

## CURRICULUM VITAE

Elizabeth R. Gavis  
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### EDUCATION

1982 B.S., Dept. of Biology, Yale University  
1990 Ph.D., Dept. of Biochemistry, Stanford University Medical Center  
1990 M.D., Stanford University Medical School

### RESEARCH AND PROFESSIONAL EXPERIENCE

1978–1980 Undergraduate Summer Fellowship, Carnegie Institute of Washington, Dept. of Embryology, Laboratory of Dr. Steven L. McKnight  
1981 Summer Research Assistant, Johns Hopkins University School of Medicine, Laboratory of Dr. Gary S. Hayward  
1981–1982 Senior Thesis Research, Department of Biology, Yale University, Laboratory of Dr. Joseph G. Gall  
1982–1990 Medical Scientist Training Program, Dept. of Biochemistry, Stanford University Medical Center, Laboratory of Dr. David S. Hogness  
1990–1994 Post-doctoral Fellow, Whitehead Institute, Laboratory of Dr. Ruth Lehman  
1994–2001 Assistant Professor, Dept. of Molecular Biology, Princeton University  
2001–2008 Associate Professor, Dept. of Molecular Biology, Princeton University  
2006–2007 Sabbatical, Laboratory of Dr. Andrea Brand, Cambridge University, UK  
2008–present Professor, Dept. of Molecular Biology, Princeton University  
2011–present Associate Faculty, Princeton Neuroscience Institute  
2014–present Director of Undergraduate Studies, Dept. of Molecular Biology

### AWARDS AND HONORS

1982 Edgar J. Boell Biology Prize (Senior Thesis Research), Yale University  
1982 Summa cum laude, Yale University  
1982 Phi Beta Kappa, Yale University  
1982–1989 Medical Scientist Training Program Trainee, Stanford University  
1990–1993 Postdoctoral Fellow, Jane Coffin Childs Memorial Fund for Cancer Research  
1993–1994 Postdoctoral Associate, Howard Hughes Medical Institute  
1995–1999 NSF Early Career Development Award  
1997–2000 Beckman Young Investigator Award  
2006–2007 Clare Hall Visiting Fellow, Cambridge UK  
2007–present Clare Hall Life Member, Cambridge UK  
2009 Larry Sandler Memorial Award for best *Drosophila* Ph.D. thesis to T. Weil  
2011–2012 President, The North American *Drosophila* Board of Directors  
2014 Princeton Innovation Award  
2016 Damon B. Pfeiffer Endowed Professorship in the Life Sciences

## **SOCIETIES**

American Society for Cell Biology  
American Society for Developmental Biology  
Genetics Society of America

## **PROFESSIONAL ACTIVITIES**

### Departmental

1995 Planning Committee for new Cellular Biochemistry course  
1995–1996 Media Committee  
1996 Chair, Departmental Seminar Series  
1996 Faculty Advisor, "RNA Today" Symposium (Graduate Program-sponsored symposium)  
  
1996–1997 Special Opportunities Job Search Committee  
1997, 1998 Departmental Retreat Co-chair  
2002–2005 Undergraduate Committee  
2002–2011 Princeton Director, Princeton/RWJMS/UMDNJ (Joint) MD/PhD Program  
2003 Committee on Tenure and Retention  
2003–2011 Admissions Committee, Joint MD/PhD Program  
2004–2005 Departmental Representative, Seniors  
2006–2011 Steering Committee, Joint M.D./Ph.D. Program  
Academic Affairs Committee, Joint M.D./Ph.D. Program  
Curriculum Committee, Joint MD/PhD Program  
  
2010–present Departmental Graduate Curriculum Committee  
2010–2011 Developmental Biology Search Committee  
2011–2012 Chair, Developmental Biology Search Committee  
2012–present Advisory Committee, Princeton/RWJMS/UMDNJ MD/PhD Program  
2012–present Faculty Supervisor, Confocal Microscopy Facility  
2013–present Chair, Undergraduate Curriculum Committee  
2014–present Director of Undergraduate Studies  
2014–present Executive Committee  
2015–2016 Chair, Cellular Dynamics and Development faculty search  
2016–2017 Development and cell biology faculty search committee

