

**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.  
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Roger Brent, Ph.D.		POSITION TITLE President & Research Director	
eRA COMMONS USER NAME			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Southern Mississippi	B.A.	1973	Mathematics & Computer Science
Harvard University	Ph.D.	1982	Biochemistry & Molecular Biology

**A. Positions and Honors.** List in chronological order previous positions, concluding with your present position. List any honors. Include present membership on any Federal Government public advisory committee.

Positions

1981-present Reviewer, Cell  
 1982-1985 Research Fellow, Harvard University, Dept. of Biochemistry and Molecular Biology  
 1985-1990 Asst. Professor, Dept. of Genetics, HMS, Asst. Molecular Biologist, MGH  
 1986-present Reviewer and advisor for NSF, NIH NCI, NIH NHGRI, NIH NCRR, NASA, DARPA DSO, and DARPA ITO  
 1986-1998 Instructor, HMS, Genetics 208, Course director, Genetics 205a and 205b, "Developmental Biology", and Instructor, Micro 230, "Methods and logic in Molecular Biology", and Micro 213, "Social issues in biology"  
 1987-present Editor, Current Protocols in Molecular Biology  
 1990-1998 Assoc. Prof., Dept. of Genetics, HMS, Assoc. Molecular Biologist, MGH  
 1989-1997 Ad hoc member, then member, Virology and Molecular Genetics study, ACS  
 1997-present Editor, Molecular Cell  
 1997-2000 Associate Director, The Molecular Sciences Institute  
 1999-present Wellcome Trust Functional Genomics Steering Committee  
 1999-present Member, Program in Human Genetics, UCSF  
 2000-present Professor (adjunct), Program in Biopharmaceutical Sciences, UCSF  
 2000-present Research Director, The Molecular Sciences Institute  
 2001-present President and CEO, The Molecular Sciences Institute  
 2003-present Instructor, UC Berkeley, Letters & Science 126, "Towards an Anthropology of Biology: Genomics and Citizenship", with Professor Paul Rabinow, UC Berkeley

Honors

1970-1973 USM, full University Scholarship, Honors College, Stipend Award  
 1973 National Merit Scholarship finalist  
 1987-1991 Pew Scholar in the Biomedical Sciences  
 1991-1996 American Cancer Society Faculty Research Award  
 1993-2003 Scientific Advisory Board, Genetics Inst., and GI/Wyeth-Ayerst Research  
 2001-2005 Senior Scholar, Ellison Medical Foundation

**B. Selected peer-reviewed publications (in chronological order).**

1. Brent, R. and Ptashne, M. The wild type *lexA* gene product represses its own promoter. PNAS USA 1980; 77: 1932-1938
2. Brent, R. and Ptashne, M. Mechanism of action of the *lexA* gene product. PNAS USA 1981; 78: 4204-4208
3. Brent, R. and Ptashne, M. A bacterial repressor protein or a yeast transcriptional terminator can block upstream activation of a yeast gene. Nature 1984; 312:612-615.
4. Brent, R. Repression of transcription in yeast. Cell 1985, 42, 3-4
5. Brent, R. and Ptashne, M. A eukaryotic transcriptional activator bearing the DNA specificity of a prokaryotic repressor. Cell 1985; 43: 729-736
6. Brent, R. How to run a very small factory. Cell 1986; 47: 329-330
7. Lech, K., Anderson, K., and Brent, R. DNA-bound Fos proteins activate transcription in yeast. Cell 1988; 53: 179-184
8. Samson M-L, Jackson-Grusby L, Brent R. Gene activation and DNA binding by Drosophila Ubx and abd-A proteins. Cell 1989; 57: 1045-1052
9. Hanes, S. and Brent, R. DNA specificity of the Bicoid activator protein is determined by the homeodomain recognition helix residue 9. Cell 1989; 57: 1275-1283
10. Hanes, S. and Brent, R. A genetic model for the interaction of the homeodomain recognition helix with DNA. Science 1991; 251: 426-430
11. Golemis, E. and Brent, R. Fused protein domains inhibit DNA binding by LexA. MCB 1992; 12: 3006-3014
12. Zervos, A., Gyuris, J., and Brent, R. Mxi1, a protein that specifically interacts with Max to bind Myc/Max recognition sites. Cell 1993; 72: 223-232
13. Gyuris, J., Golemis, E., Chertkov, H., and Brent R. Cdi1, a human tyrosine phosphatase that specifically associates with the Cdk2 protein kinase during the G1 to S transition. Cell 1993; 75:791-803
14. Hanes, S., Riddehough, G., Ish-Horowicz D., and Brent, R. Specific DNA recognition and intersite spacing are critical for action of the Bicoid morphogen in Drosophila.. MCB 1994; 14:3364-3375
15. Cuomo, C., Kirch, S., Gyuris, J., Brent, R., and Oettinger, M.A. Rch1, a protein that specifically interacts with RAG-1 and effects V(D)J recombination. PNAS USA. 1994; 91:6156-6160
16. Parroush Z, Finley R, Brent R., and Ish-Horowitz, D. Interactions between Groucho and bHLH proteins mediate transcription repression during Drosophila neurogenesis, segmentation, and sex-determination. Cell 1994; 79:805-816
17. Hanes, S. D. and Brent, R. Backwards Bicoid? Structure, 1994, 2:894-895
18. Finley R and Brent R. Binary and ternary interactions between Drosophila cell cycle regulators. PNAS USA 1994, 91:12980-12984
19. Finley, R. and Brent, R. The interaction trap. In DNA cloning - expression systems: a practical approach. (ed. D. Glover and B.D. Hames) Oxford University Press, Oxford, England. 1995
20. Lee, J.W., Choi, H-K., Gyuris, J., Brent, R., and Moore, D.D. Two classes of proteins dependent on either the presence or absence of thyroid hormone for interaction with the thyroid hormone receptor. Mol. Endocrinology 1995, 9:243-254
21. Khazak, V., Sadhale, P., Woychikc, N. A., Brent, R., and Golemis, E. A. Human RNA polymerase II subunit hsRPB7 functions in yeast and influences stress survival and cell morphology. Mol. Biol. Cell 1995, 6:759-775
22. Su, L-K., Burrell M. Hill, D.E. Gyuris, J., Brent R., Wiltshire, R., Trent, J., Vogelstein, B., and Kinzler, K. W. APC binds to the novel protein, EB1. Cancer Research 1995, 55:2972-2977 T
23. Estojak, J. Brent, R., and Golemis, E. Correlation of two-hybrid data with affinity measurements. Mol. Cell. Biol. 1995, 15, 5820-5829
24. Reymond, A. and Brent, R. p16 from human tumors shows diminished interaction with Cdk4. Oncogene 1995, 11, 1173-1178

