

Curriculum Vitae

Geraldine Seydoux

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Education

B. S. 1986	University of Maine at Orono Biochemistry
Ph. D. 1991	Princeton University Molecular Biology - Mentor: Dr. Iva Greenwald
Post-doctorate 1995	Carnegie Institution of Washington Developmental Biology - Mentor: Dr. Andrew Fire

Professional Experience

1995 -	Assistant (1995) Associate (2000) Full (2004) Professor Department of Molecular Biology and Genetics The Johns Hopkins University, School of Medicine
2005 -	Investigator Howard Hughes Medical Institute

Research focus

Oocyte-to-embryo transition and the soma-germline dichotomy in *C. elegans*.

Honors and Fellowships

1984-86	Totman Scholarship, University of Maine
1986	Graduated Summa Cum Laude, University of Maine
1986-87	Princeton Fellowship
1988-91	Howard Hughes Medical Institute Pre-Doctoral Fellowship
1991-94	Helen Hay Whitney Post-Doctoral Fellowship
1996-98	Basil O'Connor Starter Scholar Research Award, March of Dimes
1996-99	Junior Faculty Research Award, American Cancer Society
1996-01	David and Lucile Packard Fellowship for Science and Engineering
1996-99	Searle Scholar Program, The Chicago Community Trust
1999	Presidential Early Career Award for Scientists and Engineers (PECASE) - NIH
2001-3	Kirsch Investigator Award, Steve and Michele Kirsch Foundation
2001-6	John D. and Catherine T. MacArthur Fellowship
2010	Professors' Award for Excellence in Teaching in the Preclinical Sciences (Johns Hopkins School of Medicine)

Teaching

Instructor

1996 to present *Molecules and Cells* (Medical School Course)
1997 to present *Fundamentals of Genetics*
2004 to present *Developmental Biology Elective*
2004 to present *Epigenetics Elective*

Course Director

2003 to present *Fundamentals of Genetics*

Institutional Administrative Appointments

1997-present Admissions Committee BCMB graduate program
1998-2002 Medical School Council
2000-2007 Biomedical Scholars Selection committee
2001-2002 Medical School Council Agenda Committee
2001-2004 BCMB curriculum reform committee
2002-2003 Vice-chair Radiology Search Committee
2003-present BCMB graduate program Policy Committee

Conference Organizer

2000 Germ Cells Meeting, Cold Spring Harbor Laboratories, Cold Spring Harbor NY
 Co-organizer with Chris Wylie, U. of Minnesota
2003 International *C. elegans* Meeting, UCLA, Los Angeles
 Co-head organizer with Stuart Kim, Stanford University
2005 International *C. elegans* Meeting, UCLA, Los Angeles
 Organizing committee member
2008 RNA Granules Workshop, HHMI headquarters, Chevy Chase, MD
 Co-organizer with Paul Anderson and Roy Parker
2010 Society Developmental Biology 69th Annual Meeting
 Program Committee

Scientific Review Panels

2001 NIH Genetics Study Section, Ad Hoc Reviewer
2001 Damon Runyon-Winchell Cancer Research Fund – Guest reviewer
2002-2003 NIH Reproductive Biology Study Section, Ad Hoc Reviewer
2003-2008 NIH Development 1 Study Section, Regular Member
2005-present Life Sciences Research Foundation, Post-doctoral Fellowships
2011- Searle Scholars Advisory Board

Society Memberships

Society for Developmental Biology, member
Genetic Society of America, member - Board of Directors 2005-2008

Editorial boards

2002 to present *Developmental Cell* (Advisory Board)
2004 to present *Worm Book* (Advisory Board)
2005 - 2010 *Development* (Advisory Board)
2009 to present *Cell* (Advisory Board)
2011 - *Development* - Editor