### University

1997 Panel participant, Women in Science and Engineering Panel for incoming Freshman  
  
2000–2004 Freshman/Sophomore Adviser, Mathey College  
2001–2006 Radiation Safety Committee  
2003 Princeton University Freshman Parents Day panel participant  
2003–2004 President's Task Force on Health and Well-Being  
2005–2006 Committee on Postdoctoral Research Staff  
2005–2007 Fellow, Rockefeller College  
2006 Childcare Working Group  
2007–present Chair, Radiation Safety Committee  
2007–present Fellow, Whitman College

2007–2008 UHS Executive Director Search Committee  
 2008–2010 Healthier Princeton Advisory Board  
 2008 Panelist, "Many Faces of Science"  
 2010 Committee on Postdoctoral Appointments  
 2011–present Student Health Plan Advisory Board  
 2012–2013 Dean of Faculty Online Course Committee  
 2012–2015 Campus Recreation Committee  
 2013 Women in Science Colloquium, Keynote Speaker  
 2015-2016 President's Task Force on General Education

Extramural

1996–2002 American Society for Cell Biology Education Committee, Graduate Education  
 Subcommittee  
 9/99 Panelist, Career Day Program, Roland Park Country School  
 2000 American Society for Cell Biology Program Committee  
 2001 Consultant, New York State Board of Education, site visit for accreditation of  
 the Watson School of Biological Sciences, Cold Spring Harbor Laboratory  
 2001–2003 Temporary member, NIH Genetics Study Section  
 2002–2009 Faculty of 1000  
 2004 NSF Animal Developmental Mechanisms Review Panel  
 2006 Riverside Elementary School Science Day Participant  
 2007 Ph.D. Viva Examiner, Gurdon Institute, Cambridge University  
 2007 External Ph.D. Thesis Examiner, University of Toronto  
 2007 External Ph.D. Thesis Examiner, Skirball Institute, NYU Medical School  
 2007–2010 Mid-Atlantic Representative, The North American Drosophila Board  
 2009–2010 Hunter College HHMI Faculty Development Program Mentor  
 2010–2011 Mentor, The College of New Jersey Advancement Program (NSF-funded)  
 2010–2011 President-elect, The North American Drosophila Board  
 2010–2013 Mid-Atlantic Representative, Society of Developmental Biology Board of  
 Directors  
 2011–2012 President, The North American Drosophila Board  
 2011 External reviewer, Harvard MCO Graduate Program  
 2011 Ad Hoc reviewer, Endocrinology, Metabolism, Nutrition and Reproductive  
 Sciences review panel (NIH)  
 2012 DEV2 Review panel temporary member (NIH)  
 2012–2014 Chair, Drosophila Board Communications Committee  
 2013–2016 Genetics Society of America Communications Committee  
 2014–2018 Organizing Committee, EMBO Crete Drosophila Conference  
 2016 Ad hoc member, NIGMS Council  
 2016-present Associate Editor, G3

