell polarity signaling: The developing cell's compass. **Cold Spring Harb Perspect Biol** 1: a002964 (in press).
15. Axelrod JD (2010) Delivering the Lateral Inhibition Punchline: It's All About the Timing. **Sci Signal** 3(145), pe38. scisignal.3145pe38 [pii] 10.1126/scisignal.3145pe38
16. Axelrod JD & Tomlin CJ (2011) Modeling the control of planar cell polarity. **Wiley Interdiscip Rev Syst Biol Med** 3(5), 588-605. 10.1002/wsbm.138
17. Bayly R & Axelrod JD (2011) Pointing in the right direction: new developments in the field of planar cell polarity. **Nat Rev Genet** 12(6), 385-391. nrg2956 [pii] 10.1038/nrg2956
18. Axelrod JD (2012) Remodeling a tissue: subtraction adds insight. **Sci Signal** 5(252), pe52. 10.1126/scisignal.2003620
19. Peng Y & Axelrod JD (2012) Asymmetric protein localization in planar cell polarity: mechanisms, puzzles, and challenges. **Current topics in developmental biology** 101, 33-53. 10.1016/B978-0-12-394592-1.00002-8
20. Matis M & Axelrod JD (2013) Regulation of PCP by the Fat signaling pathway. **Genes Dev** 27(20), 2207-2220. 10.1101/gad.228098.113
21. Axelrod JD & Bergmann DC (2014) Coordinating cell polarity: heading in the right direction? **Development** 141(17), 3298-3302. 10.1242/dev.111484
22. Axelrod JD (2020) Planar cell polarity signaling in the development of left-right asymmetry. **Curr Opin Cell Biol** 62, 61-69.

Reviewed conference papers

(1-4)

1. Amonlirdviman K, Ghosh R, Axelrod JD, & Tomlin CJ (December 2002) A hybrid systems approach to modeling and analyzing Planar Cell Polarity. *Proceedings of the International Conference on Systems Biology*, Stockholm
2. Raffard R, Amonlirdviman K, Axelrod JD, & Tomlin CJ (December 2006) Automatic Parameter Identification via the Adjoint Method, with Application to Understanding Planar Cell Polarity. *Proceedings of the 45th IEEE Conference on Decision and Control*, San Diego.
3. Raffard R, Amonlirdviman K, Axelrod JD, & Tomlin CJ (April 2006) Automatic parameter identification via the adjoint method: application to protein regulatory networks. *Proceedings of the IFAC 2006 International Symposium on Advanced Control of Chemical Processes*, Brazil.
4. Lau L, Lee YL, Matis M, Axelrod J, Stearns T, & Moerner WE (2011) STED Super-resolution Microscopy in Drosophila Tissue and in Mammalian Cells. *Proceedings of SPIE* 7910.

Book chapters

(1-2)

1. Pilch PF, Axelrod J, & Czech MP (1982) Biological properties of a proteolytically altered insulin receptor. *Serono Symposium: Current Views on Insulin Receptors*, eds Andreani, Depirro, Lauro, Olefski, & Roth (Academic Press, New York), Vol 41, pp 555-560.
2. Axelrod, JD (2012) Mathematical modeling of planar cell polarity signaling. *Pattern Formation in Morphogenesis: Problems and Mathematical Issues*, Springer Proceedings in Mathematics, eds Capasso, V.; Gromov, M.; Harel-Bellan, A.; Morozova, N.; Pritchard, L. 1st Edition. Vol. 15. pp 27-35.
3. Axelrod J.D. (2016) Regulation of Cell Polarity. In: Ralph A Bradshaw and Philip D Stahl (Editors-in-Chief), *Encyclopedia of Cell Biology*, Vol 3, Waltham, MA: Academic Press, pp. 199-207.

Case report

(1)

1. Meunier-Powell J, Sanabria JA, & Axelrod J (1993) *Agrobacterium tumefaciens* (or *Agrobacterium radiobacter*) septicemia in a patient with cervical carcinoma. **Clinical Microbiology Newsletter** 15, 6-7.

