

## Curriculum Vitae and Bibliography

Name: Rong Li

### Education

1984-1988	B.S. and M.S (Combined) (Mol. Biochem. & Biophy.)	Yale University	New Haven, Connecticut
1988-1992	Ph.D. (Biochem. & Biophy.)	University of California, San Francisco	San Francisco, California

### Postdoctoral Training

1993-1994	Postdoctoral fellow (Mol. Cell Biology)	University of California, Berkeley	Berkeley, California
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### Academic Appointments

Dec 1994 – Dec 1999	Assistant Professor	Department of Cell Biology Harvard Medical School
Jan 2000 – June 2005	Associate Professor	Department of Cell Biology Harvard Medical School
July 2005 – Present	Investigator	Rong Li Laboratory Stowers Institute for Medical Research
Jan 2006 – Present	Professor (affiliated)	Department of Molecular and Integrative Physiology University of Kansas School of Medicine

### Awards and Honors

1988	Phi Beta Kappa, <i>Summa Cum Laude</i> , Distinction in Major, Yale University
1993 – 1994	Damon Runyon-Walter Winchell Cancer Research Fellowship
1995 – 1997	Medical Foundation New Investigator Award
1997 – 1998	The Funds for Discovery Exploratory Award
1998 – 2000	Giovanni Armenise/Harvard Foundation Award
1999 – 2001	Hoechst Marion Roussel Research Award
2000	Biological and Biomedical Sciences Mentoring Award, Harvard Medical School
2004 – 2005	The Alexander and Margaret Stewart Trust Pilot Project Program Award
2010 – 2012	William B. Neaves Award
2012	Watkins Visiting Professorship – Wichita State University

### Publications

#### I. Research Papers

1. Zhou C, Slaughter BD, Unruh JR, Guo F, Yu Z, Mickey K, Narkar A, Ross TR, McClain M and **Li R**. Organelle-based aggregation and retention of damaged proteins in asymmetrically dividing cells. (2014) **Cell** 159:530-542

2. Li G, Li M, Zhang Y, Wang D, **Li R**, Guimerà R, Gao J, Zhang MQ. ModuleRole: a tool for modularization, role determination and visualization in protein-protein interaction networks. (2014) **PLoS One** 9(5):e94608
3. Three-dimensional reconstructions of actin filaments capped by Arp2/3 complex. Volkmann N, Page C, **Li R**, Hanein D. (2014) **Eur J Cell Biol.** 93:179-83
4. Smith SE, Rubinstein B, Mendes Pinto I, Slaughter BD, Unruh JR, **Li R**. Independence of symmetry breaking on Bem1-mediated autocatalytic activation of Cdc42. (2013) **J Cell Biol** 202:1091-1106
5. Yi K, Rubinstein B, Unruh JR, Guo F, Slaughter BD, and **Li R**. Sequential actin-based pushing forces drive meiosis I chromosome migration and symmetry breaking in oocytes. (2013) **J Cell Biol** 200:567-576
6. Slaughter BD, Unruh JR, Das A, Smith SE, Rubinstein B and **Li R**. Non-uniform membrane diffusion enables steady-state cell polarization via vesicular trafficking. (2013) **Nat Com** 4:1380. PMID:23340420; PMCID:PMC3900288
7. Mendes Pinto I, Rubinstein B, Kucharavy A, Unruh JR, **Li R**. Actin depolymerization drives actomyosin ring contraction during budding yeast cytokinesis. (2012) **Dev Cell** 22(6):1247-1260
8. Suraneni P, Rubinstein B, Unruh JR, Durnin M, Hanein D, **Li R**. The Arp2/3 complex is required for lamellipodia extension and directional fibroblast cell migration. (2012) **J Cell Biol** 16; 197(2):239-51. *Cover story and comment in In Focus.*
9. Das A, Slaughter BD, Unruh JR, Bradford WD, Alexander R, Rubinstein B, **Li R**. Flippase-mediated phospholipid asymmetry promotes fast Cdc42 recycling in dynamic maintenance of cell polarity. (2012) **Nat Cell Biol** 14(3):304-10. *Reported in ScienceDaily*
10. Chen G, Bradford WD, Seidel CW, **Li R**. Hsp90 stress potentiates rapid cellular adaptation through induction of aneuploidy. (2012) **Nature** 482:246-250. *Reported in The Scientist and New Scientist*
11. Zhu J, Pavelka N, Bradford WD, Rancati G, **Li R**. Karyotypic determinants of chromosome instability in aneuploid budding yeast. (2012) **PLoS Genet** 8(5):e1002719 *Highlighted in New & Noteworthy at Saccharomyces Genome Database (SGD).*
12. Xu XP, Rouiller I, Slaughter BD, Egile C, Kim E, Unruh JR, Fan X, Pollard TD, **Li R**, Hanein D, Volkmann N. Three-dimensional reconstructions of Arp2/3 complex with bound nucleation promoting factors. (2011) **EMBO J** 31:236-47.
13. Zhou C, Slaughter BD, Unruh JR, Eldakak A, Rubinstein B, **Li R**. Motility and segregation of Hsp104-associated protein aggregates in budding yeast. (2011) **Cell** 147:1186-96. PMCID:PMC3237388 *Reported in The Scientist*
14. Yi K, Unruh JR, Deng M, Slaughter BD, Rubinstein B, **Li R**. Dynamic maintenance of asymmetric meiotic spindle position through Arp2/3-complex-driven cytoplasmic