Publications

1. Seydoux, G. and Greenwald, I. (1989). Cell autonomy of *lin-12* function in a cell fate decision in *C. elegans*. **Cell** 57, 1237-1245.
2. Greenwald, I. and Seydoux, G. (1990). Analysis of gain-of-function mutations of the *lin-12* gene of *Caenorhabditis elegans*. **Nature** 346, 197-199.
3. Seydoux, G., Schedl, T. and Greenwald, I. (1990). Cell-cell interactions prevent a potential inductive interaction between soma and germline in *C. elegans*. **Cell** 61, 939-951.
4. DeVoti, J., Seydoux, G., Beach, D., McLeod, M. (1991). Interaction between ran1+ protein kinase and cAMP dependent protein kinase as negative regulators of fission yeast meiosis. **EMBO Journal** 10, 3759-68.
5. Seydoux, G., Savage, C., and Greenwald, I. (1993). Isolation and characterization of mutations causing abnormal eversion of the vulva in *Caenorhabditis elegans*. **Developmental Biology** 157, 423-436.
6. Seydoux, G. and Fire, A. (1994). Soma-germline asymmetry in the distribution of embryonic RNAs in *C. elegans*. **Development** 120, 2823-2834.
7. Bucher, E. and Seydoux, G. (1994). Gastrulation in the nematode *Caenorhabditis elegans*. **Seminars in Developmental Biology** 5, 121-130.
8. Seydoux, G. and Fire, A. (1995). Whole-mount *in situ* hybridization for the detection of RNA in *C. elegans* embryos. In *C. elegans: Modern Biological Analysis of an Organism. Methods in Cell Biology* (ed. H. Epstein and D. Shakes) Academic Press, San Diego.
9. Seydoux, G. (1996). Mechanisms of translational control in early development. **Current Opinion in Genetics and Development** 6, 555-561.
10. Seydoux, G., Mello, C. C., Pettitt, J., Wood, W., Priess, J., Fire, A. (1996). Repression of gene expression in the embryonic germ lineage of *C. elegans*. **Nature** 382, 713-716.
11. Seydoux, G. and Dunn, M. (1997). Transcriptionally-repressed germ cells lack a subpopulation of phosphorylated RNA polymerase II in early embryos of *C. elegans* and *D. melanogaster*. **Development** 124, 2191-2201.
12. Tenenhaus, C., Schubert, C., Seydoux, G. (1998). Genetic requirements for PIE-1 localization and inhibition of gene expression in the embryonic germ lineage of *Caenorhabditis elegans*. **Developmental Biology** , 200(2):212-24.
13. Prasad, B. C., Ye, B., Zackhary, R., Schrader, K., Seydoux, G., Reed, R. R. (1998). *unc-3*, a gene required for axonal guidance in *Caenorhabditis elegans*, encodes a member of the O/E family of transcription factors. **Development**, 125(8):1561-8
14. Batchelder, C., Dunn, M. A., Choy, B., Suh, Y., Cassie, C., Shim, E. Y., Shin, T. H., Mello, C., Seydoux, G., Blackwell, T. K. (1999) Transcriptional repression by the *Caenorhabditis elegans* germ-line protein PIE-1. **Genes and Development** 13(2):202-12.
15. Subramaniam, K. and Seydoux, G. (1999). *nos-1* and *nos-2*, two genes related to *Drosophila nanos*, regulate primordial germ cell development and survival in *C. elegans*. **Development** 126, 4861-4871.
16. Seydoux, G. and Strome S. (1999). Launching the germline in *C. elegans*: regulation of gene expression in early germ cells. **Development** 126, 3275-3283.
17. Seydoux G., and Schedl, T. (2000). The germline in *C. elegans*: Origins, Proliferation and Silencing. In “*Establishment of Cell Lineages and Patterning of the Embryo*”, a book in the **International Review of Cytology** Series edited by Etkin and Jeon.
18. Halpern, M. and Seydoux, G. (2000). Embryo emergent: Elucidating the cell biology of development. **Embo Reports** 1, 469-472.
19. Reese, K. J., Dunn, M. A., Waddle J. A. and Seydoux, G. (2000). Asymmetric segregation of PIE-1 in *C. elegans* is mediated by two complementary mechanisms that act through separate PIE-1 protein domains. **Molecular Cell** 6, 445-455.

