

BIOGRAPHICAL SKETCH

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NAME Goldstein, Robert Patrick (Bob)		POSITION TITLE Associate Professor	
eRA COMMONS USER NAME bgcambridge			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Union College, Schenectady, NY	BS	1985-1988	Biology
University of Texas, Austin, TX	PhD	1988-1992	Developmental Biology
MRC Lab. of Molecular Biology, Cambridge, UK	Postdoc	1992-1996	Cell Biology
University of California, Berkeley, CA	Postdoc	1996-1999	Evolution & Development

Professional Experience

PhD, University of Texas, Austin (laboratory of Gary Freeman)	1988-1992
Postdoctoral Fellow, MRC Laboratory of Molecular Biology, Cambridge, England (laboratory of John White 1992-3, independent 1993-6)	1992-1996
Miller Institute Research Fellow, University of California, Berkeley, Dept of Molecular and Cell Biology (laboratory of David Weisblat)	1996-1999
Assistant Professor, Biology Department, UNC Chapel Hill	1999-2005
Associate Professor, Biology Department, UNC Chapel Hill	2005-present

Professional Service

Editorial Board, <i>Development</i>	1999-present
Editorial Board, <i>BMC Developmental Biology</i>	2004-present
Editorial Board, <i>Developmental Dynamics</i>	2007-present
Board of Reviewing Editors, <i>Molecular Biology of the Cell</i>	2005-present
Member, <i>Faculty of 1000</i> , Morphogenesis & Cell Biology Section	2007-present
Program Committee, 2009 ASCB Annual Meeting	2008
NSF Developmental Mechanisms Panel	2004, 2006
NIH study section DEV-1, ad hoc member	2004
NIH study section NCF, ad hoc member	2005, 2006
NIH study section CHHD-C, ad hoc member	2006

Awards and Honors

Outstanding Doctoral Dissertation Award, University of Texas	1993
American Cancer Society Postdoctoral Fellow	1993-1994
Human Frontiers Science Program Postdoctoral Fellow	1994-1996
Medical Research Council Postdoctoral Fellow	1996
Development Traveling Fellow	1996
Miller Institute Research Fellow, University of California, Berkeley	1996-1998
March of Dimes Basil O'Connor Scholar	2000-2002
Pew Scholar	2000-2004
Hettleman Prize for Artistic and Scholarly Achievement, UNC Chapel Hill	2005
Visiting Fellow/Elected Life Fellow, Clare Hall, Cambridge University	2007/2008-
Guggenheim Fellow	2007