- streaming in mouse oocytes. (2011) **Nat Cell Biol** 13:1252-8. *Highlighted in NCB News & Views.*
15. Gao JT, Guimerà R, Li H, Pinto IM, Sales-Pardo M, Wai SC, Rubinstein B **Li R**. Modular coherence of protein dynamics in yeast cell polarity. (2011) **Proc Natl Acad Sci USA** 108:7647-52.
  16. Potapova TA, Sivakumar S, Flynn JN, **Li R**, Gorbsky GJ. Mitotic progression becomes irreversible in prometaphase and collapses when Wee1 and Cdc25 are inhibited. (2011) **Mol Biol Cell** 22:1191-206.
  17. Pavelka N, Rancati G, Zhu J, Bradford WD, Saraf A, Florens L, Sanderson BW, Hattem GL, **Li R**. Aneuploidy confers quantitative proteome changes and phenotypic variation in budding yeast. (2010) **Nature** 468:321-5. *Highlighted in Nature New & Views.*
  18. Eldakak A, Rancati G, Rubinstein B, Paul P, Conaway V, **Li R**. Asymmetrically inherited multidrug resistance transporters are recessive determinants in cellular replicative ageing. (2010) **Nat Cell Biol** 12:799-805. *Reported in Nature News and ScienceNews*
  19. Bosl W, **Li R**. The role of noise and positive feedback in the onset of autosomal dominant diseases. (2010) **BMC Syst Biol** 4:93.
  20. Xia S, Li X, Johnson T, Seidel C, Wallace DP, **Li R**. Polycystin-dependent fluid flow sensing targets histone deacetylase 5 to prevent the development of renal cysts. (2010) **Development** 1075-84. *Highlighted in In This Issue.*
  21. Slaughter BD, Das A, Schwartz JW, Rubinstein B **Li R**. Dual modes of Cdc42 recycling fine-tune polarized morphogenesis. (2009) **Dev Cell** 17:823-835.
  22. Wai SC, Gerber SA, **Li R**. Multisite phosphorylation of the guanine nucleotide exchange factor Cdc24 during yeast cell polarization. (2009) **PLoS One** 4:e6563.
  23. Deng M, Gao J, Suraneni P, **Li R**. Kinetochore-independent chromosome poleward movement during anaphase of meiosis II in mouse eggs. (2009) **PLoS One** 4:e5249.
  24. Rancati G, Pavelka N, Fleharty B, Noll A, Allen R, Walton K, Perera A, Staehling-Hampton K, Seidel CW, **Li R**. Aneuploidy underlies rapid adaptive evolution of yeast cells deprived of a conserved cytokinesis motor. (2008) **Cell**135:879-893. *Highlighted as Featured Article of the issue with commentary.*
  25. Li H, Guo F, Rubinstein B, **Li R**. Actin-driven chromosomal motility leading to symmetry breaking in mammalian meiotic oocytes. (2008) **Nat Cell Biol** 10:1301-08.
  26. Li X, Magenheimer BS, Xia S, Johnson T, Wallace DP, Calvet JP, **Li R**. A tumor necrosis factor-alpha-mediated pathway promoting autosomal dominant polycystic kidney disease. (2008) **Nat Med** 14:863-868.
  27. Slaughter BD, Huff JM, Wiegraebe W, Schwartz JW, **Li R**. SAM domain-based protein oligomerization observed by live-cell fluorescence fluctuation spectroscopy (2008) **PLoS One** 23:e1931

