

Curriculum Vitae
NANCY R. FORSTHOEFEL

Department of Biology, Whitman College, Walla Walla, WA 99362
Phone: 509-527-5019 (lab); 509-526-3889 (home)
Email: forsth@whitman.edu

Education

M.S. Agronomy and Plant Genetics, University of Arizona, Tucson, AZ 1991
B.A. Biology; Minor in Mathematics, University of Louisville, Louisville, KY 1985

Teaching Experience:

2012-present: Laboratory Instructor, Genetics Laboratory (Bio 206, three sections). Department of Biology, Whitman College.

1997- present: Undergraduate Research Training & Laboratory Supervision; Department of Biology, Whitman College, Walla Walla, WA. 99362 [Provided laboratory training and technical oversight for >60 students doing projects directed by 5 different Whitman faculty]

2013: Laboratory Instructor, Introductory Biology (Bio 111L) Department of Biology, Whitman College, Walla Walla, WA. 99362

2012, 2013, 2014: Whitman College Perry Awards for undergraduate summer research supervision

2012-13: Academic Pre-Major Advisor for first-year students, Whitman College

Jan. 1998-May 1998: Laboratory Instructor, Introductory Biology (Bio 111L) Department of Biology, Whitman College, Walla Walla, WA. 99362

Jan. 1996- May 1996: Laboratory Instructor, Cell Biology (Bio 309L) Department of Biology, Whitman College, Walla Walla, WA. 99362

1985-1987: High School Mathematics Teacher, U.S. Peace Corps/Ministry of Education, Gambia, Africa

Research and Laboratory Positions:

1997- present: Research Specialist, Laboratory of Dan Vernon, Biology Department, Whitman College, Walla Walla, WA. 99362 [not including 9/99-7/00, see below]

2010-2011: Interim Laboratory Coordinator, Biology and BBMB programs, Whitman College, Walla Walla, WA. 99362 [Coordinated preparation and set-up and supervised undergraduate assistants for undergraduate teaching laboratories]

Sept. 1999-July 2000: Research Specialist, Laboratory of Hans J. Bohnert, Biochemistry Department, University of Arizona, Tucson, AZ 85721

1993-1995: Laboratory Technician II, Laboratory of John C. Cushman, Department of Biochemistry and Molecular Biology, Oklahoma State University, Stillwater, OK. 74078

1991-1992: Research Specialist, Laboratory of Kenneth A. Feldmann, Department of Plant Sciences, University of Arizona, Tucson, AZ. 85721

1989 - 1991: Graduate Assistant in Research, Laboratory of Steven E. Smith, Department of Plant Sciences, University of Arizona, Tucson, AZ. 85721

Research Publications

(bold journal titles indicate peer-reviewed publication; * indicates Whitman student coauthors):

Forsthoefel NR, Klag KA*, Simeles BP*, Reiter R*, Brougham L*, Vernon DM (2013) The Arabidopsis PIRL family and the value of reverse genetic analysis for identifying genes that function in gametophyte development. **Plants**, 2: 507-520 [DOI: 10.3390/plants2030507]

Forsthoefel NR and Vernon DM. (2011) Effect of sporophytic *PIRL9* genotype on post-meiotic expression of the Arabidopsis *pir11;pir19* mutant pollen phenotype. **Planta**. 233(2): 423-431 [DOI: 10.1007/s00425-010-1324-5; published online 12/2010]

Forsthoefel NR, Dao TP*, and Vernon DM (2010) PIRL1 and PIRL9, Encoding Members of a Novel Family of Plant Leucine-rich Repeat Proteins, Are Essential for Differentiation of Microspores into Pollen. **Planta**, 232(5): 1101-1114. [DOI: 10.1007/s00425-010-1242-6]

Chen T, Martin D, Nayak N, Majee S, Lowenson J, Schäfermeyer KR, Eliopoulos AC, Lloyd TD, Villa S, Dinkins R, Perry SE, Forsthoefel NR, Clarke SG, Vernon DM, Zhou Z, Rejtar T, and Downie AB. (2010) Substrates of the *Arabidopsis thaliana* PIMT1 identified using seed phage display cDNA libraries and biopanning with recombinant enzyme. **J. Biol. Chem**, 285: 37281-37292 [DOI:10.1074/jbc.M110.157008]

Forsthoefel N, Cutler K*, Port MD*, Yamamoto T*, & Vernon DM (2005) PIRLs: A novel plant-specific class of intracellular leucine rich repeat proteins related to Ras-interacting LRR proteins from animals and yeast. **Plant & Cell Physiology**, 46: 913-922.

Cushing DA*, Forsthoefel NR, Gestaut DR*, Vernon DM (2005) *Arabidopsis emb175* and other *ppr* knockout mutants reveal essential roles for PPR proteins in plant embryogenesis. **Planta**, 222: 424-436.

Vernon DM and Forsthoefel NR (2004) Seventeen gene and mRNA nucleotide sequence submissions to GenBank, the international gene database. Accession numbers: 849571; 849572; 849573; 849574; 849575; 849576; 849577; 849578; 849579; AY86345; AY86346; AY86347; AY86348; AY86349; AY86350; AY86351; AY86352.

Vernon DM & Forsthoefel N (2002) Leucine-rich repeat proteins in plants: diverse roles in signaling and development. *Research Signpost: Recent Research Developments in Plant Biology*. 2: 201-214

Vernon DM, Hannon MJ*, Le M-P*, Forsthoefel N (2001) An expanded role for the *TWN1* gene in embryogenesis: defects in cotyledon pattern and morphology in the *twn1* mutant of *Arabidopsis*. **American Journal of Botany**, 88(4), 570-582.