Publications

1. Goldstein, B. (1992) Induction of gut in *Caenorhabditis elegans* embryos. **Nature** 357:255-257.
2. Goldstein, B. (1993) Establishment of gut fate in the E lineage of *C. elegans*: the roles of lineage-dependent mechanisms and cell interactions. **Development** 118:1267-1277.
3. Goldstein, B., S. N. Hird, and J. G. White (1993) Cell polarity in early *C. elegans* development. **Development Supplement**, 279-287.
4. Goldstein, B. (1995) Cell contacts orient some cell division axes in the early *C. elegans* embryo. **The Journal of Cell Biology** 129:1071-1080.
5. Goldstein, B. (1995) An analysis of the response to gut induction in the *C. elegans* embryo. **Development** 121:1227-1236.
6. Goldstein, B. and S. N. Hird (1996) Specification of the anteroposterior axis in *Caenorhabditis elegans*. **Development** 122:1467-1474.
7. Goldstein, B. and G. Freeman (1997) Axis specification in animal development. **BioEssays** 19:105-116.
8. Wittmann, C., O. Bossinger, B. Goldstein, M. Fleischmann, R. Kohler, K. Brunschwig, H. Tobler and F. Müller (1997) The expression of the *C. elegans labial*-like *Hox* gene *ceh-13* during early embryogenesis relies on cell fate and on anteroposterior cell polarity. **Development** 124:4193-4200.
9. Goldstein, B., L. Frisse and W. K. Thomas (1998) Embryonic axis specification in nematodes: evolution of the first step in development. **Current Biology** 8:157-160.
10. Goldstein, B. (2000) Embryonic polarity: A role for microtubules. **Current Biology** 10:R820-R822.
11. Goldstein, B. (2000) When cells tell their neighbors which direction to divide. **Devel. Dynamics** 218:23-29.
12. Goldstein, B. (2000) The Professional Debunker (review of the book *Voodoo Science: the Road from Foolishness to Fraud*, by Robert L. Park), **Nature Cell Biology** 2:E212.
13. Goldstein, B., M. Leviten and D. A. Weisblat. (2001) Dorsal and Snail homologs in leech development. **Development Genes and Evolution** 211:329-337.
14. Goldstein, B. (2001) On the Evolution of Early Development in the Nematoda. **Philos Trans Royal Society B** 356:1521-31.
15. Dudley, N.R., J.-C. Labbé, and B. Goldstein (2002) Using RNA Interference to Identify Genes Required for RNA Interference. **PNAS** 99:4191-4196.
16. Labbé, J.-C. and B. Goldstein. (2002) Embryonic Development: A New SPN on Cell Fate Specification. **Current Biology** 12:R396-R398.
17. Goldstein, B. and M. Blaxter (2002) Tardigrades. **Current Biology**, 12:R475.
18. Labbé, J.-C., P.S. Maddox, E.D. Salmon and B. Goldstein (2003) PAR proteins regulate microtubule dynamics at the cell cortex in *C. elegans*. **Current Biology** 13:707-714.
19. Lee, J.-Y. and B. Goldstein (2003) Mechanisms of cell positioning during *C. elegans* gastrulation. **Development** 130:307-320.
20. Dudley, N.R. and B. Goldstein (2003) RNA interference: Silencing in the cytoplasm and nucleus. **Curr Opin Mol Ther** 5:113-117.
21. Goldstein, B. (2003) Asymmetric Division: AGS Proteins Position the Spindle. **Current Biology** 13:R879-80.
22. Cheeks, R.J., J.C. Canman, W.N. Gabriel, N. Meyer, S. Strome and B. Goldstein (2004) *C. elegans* PAR Proteins Function by Mobilizing and Stabilizing Asymmetrically Localized Protein Complexes. **Current Biology** 14:851-862.
23. Labbé, J.-C., E. McCarthy and B. Goldstein (2004) The forces that position a mitotic spindle asymmetrically are tethered until after the time of spindle assembly. **The Journal of Cell Biology** 167:245-256.
24. Dudley, N.R., A.Z. Amin and B. Goldstein (2005) Genes Required for RNA Interference, pp 55-68 in *RNA Interference Technology: From Basic Science to Drug Development*, edited by K. Appasani, Cambridge University Press.

