

CURRICULUM VITAE

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CURRENT POSITION: Professor
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EDUCATION AND TRAINING:

Institution and Location	Field of Study	Year	Degree/Training
Carnegie-Mellon Univ., Pittsburgh, PA	Biological Sciences	1977	B.S.
Duke Univ., Durham, NC	Genetics	1983	Ph.D.
Columbia Univ., New York, NY	Biochemistry	1983-1986	Postdoc. Fellow

PROFESSIONAL EXPERIENCE:

12/1/86 - 6/31/92 Assistant Professor, Iowa State University.
7/1/92 - 6/30/98: Associate Professor, Iowa State University.
7/1/98 - present: Professor, Iowa State University
10/1/98 – 4/30/99: Visiting Professor, Laboratoire de Chimie Biologique, Université des Sciences et Technologies de Lille, Villeneuve d'Ascq, France
9/1/00 - 8/31/07: Chair, Department of Biochemistry, Biophysics, and Molecular Biology

PUBLICATIONS (five most significant marked with asterisks):

Google Scholar Profile:

http://scholar.google.com/citations?hl=en&user=RKN_jDIAAAAJ&view_op=list_works

1. **Myers, A.M.**, Grant, D.M., Rabert, D.K., Harris, E.H., Boynton, J.E., and Gilham, N.W. (1982) Mutants of *Chlamydomonas reinhardtii* with physical alterations in their chloroplast DNA. *Plasmid* **7**, 133-151.
2. Schmidt, R.J., **Myers, A.M.**, Gillham, N.W., and Boynton, J.E. (1984) Chloroplast ribosomal proteins of *Chlamydomonas* synthesized in the cytoplasm are made as precursors. *J. Cell Biol.* **98**, 2011-2018.
3. Schmidt, R.J., **Myers, A.M.**, Gillham, N.W., and Boynton, J.E. (1984) Immunological similarities between specific chloroplast ribosomal proteins from *Chlamydomonas reinhardtii* and ribosomal proteins from *Escherichia coli*. *Mol. Biol. Evol.* **1**, 317-334.

4. **Myers, A.M.**, Harris, E.H., Boynton, J.E., and Gillham, N.W. (1984) Mutations in a nuclear gene of *Chlamydomonas* cause the loss of two chloroplast ribosomal proteins, one synthesized in the cytoplasm and the other in the chloroplast. *Curr. Genet.* **8**, 369-378.
5. **Myers, A.M.**, Pape, L.K., and Tzagoloff, A. (1985) Mitochondrial protein synthesis is required for maintenance of intact mitochondrial genomes in *Saccharomyces cerevisiae*. *EMBO J.* **4**, 2087-2092.
6. **Myers, A.M.**, and Tzagoloff, A. (1985) *MSW*, a yeast gene coding for mitochondrial tryptophanyl tRNA synthetase. *J. Biol. Chem.* **260**, 15371-15377.
7. **Myers, A.M.**, Tzagoloff, A. Kinney, D.M., and Lusty, C.J. (1986) Yeast shuttle and integrative vectors suitable for construction of *lacZ* fusions. *Gene* **45**, 299-310.
8. Hill, J.E., **Myers, A.M.**, Koerner, T.J., and Tzagoloff, A. (1986) Yeast/*E. coli* shuttle vectors with multiple unique restriction sites. *Yeast* **2**, 163-167.
9. Tzagoloff, A., and **Myers, A.M.** (1986) Genetics of mitochondrial biogenesis. *Annu. Rev. Biochem.* **55**, 249-285.
10. Madaule, P., Axel, R., and **Myers, A.M.** (1987) Isolation and characterization of two members of the *rho* gene family from the yeast *Saccharomyces cerevisiae*. *Proc. Natl. Acad. Sci. USA* **84**, 779-783.
11. **Myers, A.M.**, Crivellone, M.D., and Tzagoloff, A. (1987) Assembly of the mitochondrial membrane system. *MRP1* and *MRP2*, two yeast genes coding for mitochondrial ribosomal proteins. *J. Biol. Chem.* **262**, 3388-3397.
12. Koerner, T.J., **Myers, A.M.**, Lee, S., and Tzagoloff, A. (1987) Isolation and characterization of the yeast gene coding for mitochondrial phenylalanyl tRNA synthetase a subunit. *J. Biol. Chem.* **262**, 3690-3696.
13. **Myers, A.M.**, Crivellone, M.D., Koerner, T.J. and Tzagoloff, A. (1987) Characterization of the yeast *HEM2* gene and transcriptional regulation of *COX5* and *COR1* by heme. *J. Biol. Chem.* **262**, 16822-16829.
14. Brown, D.R., Koehler, C.M., Lindberg, G.L., Freeman, A.E., Mayfield, J.E., **Myers, A.M.**, Schutz, M.M. and Beitz, D.C. (1989) Molecular analysis of cytoplasmic genetic variation in Holstein cows. *J. Animal Sci.* **67**, 1926-1932.
15. Reading, D.S., Hallberg, R.L. and **Myers, A.M.** (1989) Characterization of the yeast *HSP60* gene coding for a mitochondrial assembly factor. *Nature* **337**, 655-659.
16. Chen, L.-R., Yuan, C.-J., Somasekhar, G., Wejksnora, P., Peterson, J.E., **Myers, A.M.**, Graves, L., Cohen, P.T.W., da Cruz e Silva, E.F. and Graves, D.J. (1989) Bacterial expression and characterization of the gamma subunit of phosphorylase kinase. *Biochem. Biophys. Res. Comm.* **161**, 746-753.
17. Koerner, T.J., Hill, J.E., **Myers, A.M.** and Tzagoloff, A. (1990) High-expression vectors with multiple cloning sites for construction of *trpE*-fusion genes: pATH plasmids. *Meth. Enzymol.* **194**, 477-490.

