Rachel A Burton: Publications

**Book chapters**

1. Byrt CS, Betts NS, Farrokhi N, **Burton RA** (2013) Deconstructing plant biomass: cell wall structure and novel manipulation strategies (Chapter 7). In: *Biofuel Crops* (Singh BP, ed). CABI, UK.
2. Stone BA, Jacobs AK, Hrmova M, **Burton RA**, Fincher GB (2010) The Biosynthesis of Plant Cell Wall and Related Polysaccharides by Enzymes of the GT2 and GT48 Families (Chapter 5*)*.In: *Annual Plant Reviews: Plant cell wall polysaccharides - biosynthesis and bioengineering* (Ulvskov P, Carpita NC eds). Blackwell Publishing, USA 41, pp109-166.
3. **Burton RA**, Collins HM, Fincher GB (2009) The Role of Endosperm Cell Walls in Barley Malting Quality (Chapter 7). In: *Genetics and Improvement of Barley Malt Quality* (Zhang G, Li C, eds). Springer Publishing Company, pp 190-237.
4. Farrokhi N, Hrmova M, **Burton RA**, Fincher GB (2009) Heterologous and cell free expression systems. In: *Methods in Molecular Biology: Plant Genomics*, (Somers D, Langridge P, Gustafson P, eds). Humana Press Inc., Totowa, NJ, USA, pp 175-198.