28. Rouiller I, Xu XP, Amann KJ, Egile C, Nickell S, Nicastro D, **Li R**, Pollard TD, Volkman N, Hanein D. The structural basis of actin filament branching by Arp2/3 complex. (2008) **J Cell Biol** 180:887-95
29. Fan X, Martin-Brown S, Florens L, **Li R**. Intrinsic capability of budding yeast cofilin to promote turnover of tropomyosin-bound actin filaments. (2008) **PLoS One** 3:e3641.
30. Slaughter BD, Schwartz JW, **Li R**. Mapping dynamic protein interactions in MAP kinase signaling using live-cell fluorescence fluctuation spectroscopy and imaging. (2007) **Proc Natl Acad Sci USA** 104:20320-5.
31. Marco E, Wedlich-Soldner R, **Li R**, Altschuler SJ, Wu LF. Endocytosis optimizes the dynamic localization of membrane proteins that regulate cortical polarity. (2007) **Cell** 129:411-422.
32. Deng M, Suraneni P, Schultz RM, **Li R**. The Ran GTPase mediates chromatin signaling to control cortical polarity during polar body extrusion in mouse oocytes. (2007) **Dev Cell** 12:301-8.
33. Lister IM, Tolliday NJ, **Li R** Characterization of the minimum domain required for targeting budding yeast myosin II to the site of cell division. (2006) **BMC Biol** 4:19
34. Yoo Y, Wu X, Egile C, **Li R**, Guan JL. Interaction of N-WASP with hnRNPk and its role in filopodia formation and cell spreading. (2006) **J Biol Chem** 281:15352-60
35. Kreishman-Deitrick M, Goley ED, Burdine L, Denison C, Egile C, **Li R**, Murali N, Kodadek TJ, Welch MD, Rosen MK. NMR analyses of the activation of Arp2/3 complex by neuronal Wiskott-Aldrich syndrome protein. (2005) **Biochemistry** 44:15247-56.
36. Egile C, Rouiller I, Xu X, Volkman N, **Li R**<sup>†</sup>, Hanein D<sup>†</sup>. Mechanism of filament nucleation and branch stability revealed by the structure of the Arp2/3 complex at actin branch junctions. (2005) **PLoS Biol** 3:e383. <sup>†</sup>co-corresponding authors
37. Brandman O, Ferrell JE Jr, **Li R**, Meyer T. Interlinked fast and slow positive feedback loops drive reliable cell decisions. (2005) **Science** 310:496-8.
38. VerPlank L, **Li R**. Cell cycle-regulated trafficking of Chs2 controls actomyosin ring stability during cytokinesis. (2005) **Mol Biol Cell** 16:2529-43.
39. Kowalski JR, Egile C, Gil S, Snapper SB, **Li R**, Thomas SM. Cortactin regulates cell migration through activation of N-WASP. (2005) **J Cell Sci** 118:79-87.
40. Pan F, Egile C, Lipkin T, **Li R**. ARPC1/Arc40 mediates the interaction of the actin-related protein 2 and 3 complex with Wiskott-Aldrich syndrome family activators. (2004) **J Biol Chem** 279:54629-36.
41. Frank M, Egile C, Dyachok J, Djakovic S, Nolasco M, **Li R**, Smith LG. Activation of Arp2/3 complex-dependent actin polymerization by plant proteins distantly related to Scar/WAVE. (2004) **Proc Natl Acad Sci USA** 101:16379-84.
42. Wedlich-Soldner R, Wai SC, Schmidt T, **Li R**. Robust cell polarity is a dynamic state established by coupling transport and GTPase signaling. (2004) **J Cell Biol** 166:889-900.