18. Huang, J., Lee, S.-H., Lin, C., Medici, R., Hack, E. and **Myers, A.M.** (1990) Expression in yeast of the T-URF13 protein from Texas male-sterile maize mitochondria confers sensitivity to methomyl and T cytoplasm-specific fungal toxins. *EMBO J.* **9**, 339-347.
19. Huang, J., Hack, E., Thornburg, R.W. and **Myers, A.M.** (1990) A yeast mitochondrial targeting peptide functions in vivo as a dual targeting signal for both chloroplasts and mitochondria. *Plant Cell* **2**, 1249-1260.
20. Zhou, J.H., **Myers, A.M.** and Atherly, A.G. (1991) Ends of the maize *Ac* transposable element have strong, orientation-dependent procaryotic promoter activity, yeast ARS activity, and homologous sequences with *E. coli* DnaA protein binding sites. *Genetica* **84**, 13-21.
21. Koehler, C.M., Lindberg, G.L., Brown, D.R., Beitz, D.C., Freeman, A.E., Mayfield, J.E., and **Myers, A.M.** (1991) Replacement of bovine mitochondrial DNA by a sequence variant within a single generation. *Genetics* **129**, 247-255.
22. Dong, Q., Liu, F., **Myers, A.M.** and Fromm, H.J. (1991) Evidence for an arginine residue at the substrate binding site of *Escherichia coli* adenylosuccinate synthase as studied by chemical modification and site-directed mutagenesis. *J. Biol. Chem.* **266**, 12228-12233.
23. Liu, F., Dong, Q., **Myers, A.M.** and Fromm, H.J. (1991) Purification and characterization of human brain hexokinase expressed in *Escherichia coli*. *Biochem. Biophys. Res. Comm.* **177**, 305-311.
24. MacCaffrey, M., Johnson, J.S., Goud, B., **Myers, A.M.**, Rossier, J., Popoff, M.R., Madaule, P. and Boquet, P. (1991) The small GTP-binding protein Rho1p is localized on the Golgi apparatus and post-Golgi vesicles in *S. cerevisiae*. *J. Cell. Biol.* **115**, 309-319.
25. Lindberg, G.L., Koehler, C.M., Mayfield, J.M., **Myers, A.M.** and Beitz, D.C. (1992) Recovery of mitochondrial DNA from blood leukocytes using detergent lysis. *Biochem. Genet.* **30**, 27-33.
26. James, M.J., Scanlon, M.J., Qin, M., Robertson, D.S. and **Myers, A.M.** (1993) DNA sequence and transcript analysis of transposon *MuA2*, a regulator of *Mutator* transposable element activity in maize. *Plant Mol. Biol.* **21**, 1181-1185.
27. Blacketer, M.J., Koehler, C.M., Coats, S.G., **Myers, A.M.** and Madaule, P. (1993) Regulation of dimorphism in *Saccharomyces cerevisiae*: Involvement of the novel protein kinase homolog Elm1p and protein phosphatase 2A. *Mol. Cell. Biol.* **13**, 5567-5581.
28. Tan, K.O., Sater, G.R., **Myers, A.M.**, Robson, R.M. and Huiatt, T.W. (1993) Molecular characterization of avian muscle titin. *J. Biol. Chem.* **268**, 22900-22907.
29. Peterson, J. and **Myers, A.M.** (1993) Analysis of 3' end formation signals in the convergent and overlapping transcription units of the *Saccharomyces cerevisiae* genes *RHO1* and *MRP2*. *Nucl. Acids Res.* **21**, 5500-5508.
30. Scanlon, M.J., Stinard, P.S., James, M.G., **Myers, A.M.** and Robertson, D.S. (1994) Genetic analysis of sixty three mutations affecting maize kernel development isolated from *Mutator* stocks. *Genetics* **136**, 281-294.