**Refereed journal articles**

1. **Burton RA**, Fincher GB (2014) Plant cell wall engineering: applications in biofuel production and improved human health. *Current Opinion in Biotechnology* **26**: 79-84.
2. Schreiber M, Wright F, MacKenzie K, Hedley PE, Schwerdt JG, Little A, **Burton RA**, Fincher GB, Marshall D, Waugh R, Halpin C (2014) The Barley Genome Sequence Assembly Reveals Three Additional Members of the CsIF (1,3;1,4)- β-Glucan Synthase Gene Family. *PloS One* **9**: e90888.
3. Zhang Q, Cheetamun R, Dhugga KS, Rafalski JA, Tingey SV, Shirley NJ, Taylor J, Hayes K, Beatty M, Bacic A, **Burton RA**, Fincher GB (2014) Spatial gradients in cell wall composition and transcriptional profiles along elongating maize internodes. *BMC Plant Biology* **14**: 27.
4. Trafford K, Haleux P, Henderson M, Shirley NJ, Tucker MR, Fincher GB, **Burton RA** (2013) Grain development in Brachypodium and other grasses: possible interactions between cell expansion, starch deposition, and cell-wall synthesis. *Journal of Experimental Botany* **64**: 5033-5047.
5. Buchanan M, **Burton RA**, Dhugga KS, Rafalski AJ, Tingey SV,Shirley NJ, Fincher GB (2012) Endo-(1, 4)-β-Glucanase gene families in the grasses: temporal and spatial Co-transcription of orthologous genes. *BMC Plant Biology* **12**: 235.
6. Laidlaw HKC, Lahnstein J, **Burton RA**, Fincher GB, Jobling SA (2012) Analysis of the arabinoxylan arabinofuranohydrolase gene family in grasses. *Journal of Experimental Botany* **63**: 3031-3045.
7. Wilson SM, **Burton RA**, Collins HM, Doblin MS, Pettolino F, Shirley NJ, Fincher GB, Bacic A (2012) Pattern of deposition of cell wall polysaccharides and transcript abundance of related cell wall synthesis genes during differentiation in barley (*Hordeum vulgare*) endosperm. *Plant Physiology* **159**: 655-670.
8. **Burton RA**, Fincher GB (2012) Current challenges in cell wall biology in the cereals and grasses. *Frontiers in Plant Physiology* **3**: 130.
9. **Burton RA**, Collins HM, Kibble NAJ, Smith JA, Shirley NJ, Jobling SA, Henderson M, Singh RR, Pettolino F, Wilson SM, Bird AR, Topping DL, Bacic A, Fincher GB (2011) Over-expression of specific *HvCslF* cellulose synthase-like genes in transgenic barley increases the levels of cell wall (1,3;1,4)-β-D-glucans and alters their fine structure. *Plant Biotechnology Journal* **9**: 117-135.
10. Zhang Q, Pettolino FA, Dhugga KS, Rafalski JA, Tingey S, Taylor J, Shirley NJ, Hayes K, Beatty M, Abrams SR, Zaharia LI, **Burton RA**, Bacic A, Fincher GB (2011) Cell Wall Modifications in Maize Pulvini in Response to Gravitational Stress. *Plant Physiology* **156**: 2155-2171.
11. Conn SJ, Gilliham M, Athman A, Schreiber AW, Baumann U, Moller I, Cheng NH, Stancombe MA, Hirschi KD, Webb AAR, **Burton RA**, Kaiser BN, Tyerman SD, Leigh RA (2011) Cell-specific vacuolar calcium storage mediated by CAX1 regulates apoplastic calcium concentration, gas exchange, and plant productivity in Arabidopsis. *The Plant* *Cell* **23**: 240-257.
12. **Burton RA**, Gidley MJ, Fincher GB (2010) Heterogeneity in the Chemistry, Structure and Function of Plant Cell Walls. *Nature Chemical Biology* **6**:724-732.
13. Collins HM, **Burton RA**, Topping DL, Liao M-L, Bacic A, Fincher GB (2010) Variability in the fine structures of non-cellulosic cell wall polysaccharides from cereal grains: potential importance in human health and nutrition. *Cereal Chemistry* **87**: 272-282.
14. **Burton RA**, Ma G, Baumann U, Harvey AJ, Shirley NJ, Taylor J, Pettolino F, Bacic A, Beatty M, Simmons CR, Dhugga KS, Rafalski JA, Tingey SV, Fincher GB (2010) Customized Gene Expression Microarray Reveals that the Brittle Stem Phenotype fs2 of Barley is Attributable to a Retroelement in the HvCesA4 Cellulose Synthase Gene. *Plant Physiology* **153**: 1716-1728.
15. Zhang Q, Shirley NJ, **Burton RA**, Lahnstein J, Hrmova M, Fincher GB (2010) The genetics, transcriptional profiles, and catalytic properties of UDP-α-D-xylose 4-epimerases from barley. *Plant Physiology* **153**: 555-568.
16. Liu Q, Zhang Q, **Burton RA**, Shirley NJ, Atwell BJ (2010) Expression of vacuolar H+pyrophosphatase (*OVP3*) is under control of an anoxia-inducible promoter in rice. *Plant Molecular Biology* **72**: 47-60.
17. Doblin MS, Pettolino F, Wilson SM, Campbell R, **Burton RA**, Fincher GB, Newbigin E, Bacic A (2009) A barley CELLULOSE SYNTHASE-LIKE CSLH gene mediates (1,3;1,4)-β-D-glucan synthesis in transgenic *Arabidopsis*. *Proceedings of the Natural Academy of Sciences USA* **106**: 5996-6001.
18. Schober MS, **Burton RA**, Shirley NJ, Jacobs AK**,** Fincher GB (2009) Analysis of the (1,3)-β-D-Glucan Synthase Gene Family of Barley. *Phytochemistry* **70**:713-720.
19. **Burton RA**, Fincher GB (2009) (1,3;1,4)-β-D-Glucans in Cell Walls of the Poaceae, Lower Plants and Fungi: A Tale of Two Linkages. *Molecular Plant* **2**: 873-882.
20. Dwivany FM, Yulia D, **Burton RA**, Shirley NJ, Wilson SM, Fincher GB, Bacic A, Newbigin E, Doblin MS (2009) The CELLULOSE-SYNTHASE LIKE C (CSLC) gene family of barley encodes integral membrane proteins that are located in the plasma membrane. *Molecular Plant* **2**: 1025-1039.
21. **Burton RA**, Jobling SA, Harvey AJ, Shirley NJ, Mather DE, Bacic A, Fincher GB (2008) The genetics and transcriptional profiles of the cellulose synthase-like *HvCslF* gene family in barley (*Hordeum vulgare* L.). *Plant Physiology* **146**: 1821-1833.
