

CURRICULUM VITAE

CHRISTINE A. RAINES

Surname: Raines

Forenames: Christine Anne

Nationality: British

Qualifications:

B.Sc. (Hons) Agricultural Botany, First Class, Glasgow University, 1982.

Ph.D., Photosynthesis, Glasgow University, 1986.

Research Positions

Oct 85 - Aug 88 Higher Scientific Officer, Institute of Plant Science Research, Cambridge

Aug 88 - Sept 95 Lecturer, University of Essex

Oct 95 - Sept 2002 Senior Lecturer, University of Essex

Oct 2002 - Sept 2004 Reader, University of Essex

Oct 2004 - Professor University of Essex

Other Responsibilities:

Associate Editor, Journal of Experimental Botany (2006-)

Member of SEB Plant Section Committee (2002-)

Honorary Secretary of SEB Plant Section (2008-)

Member of BBSRC Biofuels Committee (2007/8)

Member of EPSRC Bioenergy Committee (2008)

Member of BBSRC PMS Review Panel (2008)

Member of Nuffield Bioethics Committee on Biofuels

Research Interests

I have over 20 years of research experience in the area of plant molecular physiology, isolation and characterisation of photosynthetic genes, analysis of gene expression and production and analysis of transgenic plants. Studies of limitations to photosynthetic carbon assimilation in transgenic plants have identified a target in the Calvin cycle for increasing plant yield. Raines recent work using a proteomic based approach, has revealed a novel mechanism allowing the Calvin cycle to be regulated in response to changes in the light environment. More recently in collaboration with Geider, I have worked on the molecular basis of acclimation of phytoplankton to light and CO₂, using material grown in chemostat and pH-stat cultures in the laboratory. This work has shown that in *E. huxleyi* the light harvesting fucoxanthin chlorophyll proteins (FCPs) form a divergent multigene family and that in high light *E. huxleyi* down regulates the levels of the FCP transcripts and proteins.

I have been an author or co-author on 50 peer-reviewed research papers and 6 reviews or book chapters. Since 1989, she has been the lead PI or Co-PI on 7 BBSRC response mode grants; 2 NERC non-thematic standard project and a Leverhulme International Collaborative project. I have also been a participant in the EUROFACE and POPFACE integrated projects investigating the impact of elevated CO₂ on poplar trees.

Selected Publications since 2000

Olcer H, Lloyd JC, **Raines CA** (2001) Photosynthetic capacity is differentially affected by reductions in sedoheptulose-1,7-bisphosphatase activity during leaf development in transgenic tobacco plants. *Plant Physiol* **125**, 982-989.

Poolman M, Olcer H, Lloyd JC, **Raines CA**, Fell D (2001) Computer modelling and experimental evidence for two steady-states in the photosynthetic Calvin cycle. *Eur J Biochem* **268**, 1-8.

Harrison EP, Olcer H, Lloyd JC, Long SP, **Raines CA** (2001) Small decreases in SBPase cause a linear decline in the apparent RuBP regeneration rate, but do not affect Rubisco carboxylation capacity. *J Exp Bot* **52**, 1779-1784

Poolman, M. G., Fell, D. A. & **Raines, C. A.** (2003) Elementary modes analysis of photosynthate metabolism in the chloroplast stroma, *Eur. J. Biochem.* **270**, 430-439.

Raines CA (2003) The Calvin cycle revisited: analysis of antisense plants. *Photos. Res.* **75**, 1-10.

Naidu SL, Moose SP, AL-Shoabi AK, **Raines CA**, Long SP (2003) Cold tolerant C4 photosynthesis in *Miscanthus x giganteus* – effects of cold on photosynthetic enzymes. *Plant Physiol* **132**, 1688-1697

Bernacchi C, Davey P , Calfapietera C, **Raines CA**, Long SP (2003) Physiological responses of three Poplar species to long term growth in free-air CO₂ enrichment. *New Phytologist.* **159**, 609-621

Caemmerer SV, Lawson T, Oxborough K, Baker N, Andrews TJ, **Raines CA** (2004) Stomatal conductance does not correlate with photosynthetic capacity in transgenic plants with reduced amounts of Rubisco. *J Exp Bot* **55**, 1157-1166

Lefebvre S., Lawson T., Zakhleniuk O.V., Lloyd J.C., **Raines C.A.** (2005) Increased sedoheptulose-1,7-bisphosphatase activity in transgenic tobacco plants stimulates photosynthesis and growth from an early stage in development. *Plant Physiology* **138**, 451- 460

Lawson T, Bryant B, Lefebvre S, Lloyd JC, **Raines CA.** (2006) Decreased SBPase activity alters growth and development in transgenic tobacco plants. *Plant Cell Environ* **29**, 48-58

Raines CA (2006) Transgenic approaches to manipulate the environmental responses of the C3 carbon fixation cycle. *Plant Cell Environ* **29**, 331-339

Raines CA, Paul M. (2006) Products of leaf carbon metabolism modulate the developmental programme determining leaf morphology. *J Exp Botany* **57**, 1857-1862

P A Davey, H Olcer, O Zakhleniuk , C J Bernacchi , C Calfapietra, SP Long, **CA Raines** (2006) Can fast growing plantation trees escape biochemical down-regulation of photosynthesis when grown throughout their complete production cycle in the field under elevated carbon dioxide? *Plant Cell Environ* **29**, 1235-1244

Singh P, Kaloudas D, **Raines CA** (2008) Expression analysis of the Arabidopsis CP12 gene family suggests novel roles for these proteins in roots and floral tissues. *J Exp Bot* **59**, 3975–3985

Lawson T, Lefebvre S, Baker NR, Morison JIL, **Raines CA** (2008) Reductions in mesophyll and guard cell photosynthesis impact on the control of stomatal responses to light and CO₂. *J Exp Bot* **59**: 3609–3619,

Howard TP, Metodiev M, Lloyd JC, **Raines CA** (2008) Thioredoxin-mediated reversible dissociation of a stromal multiprotein complex in response to changes in light availability. *Proc Natl Acad Sci* **105**, 4056-4061

Lefebvre SC, Harris G, Webster R, Read B, Garrido J, Leonardos N, Geider RJ, **Raines CA** (2009) Characterisation and expression analysis of the *Lhcf* gene family in *Emiliana huxleyi* (Haptophyta) reveals differential responses to light and CO₂. *J Phycol* in press