43. Jonsdottir GA, Li R. Dynamics of yeast Myosin I: evidence for a possible role in scission of endocytic vesicles. (2004) **Curr Biol** 14:1604-9.
44. Gouin E, Egile C, Dehoux P, Villiers V, Adams J, Gertler F, Li R, Cossart P. The RickA protein of *Rickettsia conorii* activates the Arp2/3 complex. (2004) **Nature** 427:457-61.
45. Kreishman-Deitrick M, Egile C, Hoyt DW, Ford JJ, Li R, Rosen MK. NMR analysis of methyl groups at 100-500kDa: model systems and Arp2/3 complex. (2003) **Biochemistry** 42:8579-86.
46. Yarrow JC, Lechler T, Li R, Mitchison TJ. Rapid de-localization of actin leading edge components with BDM treatment. (2003) **BMC Cell Biol** 4:5
47. Paw BH, Davidson AJ, Zhou Y, Li R, Pratt SJ, Lee C, Trede NS, Brownlie A, Donovan A, Liao EC, Ziai JM, Drejer AH, Guo W, Kim CH, Gwynn B, Peters LL, Chernova MN, Alper SL, Zapata A, Wickramasinghe SN, Lee MJ, Lux SE, Fritz A, Postlethwait JH, Zon LI. Cell-specific mitotic defect and dyserythropoiesis associated with erythroid band 3 deficiency. (2003) **Nat Genet** 34:59-64.
48. Wedlich-Soldner R, Altschuler S, Wu L, Li R. Spontaneous cell polarization through actomyosin-based delivery of the Cdc42 GTPase. (2003) **Science** 299:1231-5.
49. Tolliday N, Pitcher M, Li R. Direct evidence for a critical role of myosin II in budding yeast cytokinesis and the evolvability of new cytokinetic mechanisms in the absence of myosin II. (2003) **Mol Biol Cell** 14:798-809.
50. Soulard A, Lechler T, Spiridonov V, Schevchenko A, Li R, Winsor B. *Saccharomyces cerevisiae* Bzz1p is implicated with type I myosins in actin patch polarization and is able to recruit actin-polymerizing machinery *in vitro*. (2002) **Mol Cell Biol** 22:7889-906.
51. Tolliday N, VerPlank L, Li R. Rho1 directs formin-mediated actin ring assembly during budding yeast cytokinesis. (2002) **Curr Biol** 12:1864-70.
52. Lee PL, Song S, Ro H, Park CJ, Lippincott J, Li R, Pringle JR, De Vergilio C, Longtine MS, Lee KS. Bni5p, a septin-interacting protein, is required for normal septin function and cytokinesis in *Saccharomyces cerevisiae*. (2002) **Mol Cell Biol** 22:6906-20.
53. Lechler T, Jonsdottir GA, Klee SK, Pellman D, Li R. A two-tiered mechanism by which Cdc42 controls the localization and activation of an Arp2/3-activating motor complex in yeast. (2001) **J Cell Biol** 155:261-70.
54. Volkmann N, Amann KJ, Stoilova-McPhie, S, Egile C, Winter DC, Hazelwood L, Heuser JE, Li R, Pollard TD, Hanein D. Structure of Arp2/3 complex in its activated state and in actin filament branch junctions. (2001) **Science** 293:2456-9.
55. Lippincott J, Shannon K, Shou W, Deshaies RJ, Li R. The Tem1 small GTPase controls actomyosin and septin dynamics during cytokinesis. (2001) **J Cell Sci** 114:1379-86.
56. Uruno T, Liu J, Zhang, P, Fan Yx, Egile C, Li R, Mueller SC, Zhan X. Activation of the Arp2/3 complex-mediated actin polymerization by cortactin. (2001) **Nat Cell Biol** 3:259-66.