25. Zervos A, Faccio, L., Gatto, J., Kyriakis, J., and Brent R. Mxi2, a mitogen-activated protein kinase that recognizes and phosphorylates Max protein. *PNAS USA* 1995, 92:10531-10534
26. Clemens, K., E., Brent, R., Gyuris, J., and Münger, K., Dimerization of the human papillomavirus E7 oncoprotein in vivo. *Virology* 1995, 214:289-293
27. Finley, R. Thomas, B. J., Zipursky, L., and Brent, R. Isolation of Drosophila Cyclin D, whose expression in the morphogenetic furrow precedes entry into S. *PNAS USA* 1995, 93:3011-1015
28. Colas, P. Cohen, B., Jessen, T., Grishina, I., McCoy, J., and Brent, R., Genetic selection of peptide aptamers that recognize and inhibit Cyclin-dependent kinase 2. *Nature* 1996; 380:548-550
29. Reymond, A., Meroni, G., Borsani, G., Ballabio, A., and Brent, R. Repression by Rox, a novel bHLH-Zip protein expressed in quiescent cells that heterodimerizes with Max, binds a non-canonical E box and acts as a transcriptional repressor. *EMBO* 1997, 16(10):2892-2906
30. Brent, Roger. Looms to weave genomic nets. *Nature Genetics* 1997, 16:216-217
31. Finley, R. and Brent, R., Use of two hybrid methods to probe genetic networks. In "The Yeast Two-Hybrid System", Bartel, P. and Fields, S. eds. 1997 Oxford University Press, London
32. Xu, C., Mendelsohn, A., and Brent, R. Cells that register logical relationships among proteins. *PNAS USA*, 1997 94:12473-12478
33. Finley, R. and Brent, R. Studying gene and allele function with two-hybrid methods. *Ann Rev Gen* 1997, 31:663-704
34. Thomas, B. J., Zavitz, K. H., Dong, X., Lane, M. E., Weigman, K., Finley, R., Brent, R., Lehner, C. F. and Zipursky, L. roughex downregulates G2 cyclins in G1. *Genes and Dev.* 1997, 10:1289-1298
35. Mendelsohn A.R. and Brent R "Postgenomic protein analysis: the next bend in the river." *Nature Biotechnology* 1998 16:520-521.
36. Colas, P. and Brent, R. "The impact of two-hybrid and related methods on biotechnology". *Trends in Biotechnology*, 1998, 16:355-363
37. Cohen, B. A., Colas, P., and Brent, R. A novel cell cycle inhibitor from a combinatorial library. *PNAS USA* 1998 95, 14272-14277
38. Makris, A. Lin, J.-H., McMahan, C., Bear, S. E., Patriotis, C., Prasad, Y. R., Brent, R., Golemis, E., and Tsiclis, P. N. "Ankyrin repeat Raf-1 interacting protein-1 (Arp-1) is a novel substrate and regulator of Raf-1". *JBC* 1999, 274:14706-14715
39. Brent, R. "Functional genomics: learning to think about gene expression data", *Curr Biology*, 1999, 9:338-341.
40. Brent, R. and Carlson, R. "Double stranded DNA chips: next steps in the surface campaign", *Nature Biotech*, 1999, 17:536-7.
41. Mendelsohn, A.R. and Brent, R. "Protein interaction technology: envisioning the end game", *Science*, 1999, 284, 1948-50.
42. Geyer, R., Colman-Lerner, A., Chin, T., and Brent, R. Dominant peptide aptamers identify genetic network components and pathway connections. *PNAS USA*, 1999, 96:8567-8572
43. Fabbrizio, E., Le Cam, L., Polanowska, J., Kakzoreck, M., Lamb, N., Brent, R., and Sardet, C. Inhibition of mammalian cell proliferation by genetically selected peptide aptamers that antagonize E2F activity. *Oncogene* 1999, 18:4357-4363.
44. Brent, R. *Genomic Biology*. *Cell* 2000, 100:169-183.
45. Brent, R., Kodadek, T. Interaction, assembly & processing: life on an interface. *Curr Op Chem Bio* 2000, 4:13-15.
46. Colas, P. Ko Ferrigno, P., Silver, P.A., and Brent, R. Targeted modification and transportation of cellular proteins. *PNAS USA*, December 5, 2000. 97:25 13720-13725
47. Geyer, C.R. and Brent, R. Selection of genetic agents from random peptide aptamer expression libraries. *Methods in Enzymology*, 2000, 328: 171-208
48. Colman-Lerner, A. and Brent, R. Using peptide aptamers to analyze the proteome. In "New technologies for the life sciences: a Trends Guide" supplement to *Trends in Cell Biology*, 2000: 56-61.
49. Endy, D. and Brent, R. Modeling cellular behavior. *Nature* 2001, 409: 391-395
50. Colman-Lerner, A. Chin, T. and Brent, R. Yeast Cbk1 kinase activates distinct daughter-specific genetic programs that induce asymmetric cell fates. *Cell* 2001, 107: 739-750