Research Publications, continued

Chauhan S, Forsthoefel N, Ran Y, Quigley F, Nelson D, and H.J. Bohnert (2000) Na⁺/myo-inositol symporters and Na⁺/H⁺-antiport in *Mesembryanthemum crystallinum*. **Plant Journal** 24: 511-522

Forsthoefel, N.R., M.A.F. Cushman, and J.C. Cushman. (1995). Post-transcriptional and post-translational control of Enolase expression in the facultative CAM plant, *Mesembryanthemum crystallinum* **Plant Physiology** 108:1185-1195.

Forsthoefel, N.R., D.M. Vernon, J.C. Cushman. (1995). A salinity-induced gene from the facultative halophyte *M. crystallinum* encodes a glycolytic enzyme, cofactor-independent phosphoglyceromutase. **Plant Molecular Biology** 29:213-226.

Schaeffer, H.J., N.R. Forsthoefel, and J.C. Cushman. (1995). Identification of enhancer and silencer regions involved in salt-responsive expression of Crassulacean acid metabolism (CAM) genes in the facultative halophyte, *M. crystallinum*. **Plant Molecular Biology** 28:205-218

Forsthoefel, N.R., J.C. Cushman. (1994). Characterization and expression of Photosystem II genes (*psbE*, *psbF*, and *psbL*) from the facultative CAM plant *Mesembryanthemum crystallinum*. **Plant Physiology** 105:761-762.

Forsthoefel, N.R., H.J. Bohnert, and S.E. Smith. (1992). Discordant inheritance of mitochondrial and plastid DNA in diverse alfalfa genotypes. **J. Heredity** 83:342-345.

Forsthoefel, NR, Y. Wu, B. Shulz, M.J. Bennett, and K.A. Feldmann. (1992). T-DNA insertion mutagenesis in *Arabidopsis*: prospects and perspectives. **Aust. J. Plant Phys.** 19:353-366.

Meeting Presentations (since 2001 only):

Forsthoefel NR, Klag KA*, Vernon DM (2013) Alternative splicing, RNA expression, & knockout analysis suggest an essential function for *PIRL6* in *Arabidopsis* gametophytes. Plant Biology 2013 (American Society of Plant Biologists meetings), Providence, RI

Vernon DM, Reiter R*, Reinhart C*, Forsthoefel N (2013) The *Arabidopsis PIRL2*, *PIRL3*, and *PIRL9* genes function in the formation and organization of the male germ unit in developing pollen. Plant Biology 2013, Providence, RI

Forsthoefel N & Vernon DM (2012) The *Arabidopsis PIRL9* gene functions in both the flowering transition and pollen differentiation, 23rd Intl. Conference on *Arabidopsis* Research (ICAR), Vienna, Austria

Vernon DM, Brougham L*, Reinhart C*, Forsthoefel N (2012) *Arabidopsis PIRL2* & *PIRL3* function in pollen differentiation and nuclear organization and interact with the pollen-essential gene *PIRL9*, 23rd International Conference on *Arabidopsis* Research (ICAR), Vienna, Austria

- Forsthoefel NR, Reinhart CS*, and Vernon DM (2010) *PIRLs & Pollen: The PIRL2 and PIRL3 genes function in pollen development and have complex genetic interactions with PIRL1 & PIRL9* Plant Biology 2010 meetings, Montreal, Canada
- Forsthoefel N, Reinhart C*, Dao TP*, Simeles BP*, & Vernon DM (2009) The Arabidopsis PIRL1 & PIRL9 genes are essential for microspore mitosis, growth, and differentiation into pollen, and have limited functional overlap with related PIRLs. Plant Biology 2009 (ASPB conference), Honolulu, HI.
- Vernon DM, Shafer M, and Forsthoefel NR (2009) An adaptable undergraduate molecular biology lab module that integrates use of genomic resources with bench experiments to pursue original research questions. Plant Biology 2009, (ASPB conference) Honolulu, HI.
- Vernon DM, Davis NA*, Forsthoefel NR (2008) Diverse impacts of PPR knockout mutations on Arabidopsis embryo morphology, cell organization, and plastid development. Plant Biology 2008 (ASPB conference), Merida Mexico.
- Forsthoefel NR, Simeles BP*, Dao TP*, & Vernon DM (2008) The Arabidopsis PIRL1 & PIRL9 genes are essential for differentiation of microspores into pollen. Plant Biology 2008 (ASPBs Conference), Merida, Mexico, June, 2008.
- Dao TP*, Forsthoefel N, Vernon DM, Juers D (2007) Expression, purification & biophysical characterization of Arabidopsis LRR protein PIRL1. Meeting of the Biophysical Society, Baltimore, MD, March, 2007
- Forsthoefel N, Dao TP*, Geiser HA, and Vernon DM (2006) The novel intracellular LRR proteins PIRL1 and PIRL9 are required for Arabidopsis pollen development and viability. Plant Biology 2006 (ASPB conference), Boston,
- Forsthoefel N, Geiser HA, & Vernon DM (2005) PIRL1 and PIRL9, novel intracellular LRR proteins, are required for pollen development in Arabidopsis. Plant Biology 2005 (ASPB conference), Seattle, WA, July 2005.
- Forsthoefel N, Cutler K*, & Vernon DM (2003) Overlapping genes and aberrant splicing at the Arabidopsis PIRL6 locus, Plant Biology 2003, Honolulu, HI, July, 2003
- Cushing DA*, Gestaut DR*, Forsthoefel N, & Vernon DM (2003) Essential roles for PPR proteins in plant development revealed by Arabidopsis knock-out mutants. Plant Biology 2003, Honolulu, HI, July, 2003
- Forsthoefel N, Yamamoto TN*, & Vernon DM (2001) Structural and reverse genetic analysis of the *SLAT* s. 12th International Conference on Arabidopsis Research. Madison, WI, June, 2001