57. Lippincott J, Li R. Nuclear envelope fission is linked to cytokinesis in budding yeast. (2000) **Exp Cell Res** 260: 277-83.
58. Shannon KB, Li R. A myosin light chain mediates the localization of the budding yeast IQGAP-like protein during contractile ring formation. (2000) **Curr Biol** 10:727-30.
59. Egile C, Loisel TP, Laurent V, Li R, Pantaloni D, Sansonetti PJ, Carlier MF. Activation of the CDC42 effector N-WASP by the Shigella flexneri IcsA protein promotes actin nucleation by Arp2/3 complex and bacterial actin-based motility. (1999) **J Cell Biol** 146:1319-32
60. Winter DC, Chau EC, Li R. Genetic dissection of the budding yeast Arp2/3 complex: a comparison of the in vivo and structural roles of individual subunits. (1999) **Proc Natl Acad Sci USA** 96:7288-93.
61. Hardwick KG, Li R, Mistrot C, Chen RH, Dann P, Rudner A, Murray AW. Lesions in many different spindle components activate the spindle checkpoint in the budding yeast *Saccharomyces cerevisiae*. (1999) **Genetics** 152:509-18.
62. Winter D, Lechler T, Li R. Activation of the yeast Arp2/3 complex by Bee1p, a WASP-family protein. (1999) **Curr Biol** 9:501-4.
63. Li R. Bifurcation of the mitotic checkpoint pathway in budding yeast. (1999) **Proc Natl Acad Sci USA** 96:4989-94.
64. Shannon KB, Li R. The multiple roles of Cyk1p in the assembly and function of the actomyosin ring in budding yeast. (1999) **Mol Biol Cell** 10:283-96.
65. Lippincott J, Li R. Dual function of Cyk2, a cdc15/PSTPIP family protein, in regulating actomyosin ring dynamics and septin distribution. (1998) **J Cell Biol** 143:1947-60.
66. Lippincott J, Li R. Sequential assembly of myosin II, an IQGAP-like protein and filamentous actin to a ring structure involved in budding yeast cytokinesis. (1998) **J Cell Biol** 140:355-66.
67. Lechler T, Li R. *In vitro* reconstitution of cortical actin assembly sites in budding yeast. (1997) **J Cell Biol** 138:95-103.
68. Winter D, Podtelejnikov AV, Mann M, Li R. The complex containing actin-related proteins Arp2 and Arp3 is required for the motility and integrity of yeast actin patches. (1997) **Curr Biol** 7:519-29.
69. Li R. Bee1, a yeast protein with homology to Wiskott-Aldrich syndrome protein, is critical for the assembly of cortical actin cytoskeleton. (1997) **J Cell Biol** 136:649-58.
70. Li R, Zheng Y, Drubin DG. Regulation of cortical actin cytoskeleton assembly during polarized cell growth in budding yeast. (1995) **J Cell Biol** 128:599-615.
71. Li R, Havel C, Watson J, Murray AW. The mitotic feedback control gene *MAD2* encodes the alpha-subunit of a prenyltransferase. (1993) **Nature** 366:82-4 (Erratum: Nature 1994; 371: 438)

72. Li R, Murray AW. Feedback control of mitosis in budding yeast. (1994) **Cell** 66:519-531. (*A Nature Milestone in Cell Cycle research*)
73. Potashkin J, Li R, Frendewey D. Pre-mRNA splicing mutants of *Schizosaccharomyces pombe*. (1989) **EMBO J** 8:551-9.

## **II. Review articles**

74. Mulla W, Zhu J, Li R. Yeast: A simple model system to study complex phenomena of aneuploidy. (2013) **FEMS Microbiol Rev** doi: 10.1111/1574-6976.12048. [Epub ahead of print].
75. Yi K, Rubinstein B, Li R. Symmetry breaking and polarity establishment during mouse oocyte maturation. (2013) **Philos Trans R Soc London [Biol]** 368(1629):20130002.
76. Mendes Pinto I, Rubinstein B, Li R. Force to divide: structural and mechanical requirements for actomyosin ring contraction. (2013) **Biophys J** 105:547-54.
77. Li R. The art of choreographing asymmetric cell division. (2013) **Dev Cell** 25:439-50.
78. Potapova TA, Zhu J, and Li R. Aneuploidy and chromosomal instability: a vicious cycle driving cellular evolution and cancer genome chaos. (2013) **Cancer Metastasis Rev** 32:377-89
79. Li R, Albertini DF. The road to maturation: somatic cell interaction and self-organization of the mammalian oocyte. (2013) **Nat Rev Mol Cell Biol** 14:141-52
80. Unruh JR, Slaughter BD, Li R. Quality control: putting protein aggregates in a bind. (2013) **Curr Biol** 23:R74-6
81. Kaplan K, Li R. A prescription for 'stress'--the role of Hsp90 in genome stability and cellular adaptation. (2012) **Trends Cell Biol** 22:576-83
82. Yi K, Li R. Actin cytoskeleton in cell polarity and asymmetric division during mouse oocyte maturation. (2012) **Cytoskeleton** 69:727-37
83. Chen G, Rubinstein B, Li R. Whole chromosome aneuploidy: big mutations drive adaptation by phenotypic leap. (2012) **BioEssays** 34:893-900.
84. Rubinstein B, Slaughter BD, Li R. Weakly nonlinear analysis of symmetry breaking in cell polarity models. (2012) **Phys Biol** 9:045006.
85. Slaughter BD, Li R. Toward quantitative "in vivo biochemistry" with fluorescence fluctuation spectroscopy. (2010) **Mol Biol Cell** 21:4306-11.
86. Pavelka N, Rancati G, Li R. Dr Jekyll and Mr Hyde: role of aneuploidy in cellular adaptation and cancer. (2010) **Curr Opin Cell Biol** 22:809-15
87. Li R. Myosin-II puts the squeeze on asymmetric cell division. (2010) **Dev Cell** 19:639-40.
88. Li R, Wedlich-Soldner R. Bem1 complexes and the complexity of yeast cell polarization. (2009) **Curr Biol** 19:R194-5

