

## JOHN CAIRNEY, PHD

Molecular Biologist/Microbiologist  
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Permanent US Resident  
Born : Dumfries, Scotland, UK, 29th March, 1959

### EDUCATION:

B.Sc. (Honours), University of Glasgow, Scotland, 1982  
Ph.D., University of Dundee, Scotland, 1986

### PROFESSIONAL AND ACADEMIC APPOINTMENTS:

2010 - P      President and Scientific Director , NanoBiotechnologies  
2007 - P      Associate, Aqua Resources  
2003-2009    Associate Professor, School of Biology, Georgia Tech  
1999-2003    Associate Professor, Institute of Paper Science and Technology  
1996-2003    Adjunct Faculty, School of Biology, Georgia Tech  
1994-1999    Assistant Professor, Institute of Paper Science and Technology  
1991-1994    Assistant Professor, Dept. Forest Science, Texas A&M Univ.  
1990 -1991    Research Associate, Dept. Forest Science, Texas A&M Univ.  
1989 -1990    Postdoctoral Fellow, Dept. Biological Sciences, Columbia University, NY  
1988-1989    Postdoctoral Fellow, Med. Res. Council Human Genetics Unit, Western  
                  General Hospital, Edinburgh, Scotland  
1986-1988    EMBO Postdoctoral Fellow, Max Planck Institute for Molecular Genetics,  
                  Berlin, Germany  
1982-1986    Graduate Res. Ass., Dept. of Biochemistry, University of Dundee, Scotland

### ACADEMIC AND RESEARCH ACCOMPLISHMENTS

Mentored (major professor) 5 PhD students, 13 MS students, and 10 post-doctoral Fellows.  
Obtained over \$5.5 Million in External Funding over course of career (funds from Federal  
Sources [NSF,USDA, DOE], State Sources [Georgia Consortium] and Industrial Sources).  
First to demonstrate Mg(OH)<sub>2</sub> nanoplatelets as antimicrobial agent (for Aqua Resources)

### CURRENT FIELDS OF INTEREST:

Molecular Microbiology of Antimicrobial Properties of Nanoparticles  
Molecular Biology of the Production of Biomass for Bioenergy and Biochemicals  
Molecular Biology of the Production and Hydrolysis of Cellulose and Lignocellulose for  
Bioenergy and Biochemicals  
Molecular Biology of Embryogenesis in Loblolly Pine (*Pinus taeda* L.)

## SAMPLE PUBLICATIONS

Published over 50 peer-reviewed research papers, 20 conference proceedings and 60 Industrial Reports. Hold 2 patents, 1 pending patent, 5 invention disclosures lodged.

1. Dong C, **Cairney J**, Sun Q, Maddan OL, He G, Deng Y. 2010. Investigation of Mg(OH)<sub>2</sub> nanoparticles as an antibacterial agent. **J Nanopart Res** (online) DOI 10.1007/s11051-009-9769-9
2. Oh, T., R. M. Wartell, **J. Cairney**, G. S. Pullman. 2008. Evidence for stage-specific modulation of specific microRNAs (miRNA) and miRNA processing components in female gametophyte tissues during embryogenesis of loblolly pine (*Pinus taeda* L.). **New Phytologist**. 179:67 - 80 (OnlineEarly; doi:10.1111/j.1469-8137.2008.02448.x)
3. **Cairney J**, Pullman GS. 2007. The cellular and molecular biology of conifer embryogenesis. (Invited **Tansley Review**) **New Phytol.** 176:511-36.
4. **Cairney J**, Zheng L, Cowels A, Hsiao J, Zismann V, Liu J, Ouyang S, Thibaud-Nissen F, Hamilton J, Childs K, Pullman GS, Zhang Y, Oh T, Buell CR. 2006. Expressed Sequence Tags from loblolly pine embryos reveal similarities with angiosperm Embryogenesis. **Plant Mol. Biol.** 62:485-501 (DOI: 10.1007/s11103-006-9035-9) ([View PDF](#))
5. Ragauskas AJ.; Williams CK.; Davison BH.; Britovsek G; **Cairney J**; Eckert CA.; Frederick W J. Jr.; Hallett JP.; Leak DJ.; Liotta CL.; Mielenz JR.; Murphy R; Templer R; Tschaplinski T. 2006. The Path Forward for Biofuels and Biomaterials. **Science** 311(5760), 484-489. ([View PDF](#)).
6. Lee SH, Stubbs DD, **Cairney J**,. Hunt WD. 2005. Rapid detection of bacterial spores using a Quartz Crystal Microbalance (QCM) immunoassay. **IEEE Sensors Journal**. Special Issue on Sensors for the Prevention of Terrorist Acts. 5: 737-743
7. Ciavatta VT, Egertsdotter U, Clapham D, von Arnold S, **Cairney J**. 2002. A promoter from the loblolly pine PtNIP1:1 gene directs expression in an early-embryogenesis and suspensor-specific fashion. **Planta** 215: 694-698 (DOI 10.1007/s00425-002-0822-5) (<http://link.springer-ny.com/link/service/journals/00425/contents/02/00822/>)
8. Ciavatta VT, Morillon R, Pullman GS, Chrispeels M, **Cairney J**. 2001. An aquaglyceroporin is abundantly expressed early in the development of the suspensor and the embryo proper of loblolly pine (*Pinus taeda* L.). **Plant Physiol.** 127: 1556-1567 (<http://www.plantphysiol.org/cgi/content/full/127/4/1556>)
9. Strauss S, Boerjan W, **Cairney J**, Malcolm Campbell M, Dean J, Ellis D, Jouanin L, Sundberg B. 1999. Forest biotechnology makes its position known. **Nature/Biotechnology** 17 (12) 1145. (<http://www.nature.com/cgi-bin/doifinder.pl?URL=/doifinder/10.1038/70652>)
10. Higgins CF, **Cairney J**, Stirling DA, Sutherland L, Booth IR. 1987. Osmotic regulation of gene expression: ionic strength as an intracellular signal? **Trends Biochem. Sci.** 12: 339-344.