31. Madaule, P., Johnson, J.S., McCaffrey, M., Boquet, P., and **Myers, A.M.** (1994) Rho1p of *S. cerevisiae*. In "Guidebook to the small GTPases" (Huber, L.A., Zerial, M. and Tooze, J., eds.) Oxford University Press, Oxford.
32. Madaule, P. and **Myers, A.M.** (1994) Rho2p of *S. cerevisiae*. In "Guidebook to the Small GTPases" (Huber, L.A., Zerial, M. and Tooze, J., eds.), Oxford University Press, Oxford.
33. Blacketer, M.J., Madaule, P. and **Myers, A.M.** (1994) The *S. cerevisiae* mutation *elm4-1* confers competence for pseudohyphal differentiation and interacts with a deficiency in phosphoribosylpyrophosphate synthase activity to cause constitutive pseudohyphal growth. *Mol. Cell. Biol.* **14**, 4671-4681.
34. Peterson, J., Zheng, Y., Bender, L., **Myers, A.M.**, Cerione, R. and Bender, A. (1994) Interactions between the bud-emergence proteins Bem1p and Bem2p and the Rho-type GTPases in yeast. *J. Cell Biol.* **127**, 1395-1406.
35. Scanlon, M.J., Stinard, P.S., James, M.G., **Myers, A.M.** and Robertson, D.S. (1994) Characterization of ten novel mutations of the maize *Etched-1 (Et1)* locus. *Maydica* **39**, 304-310.
36. Blacketer, M.J., Madaule, P. and **Myers, A.M.** (1995) Mutational analysis of morphologic differentiation in *S. cerevisiae*. *Genetics* **140**, 1259-1275.
- *37. James, M.G., Robertson, D.S. and **Myers, A.M.** (1995) Isolation and characterization of the maize gene *Sugary1*, a determinant of starch composition in kernels. *Plant Cell* **7**, 417-429.
38. Ball, S, Guan, H.-P., James, M.G., **Myers, A.M.**, Keeling, P., Mouille, G., Buleon, A., Colonna, P. and Priess, J. (1996) From glycogen to amylopectin: a model explaining the biogenesis of the plant starch granule. *Cell* **86**, 349-352.
39. Jin, C., **Myers, A.M.**, and Tzagoloff, A. (1997) Cloning and characterization of *MRP10*, a yeast gene coding for a mitochondrial ribosomal protein. *Curr. Genet.* **31**, 228-234.
40. Koehler, C.M., and **Myers, A.M.** (1997) Serine-threonine protein kinase activity of Elm1p, a regulator of morphologic differentiation in *Saccharomyces cerevisiae*. *FEBS Lett.* **408**, 109-114.
41. Scanlon, M.S., **Myers, A.M.**, Schneeberger, R.G. and Freeling, M. (1997) The maize gene *empty pericarp-2* is required for progression beyond early stages of embryogenesis. *Plant J.* **12**, 901-909.
42. Beatty, M., **Myers, A.M.**, and James, M.G. (1997) Genomic nucleotide sequence of a full-length wild type allele of the maize *sugary1 (su1)* gene (Accession No. AF030882) (PGR97-187). *Plant Physiol.* **115**, 1731.
- *43. Gao, M., Wanat, J., Stinard, P.S, James, M.G., and **Myers, A.M.** (1998) Characterization of *dull1*, a maize gene coding for a novel starch synthase. *Plant Cell* **10**, 399-412.
44. Scanlon, M.J., and **Myers, A.M.** (1998) Phenotypic analysis and molecular cloning of *discolored1 (dsc1)*, a maize gene required for early kernel development. *Plant Mol. Biol.* **37**, 483-493.

45. Rahman, A., Wong, K.-S., Jane, J.-L., **Myers, A. M.**, and James, M.G. (1998) Characterization of SU1 isoamylase, a determinant of storage starch structure in maize. *Plant Physiol.* **117**, 425-435.
46. Hoyer, L.L., Payne, T.L., Bell, M., **Myers, A.M.**, and Scherer, S. (1998) *Candida albicans* *ALS3*, a hyphal-specific gene in the *ALS* family. *Curr. Genet.* **33**, 451-459.
47. Beatty, M.J., Rahman, A., Cao, H., Woodman, W., Lee, M., **Myers, A.M.**, and James, M.J. (1999) Purification and molecular characterization of ZPU1, a pullulanase-type starch-debranching enzyme from maize. *Plant Physiol.* **119**, 255-266.
48. Edgington, N. P., Blacketer, M.J., Bierwagen, T.A. and **Myers, A.M.** (1999) Control of *Saccharomyces cerevisiae* filamentous growth by the cyclin-dependent protein kinase Cdc28. *Mol. Cell. Biol.* **19**, 1369-1380.
49. Cao, H., Imparl-Radosevich, J., Guan, H.P., Keeling, P.L., James, M.G. and **Myers, A.M.** (1999) The maize gene *dul* codes for one of the two major soluble starch synthases in developing kernels. *Plant Physiol.* **120**, 205-216.
50. Cao, H., James, M.G., and **Myers, A.M.** (2000) Purification and characterization of soluble starch synthases of maize endosperm. *Arch. Biochem. Biophys.* **373**, 135-146.
51. **Myers, A.M.**, Morell, M.K., James, M.G., and Ball, S.G. (2000) Recent progress in understanding the biosynthesis of the amylopectin crystal. *Plant Physiol.* **122**, 989-998.
52. Dinges, J.R., Colleoni, C., **Myers, A.M.**, and James, M.G. (2001) Molecular structure of three mutations at the maize *sugary1* locus and their allele-specific phenotypic effects. *Plant Physiol.* **125**, 1406-1418.
53. Dauvillée, D., Colleoni, C., Mouille, G., Buléon, A., Gallant, D. Bouchet, B., Morell, M., D'Hulst, C., **Myers, A.M.**, and Ball, S.G. (2001) Two loci control phytylglycogen production in the monocellular green alga *Chlamydomonas reinhardtii*. *Plant Physiol.* **125**, 1710-1722.
54. Dauvillée, D., Colleoni, C., Mouille, Morell, M., D'Hulst, C., **Myers, A.M.**, and Ball, S.G. (2001) Biochemical characterization of wild-type and mutant isoamylases of *Chlamydomonas reinhardtii* supports a function of the multimeric enzyme organization in amylopectin maturation. *Plant Physiol.* **125**, 1723-1731.
55. Seo, B.-S., Kim, S., Wong, K.-S., Scott, M.P., Singletary, G.W., James, M.G., and **Myers, A.M.** (2002) Functional interactions between heterologously expressed starch branching enzymes of maize and the glycogen synthases of *S. cerevisiae*. *Plant Physiol.* **128**, 1189-1199.
56. Wu, C., Colleoni, C., **Myers, A.M.**, and James, M.G. (2002) Enzymatic properties and regulation of ZPU1, the maize pullulanase-type starch debranching enzyme. *Arch. Biochem. Biophys.* **406**, 21-32.
- *57. Dinges, J.R., Colleoni, C., James, M.G., and **Myers, A.M.** (2003) Mutational analysis of the pullulanase-type debranching enzyme of maize indicates multiple functions in starch metabolism. *Plant Cell* **15**, 666-680.

