

Curriculum Vitae

Name

Alison DeLong
Associate Professor of Biology
Department of Molecular Biology, Cell Biology and Biochemistry

Education

1982 B.A. with Honors, English Literature, Swarthmore College, Swarthmore, PA
1989 Ph.D., Microbiology and Molecular Genetics, Harvard University, Cambridge MA
Dissertation topic: Isolation and characterization of Tn5 mutants with trans-
dominant defects in the regulation of transposition

Professional Appointments

1989 - 1992 Postdoctoral Fellow with Prof. Stephen Dellaporta, Biology Department, Yale University
1992 - 1994 Postdoctoral Fellow with Prof. Dieter Söll, Department of Molecular Biophysics and Biochemistry, Yale University
1994 - 1995 Associate Research Scientist with Prof. Dieter Söll, Department of Molecular Biophysics and Biochemistry, Yale University
1996 - 2002 Assistant Professor (Research), Department of Molecular Biology, Cell Biology and Biochemistry, Brown University
2002 - 2008 Assistant Professor of Biology, Department of Molecular Biology, Cell Biology and Biochemistry, Brown University
2008 - present Associate Professor of Biology, Department of Molecular Biology, Cell Biology and Biochemistry, Brown University

Publications

Booker, M.A. and A. DeLong (2015) Producing the Ethylene Signal: Regulation and Diversification of Ethylene Biosynthetic Enzymes. *Plant Physiology*, 169(1):42-50.
Waadt, R., B. Manalansan, N. Rauniyar, S. Munemasa, M. A. Booker, B. Brandt, C. Waadt, D. A. Nusinow, S. A. Kay, H.-H. Kunz, K. Schumacher, A. DeLong, J. R. Yates 3rd, and J. I. Schroeder. (2015) Identification of OST1-Interacting Proteins Reveals Interactions with SnRK2-Type Protein Kinases and with PP2A-Type Protein Phosphatases that Function in ABA Responses. *Plant Physiology*, 169(1):760-79.
Tran H.T., M. Nimick, R.G. Uhrig, G. Templeton, N. Morrice, R. Gurlay, A. DeLong, G.B. Moorhead. (2012) *Arabidopsis thaliana* histone deacetylase 14 (HDA14) is an α -tubulin deacetylase that associates with PP2A and enriches in the microtubule fraction with the putative histone acetyltransferase ELP3. *Plant J.* 71(2):263-72. doi: 10.1111/j.1365-313X.2012.04984.x.

- Skottke, K.R., G.M. Yoon, J.J. Kieber and A. DeLong. (2011) Protein phosphatase 2A controls ethylene biosynthesis by differentially regulating the turnover of ACC synthase isoforms. *PLoS Genetics* 7(4):e1001370.
- Tang, W., M. Yuan, R. Wang, Y. Yang, C. Wang, J.A. Oses-Prieto, T.-W. Kim, H.-W. Zhou, Z. Deng, S.S. Gampala, J.M. Gendron, E.M. Jonassen, C. Lillo, A. DeLong, A.L. Burlingame, Y. Sun and Z.-Y. Wang. (2011) PP2A activates brassinosteroid-responsive gene expression and plant growth by dephosphorylating BZR1. *Nature Cell Biology* 13:124-31.
- Sukumar, P., K.S. Edwards, A. Rahman, A. DeLong, and G. Muday (2009) PINOID kinase regulates root gravitropism through modulation of PIN2-dependent basipetal auxin transport in Arabidopsis. *Plant Physiology*, 150:722-35.
- Blakeslee, J.J., H.-W. Zhou, J.T. Heath, K.R. Skottke, J.A. Rodriguez Barrios, S.-Y. Liu and A. DeLong (2008) Specificity of RCN1-mediated PP2A regulation in meristem organization and stress response in Arabidopsis roots. *Plant Physiology*, 146: 539-553.
- Lizotte, D.L., J.J. Blakeslee, A. Siryaporn, J. Heath and A. DeLong (2007) A PP2A active site mutant impedes growth and causes misregulation of native catalytic subunit expression. *Journal of Cellular Biochemistry* 103:1309 - 25.
- Muday, G.K., S. Brady, C. Argueso, J. Deruère, J. Kieber and A. DeLong (2006) RCN1-regulated phosphatase activity and EIN2 modulate hypocotyl gravitropism by a mechanism that does not require ethylene signaling. *Plant Physiology* 141:1617-1629.
- Zhou, H.W., C. Nussbaumer, Y. Chao and A. DeLong (2004) Disparate roles for the regulatory A subunit isoforms in Arabidopsis protein phosphatase 2A. *The Plant Cell* 16:709-722.
- Kwak, J.M., J.-H. Moon, Y. Murata, K. Kuchitsu, N. Leonhardt, A. DeLong, and J.I. Schroeder (2002) Disruption of a guard cell-expressed protein phosphatase 2A regulatory subunit, RCN1, confers abscisic acid insensitivity in Arabidopsis. *The Plant Cell* 14:2849-2861.
- DeLong, A., K. Mockaitis and S. Christensen (2002) Protein phosphorylation in the delivery of and response to auxin signals. *Plant Molecular Biology* 49:285-303
- Muday, G.K. and A. DeLong (2001) Polar auxin transport: Controlling where and how much. *Trends in Plant Science* 6:535-542
- Rashotte, A. M., A. DeLong and G. K. Muday (2001) Genetic and chemical reductions in protein phosphatase activity alter auxin transport, gravity response and lateral root growth. *The Plant Cell* 13:1683-1697.
- Willows R. D., S. M. Mayer, M. S. Foulk, A. DeLong, K. Hanson, J. Chory and S. I. Beale (2000) Phytobilin biosynthesis: the *Synechocystis* sp. PCC 6803 heme oxygenase-encoding *ho1* gene complements a phytochrome-deficient *Arabidopsis thaliana hy1* mutant. *Plant Molecular Biology* 43:113-20.
- Lizotte, D., D. D. McManus, H. R. Cohen and A. DeLong (1999) Functional expression of human and Arabidopsis protein phosphatase 2A in *Saccharomyces cerevisiae* and isolation of dominant-defective mutants. *Gene* 234:35-44.
- Deruère, J., K. Jackson, C. Garbers, D. Söll and A. DeLong (1999) The RCN1-encoded A subunit of protein phosphatase 2A increases phosphatase activity in vivo. *The Plant Journal* 20: 389-399.