Volume Edited

(1)

1. Planar cell polarity signaling. *Seminars in Cell and Developmental Biology*, ed Axelrod (2009) 20(8) 956-1013.

Invited seminars (selected):

Yale University School of Medicine, Boyer Center for Molecular Medicine, February 17, 1994 “Wingless and Notch signaling interactions”

Brandeis University, Department of Biology, September 28, 1995 “Wingless antagonizes Notch signaling”

University of Massachusetts, Amherst, Department of Biochemistry and Molecular Biology. December 6, 1995 “Wingless antagonizes Notch signaling”

- University of Washington, Department of Pharmacology, November 4, 1998
“Developmental control of planar cell polarity”
- University of Texas, Houston, Department of Pharmacology, February 1, 1999
“Frizzled signaling and development of planar cell polarity”
- University of California, Los Angeles, September 28, 2001 “Signal amplification during Frizzled mediated planar cell polarity signaling.”
- University of North Carolina, Chapel Hill, January 25, 2002 "Feedback loops, gradients and fidelity in planar cell polarity signaling."
- Children's Hospital Research Foundation, Cincinnati, Ohio, May 1, 2002
"Feedback loops, gradients and fidelity in planar cell polarity signaling."
- University of Iowa, Interdisciplinary Genetics Program seminar series and class, Iowa City, Iowa, February 10-11, 2003 “Dissecting the logic of planar cell polarity signaling”
- Cancer Research UK, London Research Institute, London, UK, March 31, 2003
“Dissecting the logic of planar cell polarity signaling”
- Wellcome/CRUK Institute, Cambridge, UK, April 1, 2003 “Dissecting the logic of planar cell polarity signaling”
- University of California, Berkeley, BMB/G&D Seminar Series, Berkeley, California, April 24, 2003 “Dissecting the logic of planar cell polarity signaling: experimental and mathematical modeling approaches”
- University of California, San Francisco, Biochemistry Seminar Series, San Francisco, California, September 30, 2003 “Complex patterns from simple rules: reaction diffusion modeling of planar cell polarity signaling”
- Oregon Health Sciences University, Cell & Developmental Biology Seminar Series, Portland, Oregon, November 10, 2003 “Autonomy and non-autonomy in planar cell polarity signaling”
- University of Pennsylvania School of Medicine, Departments of Cell and Developmental Biology and of Genetics, Philadelphia, Pennsylvania, January 26, 2004 “Autonomy and non-autonomy in planar cell polarity signaling”
- Stanford University School of Medicine, Cell Signaling Seminar Series, Stanford, California, February 19, 2004 “Complex patterns from simple rules: reaction diffusion modeling of planar cell polarity signaling.”
- Saban Research Institute of Childrens Hospital, Los Angeles, Basic Research Seminar Series, Los Angeles, California, March 9, 2004 “Complex patterns from simple rules: reaction diffusion modeling of planar cell polarity signaling.”
- Department of Developmental and Cell Biology, and Center for Complex Biological Systems, University of California, Irvine, California. May 6, 2004
“Complex patterns from simple rules: reaction diffusion modeling of planar cell polarity signaling.”

Department of Molecular Biology and Pharmacology, Washington University School of Medicine, St. Louis, MO, October 29, 2004 “Dissecting the logic of planar cell polarity signaling: experimental and mathematical modeling approaches”

Memorial Sloan-Kettering Cancer Center, New York, NY, December 9, 2004 “Dissecting the logic of Planar Cell Polarity Signaling”

Department of Genetics, Cell Biology and Development, University of Minnesota, Minneapolis, MN, May 14, 2005 “Dissecting the logic of planar cell polarity signaling: experimental and mathematical modeling approaches”

Department of Biology, University of Michigan, Ann Arbor, MI, May 20, 2005, “Dissecting the logic of planar cell polarity signaling: experimental and mathematical modeling approaches”

Department of Molecular Biology, UT Southwestern Medical Center, Dallas, TX, November 8, 2005, “Feelin’ Groovy: molecular mechanisms for determining and forming an epithelial groove”