58. Dinges, J.R., James, M.G., and **Myers, A.M.** (2003) Genetic analysis indicates maize pullulanase- and isoamylase-type starch debranching enzymes have partially overlapping functions in starch metabolism. *J. Appl. Glycosci.* **50**, 141-145.
59. Colleoni, C., **Myers, A.M.**, and James, M.G. (2003) One- and two-dimensional native PAGE activity gel analyses of maize endosperm proteins reveal functional interactions between specific starch metabolizing enzymes. *J. Appl. Glycosci.* **50**, 207-212.
60. James, M.G., Denyer, K., and **Myers, A.M.** (2003) Starch synthesis in the cereal endosperm. *Curr. Opin. Plant Biol.* **6**, 215-222.
61. Wattedled, F., Jean-Philippe Ral, J.-P., Dauvillée, D., **Myers, A.M.**, James, M.G., Schlichting, R., Giersch, C., Ball, S.G., and D'Hulst, C. (2003) *STAI1*, a *Chlamydomonas reinhardtii* locus required for normal starch granule biogenesis, encodes disproportionating enzyme. Further evidence for a function of α -1,4 glucanotransferases during starch granule biosynthesis in green algae. *Plant Physiol.* **132**, 137-145.
62. Thomas, C.L., Blacketer, M.J., Edgington, N.P., and **Myers, A.M.** (2003) Assembly interdependence among the *S. cerevisiae* bud neck ring proteins Elm1p, Hsl1p, and Cdc12p. *Yeast* **20**, 813-826.
63. Zhang, X., Colleoni, C., Ratushna, V., Sirghie-Colleoni, M., James, M.G., and **Myers, A.M.** (2004) Molecular characterization of the *Zea mays* gene *sugary2*, a determinant of starch structure and functionality. *Plant Mol. Biol.* **54**, 865-879.
64. Zhang, X., **Myers, A.M.**, and James, M.G. (2005) Mutations affecting starch synthase III in *Arabidopsis thaliana* alter leaf starch structure and increase the rate of starch synthesis. *Plant Physiol.* **138**, 663-674.
65. Morell, M.K. and **Myers, A.M.** (2005) Towards the rational design of cereal starches. *Curr. Opin. Plant Biol.* **8**, 204-210.
66. Barros, M.H., **Myers, A.M.**, Van Driesche, S. and Tzagoloff, A. (2006) *COX24* codes for a mitochondrial protein required for processing of the *COX1* transcript. *J. Biol. Chem.* **281**, 3743-3751.
67. Li, L., Ilarslan, H., James, M.G., **Myers, A.M.** and Syrkin-Wurtele, E. (2007) Genome-wide co-expression among the starch debranching enzyme genes *AtISA1*, *AtISA2*, and *AtISA3* of *Arabidopsis thaliana*. *J. Exp. Bot.* **58**, 3323-3342.
68. Hernández, J.M., Gaborieau, M., Patrice Castignolles, P., Gidley, M.J., **Myers, A.M.** and Gilbert, R.G. (2008) Mechanistic investigation of a starch branching enzyme using hydrodynamic volume SEC analysis. *Biomacromolecules* **9**, 954-965.
69. Hennen-Bierwagen, T.A., Liu, F., Marsh, R.S., Kim, S., Gan, Q., Tetlow, I.J., Emes, M.J., James, M.G. and **Myers, A.M.** (2008) Starch biosynthetic enzymes from developing *Zea mays* endosperm associate in multi-subunit complexes. *Plant Physiol.* **146**, 1892-1908.
70. Grimaud, F., Rogniaux, H., James, M.G., **Myers, A.M.** and Planchot, V. (2008) Proteome and phosphoproteome analysis of starch granule-associated proteins from normal maize and mutants affected in starch biosynthesis. *J. Exp. Bot.* **59**, 3395-3406.