## PUBLICATIONS

1. McKnight, S.L. and **Gavis, E.R.** (1980) Expression of the herpes thymidine kinase gene in *Xenopus laevis* oocytes: an assay for the study of deletion mutants constructed *in vitro*. *Nucleic Acids Research* 8, 5931–5940.
2. McKnight, S.L., **Gavis, E.R.**, Kingsbury, R., and Axel, R. (1981) Analysis of transcriptional regulatory signals of the HSV thymidine kinase gene: identification of an upstream control region. *Cell* 25, 385–398.
3. Hayward, G.S., Reyes, G.R., **Gavis, E.R.**, and McKnight, S.L. (1981) Identification, cloning and sequencing of the herpes simplex virus thymidine kinase genes. In *Herpesvirus DNA: Recent Studies on the Internal Organization and Replication of the Viral Genome*. (ed. V. Becker) Amsterdam: Martinus Nijhoff Publishers.
4. Reyes, G.R., **Gavis, E.R.**, Buchan, A., Raj, N.B.K., Hayward, G.S., and Pitha, P.M. (1982) Expression of human  $\beta$ -interferon cDNA under the control of a thymidine kinase promoter from herpes simplex virus. *Nature* 297, 598–601.
5. Jamrich, M., Mahon, K.A., **Gavis, E.R.**, and Gall, J.G. (1984) Histone RNA in amphibian oocytes visualized by *in situ* hybridization to methacrylate-embedded tissue sections. *EMBO Journal* 9, 1939–1943.
6. Hogness, D.S., Lipshitz, H.D., Beachy, P.A., Peattie, D.A., Saint, R.B., Goldschmidt-Clermont, M., Harte, P.J., **Gavis, E.R.**, and Helfand, S.L. (1985) Regulation and products of the *Ubx* domain of the bithorax complex. *Cold Spring Harbor Symposia on Quantitative Biology* 50, 181–194.
7. Beachy, P.A., Krasnow, M.A. \*, **Gavis, E.R.** \*, and Hogness, D.S. (1988) An *Ultrabithorax* protein binds sequences near its own and the *Antennapedia* P1 promoters. *Cell* 55, 1069–1081. (\*Equal contributors.)
8. **Gavis, E.R.** and Hogness, D.S. (1991) Phosphorylation, expression and function of the *Ultrabithorax* protein family in *Drosophila melanogaster*. *Development* 112, 1077–1093.
9. **Gavis, E.R.** and Lehmann, R. (1992) Localization of *nanos* RNA controls embryonic polarity. *Cell* 71, 301–313.
10. **Gavis, E.R.** and Lehmann, R. (1994) Translational regulation of *nanos* by RNA localization. *Nature* 369, 315–318.
11. **Gavis, E.R.** and Lehmann, R. (1994) RNA localization during oogenesis in *Drosophila*. In *Advances in Developmental Biology*, Vol. 3 (Greenwich: JAI Press), pp. 115–136.
12. Rongo, C., **Gavis, E.R.**, and Lehmann, R. (1995) Localization of *oskar* RNA regulates *oskar* translation and requires Oskar protein. *Development* 121, 2737–2746.
13. **Gavis, E.R.** (1995) *Gurken* meets *torpedo* for the first time. *Current Biology* 5, 1252–1254.
14. **Gavis, E.R.**, Curtis, D., and Lehmann, R. (1996) Identification of *cis*-acting sequences that control *nanos* RNA localization. *Developmental Biology* 176, 36–50.
15. **Gavis, E.R.**, Lunsford, L., Bergsten, S.E., Lehmann, R. (1996) A conserved 90 nucleotide element mediates translational repression of *nanos* RNA. *Development* 122, 2791–2800.
16. **Gavis, E.R.** (1997) Expeditions to the pole: RNA localization in *Xenopus* and *Drosophila*. *Trends in Cell Biology* 7, 485–492.
17. Bergsten, S.E. and **Gavis, E.R.** (1999) Role for mRNA localization in translational activation but not spatial restriction of *nanos* RNA. *Development* 126, 659–669.