Northwestern University, Evanston, IL, November 10, 2005, “Cell signaling and cell geometry: interactions in planar cell polarity and embryonic groove formation”

Vanderbilt University, Nashville, TN, January 31, 2006. “Cell signaling and cell geometry: interactions in planar cell polarity and embryonic groove formation” (cancelled)

Department de Biologie du Developpement, Institut Pasteur, Paris, France, October 6, 2006. “Dissecting the logic of Planar Cell Polarity signaling”

Department of Genetics, Case Western Reserve University, Cleveland, OH, March 7, 2007. “Mechanisms of Planar Cell Polarity Signaling: from flies to vertebrates”

Green Center Division for Systems Biology, Department of Pharmacology, UT Southwestern Medical Center, September 27, 2007 “Control Circuitry for Establishing Epithelial Planar Cell Polarity”

Epithelial Biology Seminar Series, Stanford University School of Medicine, October 12, 2007

Institut de Biologie du Développement de Marseille-Luminy, October 19, 2007 “Dissecting the logic of Planar Cell Polarity signaling”

On the Fly Seminar Series, Stanford University School of Medicine, December 11, 2007

Systems Biology Seminar Series, Stanford University School of Medicine, March 18, 2008

Vanderbilt University, Nashville, TN, April 14, 2008. “Dissecting the logic of planar cell polarity signaling”

Samuel Lunenfeld Research Institute, Toronto, Canada, April 16, 2008 “Dissecting the logic of planar cell polarity signaling”

Massachusetts General Hospital Cancer Center, Charlestown, MA, November 8, 2008 “Mechanisms of Planar Cell Polarity Signaling: from fly wings to vertebrate primary cilia”

Georgia Institute of Technology, Institute for Biotechnology and Bioengineering, Atlanta, GA, January 21, 2009 “Planar cell polarity: from cells to tissues to organisms”

MIPS Seminar Series, Stanford University Department of Radiology and Nuclear Medicine, Stanford, CA April 27, 2009 “Planar cell polarity: from cells to tissues to organisms”

University of Alabama at Birmingham, Department of Cell Biology, Birmingham, AL, February 17, 2010 “Planar Cell Polarity from Flies to Vertebrates”

Regenerative Medicine Seminar Series, Stanford University, Stanford, CA, February 25, 2010 “Planar cell polarization of mouse tracheal epithelial cells”

MSTP 40th Anniversary Symposium, Washington University School of Medicine, St. Louis, MO, April 9, 2010 “Conserved mechanisms of planar cell polarity signaling”

Technion - Israel Institute of Technology, Haifa, Israel, June 12, 2012 “Microtubules link the planar cell polarity directional cue to the amplification/alignment mechanism”

Integrative Genomics Seminar Series. Vanderbilt University, Nashville, Tennessee, September 11, 2012. “Microtubules link the planar cell polarity directional cue to the amplification/alignment mechanism”

Molecular, Cell and Developmental Biology Seminar Series, UC Santa Cruz, Santa Cruz, CA, January 28, 2013 “Microtubules and interpretation of gradient direction in planar cell polarity signaling”

Fred Hutchinson Cancer Research Center - Basic Science Seminar Series, Seattle, WA, November 19, 2013 “Microtubules and interpretation of gradient direction in planar cell polarity signaling”

Department of Cell Biology at the University of Virginia, Charlottesville, VA, October 7, 2015 “Mechanisms of Planar Cell Polarity Signaling”

University of Iowa, Molecular and Cellular Biology Program, Iowa City, IA Oct 27, 2016 “Planar Cell Polarity signaling in cancer growth and invasion”

Development, Regeneration and Stem Cell Biology Program at the University of Chicago, Chicago IL, February 20, 2018. “Interpreting directionality in PCP signaling: a Prickle’ly problem”

University of Wisconsin School of Medicine, Skin Disease Research Center, Madison, WI, November 5, 2018. “Handedness of helical morphogenesis determined by PCP signaling”

Invited presentations at national and international meetings (selected):

EMBO International Workshop on the Molecular and Developmental Biology of *Drosophila*, June 19-26, 1994 Kolymbari, Crete, "Role of Dishevelled in cell-cell communication pathways."