- Garbers, C.*, A. DeLong*, J. Deruère, P. Bernasconi and D. Söll (1996) A mutation in protein phosphatase 2A regulatory subunit A affects auxin transport in Arabidopsis. *EMBO Journal* **15**: 2115-2124. (*Equal contribution; co-first authorship)
- DeLong, A., A. Calderon-Urrea, and S. Dellaporta (1993) Sex determination gene *TASSELSEED2* of maize encodes a short-chain alcohol dehydrogenase required for stage-specific floral organ abortion. *Cell* **74**: 757-768.
- Dellaporta, S., M. Moreno and A. DeLong (1991) Cell lineage analysis of the gynoeceium of maize using the transposable element *Ac*. *Development Supplement* **1**: 141-147.
- DeLong, A. and M. Syvanen (1991) Trans-acting transposase mutant from Tn5. *Proceedings of the National Academy of Sciences USA* **88**: 6072-6076.
- DeLong, A. and M. Syvanen (1990) Membrane association of the Tnp and Inh proteins of IS50R. *Journal of Bacteriology* **172**: 5516-5519.
- Ward, D. F., A. DeLong and M. E. Gottesman (1983) *E. coli nusB* mutations that suppress *nusA1* exhibit I N specificity. *Journal of Molecular Biology* **168**: 73-85.

Invited Reviews

- DeLong A. (2006) Switching the flip: protein phosphatase roles in signaling pathways. Invited review for *Current Opinion in Plant Biology* **9**:470-477.

Research Grants

Current grants

- Regulation of Protein Phosphatase 2A Activity in Arabidopsis by the RCN1 Protein, (NSF IOS-1145585) \$450,000 total costs, 3/1/12 - 2/28/16. PI

Pending Grants

- IOS Preliminary Proposal: Analysis of protein phosphatase-mediated switches that control ethylene synthesis 1/1/17 – 12/31/20

Completed grants

- Regulation of Protein Phosphatase 2A Activity in Arabidopsis by the RCN1 Protein, (NSF IOS-0846282) \$346,000 total costs (including \$6,000 REU supplement) 2/15/09 - 7/31/12. PI
- Protein Phosphatase 2A Interactions with Phosphatidic Acid and Hormone Signaling Pathways in *Arabidopsis* and rice (USDA 2007-35304-18418; Joshua J. Blakeslee, P.I.) \$125,000 total costs 9/1/07 – 8/31/10. Mentor
- Regulation of Protein Phosphatase 2A Activity in Arabidopsis by the RCN1 Protein, (NSF IOB-0446039) \$456,000 total costs (including \$6,000 REU supplement) 2/1/05 - 1/31/09. PI
- Regulation of Protein Phosphatase 2A Activity in Arabidopsis by the RCN1 Protein, (NSF IBN-0135458) \$360,315 total costs (\$115,000 yr 1, \$120,000 yrs 2 & 3 plus \$5,315 REU supplement) 2/1/02 - 6/30/05. PI

Center for Genetics and Genomics (NIH/NCRR 1 P20 RR15578-01; John Sedivy, P.I.) 10/01/00-9/30/05. This award funds several interdisciplinary projects and core facilities in a Center of Biomedical Research Excellence (COBRE). Dr. Sedivy is the Director of the Center. Support for a project in the DeLong laboratory was ca. \$40,000/year.

