

Publications – R.T. Mullen

Book Chapters:

- Mullen RT and SK Gidda. 2009. The role of peroxisomes in viral replication. *In* Emergent functions of the peroxisome. Eds. SR Terlecky and VI Titorenko. Research Signpost. Pp. 7-32.
- Mullen RT. 2006. Glyoxysomes, peroxisomes and microbodies. *In* Encyclopedia of seeds, technology and uses. Eds. JD Bewley, M Black and P Halmer. CABI Publishing. Pp. 289-299, 415 & 490.
- Mullen RT. 2002. Targeting and import of matrix proteins into peroxisomes. *In* Plant peroxisomes: biochemistry, cell biology and biotechnological applications. Eds. A Baker and IA Graham. Kluwer Academic Publishers. Pp. 339-385.

Review Articles:

- Abell, B.M. and R.T. Mullen. 2011. Tail-anchored membrane proteins: exploring the complex diversity of tail-anchored protein targeting in plant cells. *Plant Cell Reports. In Press.*
- Dyer JM and RT Mullen. 2008. Engineering plant oils as high-value industrial feedstocks for biorefining: the need for unpinning cell biology research. *Physiologia Plantarum* 132: 11-22.
- Cahoon EB, JM Shockey, CR Dietrich, SK Gidda, RT Mullen and JM Dyer. 2007. Engineering oilseeds for sustainable production of industrial and nutritional feedstocks: Solving bottlenecks in fatty acid flux. *Current Opinions in Plant Biology* 10: 1-9.
- Mullen RT and RN Trelease. 2006. The ER-peroxisome connection in plants: Development of the "ER semi-autonomous peroxisome maturation and replication" model for plant peroxisome biogenesis. *Biochim Biophys Acta* 1763: 1655-1668.
- Titorenko VI and RT Mullen. 2006. Peroxisome biogenesis: The peroxisomal endomembrane system and the role of the ER. *Journal of Cell Biology* 174: 11-17
- Dhanao PK., A Sinclair, RT Mullen and J Mathur. 2006. Illuminating sub-cellular structures and dynamics in plants: a fluorescent protein toolbox. *Canadian Journal of Botany* 84: 515-522.
- Dyer JM, RT Mullen. 2005. Development and potential of genetically engineered oilseed crops. *Seed Science Research* 15: 255-267.
- Muench DG, RT Mullen. 2003. Peroxisome dynamics in plant cells: a role for the cytoskeleton. *Plant Science* 64: 307-315.
- Mullen RT, CR Flynn, RN Trelease. 2001. How are peroxisomes formed? The role of the endoplasmic reticulum and peroxins. *Trends Plant Science* 6: 273-278.
- Mullen RT, RN Trelease. 1996. Biogenesis and membrane properties of peroxisomes: does the boundary membrane serve and protect? *Trends in Plant Science* 1: 389-394.

Journal Articles:

- Gidda, S.K. J.M. Shockey, M. Falcone, P.K. Kim, S. J. Rothstein, D.W. Andrews, J.M. Dyer and R.T. Mullen. 2011. Hydrophobic-domain-dependent protein-protein interactions mediate the localization of GPAT enzymes to ER subdomains. *Traffic. In Press.*
- Johnstone, A.D., R.T. Mullen and D. Mangroo. 2011. Arabidopsis At2g40730 encodes a cytoplasmic protein involved in nuclear tRNA export. *Botany. In Press.*
- James, C.N., P.J. Horn, C.C. Richardson, S.K. Gidda, D. Zhang, R.T. Mullen, J.M. Dyer, R.G.W. Anderson and K.D. Chapman. 2010. Disruption of the *Arabidopsis* CGI-58 homologue produces Chanarin–Dorfman-like lipodystrophy in plants. *Proc Natl Acad Sci USA* 107: 17833-17838.
- Dhanao, P.K., L.G. Richardson, M.D. Smith, S.K. Gidda, M.P. Henderson, D.W. Andrews and R.T. Mullen. 2010. Distinct pathways mediate the sorting of tail-anchored proteins to the plastid outer envelope. *PLoS ONE* 5: 1-18.
- O'Quin, J.B., L. Bourassa, D. Zhang, J.M. Shockey, S.K. Gidda, S. Fosnot, K.D. Chapman, R.T. Mullen and J.M. Dyer. 2010. Temperature-sensitive post-translational regulation of plant omega-3 fatty-

