

POORNIMA SUKUMAR

Educational Experience:

- **2006-2010** Ph.D. in Biology
Wake Forest University, Winston Salem, NC
Advisor Name: Dr. Gloria K. Muday.

Dissertation: Plant Physiology: Hormonal Regulation of Adventitious Root Formation in Arabidopsis and Tomato.

- **2004-2006** Master of Science in Biology
Wake Forest University, Winston Salem, NC
Advisor Name: Dr. Gloria K. Muday.

Thesis: Role of Auxin Transport in the Photomorphogenic Mutant *hy5*.

- **1999-2003** Bachelor of Science in Agriculture,
Kerala Agricultural University, India.

Research Experience:

- Laboratory experience in plant physiology
 - Modulation of auxin transport during plant responses to gravity, wounding.
 - Molecular techniques (e.g. RT-PCR).
- Microscopy techniques: Confocal laser scanning microscope, Epifluorescent microscope, Compound microscopes, & Stereomicroscope
- Biologist in a in-class bioinformatics project aimed at developing a software to identify protein spots in 2 D gels.
- Green house assistant for the Department of Biology, Wake Forest University, Winston-Salem.
- Field experience growing research tomatoes.
- Trained in quantification of free auxin in tissue using GC-Mass Spectrometry in Dr Jerry Cohen's lab, University of Minnesota, St Paul, Minnesota.

Teaching Experience:

- Teaching assistant: Biochemistry 670: 2009 Fall
- Teaching Assistant: Cell Biology 214: 2009 Spring
- Microscopy Teaching Assistant: 2007 Fall
- Teaching Assistant: Cell Biology 214: 2006 Fall
- Teaching Assistant: Cell Biology 214: 2006 Spring
- Teaching Assistant: Biochemistry 670: 2005 Fall
- Teaching Assistant: Comparative Physiology 112: 2005 Spring
- Teaching Assistant: Comparative Physiology 112: 2004 Fall
- Trained undergraduate students in the laboratory during Ph.D. studies-2006-present

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BIBLIOGRAPHY

Journal Publications:

- **Sukumar P**, Lewis DR, Muday GK (2010) "Polar auxin transport by ABCB19 and PIN1 regulates adventitious root formation in Arabidopsis" *in review*.
- Negi S*, **Sukumar P***, Liu X, Cohen J, Muday GK (2010) "Genetic dissection of the role of ethylene in regulating auxin dependent lateral and adventitious root formation in tomato" *Plant Journal* 61;3-15.
- Chen, Z. Y., Noir, S., Kwaaitaal, M., Hartmann, H. A., Wu, M. J., Mudgil, Y., **Sukumar, P.**, Muday, G., Panstruga, R., and Jones, A. M. J. (2009) "Two seven-transmembrane domain MLO proteins co-function in root thigmomorphogenesis" *Plant Cell* 21;1972-1991.
- **Sukumar P***, Edwards KS*, Rahman A, Delong A, Muday GK (2009)" PINOID kinase regulates root gravitropism through modulation of PIN2-dependent basipetal auxin transport in Arabidopsis" *Plant Physiology* 150(2) 722-735.
- Sibout R, **Sukumar P**, Hettiarachchi C, Holm M, Muday GK, Hardtke CS (2006) "Opposite root growth phenotypes of hy5 versus hy5 hyh mutants correlate with increased constitutive auxin signaling" *PLoS Genet* 2(11); 1898-191.
- Buer CB, **Sukumar P**, Muday GK (2006)"Ethylene modulates flavonoid accumulation and gravitropic response in roots of Arabidopsis thaliana" *Plant Physiology*, 140(4);1384–1396.

* co-authorship

Poster Abstracts:

- **Sukumar P** and Muday GK (2009) "Ethylene and auxin cross talk regulates adventitious root formation in Arabidopsis and Tomato", 8th International Conference on Ethylene, Ithaca, NY, USA.
- **Sukumar P** and Muday GK (2009) 'Role of auxin and ethylene in adventitious root formation in Arabidopsis and Tomato', 9th Annual Graduate Student research day, Wake Forest University, NC, USA.
- **Sukumar P** and Muday GK (2008) "Polar auxin transport drives adventitious root formation", 22nd Annual Plant Molecular Biology Meeting, Asheville, NC, USA.
- **Sukumar P** and Muday GK (2008) "Role of auxin and ethylene in adventitious root formation in Arabidopsis and Tomato" American Society of Plant Biologists, Merida, Mexico.
- **Sukumar P** and Muday GK (2008) "Role of auxin and ethylene in adventitious root formation in Arabidopsis", 8th Annual Graduate Student Research Day, Wake Forest University, NC, USA
- **Sukumar P** and Muday GK (2007) "Role of auxin and ethylene in adventitious root formation in Arabidopsis" 21st Annual Plant Molecular Biology Retreat, Wilmington, NC, USA.
- **Sukumar P** and Muday GK (2007) "Role of auxin and ethylene in adventitious root formation in Arabidopsis" American Society of Plant Biologists, Chicago, Illinois, USA.
- **Sukumar P** and Muday GK (2006) "Role of auxin and ethylene in adventitious root formation in Arabidopsis", FASEB, Vermont, USA.

