Anthony C. Bryan, Ph.D.

Oak Ridge, TN
bryanac@ornl.gov

Education

University of Arizona, Tucson AZ
Ph.D. Molecular and Cellular Biology 2011
Dissertation title: Social Networks of Receptor-like Kinases Regulating Cell Identity in *Arabidopsis thaliana*.
Advisor: Dr. Frans Tax

Emory University, Atlanta GA
B.S. Biology 2000
B.S Anthropology 2000

Oxford College of Emory University, Oxford GA
Assoc. Focus in Biology and Anthropology 1998

Awards & Fellowships & Memberships

- Best poster award, Western American Society of Plant Biology Symposium 2009
- Mentor of the year, Molecular and Cellular Biology, University of Arizona 2008
- Graduate training fellowship in Biochemistry and Molecular Biology 2004-2006
- Graduate training fellowship in Ecology and Evolutionary Biology 2001-2002
- Society of Developmental Biology member
- Lambda Alpha Honor Society in Anthropology

Research Experience

Doctoral Research: Department of Molecular and Cellular Biology, University of Arizona
Aug 2004-Dec 2011 (research advisor: Dr. Frans Tax)

- Analyzed signaling pathways mediated by previously uncharacterized receptors using gene and protein expression, histochemical and genetic analyses in *Arabidopsis*.
- Designed, implemented and analyzed experiments with minimal supervision requirements.
- Refined techniques including micro-dissections and histological analyses, and used biomarkers to characterize developmental defects associated with mutations in previously uncharacterized genes.
- Enhanced the understanding of receptor signaling and intercellular communication regulating cell differentiation and cell proliferation in *Arabidopsis*.
- Identified key findings spurring a new research focus and projects for my lab.
- Organized the graduate student recruitment weekend for my department.

Research Assistant Ecology and Evolutionary Biology, University of Arizona Aug 2001-Jul 2004 (Dr. Michael Nachman & Dr. Rich Jorgensen)

- Investigated molecular evolution of mouse, *c. elegans* and *Arabidopsis* genomes.
- Utilized PCR, qRT-PCR and bioinformatics analyses to evaluate the molecular evolution of genomes.
- Research on evolution of gene expression and molecular evolution of mouse population genetics.
- Published a bioinformatics manuscript with other students in a class on genomics (Cutter et al 2003).
- Evaluated and utilized sequence and microarray data from publically available sources.

Research Assistant Department of Biochemistry Emory University May 2000-Jul 2001 (Dr. Gerald Shadel – presently at Yale University

- Utilized biochemical and genetic tools to determine nuclear-encoded factors that regulate mitochondrial transcription and translation.
- Conducted independent research that complemented the projects of fellow co-workers.
- Developed new understanding of communication between mitochondrial and nucleus with links to aging in yeast.
- Utilized genetic analyses, molecular and biochemical approaches including IP, western and northern blots to characterize protein and RNA expression.
- Published 3 manuscripts including 1 first author (JBC, Genes and Development, Genetics).

Research Interests

- Signal transduction and analyzing mechanisms of receptor-mediated signaling.
- Applied agricultural biotechnology development
- Trait discovery
- Proteomic and genomic analysis of crosstalk and coordinated signaling pathways
- Plant immune response
- Interaction between immune response and developmental pathways

Specific Experimental Skills

Molecular and Cell Biology and Biochemistry

-DNA, RNA and protein isolation	-Westerns	-immuno-histochemistry (IHC)	-RNAi
-PCR	-immuno-precipitations (IP)	- *in situ* (ISH)	-histological imaging analyses
-RT-PCR	-Arabidopsis, yeast and bacterial transformations	-plastic embedding	-Genetically Modified Organisms (GMOs)
-plasmid construction (transgenics)		-bacterial and yeast cell culture (aseptic technique)	
-Northerns			

Additional skills: Biomarker analysis and design, yeast-two hybrid, designed and implemented genetic screens in Arabidopsis and yeast. Utilized Arabidopsis, yeast, bacterial and mouse models.