Functions of Protein Phosphatase 2A Isoforms in Arabidopsis Development (NSF IBN-9986017) \$330,000 total costs (\$110,000/year) 3/1/00 - 2/28/04. PI

Function of Protein Phosphatase 2A in Control of Proliferation: Isolation and Analysis of Dominant-Defective Mutants (U.S. Army Breast Cancer Research Program BC962351) \$300,000 total costs 5/15/97 - 6/14/00. PI

Functions of Protein Phosphatase 2A Isoforms in Arabidopsis Development (NSF IBN-9604782) \$240,214 total costs 2/1/97 - 1/31/00. PI

Molecular Genetics of Gravitropism in Arabidopsis (NSF IBN-9416027) funded by the NASA/NSF Joint Program in Plant Biology \$695,000 total costs 9/1/94 - 8/31/99 Co-PI with Dieter Söll, Yale University

Honors

1989-1992 National Science Foundation Postdoctoral Fellowship

1982-1985 National Science Foundation Graduate Fellowship

1982 Phi Beta Kappa

Teaching

BIOL0440 Spring 2016 (with M. Johnson) Plant Organism (Course Leader)
(1 laboratory section)

BIOL2000C Spring 2015 (with M. Johnson) Molecular Recognition and Signaling in Self and Non-self Interactions
Enrollment: 7

BIOL2030 Fall 2014 (with D. Mark Welch, J. Sedivy and S. Gerbi) Foundations for Advanced Study in Experimental Biology (Course Leader)
Enrollment: 9

BIOL0440 Spring 2014 (with M. Johnson) Plant Organism (Course Leader)
(1 laboratory section)
Enrollment: 29

BIOL2030 Fall 2013 (with G. Jogl, D. Mark Welch, and J. Sedivy) Foundations for Advanced Study in Experimental Biology (Course Leader)
Enrollment: 9

BIOL2290 Spring 2013 (with Kristi Wharton) Current Topics in Cell Biology: Signal Transduction

BIOL2030 Fall 2012 (with M. Johnson, D. Mark Welch, A. Salomon and J. Sedivy) Foundations for Advanced Study in Experimental Biology (Course Leader)
Enrollment: 13

BIOL0440 Spring 2012 Plant Organism (Course Leader)
(1 laboratory section)
Enrollment: 14

- BIOL2290E Spring 2011 (with Kristi Wharton) Current Topics in Cell Biology: Signal Transduction (Course Leader)
Enrollment: 12
- BIOL2030 Fall 2010 (with J. Laney, T. Serio, W. Fairbrother and D. Mark-Welch) Foundations for Advanced Study in Experimental Biology (Course Leader);
Enrollment: 12
- BIOL0440 Spring 2010 Plant Organism (Course Leader)
Enrollment: 15 (1 laboratory section)
- BI 203 Fall 2008 (with K. Mowry, W. Atwood and W. Fairbrother) Foundations for Advanced Study in Experimental Biology
Enrollment: 7
- BI 44 Spring 2008 (with Mark Johnson) Plant Organism (Course Leader)
Enrollment: 16 (with laboratory section)
- BI 203 Fall 2007 (with T. Serio, J. Laney, R. Creton and K. Mowry) Foundations for Advanced Study in Experimental Biology
Enrollment: 9
- BI 203 Fall 2006 (with T. Serio, J. Laney and W. Atwood) Foundations for Advanced Study in Experimental Biology
Enrollment: 14
- BI 44 Spring 2006 (with Mark Johnson) Plant Organism (Course Leader)
Enrollment: 17 (1 laboratory section)
- BI 221 Fall 2005 (with Art Landy) Current Topics in Biochemistry and Molecular Biology: Novel Regulatory Mechanisms
Enrollment: 8
- BI 44 Spring 2005 (with Carol Reiss) Plant Organism (Course Leader)
Enrollment: 17 (1 laboratory section)
- BI 220 Spring 2005 (with Richard Freiman) Current Topics in Biochemistry and Molecular Biology: Chromatin Regulation of Gene Expression in Development and Disease
Enrollment: 9 (+ 1 audit)
- BI 44 Spring 2004 (with Carol Reiss) Plant Organism (Course Leader)
Enrollment: 18 (2 laboratory sections)