Lecturer in the "12th Lecture Course on Biophysics and Molecular Biology: Integraton of Signaling Pathways in the Control of Cell Fate," Cividale del Friuli, Italy, June 30 - July 6, 1996. "Integration of Wingless and Notch signaling pathways in *Drosophila*."

Wnt Meeting, Stanford University, Stanford, California, July 17-19, 1999. (organizers Jeff Axelrod and Roel Nusse) "Planar cell polarity."

Wnt Meeting 2001, New York, NY, May 18-20, 2001. "Prickle regulates Frizzled signaling specificity for the planar polarity and Wg signaling pathways"

Keystone Meeting: Wnt and b-catenin signaling in Development and Disease, March 5-10, 2002, Taos, NM. "Asymmetry and signal amplification in Frizzled mediated planar cell polarity signaling." (session chair)

EMBO International Workshop on the Molecular and Developmental Biology of *Drosophila*, June 23-29, 2002 Kolymbari, Crete, "Fidelity in planar cell polarity signaling."

61st Annual Meeting of the Society for Developmental Biology, July 21-25, 2002, Madison, WI. "Feedback loops and gradients determine cortical domains during planar cell polarity signaling." (session chair)

Santa Cruz Conference on Developmental Biology, August 15-19, 2002, Santa Cruz, CA. "Gradients, feedback loops, and fidelity in planar cell polarity signaling."

UK Genetics Society Annual Meeting, March 26-28, 2003. Warwick, Great Britian. "Dissecting the logic of planar cell polarity signaling"

FASEB/ American Society for Investigative Pathology course on "Pathobiology for Basic Scientists: Growth & Development." April 12, 2003, San Diego, CA "Wnt signaling in development and disease: lessons from *Drosophila*"

Annual Meeting of the American Society for Cell Biology; Minisypmposium on Cell Polarity. December 13-17, 2003, San Francisco, CA "A mechanism for domineering non-autonomy understood through reaction-diffusion partial differential equation modeling" (session co-chair)

EMBO Workshop on Epithelial Polarity during Development and Disease, March 27-31, 2004, Carry le Rouet, France "Complex patterns from simple rules: reaction diffusion modeling of planar cell polarity signaling"

EMBO International Workshop on the Molecular and Developmental Biology of *Drosophila*, June 20-26, 2004 Kolymbari, Crete, "The planar cell polarity signaling network"

Annual Meeting of the American Society of Nephrology, October 27-November 1, 2004, St. Louis, MO. “Dissecting the logic of planar cell polarity signaling”

Keystone Symposium on Cell Polarity and Asymmetric Cell Divisions, Mar 4 - Mar 8, 2005, Coeur d'Alene, Idaho. “Cell geometry impacts planar cell polarity signaling” (session chair)

15th International Society of Developmental Biologists Congress 2005, September 3-7, 2005, Sydney, Australia. “Cell geometry and tissue patterning interact to determine planar cell polarity and embryonic groove formation”

Keystone Symposium on Wnt and beta-Catenin Signaling in Development and Disease, April 7 - April 12, 2006, Snowbird Resort in Snowbird, Utah. “Frizzled feedback loop function during Planar Cell Polarity Signaling”

Predictive Models of Complex Systems, June 3-7, 2006, Center for Cell Dynamics at Friday Harbor Laboratories, Friday Harbor, Washington. “Global patterning from local signals: the planar cell polarity signaling network”

EMBO International Workshop on the Molecular and Developmental Biology of *Drosophila*, June 18-24, 2006 Kolymbari, Crete, “Rethinking the morphogen hypothesis in embryonic segmentation”

Keystone Symposium on Tissue Engineering and Developmental Biology, April 12 - April 17, 2007, Snowbird Resort in Snowbird, Utah. “Control Circuitry for Establishing Epithelial Planar Cell Polarity”

ASIP/AANP/HCS/NAVBO Annual Meeting at Experimental Biology 2007, April 28 - May 2, 2007 Washington, DC. “Frizzled feedback loop function in Planar Cell Polarity signaling”

International Symposium on “Wnt Signaling in Development and Disease” September 12 – 15, 2007 Berlin, Germany. “Mechanisms of planar cell polarity signaling: from flies to vertebrates”

American Society of Nephrology, Renal Week Symposium entitled "Planar Cell Polarity in Kidney Development and Cystic Disease," Saturday, Nov. 3, San Francisco, CA. "Non-Canonical Wnt Signaling in Planar Cell Polarity."