20. Wallenfang, M. R., and Seydoux, G. (2000). Polarization of the anterior-posterior axis of *C. elegans* is a microtubule-directed process. **Nature** 408, 89-92.
21. Golden A., Sadler P. L., Wallenfang, M. R., Schumacher J. M., Hamill, Bates G., Bowerman B., Seydoux, G., and Shakes, D. C. (2000) Metaphase to anaphase transition defective (*mat*) mutants in *Caenorhabditis elegans*. **Journal of Cell Biology** 151, 1469-1482.
22. Tenenhaus, C., Subramaniam, K., Dunn, M. Seydoux, G. (2001). PIE-1 is a bifunctional protein that regulates maternal and zygotic gene expression in the embryonic germ lineage of *C. elegans*. **Genes and Development** 15, 1031-1040.
23. Strome, S., Powers, J., Dunn, M., Reese, K., Seydoux, G and Saxton, W. (2001). Spindle dynamics and the role of gamma-tubulin in early *C. elegans* embryos. **Mol. Biology of the Cell** 12, 1751-64.
24. Wallenfang, M. R., and Seydoux, G. (2002). *cdk-7* is required for mRNA transcription and cell cycle progression in *C. elegans* embryos. **Proc. Nat. Acad. Sci.** 99, 5527-5532.
25. Pellettieri and Seydoux (2002). Anterior/Posterior Polarity in Worms and Flies – PARallels and Differences. **Science**, 298:1946-50.
26. Subramaniam, K. and Seydoux, G. (2003). Dedifferentiation of primary spermatocytes into germ cell tumors in *C. elegans* lacking the Pumilio-like protein PUF-8. **Current Biology** 13, 134-139.
27. Cuenca, A., Schetter A., Aceto D., Kemphues K., Seydoux, G. (2003). Polarization of the *C. elegans* zygote proceeds via distinct establishment and maintenance phases. **Development** 130, 1255-1265.
28. Derenzo, C., Reese, K. and Seydoux, G. (2003). Exclusion of germ plasm proteins from somatic lineages by cullin-dependent degradation. **Nature** 424, 685-9.
29. Pellettieri, J., Reinke, V., Kim, S. K. and Seydoux, G. (2003) Coordinate activation of maternal protein degradation during the Egg-to-Embryo Transition in *C. elegans*. **Developmental Cell** 5, 451-462.
30. De Renzo, C. and Seydoux, G. (2004) A clean start: coordinate degradation of maternal proteins at the egg-to-embryo transition. **Trends in Cell Biology** 14, 420-428.
31. Seydoux, G. (2004) Surfing the actomyosin wave: polarization of the *C. elegans* zygote. **Developmental Cell**, 7, 285-286.
32. Ingrid D'Agostino, Chris Merritt, Pei-Lung Chen, Geraldine Seydoux and Kuppaswamy Subramaniam (2006). Translational repression restricts expression of the *C. elegans* Nanos homolog NOS-2 to the embryonic germline. **Developmental Biology** 292 244-252.
33. Stitzel, M., Pellettieri, M. and Seydoux, G (2006) The *C. elegans* DYRK kinase MBK-2 marks oocyte proteins for degradation in response to meiotic maturation. **Current Biology** 16, 1-7.
34. Hao, Y., Boyd, L., Seydoux, G. (2006). Stabilization of cell polarity by the RING protein PAR-2. **Developmental Cell** 10, 199-208.
35. Seydoux, G (2006) The 2006 GSA medal-Victor Ambros. **Genetics**, 172(2):721-2.
36. Gallo CM, Seydoux G (2006). Toti"potent" repressors. **Bioessays**. 28(9):865-867
37. Seydoux, G and Braun, R. (2006). Pathway to totipotency: lessons from germ cells. **Cell** 127, 891-904.
38. Stitzel, M. and Seydoux, G (2007). Regulation of the oocyte-to-zygote transition. **Science** 316, 407-8.
39. Stitzel, M., Cheng, K., Seydoux, G. (2007). Regulation of MBK-2/Dyrk kinase by dynamic cortical anchoring during the oocyte-to-zygote transition. **Current Biology**, 179:367-9.
40. Motegi, F. and Seydoux, G. (2007). Revisiting the role of microtubules in *C. elegans* polarity. **JCB** 179:367-9.
41. Lee MH, Hook B, Pan G, Kershner AM, Merritt C, Seydoux G, Thomson JA, Wickens M, Kimble J (2007) Conserved regulation of MAP kinase expression by PUF RNA-binding proteins. **PLoS Genet.** 3(12):e233.

42. Ghosh, D., Seydoux, G. (2008). Inhibition of transcription by the *C. elegans* germline protein PIE-1: genetic evidence for distinct mechanisms targeting initiation and elongation. **Genetics**, 178(1):235-43.
43. Gallo C., Munro, E., Rasoloson D., Merritt, C, and Seydoux G. (2008). Processing bodies and germ granules are distinct RNA granules that interact in *C. elegans* embryos. **Developmental Biology**, 323(1):76-87.
44. Merritt C., Rasoloson D., Ko D., Seydoux G (2008). 3' UTRs are the primary regulators of gene expression in the *C. elegans* germline. **Current Biology**, 18(19):1476-82.
45. Nakamura, A and Seydoux, G. (2008). Less is more: specification of the germline by transcriptional repression. **Development**, 135(23):3817-27.
46. Cheng K. , Klancer R. , Singson A, and Seydoux (2009) Regulation of MBK-2/DYRK by CDK-1 and the pseudo-phosphatases EGG-4 and EGG-5 during the oocyte-to-embryo transition. **Cell**, 139(3):560-72.
47. Merritt, C. , Gall, C, Rasoloson, D. and Seydoux, G. (2010). Transgenic solutions for the germline. ed. The *C. elegans* Research Community, **WormBook**, doi/10.1895/wormbook.1.148.1, <http://www.wormbook.org>.
48. Voronina, E, Seydoux, G (2010), The nucleoporin NPP-10/Nup98 is required for the integrity and function of germline P granules. **Development** 137, 1441-1450.
49. Zonies, S., Motegi, F., Hao, Y., Seydoux, G (2010). Symmetry breaking and polarization of the *C. elegans* zygote by the polarity protein PAR-2. **Development** 137:1669-1677.
50. Merritt, C., Seydoux, G (2010). The Puf RNA-binding Proteins FBF-1 and FBF-2 Inhibit the Expression of Synaptonemal Complex Proteins in Germline Stem Cells. **Development**, 137(11):1787-98.
51. Gallo, C, Wang, J, Motegi, F., Seydoux, G. (2010). Cytoplasmic partitioning of P granule components is not required to specify the germline in *C. elegans*. **Science**, in press