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Margaret Johnson received a Ph.D. in Genetics from Albert Einstein College of Medicine in 1987 and completed her postdoctoral research at Yale University. She was appointed Assistant Professor at the University of Alabama in 1990. Dr. Johnson has been an Associate Professor at the University of Alabama since 1997.

**Research Interests**

[](http://bsc.ua.edu/wp-content/uploads/2010/10/Johnson_inositol.gif)My laboratory is interested in the genetic regulation of inositol metabolism during growth and development of eukaryotes. Inositol, a six carbon cyclitol, is an essential nutrient that is used as a therapeutic agent for a number of neurological disorders and central nervous system defects. Inositol phosphates play crucial roles in a variety of fundamental physiological cell functions ranging from cell growth, signal transduction and differentiation to transcriptional regulation and apoptosis.

We are using a combination of genetic, biochemical, and molecular analyses to isolate and study genes involved in the biosynthesis and catabolism of inositol. This approach has led to the finding that inositol phosphate biosynthesis in Arabidopsis thaliana, Phaseolus vulgaris, and Saccharomyces cerevisiae is not restricted to one cellular compartment, the cytosol. Using unicellular and multicellular model organisms, we will: (1) delineate mechanisms by which inositol biosynthesis is compartmentalized, (2) question the generality and compartmentalization of inositol biosynthesis in animal cells (neurons in particular), and (3) eventually ask if there are disease states associated with the decompartmentalization/deregulation of inositol phosphate biosynthesis.

**Selected Publications**

Alebous, H.D.A., Cartee, R., Vaccari, D., Wright, O.A., Ahmed, A., Hood, R.D., Johnson, M.D. 2009. Developmental Control of Inositol Phosphate Biosynthesis is Altered in the Brain of both Curly and Phenotypically Normal Straight tail Mutant Mice. **Birth Defects Research (Part A):Molecular Toxicology**. e-pub ahead of print.

Lackey, K. H,. Pope, P. M., and Johnson, M. D. 2003. Expression of 1L-myo-Inositol-1 Phosphate Synthase in Organelles. **Plant Physiol.**132:1-8

Lackey, K. H,. Pope, P. M., and Johnson, M. D. 2002. Biosynthesis of Inositol Phosphate in Organelles of Arabidopsis thaliana. **SAAS Bull. Biochem. Biotech.** 15:8-15

Majumder, A. L., Johnson, M. D., Henry, S. A. 1997. IL-myo-inositol-1-phosphate synthase.**Biochimica et Biophysica Acta**1348:245-256

Johnson, M., Wang, X. 1996. Differentially Expressed Forms of 1L-myo-Inositol 1-Phosphate Synthase in Phaseolus vulgaris. **J. Biol. Chem.**271: 17215-17218

Johnson, M., Henry, S. 1989. Primary structure of myo-inositol-1-phosphate synthase (EC5.5.1.4) and functional analysis of its structural gene, the Ino1 locus.**J. Biol. Chem.** 264:1274-1281.