The McKnight Brain Institute and the Program in Stem Cell and Regenerative Medicine at the University of Florida Inaugural “Regeneration Project,” December 13 through 15, 2007, Amelia Island Plantation Resort. “Mathematical modeling: complex patterns from simple rules.”

Physics and Biology of Morphogenesis Workshop. Kavli Institute for Theoretical Physics, University of California, Santa Barbara, March 3-7, 2008. “Dissecting the logic of planar cell polarity signaling.”

EMBO International Workshop on the Molecular and Developmental Biology of *Drosophila*, June 23-28, 2008 Kolymbari, Crete, “Planar cell polarity signaling”

Seventh annual CDB Symposium "Shape and Polarity," March 23 - 25, 2009, RIKEN Center for Developmental Biology (CDB), Kobe, Japan “Planar cell

polarity: from cells to tissues to organisms” *participation cancelled due to family emergency

American Association of Anatomists Annual Meeting at Experimental Biology 2009, April 18-22, 2009, New Orleans, LA “Planar cell polarity: from cells to tissues to organisms”

Gordon Research Conference on Cell Contact & Adhesion, June 28 - July 03, 2009. The Waterville Valley Resort. “Mechanisms of planar cell polarity signaling”

Frontiers in Systems Biology: Network, Environment and Human Disease, Croucher Advanced Study Institute, Lam Woo International Conference Center of Hong Kong Baptist University, Hong Kong, January 4-8, 2010. “Planar Cell Polarity: complex patterns from simple rules.”

Interdisciplinary Workshop on Pattern Formation in Morphogenesis, Institut of Hautes Etudes Scientifiques, Paris, France, January 11-14, 2010. “Planar Cell Polarity: complex patterns from simple rules.”

Santa Cruz Developmental Biology Meeting 2010, June 30-July 3, 2010, Santa Cruz, CA, “Planar cell polarity signaling”

CellNetworks Conference CNC 2010, Cluster of Excellence CellNetworks at Heidelberg University, Heidelberg, Germany, September 23-26, 2010 “Interdisciplinary approaches to understanding Planar Cell Polarity”

25th Annual French Drosophila Conference, Lyon, France, October 17-20, 2011 “Planar polarized protrusions break the symmetry of EGFR signaling during Drosophila bract cell fate induction”

Planar Cell Polarity Meeting, HHMI/Janelia Farm Research Campus, Ashburn, VA, April 14-17, 2013, “System architecture of Drosophila PCP signaling”

KITP workshop on Morphogenesis in Cell and Developmental Biology, Kavli Institute for Theoretical Physics, Santa Barbara, CA, August 19-21, 2013. “Microtubules link a planar cell polarity directional cue to the amplification/alignment mechanism”

The Company of Biologists Workshop on Coordinating Cell Polarity, Wiston House, Sussex, May 18-21, 2014, “Mechanisms of Planar Cell Polarity Signaling”

EMBO|EMBL Symposium: Epithelial Biology, EMBL Advanced Training Centre (ATC) in Heidelberg, Germany, August 27-30, 2014, “Prickle-dependent endocytosis regulates negative feedback control during PCP signaling”

The Association of University Pathologists (The Pluto Society), Playa del Carmen, March 13-16, 2015 “Planar cell polarity signaling”

Special Symposium in honor of Mike Czech’s 70th Birthday, May 15, 2015 at the University of Massachusetts Medical School “Planar Cell Polarity Signaling”

FASEB Summer Research Conference “The Biology of Cilia and Flagella” Sunday July 19 through Friday July 25, 2015, Snowmass Village, Colorado, “Planar polarization of motile cilia”