- acid desaturases is mediated by the endoplasmic reticulum-associated degradation pathway. *Journal of Biological Chemistry* 285: 21781-21796.
- Hurley, B.A., H.T. Tran, N.J. Marty, J. Park, W.A. Snedden, R.T. Mullen and W.C. Plaxton. 2010. The dual-targeted purple acid phosphatase isozyme AtPAP26 is essential for efficient acclimation of *Arabidopsis* to nutritional phosphate deprivation. *Plant Physiology* 153: 1112-1122.
- Waller JC, Dhanoa PK, Schumann U, Mullen RT, Snedden WA. 2010. Subcellular and tissue localization of NAD kinases from *Arabidopsis*: compartmentalization of *de novo* NADP biosynthesis. *Planta*. 231: 305-317.
- Chong YT, Gidda SK, Sanford C, Parkinson J, Mullen RT, Goring DR. 2010. Characterization of the *Arabidopsis thaliana* exocyst complex gene families by phylogenetic, expression profiling, and subcellular localization studies. *New Phytologist* 185: 401-419.
- Bi YM, Kant S, Clark J, Gidda S, Ming F, Xu J, Rochon A, Shelp BJ, Hao L, Zhao R, Mullen RT, Zhu T, Rothstein SJ. 2009. Increased nitrogen-use efficiency in transgenic rice plants over-expressing a nitrogen-responsive early nodulin gene identified from rice expression profiling. *Plant Cell and Environment* 32: 1749-1760.
- Gidda SK, Shockey JM, Rothstein SJ, Dyer JM, Mullen RT. 2009. *Arabidopsis thaliana* GPAT8 and GPAT9 are localized to the ER and possess distinct ER retrieval signals: Functional divergence of the dilysine ER retrieval motif in plant cells. *Plant Physiology and Biochemistry* 47: 867-879
- Clark SM, Di Leo R, Van Cauwenberghe OR, Mullen RT, Shelp BJ. 2009. Subcellular localization and expression of multiple tomato γ -aminobutyrate transaminases that utilize both pyruvate and glyoxylate. *Journal of Experimental Botany* 2009 60: 3255-3267
- Clark SM, Di Leo R, Dhanoa PK, Van Cauwenberghe OR, Mullen RT, Shelp BJ. 2009. Biochemical characterization, mitochondrial localization, expression, and potential functions for an *Arabidopsis* gamma-aminobutyrate transaminase that utilizes both pyruvate and glyoxylate. *J Exp Bot* 60: 1743-1757.
- O'Quin JB, Mullen RT, Dyer JM. 2009. Addition of an N-terminal epitope tag significantly increases the activity of plant fatty acid desaturases expressed in yeast cells. *Applied Microbiology and Biotechnology* 83: 117-125.
- Kim PK, Hailey DW, Mullen RT, Lippincott-Schwartz J. 2008. Ubiquitin signals autophagic degradation of cytosolic proteins and peroxisomes. *Proc Natl Acad Sci USA* 105: 20567-20574.
- Hwang YT, AW McCartney, SK Gidda, RT Mullen. 2008. Localization of the Carnation Italian Ringspot virus replication protein p36 to the mitochondrial outer membrane is mediated by an internal targeting signal. *BMC Plant Biology* 9 (54): 1-26
- Flores T, CD Todd, A Tovar-Mendez, PK Dhanoa, N Correa-Aragunde, DL Brownfield, ME Hoyos, RT Mullen, L Lamattina, MK Deyholos, JC Polacco. Arginase-negative mutants of *Arabidopsis* exhibit increased NO signaling in root development. *Plant Physiology* 147: 1936-1946.
- Lingard MJ, SK Gidda, S Bingham, SJ Rothstein, RT Mullen, and RN Trelease. 2008. Arabidopsis PEX11 isoforms c, d and e, FIS1b, and DRP3A cooperatively participate in cell-cycle-associated replication of peroxisomes. *Plant Cell* 20: 1567-1585
- Simpson JP, R Di Leo, PK Dhanoa, WL Allan, A Makhoudova, SM Clark, GJ Hoover, RT Mullen, BJ Shelp. 2008. Identification and characterization of a plastid-localized Arabidopsis glyoxylate reductase isoform: comparison with a cytosolic isoform and implications for cellular redox homeostasis and aldehyde detoxification. *Journal of Experimental Botany* 59: 2545-2554.
- Bassel GW, RT Mullen and JD Bewley. 2008. Procera is a putative DELLA mutant in tomato (*Solanum lycopersicum*): effects on the seed and vegetative plant. *Journal of Experimental Botany* 59: 585-593.
- Henderson MP, YT Hwang, JM Dyer, RT Mullen and DW Andrews. 2007. The carboxyl-terminus of cytochrome *b₅* confers endoplasmic reticulum specificity by preventing spontaneous insertion into membranes. *Biochemical Journal* 401: 701-709.
- Shockey JM, S Gidda, DC Chapital, J-C Kuan, PK Dhanoa, JM Bland, SJ Rothstein, RT Mullen and JM Dyer. 2006. Tung tree DGAT1 and DGAT2 have nonredundant functions in triacylglycerol