Microscopy

Confocal microscopy, Light/Phase microscopy, fluorescence microscopy

Computer Software
PERL, MySQL, QCapture Pro, ImageJ, NIH programs (BLAST), Microsoft Office (Word, Excel, PowerPoint, Outlook), Vector NTI

Managing skills
Mentor for 1 Master's student and 4 undergraduate students

Teaching Experience

Teaching Assistant University of Arizona (Aug 2002-May 2004, Aug 2006-Dec 2011)

Molecular Biology	Spring 07-Fall 10
Molecular Genetics	Fall 07, Spring 11
Cell Biology	Fall 06, Fall 11
Genetics	Spring 04, Fall 03
Evolution	Spring 03
Mammalogy	Fall 02

- Awarded Mentor of the year for my services as a teaching assistant in molecular biology.
- Contributed to writing exam questions, grading and holding review sessions and office hours.
- Maintained course websites.

Guest Lecturer University of Arizona (Molecular Biology)

- Lectured on topics of transcription and experimental techniques for molecular biology

Discussion Section Leader (Molecular Genetics, Evolution, Mammalogy)

- Facilitator and lecturer for multiple discussion sections.
- Designed exercises for facilitating discussions to convey subject information

Conferences Attended and Presentations

Mar 2010	Keystone Symposia: Receptors and Signaling in Plant Development and Biotic Interactions,Tahoe, CA -*Poster*
May 2009	Western American Society of Plant Biologists Symposium, Tucson AZ -*Poster*
May 2007	NSF Plant Protein Phosphorylation-Dephosphorylation Symposium, Columbia MO -*Poster*
Nov 2006	NSF Plant Protein Phosphorylation Workshop, Asilomar CA -*Short presentation*
Nov 2005	NSF Plant Protein Phosphorylation Workshop, Sanibel FL -*Short presentation*
July 2005	American Society of Plant Biologists Symposium, Seattle WA -*Poster*
Nov 2004	NSF Plant Plan Protein Phosphorylation Workshop, Snowbird UT -*Short presentation*

Publications

1. Bryan AC, Obaidi A, Weirzba M, Tax FE. (2012) XYLEM INTERMIXED WITH PHLOEM1, a Leucine Rich Repeat Receptor-like Kinase required for stem growth and vascular development in *Arabidopsis thaliana*. Planta 235(1):111-22.
2. Bryan, AC. Racolta, A., Tax, F. and S. Liljegren. The social network: receptor kinases and cell fate determination in plants. (2011) Chapter in "Receptor-like Kinases in Plants: From Development to Defense", Editors Birgit Kemmerling and Frans Tax, in the book series Signaling and Communication in Plants (ed. Frantisek Baluska), (In press).
3. Nodine MD, Bryan AC, Racolta A, Jerosky KV, Tax FE. (2011) A few standing for many: embryo receptor-like kinases. Trends in Plant Science 16(4):211-7.
4. Yamaguchi Y, Huffaker A, Bryan AC, Tax FE, Ryan CA. (2010) PEPR2 Is a Second Receptor for the Pep1 and Pep2 Peptides and Contributes to Defense Responses in *Arabidopsis*. Plant Cell 22:508-22
5. Cutter AD, Payseur BA, Salcedo T, Estes AM, Good JM, Wood E, Hartl T, Maughan H, Strempel J, Wang B, Bryan AC, Dellos M. (2003) Molecular correlates of genes exhibiting RNAi phenotypes in *Caenorhabditis elegans*. Genome Res. 13:2651-2657
6. Bryan AC, Rodeheffer MS, Wearn CM, Shadel GS. (2002) Sls1p is a membrane-bound regulator of transcription-coupled processes involved in *Saccharomyces cerevisiae* mitochondrial gene expression. Genetics 160:75-82
7. Coelho PS, Bryan AC, Kumar A, Shadel GS, Snyder M. (2002) A novel mitochondrial protein, Tar1p, is encoded on the antisense strand of the nuclear 25S rDNA. Genes Dev. 16:2755-2760
8. Rodeheffer MS, Boone BE, Bryan AC, Shadel GS. (2001) Nam1p, a protein involved in RNA processing and translation, is coupled to transcription through an interaction with yeast mitochondrial RNA polymerase. J Biol Chem 276:8616-8622