51. Mendelsohn, A. R., Wang, Z. B., and Brent, R. Cyclin D3 interacts with Caspase 3, sensitizing cells to apoptotic stimuli and connecting cell proliferation and cell death. PNAS USA 2002, 99: 6871-6876
52. Brent, R. A partnership between biology and engineering. Nature Biotechnology 2004, 22:1211-1214.
53. Burbulis, I., Yamaguchi, K., Carlson, R., and Brent, R. Using protein-DNA chimeras to detect and count small numbers of molecules. Nature Methods 2005, 2:31-37.
54. Lok, L. and Brent, R. Automatic generation of cellular reaction networks with MolecuLizer 1.0. Nature Biotechnology 2005, 23:131-136.
55. Brent, R., Lok, L. Cell biology. A fishing buddy for hypothesis generators. Science. 2005. Apr 22;308(5721):504-6.
56. Colman-Lerner A, Gordon A, Serra E, Chin T, Resnekov O, Endy D, Pesce CG, Brent R. Regulated cell-to-cell variation in a cell-fate decision system. Nature. 2005 Sep 29;437(7059):699-706. Epub 2005. Sep 18.
57. Brent R, Bruck J. 2020 computing: can computers help to explain biology? Nature. 2006. Mar 23;440(7083):416-7.

### C. Research Support.

#### Ongoing Research Support

1 R33 CA 114306-01A1

02/23/06 – 11/30/08

NIH/NCI

Title: Tadpole Assays for the Molecular Assessment of Cancer

Role: Principal Investigator

5 P50 P50HG2370

07/22/02 – 06/30/07

NIH/NHGRI

Title: Center for Genomic Experimentation and Computation

Role: Principal Investigator

#### Completed Research Support

DARPA

09/28/01 – 09/27/02

Title: Probing structural changes and information transmission in the yeast cis-membrane.

Role: Principal Investigator

NASA Ames Research Center

09/01/04 – 08/30/05

Title: Yeast-based radiation measurement

Role: Principal Investigator

DARPA

09/01/01 – 08/31/04

Title: Methods, knowledge support, and experimental tools for simulation of eukaryotic circuitry.

Role: Principal Investigator

The Ellison Medical Foundation Senior Scholar Award

1/1/01 – 12/31/03

Title: Identification of protein regulators of self-renewal, differentiation, and senescence in embryonic stem cells.

Role: Principal Investigator

NIH/NHGRI

05/19/00 – 03/31/03

Title: Defining gene function by protein-protein interactions.

Role: Principal Investigator