25. Dudley, N.R. and B. Goldstein (2005) RNA Interference in *Caenorhabditis elegans*. Chapter in RNA Silencing: Methods and Protocols, edited by G. Carmichael (Humana Press), **Methods in Molecular Biology** 309:29-38.
26. McCarthy, E.K. and B. Goldstein (2005) Asymmetric Division: A Kinesin for Spindle Positioning. **Current Biology** 15:R591-593.
27. Nance, J.R., J.-Y. Lee and B. Goldstein (2005) Gastrulation in *C. elegans*. Chapter in Wormbook, The *C. elegans* Research Community, ed. WormBook.
28. McCarthy, E.K. and B. Goldstein (2006) Asymmetric Spindle Positioning. **Current Opinion in Cell Biology** 18:79-85.
29. Marston, D.J. and B. Goldstein (2006) Actin-based forces driving embryonic morphogenesis in *C. elegans*. **Current Opinions in Genetics and Development** 16:392-398.
30. Goldstein B.*, H. Takeshita*, K. Mizumoto and H. Sawa (2006). Wnt Proteins Can Function as Positional Cues in Establishing Cell Polarity. **Developmental Cell** 10:391-396. (*equal contributors)
31. Marston, D.J. and B. Goldstein (2006) Symmetry Breaking in *C. elegans*: Another Gift from the Sperm. **Developmental Cell** 11:273-274.
32. Lee, J.-Y., D.J. Marston, T. Walston, J. Hardin, A. Halberstadt and B. Goldstein (2006) Wnt/Frizzled Signaling Regulates *C. elegans* Gastrulation Through Activation of Actomyosin Contractility, **Current Biology** 16:1986-1997.
33. Gabriel, W.N. and B. Goldstein (2007) Segmental Expression of Pax3/7 and Engrailed Homologs in Tardigrade Development. **Development Genes and Evolution** 217: 421-433.
34. Gabriel, W.N., R. McNuff, S.K. Patel, T.R. Gregory, W.R. Jeck, C.D. Jones and B. Goldstein (2007) The Tardigrade *Hypsibius dujardini*, a New Model for Studying the Evolution of Development. **Developmental Biology** 312:545-559.
35. Goldstein, B. and I. G. Macara (2007). The PAR Proteins: Fundamental Players in Animal Cell Polarization. **Developmental Cell** 13:609-622.
36. Marston, D.J., M. Roh, A. Mikels, R. Nusse, and B. Goldstein (2008). Wnt signaling during *Caenorhabditis elegans* embryonic development. In *Wnt Signaling: Methods and Model Systems*, **Methods in Molecular Biology**, 469: 103-11.
37. McCarthy Campbell, E.K., A.D. Werts and B. Goldstein (2009). A Cell Cycle Timer for Asymmetric Spindle Positioning. **PLoS Biology** 7(4):e88.
38. Edgar, L.G. and B. Goldstein. Blastomere Culture and Manipulation (chapter for a new *C. elegans* volume of **Methods in Cell Biology**), in press.
39. Goldstein, B. and Hamada, H. Shape Meets Polarity in Japan (meeting review). **Development**, in press.

Research Support

Active

NIH R01 GM083071 (PI: Goldstein) 6/1/08 – 5/31/12
Mechanisms of *C. elegans* Gastrulation \$190,000 direct costs per year
This project uses *C. elegans* gastrulation as a model for cellular and molecular mechanisms of morphogenesis, taking advantage of the ability to combine methods of genetics, molecular biology, cell biology, advanced microscopy and cell manipulation.

NSF IBN 0845596 (PI: Goldstein) 7/1/09 - 6/30/13
Cell Polarization in Response to Wnt Signaling in *C. elegans* \$103,500 direct costs per year
This project's goal is to make use of an *in vitro* system we have developed, in which purified *C. elegans* Wnt protein is presented at a specified position on an individual cell in culture, to dissect cellular mechanisms of Wnt-dependent cell polarization.

Recent

NIH R01-GM068966 (PI: Goldstein) 5/1/03 - 4/30/08
Asymmetric Cell Division in the *C. elegans* Embryo \$170,000 direct costs per year
This project's major goal was to combine genetics with live cell imaging to identify mechanisms by which the the one cell stage *C. elegans* embryo divides asymmetrically.

UNC UCRF Innovation Award (PI: Goldstein) 2/1/08-6/30/09
A Novel System for Investigating Wnt-Dependent Cell Polarization \$84,000 direct costs total
This project was aimed at developing and testing a novel experimental system in which purified Wnt proteins are presented on beads to individual cells, and cell polarization is followed live by tracking fluorescently-tagged proteins by high resolution microscopy.

NSF IBN 0235658 (PI: Goldstein) 1/1/03 - 12/31/06
Embryonic Development of a Tardigrade \$57,000 direct costs per year
This project was aimed at developing a tardigrade, a divergent descendent of the last common ancestor of *C. elegans* and *Drosophila*, into a new model system for studying how development evolves.