18. Crucs, S., Chatterjee, S., and **Gavis, E.R.** (2000) Overlapping but distinct RNA elements control translational repression and activation of *nanos* mRNA. *Molecular Cell* 5, 457–467.
19. Clark, I., Wyckoff, D., and **Gavis, E.R.** (2000) Synthesis of the posterior determinant Nanos is spatially restricted by a novel co-translational regulatory mechanism. *Current Biology* 10, 1311-1314.
20. Bergsten, S.E., Huang, T., Chatterjee, S., and **Gavis, E.R.** (2001) Recognition and long range interactions of a minimal RNA localization signal element. *Development* 128, 427-435.
21. **Gavis, E.R.** (2001) Over the rainbow to translational control. *Nature Structural Biology* 8, 387-390.
22. Clark, I., Dobi, K., Duchow, H., Vlasak, A. and **Gavis, E.R.** (2002) A common translational control mechanism functions in axial patterning and endocrine signaling in *Drosophila*. *Development* 129, 3325-3334.
23. Forrest, K.M. and **Gavis, E.R.** (2003) Live imaging of endogenous RNA reveals a diffusion and entrapment mechanism for *nanos* mRNA localization in *Drosophila*. *Current Biology* 13, 1159-1168.
24. Ye, B., Petritsch, C., Clark, I.E., **Gavis, E.R.**, Jan, L.Y., and Jan, Y.N. (2004) *Nanos* and *pumilio* are essential for dendrite morphogenesis in *Drosophila* peripheral neurons. *Current Biology* 14, 314-321.
25. Forrest, K.M., Clark, I.E., Jain, R.A., and **Gavis, E.R.** (2004) Temporal complexity within a translational control element in the *nanos* mRNA. *Development* 131, 5753-5761.
26. **Gavis, L.** and Hughson, F. (2004) Dual(ing) academic careers In: *Career Advice for Life Scientists II* (American Society for Cell Biology) pp. 16-19.
27. Meyer, E.L. and **Gavis, E.R.** (2005) Staufen does double duty. *Nature Structural and Molecular Biology* 12, 292-292.
28. Bassler, B.L., Flint, J., and **Gavis, E.R.** (2005) Women can do science, if encouraged. (Invited Op-Ed) *Philadelphia Inquirer*, Jan. 23, p. D7.
29. Duchow, H.K., Brechbiel, J.L., Chatterjee, S., and **Gavis, E.R.** (2005) The *nanos* translational control element represses translation in somatic cells by a Bearded box-like motif. *Developmental Biology* 282, 207-217.
30. Kalifa, Y., Huang, T., Rosen, L.N., Chatterjee, S., and **Gavis, E.R.** (2006) Glorund, a *Drosophila* hnRNP F/H homolog, is an ovarian repressor of *nanos* translation. *Developmental Cell* 10, 291-301.
31. Weil, T.T., Forrest, K.M., and **Gavis, E.R.** (2006) Localization of *bicoid* mRNA in late oocytes is maintained by continual active transport. *Developmental Cell* 11, 251-262.
32. **Gavis, E.R.**, Singer, R.H., and Hüttelmaier, S. (2007) Localized translation through messenger RNA localization. In *Translational Control*, J.W.B, Hershey, M.B. Mathews, and N. Sonenberg, eds. (Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press). pp. 687-717.
33. Lipshitz, H.D. and **Gavis, E.R.** (2007) Positional cloning to positional information: the bithorax project in the Hogness lab. *The 23rd International Prize for Biology Symposium*.
34. **Gavis, E.R.**, Chatterjee, S., Ford, N.R., and Wolff, L.J. (2008) Dispensability of *nanos* mRNA localization for abdominal patterning but not for germ cell development. *Mechanisms of Development* 125, 81-90.