- biosynthesis and are localized to different subdomains of the endoplasmic reticulum. *Plant Cell* 18: 2294-2313.
- Mullen RT, AW McCartney, CR Flynn and GST Smith. 2006. Peroxisome biogenesis and the formation of multivesicular peroxisomes during tombusvirus infection: A role for ESCRT? *Canadian Journal of Botany* 84: 551-564.
- Kim, P.K., R.T. Mullen, U. Schumann and J. Lippincott-Schwartz. 2006. The origin and maintenance of mammalian peroxisomes involves a *de novo* PEX16-dependent pathway for the ER. *Journal of Cell Biology* 173: 521-532.
- Bassel G, RT Mullen and JD Bewley. 2006. *ABI3* expression ceases following germination of tomato and *Arabidopsis* seeds. *Journal of Experimental Botany* 57: 1291-1297.
- McCartney AW, JS Greenwood, M Fabian, KA White and RT Mullen. 2005. Localization of the tomato bushy stunt virus replication protein p33 reveals a peroxisome-to-endoplasmic reticulum sorting pathway. *Plant Cell* 17: 3513-3531.
- Chuong SDX, N-I Park, MC Freeman, RT Mullen and DG Muench. 2005. The peroxisomal multifunctional protein interacts with cortical MTs in plant cells. *BMC Cell Biology* 6:40.
- Shockey JM, PK Dhanoa, T Dupuy, DC Chapital, RT Mullen, JM Dyer. 2005. Cloning, functional analysis, and subcellular localization of two isoforms of NADH:cytochrome *b₅* reductase from developing seeds of tung (*Vernicia fordii*). *Plant Science* 169: 375-385.
- Hwang YT, SM Pelitire, MPA Henderson, DW Andrews, JM Dyer, RT Mullen. 2004. Novel targeting signals indicate the sorting of different isoforms of the tail-anchored membrane protein cytochrome *b₅* to either endoplasmic reticulum or mitochondria. *Plant Cell* 16: 3002-3019.
- Bassel GW, E Zielinska, RT Mullen, JD Bewley. 2004. Down-regulation of *DELLA* genes is not essential for germination of tomato, soybean and *Arabidopsis* seeds. *Plant Physiology* 136: 2782-2789.
- McCartney AW, JM Dyer, P Dhanoa, PK Kim, DW Andrews, JA McNew, RT Mullen. 2003. Membrane-bound fatty acid desaturases are inserted cotranslationally into the ER and contain different ER retrieval motifs at their carboxy termini. *Plant Journal* 37: 156-173.
- Murphy MA, BA Phillipson, A Baker, RT Mullen. 2003. Characterization of the targeting signal of the *Arabidopsis* 22 kilodalton integral peroxisomal membrane protein. *Plant Physiology* 133: 813-828.
- Stone SL, EM Anderson, RT Mullen, DR Goring. 2003. ARC1 is an E3 ubiquitin ligase and promotes the ubiquitination of proteins during the rejection of self-incompatible *Brassica* pollen. *Plant Cell* 15: 885-898.
- Chuong SDX, RT Mullen, DG Muench. 2002. Identification of a rice mRNA and microtubule binding protein as the multifunctional protein (MFP), a peroxisomal enzyme involved in the β -oxidation of fatty acids. *Journal of Biological Chemistry* 277: 2419-2429.
- Collings DA, JDI Harper, J Marc, RL Overall, RT Mullen. 2002. Life in the fast lane: actin-based motility of plant peroxisomes. *Canadian Journal of Botany* 80: 430-441.
- Dyer JM, DC Chapital, J-CW Kuan, RT Mullen, AB Pepperman. 2002. Metabolic engineering of *Saccharomyces cerevisiae* for production of novel lipid compounds. *Applied Microbiology and Biotechnology* 59: 224-230.
- Dyer JM, DC Chapital, J-CW Kuan, RT Mullen, C Turner, A McKeon, AB Pepperman. 2002. Molecular analysis of a bifunctional fatty acid conjugase/desaturase from Tung (*Aleurites fordii*): Implications for the evolution of plant fatty acid diversity. *Plant Physiology* 130: 2027-2038.
- Bassel GW, RT Mullen, JD Bewley. 2001. α -Galactosidase is synthesized in tomato seeds during development and is localized in the protein storage vacuoles. *Canadian Journal of Botany* 79: 1417-1424.
- Dyer JM, Mullen RT. 2001. Immunocytological localization of two plant fatty acid desaturases in the endoplasmic reticulum. *FEBS Letters* 494: 44-47.
- Mullen RT, CS Lisenbee, CR Flynn, RN Trelease. 2001. Stable and transient expression of chimeric peroxisomal membrane proteins induces an independent "zippering" of peroxisomes and an ER subdomain. *Tobacco Abstracts* 118: 45