71. Zhang, X., Delvallé, D., Szydlowski, N., D'Hulst, C., James, M.G. and **Myers, A.M.** (2008) Analysis of the related roles of starch synthase II and starch synthase III in amylopectin biosynthesis in *Arabidopsis* leaves. *BMC Plant Biol.* **8**, 96.
72. James, M.G. and **Myers, A.M.** (2009) Seed starch synthesis. In "Handbook of Maize: Its Biology" (Bennetzen, J.L. and Hake, S.C., eds.), Springer, New York.
73. Li, L., Foster, C.M., Gan, Q., Nettleton, D., James, M.G., **Myers, A.M.** and Wurtele, E.S. (2009) Identification of the novel protein QQS as a component of the starch metabolic network in *Arabidopsis* leaves. *Plant J.* **58**, 485-498
- *74. Hennen-Bierwagen, T.A., Gan, Q., Grimaud, F., Keeling, P.L., James, M.G. and **Myers, A.M.** (2009) Proteins from multiple metabolic pathways associate with starch biosynthetic enzymes in high molecular weight complexes: A model for regulation of carbon allocation in maize amyloplasts. *Plant Physiol.* **149**, 1541-1559.
75. Schnable, P.S., et al. (2009) The B73 maize genome: complexity, diversity, and dynamics. *Science* **326**, 1112-1115.
76. Keeling, P.L. and **Myers, A.M.** (2010) Biochemistry and genetics of starch synthesis. *Annu. Rev. Food Sci. Technol.* **1**, 271-303.
77. Kubo, A., Colleoni, C., Dinges, J.R., Lin, Q., Lappe, R., Rivenbark, J., Meyer, A., Ball, S.G., James, M.G., Hennen-Bierwagen, T.A. and **Myers, A.M.** (2010) Functions of heteromeric and homomeric isoamylase-type starch debranching enzymes in developing maize endosperm. *Plant Physiol.* **153**, 956-969.
78. James, M.G. and **Myers, A.M.** (2011) Starch metabolism and routes for manipulating starch quality in grain. In "Essential Reviews in Experimental Biology, Vol. 3: Advances in Maize" (Prioul, J.-L., Thévenot, C. and Molnar, T., eds.), Society for Experimental Biology, London, pp. 465-488.
79. Szydlowski, N., Ragel, P., Hennen-Bierwagen, T.A., Planchot, V., **Myers, A.M.**, Mérida, A., d'Hulst, C. and Wattedled, F. (2011) Integrated functions among multiple starch synthases determine both amylopectin chain length and branch linkage location *Arabidopsis* leaf starch. *J. Exp. Bot.* **62**, 4547-4559.
- *80. **Myers, A.M.**, James, M.G., Lin, Q., Yi, G., Stinard, P.S., Hennen-Bierwagen, T.A. and Becraft, P.W. (2011) Maize *opaque5* encodes monogalactosyldiacylglycerol synthase and specifically affects C18:3/C18:2 galactolipids necessary for amyloplast and chloroplast function. *Plant Cell* **23**, 2331-2347.
81. Lin, Q., Huang, B., Zhang, M., Zhang, X., Rivenbark, J.G., Lappe, R.L., James, M.G., **Myers, A.M.** and Hennen-Bierwagen, T.A. (2012) Functional interactions between starch synthase III and isoamylase-type starch debranching enzyme in maize endosperm. *Plant Physiol.* **158**, 679-672.
82. Hennen-Bierwagen, T.A., James, M.G. and **Myers, A.M.** (2012) Involvement of debranching enzymes in starch biosynthesis. In "Essential Reviews in Experimental Biology, Volume 5: The Synthesis and Breakdown of Starch" (Tetlow, I.J., ed.), Society for Experimental Biology, London, pp. 179-215.

83. Hennen-Bierwagen, T.A. and **Myers, A.M.** (2013) Genomic specification of starch biosynthesis in maize endosperm. In "Seed Genomics" (Becraft, P.W., ed.), John Wiley & Sons, Hoboken, NJ, pp. 123-138.
84. Lin., Q., Facon, M., Putaux, J.-L., Dinges, J.R., Wattedled, F., D'Hulst, C., Hennen-Bierwagen, T.A. and **Myers, A.M.** (2013) Function of isoamylase-type starch debranching enzymes in ISA1 and ISA2 in maize leaves. *New Phytol.* **200**, 1009-1021.
85. Zhu, F., Bertoft, E., Kallman, A., **Myers, A.M.** and Seetharaman, K. (2013) Molecular structure of starches from maize mutants deficient in starch synthase III. *J. Agricul. Food Chem.* **61**, 9899-9907.
86. Facon, M., Lin., Q., Azzaz, A.M., Hennen-Bierwagen, T.A., **Myers, A.M.**, Putaux, J.-L., Roussel, X., D'Hulst, C. and Wattedled, F. (2013) Distinct functional properties of isoamylase-type starch debranching enzymes in monocot and dicot leaves. *Plant Physiol.* **163**, 1363-1375.
87. Huang, B., Hennen-Bierwagen, T.A. and **Myers, A.M.** (2014) Functions of multiple genes encoding ADP-glucose pyrophosphorylase in maize endosperm, embryo, and leaf. *Plant Physiol.* **164**, 596-611.
88. Huang, B., Ratushna, V., Baier, J.W., Gustin, J.L., Settles, A.M., James, M.G., Hennen-Bierwagen, T.A. and Myers, A.M. (2014) Regulatory interactions of the starch synthase III N terminal domain *in vitro* and *in vivo* in *Zea mays* endosperm. Manuscript under review.

PATENTS:

1. U.S. Patent No. 5,858,765, "Constitutive Pseudohyphal Growth Yeast Mutants", A.M. Myers and P. Madaule, inventors. Issued 1/12/99.
2. U.S. Patent No. 5,912,413, "Isolation of SU1, a Starch Debranching Enzyme, the Product of the Maize Gene *Sugary1*", A.M. Myers and M.G. James, inventors. Issued 6/15/99.
3. U.S. Patent No. 6,212,606, "Yeast heat shock protein 60 and analogs", A.L. Horwich, M. Cheng, R. Hallberg, D.S. Reading and A.M. Myers, inventors. Issued 4/10/01.
4. U.S. Patent No. 6,410,716, "Isolation of SU1, a Starch Debranching Enzyme, the Product of the Maize Gene *Sugary1*", A.M. Myers and M.G. James, inventors. Issued 6/25/02.
5. U.S. Patent No. 6,995,300, "Isolation of SU1, a Starch Debranching Enzyme, the Product of the Maize Gene *Sugary1*", A.M. Myers and M.G. James, inventors. Issued 2/7/06.
6. U.S. Patent No. 5,981,728, "Du1 coding for a novel starch synthase and uses thereof", A.M. Myers and M.G. James, inventors. Issued 11/9/99.
7. U.S. Patent No. 6,639,125, "Du1 coding for a novel starch synthase and uses thereof", A.M. Myers and M.G. James, inventors. Issued 10/28/03.
8. U.S. Patent No. 7,270,988, "Identification and characterization of a novel alpha-amylase from maize endosperm", A.M. Myers and M.G. James, inventors. Issued 9/18/07.

