Curriculum vitae

Michael John Axtell, Ph. D.

Postdoctoral Fellow
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Education

Ph.D., Plant Biology. University of California, Berkeley, 2003.
Dissertation Advisor: Dr. Brian J. Staskawicz
"Indirect Pathogen Recognition in Plant Innate Immunity"

B.A., Biology with honors, *Summa cum laude*. Ithaca College, 1998.
Research Advisor: Dr. Susan Swensen

Research Experience

2003 to present: Postdoctoral research at the Whitehead Institute with Dr. David Bartel.

- Design and implementation of the first microarray for plant microRNAs.
- High-throughput analysis of *Arabidopsis* microRNAs during normal development.
- Description of conserved microRNAs and their targets in basal plants.
- Cloning and characterization of basal plant small RNAs.

1998 to 2003: Doctoral dissertation research at the University of California, Berkeley with Dr. Brian Staskawicz.

- Determination of the molecular basis for the specific recognition of *Pseudomonas syringae* by the *Arabidopsis* disease-resistance protein RPS2.
- Discovery that the *Pseudomonas syringae* effector protein AvrRpt2 is a protease whose putative catalytic core is required to degrade RIN4 and trigger RPS2 recognition during infection.

1996 to 1998: Undergraduate honors research at Ithaca College with Dr. Susan Swensen.

- Phylogenetic analysis of flowering plants using comparative DNA sequence analyses. Aided in a large, collaborative study to generate a global phylogeny for flowering plants based upon three independent, conserved genes.

Teaching and Mentoring Experience

Teaching Assistant: Biology 1A (Molecular and Cellular Biology), UC Berkeley

- Responsible for discussion and laboratory of large introductory biology course for bioscience majors.

Teaching Assistant: The secret life of plants, UC Berkeley

- Elective course for non-biology majors on plant genetics and development.
- Discussion and one lecture per week for each of two sections.

Mentor: UC Berkeley

- Trained and worked with an undergraduate researcher, Nicole Morrisson.
- Provided the opportunity for a young researcher to experience independent scientific research.

Awards and Fellowships

Helen Hay Whitney Postdoctoral Fellowship, 2004.

National Science Foundation Graduate Research Fellowship, 1998.

The Berkeley Fellowship, 1998. (Three-year fellowship awarded to approximately 30 incoming graduate students University-wide based on exceptional merit)

Dean's Award: Most outstanding student in Natural Sciences and Mathematics (Ithaca College), 1998.

Phi Kappa Phi past presidents award, 1998.

Barry M. Goldwater Fellowship, 1997.

Publications

Axtell, M.J., and Bartel, D.P. (2005). Antiquity of microRNAs and their targets in land plants. Plant Cell 17, 1658-1673.

Described as a Research Highlight in Nature 435: 388.

Axtell, M. J., Chisholm, S. T., Dahlbeck, D., and Staskawicz, B. J. (2003). Genetic and molecular evidence that the Pseudomonas syringae type III effector protein AvrRpt2 is a cysteine protease. Mol. Microbiol. 49: 1537-1546.

Axtell, M. J., and Staskawicz, B. J. (2003). Initiation of RPS2-specified disease resistance in Arabidopsis is coupled to the AvrRpt2-directed elimination of RIN4. Cell 112: 369-377.

Reviewed along with a related paper in Marathe, R. and Dinesh-Kumar, S.P. (2003). One Post, Multiple Guards?! Mol. Cell 11: 284-286.

Jin, H., **Axtell, M.**, Dahlbeck, D., Ekwenna, O., Zhang, S., Staskawicz, B., and Baker, B. (2002). NPK1, an MEKK1-like mitogen-zctivated protein kinase kinase kinase, regulates innate immunity and development in plants. Dev. Cell 3: 291-297.

Axtell, M. J., McNellis, T. W., Mudgett, M. B., Hsu, C. S., and Staskawicz, B. J. (2001). Mutational analysis of the Arabidopsis RPS2 disease resistance gene and the corresponding pseudomonas syringae avrRpt2 avirulence gene. Mol. Plant Microbe Interact. 14: 181-188.

Soltis, D. E., Soltis, P. S., Chase, M. W., Mort, M. E., Albach, D. C., Zanis, M., Savolainen, V., Hahn, W. H., Hoot, S. B., Fay, M. F., **Axtell, M.**, Swensen, S. M., Prince, L. M., Kress, W. J., Nixon, K. C., and Farris, J. S. (2000). Angiosperm phylogeny inferred from 18S rDNA, rbcL, and atpB sequences. Botanical Journal of the Linnean Society 133: 381-461.

Erickson, F. L., Holzberg, S., Calderon-Urrea, A., Handley, V., **Axtell, M.**, Corr, C., and Baker, B. (1999). The helicase domain of the TMV replicase proteins induces the N-mediated defence response in tobacco. Plant J. 18: 67-75.

Invited Lectures

April, 2004: John Innes Centre, U.K. New Science Symposium. "Indirect molecular recognition of a bacterial pathogen by *Arabidopsis*".

October, 2004: Ithaca College, Ithaca NY. Department of Biology Seminar Series. "Antiquity of microRNAs and their targets in land plants".

Professional Societies

American Society of Plant Biologists

American Association for the Advancement of Science

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