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- Barnard R, Kolb B, Scott W, **Sukumar P**, Olex A (2006) 'Bioinformatics: Protein spot identification tool, 6th Annual Graduate Student Research Day, Wake Forest University, NC, USA.
- **Sukumar P**, Hardtke CS, Muday GK (2006) "Defects in gravity response and lateral root growth in *hy5* are flavonoid independent", 6th Annual Graduate Student Research Day, Wake Forest University, NC, USA.
- **Sukumar P**, Hardtke CS, Muday GK (2005) "Defects in gravity response and lateral root growth in *hy5* are flavonoid independent" 19th Annual Plant Molecular Biology Retreat, Willmington, NC, USA.
- **Sukumar P**, Hardtke CS, Muday GK (2005) 'Defects in gravity response and lateral root growth in *hy5* are flavonoid independent' 5th Annual Graduate Student Research Day, Wake Forest University, NC, USA.

Conferences:

- 8th International Conference on Ethylene 2009 from 21st to 25th June in Ithaca, New York and presented a poster- "Ethylene and auxin cross talk regulates adventitious root formation in Arabidopsis and Tomato".
- Annual Graduate Student Research day, 6th April 2009, Wake Forest University, NC, and presented a poster – "Role of auxin and ethylene in adventitious root formation in Arabidopsis and Tomato".
- Perspectives in Biology Symposium 2008, 14th Nov, Wake Forest University, NC, poster- "Role of auxin and ethylene in adventitious root formation in Arabidopsis".
- Annual 22nd Plant Molecular Biology Retreat 2008, 26th to 28th Septemeber, Asheville, NC, USA.
- American Society of Plant Biologists 26th to 30th June 2008 plant biology meeting in Merida, Mexico, presented a poster- "Role of auxin and ethylene in adventitious root formation in Arabidopsis and Tomato".
- Annual Graduate Student Research day, 5th March 2008, and presented a poster- "Role of auxin and ethylene in adventitious root formation in Arabidopsis".
- Annual 21st Plant Molecular Biology Retreat 28th to 30th Sep 2007, and presented a poster- "Role of auxin and ethylene in adventitious root formation in Arabidopsis".
- American Society of Plant Biologists 2007 Plant Biology meeting in Chicago and presented a poster- "Role of auxin and ethylene in adventitious root formation in Arabidopsis".
- Perspectives in Biology Symposium 2006, 10th-11th Nov, Department of Biology, WFU.
- FASEB 2006 conference on Mechanisms of plant development held in Vermont, Aug 5th to 9th and presented a poster- "Role of auxin and ethylene in adventitious root formation in Arabidopsis".
- Sixth Annual Graduate Student Research Day, 24th March 2006, Wake forest University, Winston-Salem, NC, and presented posters- "Bioinformatics: Protein spot identification tool" and " Defects in gravity response and lateral root growth in *hy5* are flavonoids independent".
- 19th Annual Plant Molecular Biology Retreat from Sep 30th to Oct 2nd 2005 and presented a poster- "Defects in gravity response and lateral root growth in *hy5* are flavonoid independent".

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Talks:

- “Adventitious root formation: Unraveling hormonal cross talk’, Departmental seminar, Department of Biology, Wake Forest University, Winston-Salem, NC, March 31st, 2010
- “Polar auxin transport drives adventitious root formation”, Annual 22nd Plant Molecular Biology Retreat 2008, Asheville, NC - 26th-28th of September, 2008.
- “Role of flavonoids during gravity response and root formation in Arabidopsis”, Departmental seminar, Department of Biology, Wake Forest University, Winston-Salem, NC, 4th April, 2006.

Awards & Honors

- Best graduate student of the department 2010, Department of Biology, Wake forest University
- Tuttle-Newhall Travel Fund, 2009- to attend 8th International Conference on plant hormone ethylene in Ithaca, NY.
- Elton C. Cocke Travel Fund, 2008 to attend ASPB 2008 meeting in Merida, Mexico.
- 1st place in poster competition- 8th Annual Graduate Student Research Day, 2008.
- Vecellio Fund, Department of Biology, 2008-to meet expenses to work in Dr Jerry Cohen’s lab in University of Minnesota.
- Elton C. Cocke Travel Fund, 2007- to attend ASPB 2007 meeting in Chicago.
- Vecellio Fund, Department of Biology, 2007- to attend ASPB 2007 meeting in Chicago.
- Wake Forest Alumni Travel award, 2006 - to attend FASEB meeting in Vermont.
- Indian Council of Agricultural Research (ICAR) Merit Scholarship (Based on Grade Point Average).
- Kerala Agricultural University Merit Scholarship: Based on CBSE % marks (High School).
- Kochi Refineries Limited Scholarship (Won by students who get into professional programs in Universities, directly from high school).
- Duke of Edinburg: Bronze Medal for Extracurricular activities.

Professional Development Activities

- Attend the Cell and Molecular Biology lunch group at Department of Biology, which discusses molecular and cell biology research, 2006-present.
- Attend relevant bioinformatics meetings at Department of Computer science, Wake Forest University, 2007-present.
- Member of American Society of Plant Biologists, 2007-present.
- Member of Wake Forest University Graduate Student Association, 2004-2010.