RESEARCH GRANT SUPPORT (Total costs to laboratory of A. Myers are indicated; exceptions where the total award is specified are noted with *asterisks*):

Current grant support:

Agency - NSF-MCB (Systems and Synthetic Biology)

Award no. - MCB-1517256

Project title - Collaborative Research: Predictive modeling of *Zea mays* endosperm metabolism based on mutational analysis

Period of award - 7/15/15 - 6/30/18

Amount of award - \$523,279

Role - PI

Agency - USDA-AFRI (Climate Change Mitigation and Adaptation in Agriculture)

Award no. - 2011-67003-30215

Project title - Adapting kernel metabolism to enhance cereal yield under adverse conditions

Period of award - 5/15/11 - 5/14/16

Amount of award - \$813,605 (total award \$5,000,000)

Role - Co-PI (L.C. Hannah, PI; seven additional Co-PIs)

Previous grant support:

National Science Foundation

- a. Genetic analysis of differentiation mechanisms in *S. cerevisiae*; 1994-1997; NSF (MCB-9319028); \$297,169; PI
- b. Genetic and molecular analysis of differentiation mechanisms in *S. cerevisiae*; 1997-2000; NSF (MCB-9604247); \$315,000; PI
- c. Functional expression of a starch biosynthetic system in yeast; 2000-2003; NSF (MCB-9982555); \$325,547; PI
- d. Functional genomics of *Arabidopsis* starch granule metabolism; 2002-2006; NSF-Arabidopsis 2010 Program (DBI-0209789); \$2,048,943; PI

U.S. Department of Agriculture

- e. Isolation of genes for quantitative inheritance in maize; 1988-1989; USDA-NRICGP (88-37234-3316); \$24,916; Co-PI
- f. Isolation of genes for quantitative inheritance in maize; 1989-1991; USDA-NRICGP (89-37140-4335); \$43,087; Co-PI
- g. Isolation of genes for quantitative inheritance in maize; 1991-1992; USDA-NRICGP (91-37301-6344); \$53,979; Co-PI
- h. Characterization of the maize gene *Sugary1*, a determinant of starch composition in kernels; 1993-1996; USDA-NRICGP (93-37301-8671); \$130,000; Co-PI
- i. Cloning and characterization of pathogenicity genes in *Cochliobolus heterostrophus*; 1994-1996; USDA-NRICGP (94-37303-0546); *\$119,969 ; Co-PI
- j. Analysis of the function of *sugary1* in maize starch biogenesis; 1996-1998; USDA-NRICGP (96-35301-3159); \$91,832; Co-PI

- k. Isolation of the maize gene *dull1*, a determinant of starch composition in kernels; 1996-1998; USDA-NRICGP (96-35300-3779); \$97,430; PI
- l. Role of a fungal extracellular matrix in lesion development; 1999-2001; USDA-NRICGP (99-35303-8139); \$160,000; Co-PI
- m. Starch debranching enzyme activity in an allelic series of *sugary1* mutants; 1999-2002; USDA-NRICGP (99-35304-8642); \$240,000; Co-PI
- n. Manipulation of starch debranching enzyme activities in transgenic plants; 2000-2002; USDA-NRICGP (2001-35318-10003); \$150,000; Co-PI
- o. Characterization of the biosynthetic network that determines starch structure; 2002-2004; USDA-NRICGP (2002-35318-12646); \$140,000; Co-PI
- p. Biochemical processes governing the division of metabolic flux to amino acids, protein, and starch in maize grain; 2009-2012; USDA-AFRI (2010-65115-20376); \$360,000; PI

U.S. Department of Energy

- q. Function of the starch synthase zSSIII/DU1 in amylopectin biosynthesis in maize; 2000-2003; DOE-Energy Biosciences Program (DE-FG02-00ER15080); \$256,834; Co-PI
- r. Alteration of starch properties and protein expression in maize seeds in response to manipulation of starch synthase III; 2005-2008; DOE-Energy Biosciences Program (DE-FG02-05ER15706); \$360,943; Co-PI

National Institutes of Health

- s. Nuclear regulation of mitochondrial gene expression; 1983-1986; NIH-NIGMS (F32 GM09109); \$50,112; PI
- t. Function of the evolutionarily conserved *rho* gene family; 1987-1992; NIH-NIGMS (R29 GM39254); \$490,000; PI

Industry Grants

- u. Complete characterization of starch debranching enzyme activities in developing maize endosperm; 1998-2004; Pioneer HiBred Intl., Inc., Maize Genome Fellowship Program; \$187,998; Co-PI
- v. Isolation of cDNAs coding for starch biosynthetic enzymes by complementation in *Saccharomyces cerevisiae*; 1997-1999; Pioneer HiBred Intl, Inc.; \$149,079; PI
- w. Analysis of maize starch synthases; 1998-2001; ExSeed Genetics L.L.C., Inc.; \$150,000; PI

Non-federal Research Grants

- x. Function of the evolutionarily conserved *rho* gene family; 1988-1990; American Cancer Society (JFRA-199); \$90,500; PI
- y. Production of a novel starch form in transgenic potatoes; 1996-1997; Carver Trust Grant (Iowa State University); \$19,908; Co-PI

Training Grants

- z. Signal transduction training grant; 1991-1996; NSF (DIR-9113595); *\$1,200,000, Co-PI
- aa. Signal transduction research training group; 1996-2001; NSF Research Training Group Program (DIR-9113593); *\$859,497; PI
- bb. Plant Biotechnology Research Training Group; 1995-1998; USDA National Needs Graduate Fellowships Program; *\$162,000; Co-PI.