- Mullen RT, RN Trelease, M Ying. 2001. Transmembrane domain-dependent sorting of carboxy tail-anchored ascorbate peroxidase from the ER to peroxisomes in plant cells. *Biochemistry and Cell Biology* 79: 645.
- Todd CD, Cooke JEK, Mullen RT, Gifford DJ. 2001. Regulation of a loblolly pine (*Pinus taeda* L.) arginase gene in developing seedling tissue during post-germinative growth. *Plant Molecular Biology* 45: 555-565.
- Mullen RT, Lisenbee CS, Flynn CR, Trelease RN. 2001. Stable and transient expression of chimeric peroxisomal membrane proteins induces an independent "zippering" of peroxisomes and an ER subdomain. *Planta* 213: 849-863.
- Mullen RT, RN Trelease. 2000. The sorting signals for peroxisomal membrane-bound ascorbate peroxidase are within its C-terminal tail. *Journal of Biological Chemistry* 275: 16337-16344.
- Mullen RT, CS Lisenbee, JA Miernyk, RN Trelease. 1999. Peroxisomal membrane ascorbate peroxidase is sorted indirectly to peroxisomes via a membranous network resembling a subdomain of the endoplasmic reticulum. *Plant Cell* 11: 2167-2185.
- Flynn CR, RT Mullen, RN Trelease. 1998. Mutational analyses of a type 2 peroxisomal targeting signal that is capable of directing oligomeric import into tobacco BY-2 glyoxysomes. *Plant Journal* 16: 709-720.
- Mullen RT, RN Trelease, H Duerk, M Arand, BD Hammock, F Oesch, DF Grant. 1998. Different forms of soluble epoxide hydrolase are localized in peroxisomes and the cytosol of mammalian cells. *FEBS Letters* 445: 301-305.
- Lee MS, RT Mullen, RN Trelease. 1997. Oilseed isocitrate lyases lacking their essential type 1 peroxisomal targeting signal are piggybacked to glyoxysomes. *Plant Cell*. 9: 185-197.
- Mullen RT, DJ Gifford. 1997. Regulation of two loblolly pine (*Pinus taeda* L.) isocitrate lyase genes in megagametophytes of mature and stratified seeds and during postgerminative growth. *Plant Molecular Biology* 33: 593-604.
- Mullen RT, RN Trelease, MS Lee. 1997. Targeting of peroxisomal membrane-bound ascorbate peroxidase in plant and mammalian cells. *Current Topics in Plant Biochemistry and Physiology* 16: 133.
- Trelease RN, RT Mullen, MS Lee. 1997. Targeting signals of peroxisomal proteins. *Current Topics in Plant Biochemistry and Physiology*.16: 10-11.
- Mullen RT, MS Lee, CR Flynn, RN Trelease. 1997. Diverse amino acid residues function within the type 1 peroxisomal targeting signal (PTS1). Implications for the role of accessory residues upstream of the PTS1. *Plant Physiology* 115: 881-889.
- Mullen RT, MS Lee, RN Trelease. 1997. Identification of the peroxisomal targeting signal for cottonseed catalase. *Plant Journal* 12: 313-322.
- Mullen RT, JE King, DJ Gifford. 1996. Changes in mRNA populations during loblolly pine (*Pinus taeda* L.) seed stratification, germination, and post-germinative growth. *Physiologia Plantarum* 97: 545-553.
- Trelease RN, W Xie, MS Lee, RT Mullen. 1996. Rat liver catalase is sorted to peroxisomes by its C-terminal tripeptide Ala-Asn-Leu, not by its internal Ser-Lys-Leu motif. *European Journal of Cell Biology* 71: 248-258.
- Mullen RT, Gifford DJ. 1997. Regulation of two loblolly pine (*Pinus taeda* L.) isocitrate lyase genes in megagametophytes of mature and stratified seeds and during postgerminative growth. *Plant Molecular Biology* 33: 593-604.
- Mullen RT, Gifford DJ. 1995. Purification and characterization of the glyoxysomal enzyme malate synthase following seed germination in *Pinus taeda* L. *Plant Physiology and Biochemistry* 33: 639-648.
- Mullen RT, Gifford DJ. 1995. Effect of the embryo axis on catalase in the endosperm of germinated castor bean seeds. *Plant Science*. 107: 177-187.
- Mullen RT, Gifford DJ. 1995. Isocitrate lyase from germinated loblolly pine megagametophytes: enzyme purification and immunocharacterization. *Plant Physiology and Biochemistry* 33: 87-95.

Mullen RT, Gifford DJ. 1993. Purification and characterization of catalase from loblolly pine (*Pinus taeda* L.) megagametophytes. *Plant Physiology* 103: 477-483.