Cilia, Mucus and Mucocilliary Interactions Gordon Research Conference, February 12-17, 2017

Cell Contact and Adhesion Gordon Research Conference, Andover MA, June 18-23, 2017

European Drosophila Research Conference, London UK, September 22-25, 2017

Society for Developmental Biology 78th Annual Meeting, Marriott Copley Place, Boston, MA, Symposium on Planar Cell Polarity in Development Across Evolution, July 26-30, 2019

Research

Ongoing Research Support

R37GM059823-18NCX (PI: Axelrod, Jeffrey D. - 09/01/2000-03/31/2020
D. - Project 20742)

National Institutes of Health

Signaling Mechanisms Controlling Planar Cell Polarity

Major Goals: *The major goals of this project are to develop a mechanistic understanding of the core PCP signaling components and to determine how global asymmetry information is transduced to the core components in the fly wing.*

R01GM098582-08 (PI: Axelrod, Jeffrey D. - 07/18/2011-03/31/2020
Project 50878)

National Institutes of Health

PCP in Vertebrate Epithelial Tubes

Major Goals: *The major goals of this project are to leverage our understanding of PCP molecular mechanisms from the fly to pursue molecular mechanisms of core and global PCP module function in the mouse.*

1R35GM131914-01 (PI: Axelrod, Jeffrey D. - 07/18/2011-03/31/2020
Project 135804)

National Institutes of Health

Planar Cell Polarity Mechanisms and Systems Architecture

Major Goals: *The major goal of this project is to characterize planar cell polarity signaling mechanisms and systems architecture across tissues.*

Past Research Support

R01GM097081 (PI: Axelrod, Jeffrey D. - 01/04/2011-01/31/2020
Project 49910)

National Institutes of Health

Comparative Analysis of PCP Signaling
Architecture

5P50GM107615 (Ferrell, James E. - Project 09/30/2013-06/30/2018
109623; Co-I: Axelrod)

National Institutes of Health
Systems Biology of Collective Cell Decisions

Pediatric Research Fund/LPCH (PI: 1/2/2011 - 1/1/2012
Axelrod)

Role of planar cell polarity in nephronophthisis
Role: PI

1 R01 GM075311-01 (PI: Tomlin) 6/1/05 – 5/31/10
Mathematical tools for developmental signaling networks
Role: Co-PI

RSG-03-239-01-DDC (PI Axelrod) 7/1/03 – 6/30/07
American Cancer Society
Genetic and Molecular Analysis of Prickle as a Wnt Pathway Tumor Suppressor
Role: PI

Bio-X Interdisciplinary Initiatives Program 11/1/03 – 11/30/05
(Co-PI's Axelrod/Tomlin)
An Integrated Approach to Modeling Planar Cell Polarity
Role: Investigator

DARPA (PI: Tomlin) 5/1/03 – 10/31/05
(subaward to DARPA IPTO Bio-computation Program)
Hybrid control models and tools for biological regulatory networks
Role: CO-PI

DAAD19-03-1-0373 (PI: Tomlin) 9/30/03 – 10/31/05
Department of the Army
Hybrid Control Models and Tools for Biological Regulatory Networks
Role: Investigator

Stanford Cancer Council/ Stanford 11/01/01 – 10/31/03
University (PI: Axelrod)
Evaluation of a tumor suppressor function for the vertebrate Prickle homolog, Testin

OTL Research Incentive Award/Stanford 6/1/02 – 8/31/03
University (PI: Axelrod)
Actin based nuclear migration in Drosophila
Role: PI

Howard Hughes Medical Institute, Junior 1/1/99 – 12/31/00
Faculty Scholar Award (PI: Axelrod)
Signaling mechanisms controlling planar cell polarity
Role: PI

Cancer Research Fund of the Damon 1/1/99 – 12/31/00
Runyon-Walter Winchell Foundation (PI:
Axelrod)
Developmental Control of Planar Cell Polarity
Role: PI

Program in Molecular and Genetic 3/1/98-2/28/99
Medicine, Stanford University (PI: Axelrod)
Frizzled Signaling
Role: PI