Instrumentation Grants

- cc. Instrumentation for the ISU Nucleic Acids Facility; 1991-1993; NSF (DIR-9110258); *\$275,000, Co-PI
- dd. Support of proteomics instrumentation; 2001; USDA Grants and Assistance Type Cooperative Agreement; \$30,000; PI

AWARDS:

- a. College of Liberal Arts and Sciences Award for Outstanding Teaching at the Introductory Level, Iowa State University, 1998
- b. Iowa State University Honors Program Award for Outstanding Teaching, 2000
- c. State of Iowa Board of Regents Award for Faculty Excellence, 2003
- d. Iowa State University Award for Outstanding Achievement in Research, 2010

GRADUATE STUDENT TRAINING:

Student	Degree	Major	Year
Jintai Huang	Ph.D.	Genetics	1990
Joni Johnson	Ph.D.	Molecular, Cellular and Developmental Biology	1992
Julie Peterson	Ph.D.	Biochemistry	1992
Shu-Hwa Lee Tzeng	Ph.D.	Molecular, Cellular and Developmental Biology	1992
Michael Scanlon	Ph.D.	Genetics	1993
Melissa Blacketer	Ph.D.	Molecular, Cellular and Developmental Biology	1994
Jeffrey Sturges	M.S.	Biochemistry	1994
Carla Koehler	Ph.D.	Molecular, Cellular and Developmental Biology	1995
Nicholas Edgington	Ph.D.	Molecular, Cellular and Developmental Biology	1997
Mary Beatty	M.S.	Molecular, Cellular and Developmental Biology	1998
Afroza Rahman	Ph.D.	Genetics	1998
Benjamin Perrin	M.S.	Biochemistry	1999
Chunyan Wu	M.S.	Molecular, Cellular and Developmental Biology	2000
Courtney Thomas	Ph.D.	Genetics	2001
Jason Dinges	Ph.D.	Genetics	2003
Seungtaek Kim	Ph.D.	Biochemistry	2004
Rebekah Marsh	Ph.D.	Biochemistry	2005
Rachel Miller	M.S.	Genetics	2005
Mingxu Zhang	M.S.	Biochemistry	2005
Xaioli Zhang	Ph.D.	Molecular, Cellular and Developmental Biology	2006
Qinglei Gan	M.S.	Biochemistry	2007
Qiaohui Lin	M.S.	Biochemistry	2008
Tracie Hennen-Bierwagen	Ph.D.	Plant Physiology	2008
Binquan Huang	Ph.D.	Visiting scholar from Szechuan Agricultural University	2012
Ryan Lappe	Ph.D.	Biochemistry	Current

SPONSORED RESEARCH SEMINARS:

Off-campus:

October 14, 2011; Starch Round Table, American Association of Cereal Chemistry, Palm Springs, CA.

September 18, 2009; Starch Round Table, American Association of Cereal Chemistry, Baltimore, MD

March 14, 2009; 51st Annual Maize Genetics Conference, Pheasant Run, IL

June 3, 2006; Corn Utilization Technology Conference, sponsored by the National Corn Growers Association, Dallas, TX

March 17, 2006; Royal Veterinary and Agricultural University, Copenhagen, Denmark.

September 9, 2005; Starch Round Table, American Association of Cereal Chemistry, Orlando, FL

September 1, 2005; 3^{ème} Cycle Romand en Sciences Biologiques, Biosynthesis and Degradation of Reserve Carbohydrates in Plants; University of Bern, Bern, Switzerland

October 14, 2004; Department of Chemistry, University of Northern Iowa, Cedar Falls, IA

September 22, 2004; 54th Annual Symposium of the Royal Australian Chemical Institute, Cereal Chemical Division; Canberra, Australia; Keynote speaker

December 17, 2002; Institute of Plant Sciences, University of Bern, Bern, Switzerland

September 16, 2002; New Approaches in Starch Science and Carbohydrate-active Enzymes, Tokyo, Japan

October 12, 2001; Starch Round Table, Charlotte, NC

February 28, 2001; Division of Molecular and Cellular Biosciences, National Science Foundation, Arlington, VA

September 28, 2000; BioJapan 2000, Japan Bioindustries Association, Tokyo, Japan

September 29, 2000; Bio-oriented Technology Research Advancement Institution (BRAIN), Tokyo, Japan
June 16, 2000; Department of Plant Sciences, University of Saskatchewan, Saskatoon, Canada

September 21, 2000; Department of Genetics, John Innes Centre, Norwich, UK

September 19, 2000; Biogemma UK, Inc., Cambridge, UK

June 16, 2000; Department of Plant Sciences, University of Saskatchewan, Saskatoon, Canada

April 20, 2000; Department of Biological Sciences, Northern Illinois University, Normal, IL.

February 11, 2000; Department of Chemistry and Biochemistry; University of California, Los Angeles, CA.

December 20, 1999; Biogemma UK (a division of Limagrain Intl., Inc.), Clermont-Ferrand, France

December 17, 1999; Laboratoire de Pharmacognosie, Université de Reims Champagne-Ardenne, Reims, France

October 29, 1999; Starch Round Table, Seattle, WA

October 4, 1999; Department of Biochemistry, University of Missouri, Columbia, MO

September 29, 1999; Department of Chemistry, St. Cloud State University, St. Cloud, MN

September 29, 1999; Department of Chemistry, College of St. Benedict/St. John's University, St. Joseph, MN

September 18, 1999; Genetic Tailoring of Novel Starch Polymers, Carry-Le-Rouet, France

January 28, 1999; Laboratoire de Chimie Biologique, Université des Sciences et Technologies de Lille; Villeneuve d'Ascq, France