35. Jain, R.A. and **Gavis, E.R.** (2008) The *Drosophila* hnRNP M homolog, Rumpelstiltskin, regulates *nanos* mRNA localization. *Development* *135*, 973-982.
36. Jaramillo, A.M., Weil, T.T., Goodhouse, J., **Gavis, E.R.**, and Schüpbach, T. (2008) The dynamics of fluorescently labeled endogenous *gurken* mRNA in *Drosophila*. *Journal of Cell Science* *121*, 887-894.
37. Brechbiel, J.L. and **Gavis, E.R.** (2008) Spatial regulation of *nanos* activity is required for its function in dendrite morphogenesis. *Current Biology* *18*, 745-750.
38. Weil, T.T., Parton, R., Davis, I., and **Gavis, E.R.** (2008) Changes in *bicoid* mRNA anchoring highlight conserved mechanisms during the oocyte-to-embryo transition. *Current Biology* *18*, 1055-1061.
39. Kalifa, Y., Armenti, S.T., and **Gavis, E.R.** (2009) Glorund interactions in the regulation of *gurken* and *oskar* mRNAs. *Developmental Biology* *326*, 68-74.
40. Menon, K., Andrews, S., Murthy, M., **Gavis, E.R.** and Zinn, K. (2009) The translational repressors Nanos and Pumilio have divergent effects on presynaptic terminal growth and postsynaptic glutamate receptor subunit composition. *Journal of Neuroscience* *29*, 5558-5572.
41. Becalska, A.N. and **Gavis, E.R.** (2009) Lighting up mRNA localization in *Drosophila* oogenesis. *Development* *136*, 2493-2503.
42. Weil, T.T., Xanthakis, D., Parton, R., Dobbie, I., Rabouille, C., **Gavis, E.R.\***, and Davis, I. (2010) Distinguishing direct from indirect roles for *bicoid* mRNA localization factors. *Development* *137*, 169-176. (\*Corresponding author)
43. Becalska, A.N. and **Gavis, E.R.** (2010) Bazooka regulates microtubule organization and spatial restriction of germ plasm assembly in the *Drosophila* oocyte. *Developmental Biology* *340*, 528-538.
44. Becalska, A.N., Kim, Y.R., Belletier, N.G., Lerit, D.A., Sinsimer, K.S., and **Gavis, E.R.** (2011) Aubergine is a component of a *nanos* mRNA localization complex. *Developmental Biology* *349*, 46-52.
45. Lerit, D.A. and **Gavis, E.R.** (2011) Transport of germ plasm on astral microtubules directs germ cell development in *Drosophila*. *Current Biology* *21*, 439-448.
46. Andrews, S.A., Snowflack, D.S., Clark, I.E., and **Gavis, E.R.** (2011) Multiple mechanisms collaborate to repress *nanos* translation in the *Drosophila* ovary and embryo. *RNA* *17*, 967-977.
47. Sinsimer, K.S., Jain, R.A., Chatterjee, S., and **Gavis, E.R.** (2011) A late phase of germ plasm accumulation during *Drosophila* oogenesis requires Lost and Rumpelstiltskin. *Development* *138*, 3431-3440.
48. JayaNandan, N., **Gavis, E.R.**, Riechmann, V., and Leptin, M. (2011) A genetic *in vivo* system to detect asymmetrically distributed RNA. *EMBO Reports* *12*, 1167-1174.
49. Olesnicky, E.C. and **Gavis, E.R.** (2012) Combinatorial use of translational co-factors for cell type specific regulation during neuronal morphogenesis in *Drosophila*. *Developmental Biology*. *365*, 208-218.
50. Thanawala, S., Rister, J., Goldberg, G., Zuskov, A., Olesnicky, E.C., Flowers, J., Purugganan, M., **Gavis, E.R.**, Desplan, C. and Johnston, R. (2013) Regional modulation of a stochastically expressed factor determines ommatidial subtypes in the *Drosophila* retina. *Developmental Cell* *25*, 93-105.