22. Schreiber AW, Shirley NJ, **Burton RA**, Fincher GB (2008) Combining transcriptional datasets using the generalized singular value decomposition. *BMC Bioinformatics* **9**: 335
23. Farrokhi N, **Burton RA**, Brownfield L, Hrmova M, Wilson SM, Bacic A, Fincher GB (2006) Plant cell wall biosynthesis: Genetic, biochemical and functional genomics approaches to the identification of key genes. *Plant Biotechnology Journal* **4**: 145-167.
24. **Burton RA**, Wilson SM, Hrmova M, Harvey AJ, Shirley NJ, Medhurst A, Stone BA, Newbigin EJ, Bacic A, Fincher GB (2006) Cellulose Synthase-like CslF Genes Mediate the Synthesis of Cell Wall (1,3;1,4)-β-D-Glucans. *Science* **311**: 1940-1942.
25. Wilson SM, **Burton RA**, Doblin MS, Stone BA, Newbigin EJ, Fincher GB, Bacic A (2006) Temporal and spatial appearance of wall polysaccharides during cellularization of barley (*Hordeum vulgare*) endosperm. *Planta* **224**: 655-667.
26. Hrmova M, **Burton RA**, Biely P, Lahnstein J, Fincher GB (2006) Hydrolysis of (1,4)-β-D-mannans in Barley (*Hordeum vulgare*): Purification and characterization of a (1,4)-β-D-mannan endohydrolase and transcriptional activity of the corresponding gene.  *Biochemistry Journal* **399**: 77-90.
27. Mulvenna JP, Bharathi R, **Burton RA**, Shirley NJ, Fincher GB, Anderson MA, Craik DJ (2006) Discovery of Cyclotide-like Protein Sequences in Graminaceous Crop Plants: Ancestral Precursors of Circular Proteins? *Plant Cell* **18**: 2134-2144.
28. **Burton RA**, Farrokhi N, Bacic A, Fincher GB (2005) Plant Cell Wall Biosynthesis: Real Progress in the Identification of Participating Genes. *Planta* **221**: 309-312.
29. **Burton RA**, Shirley NJ, King BJ, Harvey AJ, Fincher, GB (2004) The CesA Gene Family of Barley (Hordeum vulgare): Quantitative Analysis of Transcripts Reveals Two Groups of Co-Expressed Genes. *Plant Physiology* **134**: 224-236.
30. Lee RC, Hrmova M, **Burton RA**, Lahnstein J, Fincher GB (2003) Bifunctional Family 3 Glycoside Hydrolases from Barley with α-L-Arabinofuranosidase and β-D-Xylosidase Activity: Characterization, Primary Structures and COOH-terminal processing. *Journal of Biological Chemistry* **278**: 5377-5387.
31. Li J, **Burton RA**, Harvey AJ, Hrmova M, Wardak AZ, Stone BA, Fincher GB (2003) Biochemical evidence linking a putative callose synthase gene with (1→3)-β-D-glucan biosynthesis in barley. *Plant Molecular Biology* **53**: 213-225.
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33. **Burton RA**, Jenner H, Carrangis L, Fahy B, Fincher GB, Hylton C, Laurie DA, Parker M, Waite D, van Wegen S, Verhoeven T, Denyer K (2002) Starch granule initiation and growth are altered in barley mutants that lack isoamylase activity. *Plant Journal* **31**: 97-112.
34. **Burton RA**, Johnson PE, Beckles DM, Fincher GB, Jenner HL, Naldrett MJ, Denyer K (2002) Characterisation of the genes encoding the cytosolic and plastidial forms of ADP-glucose pyrophosphorylase in wheat endosperm. *Plant Physiology* **130**: 1464-1475.
35. **Burton RA**, Gibeaut DM, Fincher GB (2001) Functional analysis of polysaccharide synthases responsible for cell wall synthesis in higher plants. *Progress in Biotechnology* **18**: 77-84.
36. Lee RC, **Burton RA**, Hrmova M, Fincher GB (2001) Barley arabinoxylan arabinofuranohydrolases: purification, characterisation and determination of primary structures from cDNA clones. *Biochemistry Journal***356**: 181-189.
37. **Burton RA**, Gibeaut DM, Bacic A, Findlay K, Roberts K, Hamilton A, Baulcombe DC, Fincher GB (2000) Virus-Induced Silencing of a Plant Cellulose Synthase Gene. *The Plant Cell* **12**: 691-705.
38. **Burton RA**, Zhang XQ, Hrmova M, Fincher GB (1999) A Single Limit Dextrinase Gene is Expressed Both in the Developing Endosperm and in Germinated Grains of Barley. *Plant Physiology***119**: 859-871.
39. **Burton RA**, Qi Z, Roulin S, Fincher GB (1998) Gene structure and a possible cytoplasmic location for (1🡪3)-*ß*-glucanse isoenzyme GI from barley (*Hordeum vulgare*). *Plant Science* **135**: 39-47.
40. Bewley JD, **Burton RA**, Morohashi Y, Fincher GB (1997) Molecular cloning of a cDNA encoding a (1🡪4)-β-mannan endohydrolase from the seeds of germinated tomato (*Lycopersicon esculentum*). *Planta* **203**: 454-459.
41. Denver K, Barber LM, **Burton RA**, Hedley CL, Hylton CM, Johnson S, Jones DA, Marshall J, Smith AM, Tatge H, Tomlinson K, Wang TL (1995) The isolation and characterization of novel low-amylose mutants of *Pisum sativum* L. *Plant, Cell and Environment* **18**: 1019-1026.
42. **Burton RA**, Bewley JD, Smith AM, Bhattacharyya MK, Tatge H, Ring S, Bull V, Hamilton WDO, Martin C (1995) Starch branching enzymes belonging to distinct enzyme families are differentially expressed during pea embryo development. *The Plant Journal* **7**: 3-15.

**Patents:**

1. **Burton RA**, Fincher GB, Bacic A. Polysaccharide synthases. International patent application number: WO 2007/014433 A1
2. **Burton RA**, Doblin MS, Bacic A, Newbigin E, Fincher GB. Polysaccharide synthases (H): Australian provisional application number: 2007907071
3. **Burton RA**, Fincher GB. Quantitative trait locus for grain polysaccharides. Australian provisional application number: 2008902999