September 21, 1998; Department of Botany, University of Georgia, Athens, GA

June 20, 1998; Inter-Iowa Genetics Symposium, Grinnell University, Grinnell, IA

February 25, 1998; Department of Biology, University of Northern Iowa, Cedar Falls, IA

December 4, 1997; Howard Hughes Medical Institute, Duke University Medical Center, Durham, NC

November 11, 1997; Department of Biology, Syracuse University, Syracuse, NY

September 15, 1997; Université des Sciences et Technologies de Lille, Lille, France

September 12, 1997; Institute for Food Research, Norwich, UK

September 11, 1997; John Innes Centre, Norwich, UK

September 9, 1997; Max-Planck-Institut für Molekulare Pflanzenphysiologie, Golm, Germany

December 1996; Institute of Cancer Research, Columbia University College of Physicians and Surgeons, New York, NY

December 1996; Department of Biological Sciences, Columbia University, New York, NY

November 1996; 5th International Centers Of Excellence Symposium: "Regulation and Manipulation of Starch and Sucrose Metabolism in Plants"; Tsukuba, Japan (Sponsored speaker)

September 1996; Department of Biochemistry, University of British Columbia, Vancouver, BC

September 1996; Department of Biochemistry, University of Iowa, Iowa City, IA

August 1996; Yeast Genetics and Molecular Biology Conference; 8/11/96, Madison, WI (Platform presentation)

November 1995; Plant Biological Sciences Colloquium Series, University of Minnesota, St. Paul, MN

September 1995; Program in Molecular Biology, Loyola University of Chicago, Chicago, IL

October 1994; Lilly Research Laboratories, Indianapolis, IN

July 1994; Pioneer HiBred Intl Inc., Johnston, IA

May 1994; Department of Biochemistry, University of Minnesota, Duluth, MN

January 1994; Merck Research Laboratories, Rahway NJ

March 1992; Department of Biochemistry, Indiana University School of Medicine, Indianapolis, IN

March 1992; Lilly Research Laboratories, Indianapolis, IN

September 1991; Center for Biochemical and Biophysical Studies, Northern Illinois University, Normal, IL

September 24, 1990; Plant Genetics Research, DeKalb-Pfizer Genetics, Groton, CT

COURSES TAUGHT:

Designator	Title	Typical Enrollment	Sem.- Hr.	Level [†]
BBMB 511	Topics in Experimental Biochemistry	10	1	G
BBMB 502	Comprehensive Biochemistry II	20	3*	G
BBMB 540	Signal Transduction	15	1*	G
U ST 321	Tolkien's Mythology	15	2	UG
BBMB 676	Biochemistry of Gene Regulation in Eukaryotes	15	1*	G
BBMB 201	Chemical Principles in Biological Systems	25	1*	UG
BBMB 301	Survey of Biochemistry	150	3	UG
BBMB 316	Principles of Biochemistry	40	3	UG
BBMB 404	Biochemistry I	180	3	G/UG
BBMB 411	Biochemical Research Techniques	36	1	UG
GEN 313	Principles of Genetics	250	1.5*	UG
BIOL 314	Principles of Molecular Cell Biology and Biochemistry	180	1*	UG
BIOL 314L	Molecular Cell Biology and Biochemistry Laboratory	100	1*	UG
GEN 491	Genetics Seminar	15	1	UG
BBMB 581	Seminar in Biochemistry	15	1	G
BBMB 681	Advanced Seminar in Biochemistry	15	1	G
MCDB 698	Advanced Seminar in Molecular, Cellular and Developmental Biology	15-30	1	G

*Sem.-hrs. offered as part of team-taught courses

[†]G, graduate course; UG, undergraduate course

PROFESSIONAL SERVICE:

Grant review panel:

National Science Foundation; Microbial Genetics Panel (1996 - 2001)

Journal referee:

Analytical Biochemistry
 Archives of Biochemistry and Biophysics
 Biochim. et Biophys. Acta
 EMBO Journal
 Genetics
 Journal of Biological Chemistry

Journal of Experimental Botany
Nature Biotechnology
Maydica
Molecular and Cellular Biology
Molecular Biology of the Cell
Molecular Microbiology
Plant and Cell Physiology
Plant Cell
Plant Journal
Plant Molecular Biology
Plant and Cell Physiology
Plant Physiology
Plant Science
Planta
Proceedings of the National Academy of Sciences, U.S.A.
Starch
Yeast

Ad-hoc grant reviewer:

National Science Foundation
U.S. Department of Agriculture
U.S. Department of Energy
National Program for Science and Technology, Colciencias, Columbia
John Innes Centre, Norwich, UK
Ontario Research Fund

COLLEGE AND UNIVERSITY SERVICE:

1992-1994	Honors Committee, College of Liberal Arts and Sciences
1995-1997; 2000	Undergraduate Advising Coordinator for the Biochemistry major; Advising Council, College of Liberal Arts and Sciences
1996-2000	College of Liberal Arts and Sciences Representative Assembly
1997-1998	Chair, College of Liberal Arts and Sciences Representative Assembly Executive Committee
1997	Dean Search Committee, College of Liberal Arts and Sciences
1999-2004	Plant Sciences Institute Advisory Council
2000	Promotion and Tenure Committee, College of Liberal Arts and Sciences
2001	Chair, Department Chair Search Committee, Department of Animal Science
2001	Dean Search Committee, College of Veterinary Medicine
2003	Budget Advisory Committee, College of Agriculture and Life Sciences
2009-present	Chair, Genetics Undergraduate Major Committee
2009-present	Undergraduate Advising Coordinator for the Genetics major; Advising Council, College of Liberal Arts and Sciences