89. Li R, Gundersen GG. Beyond polymer polarity: how the cytoskeleton builds a polarized cell. (2008) **Nat Rev Mol Cell Biol** 9:860-73. *Cover article*
90. Wedlich-Soldner R, Li R. Yeast and fungal morphogenesis from an evolutionary perspective. (2008) **Semin Cell Dev Biol** 19:224-33.
91. Li R. Cytokinesis in development and disease: variations on a common theme. (2007) **Cell Mol Life Sc.** 64:3044-58
92. Rancati G, Li, R. Polarized cell growth: double grip by CDK<sub>1</sub>. (2007) **Curr Biol** 17:R600-3.
93. Slaughter B, Li R. Toward a molecular interpretation of the surface stress theory for yeast morphogenesis. (2006) **Curr Opin Cell Biol** 18:47-53.
94. Bosl WJ, Li R. Mitotic-exit control as an evolved complex system. (2005) **Cell** 121:325-33.
95. Li R. Neuronal polarity: until GSK-3 do us part. (2005) **Curr Biol** 15:R198-200
96. Wedlich-Soldner R, Li R. Closing the loops: new insights into the role and regulation of actin during cell polarization. (2004) **Exp Cell Res** 301:8-15.
97. Li R, Wai SC. Bacteria cell polarity: a “swarmer-stalked” tale of actin. (2004) **Trends Cell Biol** 14:532-6.
98. Smith LG, Li R. Actin polymerization: riding the wave. (2004) **Curr Biol** 14:R109-11
99. Wedlich-Soldner R, Li R. Spontaneous cell polarization: undermining determinism. (2003) **Nat Cell Biol** 5:267-70.
100. Tolliday N, Bouquin N, Li R. Assembly and regulation of the cytokinetic apparatus in budding yeast. (2001) **Curr Opin Microbiol** 4:690-5.
101. Li R. Mitosis: shutting the door behind when you leave. (2000) **Curr Biol** 10:R781-4.
102. Lippincott J, Li R. Involvement of PCH family proteins in cytokinesis and actin distribution. (2000) **Micro Res Tech** 49:168-72.
103. Field C, Li R, Oegema, K. Cytokinesis in eukaryotes: a mechanistic comparison. (1999) **Curr Opin Cell Biol** 11:68-80.

### **III. Books and book chapters**

104. Li, R. Actin-based chromosome movement in cell division. In “**Actin-based motility**”, Springer-London, Edited by Mary France-Carlier. *In press*
105. Slaughter BD, Unruh JR, Li R. Examination of dynamic protein interactions in yeast using live-cell fluorescence fluctuation microscopy and spectroscopy. In **Methods in Molecular Biology**, Springer-London. 759:283-306
106. “**Symmetry Breaking in Biology**”, 1<sup>st</sup> edition, Cold Spring Harbor Laboratory Press, editors R. Li and B. Bowerman. April 1, 2010
107. Li R. and Bowerman B. Symmetry breaking in biology. In “Symmetry Breaking in Biology”, Cold Spring Harbor Laboratory Press. April 1, 2010



108. Slaughter BD, Smith SE, Li R. Cell polarity in the budding yeast *Saccharomyces cerevisiae*.  
In "**Symmetry Breaking in Biology**", Cold Spring Harbor Laboratory Press. April 1, 2010