51. Xu, X., Brechbiel, J.L., and **Gavis, E.R.** (2013) Dynein-dependent transport of *nanos* RNA in class IV dendritic arborization neurons requires Rumpelstiltskin and the germ plasm organizer Oskar. *Journal of Neuroscience* 33, 14791-14800.
52. Sinsimer, K.S., Lee, J.J., and **Gavis, E.R.** (2013) Germ plasm anchoring is a dynamic state that requires persistent trafficking. *Cell Reports* 5, 1169–1177.
53. Dunn, J.G., Foo, C.K., Belletier, N.G, **Gavis, E.R.**, and Weissman, J.S (2013) Ribosome profiling reveals pervasive and regulated stop codon readthrough in *Drosophila melanogaster*. *eLife* 2013;2:e01179.
54. Olesnický, E.C., Killian, D.J., Rathjen, A.R., Garcia, E., Sola, I.E., and **Gavis, E.R.** Extensive use of RNA binding proteins in *Drosophila* sensory neuron dendrite morphogenesis. *G3: Genes, Genomes, Genetics* 4, 297-306.
55. Little, S.C., Sinsimer, K.S., Lee, J.J., Wieschaus, E.F. and **Gavis, E.R.** (2015) Independent and coordinate trafficking of single *Drosophila* germ plasm mRNAs. *Nat. Cell Biol.* 17, 558-568.
56. López-Panadès, E., **Gavis, E.R.**, and Casacuberta, E. (2015) Specific localization of the *Drosophila* telomere transposon proteins and RNAs, give insight in their behavior, control and telomere biology in this organism. *PloS ONE* 10(6):e0128573.
57. Abbaszadeh, E.K. and **Gavis, E.R.** (2016) Fixed and live visualization of RNAs in *Drosophila* oocytes and embryos. *Methods*, <http://dx.doi.org/10.1016/j.ymeth.2016.01.018>.
58. Bhogal, B., Plaza-Jennings, A. and **Gavis, E.R.** (2016) Nanos-mediated repression of *hid* protects *Drosophila* larval sensory neurons after a global switch in sensitivity to apoptotic signals. *Development* 143, 2147-2159.
59. Misra, M., Edmund, H., Schlueter, M.A., Marot, J.E., Tambasco, J., Ennis, D., Barlow, I., Sigurbjornsdottir, S., Mathew, R., Vallés, A.M., Davis, I., Leptin, M., and **Gavis, E.R.** (2016) Genome-wide screen for dendritically localized RNAs identifies genes required for dendrite morphogenesis. *G3: Genes, Genomes, Genetics* 6, 2397-2405.
60. Trovisco, V., Belaya, K., Nashchekin, D., Irion, U., Sirinakis, G., Butler, R., Lee, J.J., **Gavis, E.R.**, St Johnston, D. (2016) *bicoid* mRNA localises to the *Drosophila* oocyte anterior by random Dynein-mediated transport and anchoring. *eLife* 2016;5:e17537
61. Tenenbaum, C.M. and **Gavis, E.R.** (2016) Removal of *Drosophila* muscle tissue from larval fillets for immunofluorescence analysis of sensory neurons and epidermal cells. *Journal of Visualized Experiments* 117, e54670, doi:10.3791/54670.
62. Lerit, D.A, Shebelut, C., Lawlor, K., Rusan, N., **Gavis, E.R.**, Schedl. P., and Deshpande, G. (2017). Germ cell-less promotes centrosome segregation to induce germ cell formation. *Cell Reports* 18, 831-839. PMC5327791
63. Tamayo, J.V., Teramoto, T., Chatterjee, S., Hall, T.M.T., and **Gavis, E.R.** (2017) The *Drosophila* hnRNP F/H homolog Glorund uses two distinct RNA-binding modes to diversify target recognition. *Cell Reports* 19, 150–161. PMC5392723
64. Aguilera-Gomez, A., Zacharogianni, M., van Oorschot, M.M., Genau, H., Grond, R., Veenendaal, T., Sinsimer, K.S., **Gavis, E.R.**, Behrends, C., Rabouille, C. (2017) Phospho-Rasputin stabilization by Sec16 is required for stress granule formation upon amino acid starvation. *Cell Reports* 20, 935–948.
65. Tenenbaum, C.M., Misra, M., Alizzi, R.A., and **Gavis, E.R.** (2017) Enclosure of dendrites by epidermal cells restricts branching and permits coordinated development of spatially overlapping sensory neurons. *Cell Reports* 20, 3043-3056.