CURRICULUM VITAE

Champa Sengupta-Gopalan
csgopala@nmsu.edu

(December, 2018)

1. GENERAL INFORMATION:

Current Position:

Distinguished Achievement Professor, Dept of Plant & Environmental Sciences,

University Education:

1978 Ph.D. in Botany, The Ohio State University

Other Positions held

07/78 - 05/80	Postdoctoral Research Associate, Dept of Biol, McGill Univ, CANADA
05/80 - 12/81	Postdoctoral Research Associate, Dept of Pharmacology, Stanford University School of Medicine, Stanford, California
02/82 - 01/85	Research Scientist, Agrigenetics Advanced Research Division, Madison, WI
01/85 - 05/85	Research Scientist, International Plant Research Institute, San Carlos, CA
06/85 - 06/92	Associate Professor, Dept. of Agron & Hort/Mol Bio Grad program
06/92 - present	Professor, Dept. of Plant & Environ Sciences/Mol Bio Grad program

Honors/Awards

Outstanding Research Lecturer, New Mexico State Univ., 1989.
Distinguished Researcher Award, College of Agriculture, NMSU. 1994.
Distinguished Teaching award, College of Agriculture, New Mexico State University, 1998.
Donald Roush, Excellence in Teaching award, New Mexico State University, 1998.
Outstanding Professor, College of Agriculture, New Mexico State University, 2006
Certificate of Recognition, The NM Commission on the status of Women, 2009
Invited Speaker at several International meetings on N_2-Fixation and Plant Mol. Biol.

Research highlights:

- Was a lead member of the team that pioneered the field of plant genetic engineering.
- Pioneered genetic engineering in alfalfa for enhanced nitrogen use efficiency
- Have improved both the protein content and quality of alfalfa using genetic engineering tools

Selected publications (Total ~100)

Murai, N., D.W. Sutton, M.G. Murray, J.L. Slightom, D.J. Merlo, N.A. Reichert, C. Sengupta-Gopalan, C.A. Stock, R.F. Barker, J.D.Kemp and T.C. Hall. 1983. □□-Phaseolin gene from bean is expressed after transfer to sunflower via tumor-inducing plasmid vectors. Science 222:476-482.

Sengupta-Gopalan, C., N.C. Reichert, R.F. Barker, T.C. Hall, and J.D. Kemp. 1985. Developmentally regulated expression of the bean beta phaseolin gene in tobacco seeds. Proc. Natl. Acad Sci. 82: 3320-3324.

Estabrook, E., and C. Sengupta-Gopalan. 1991. Specific genes for phenylalanine ammonia lyase and chalcone synthase families are induced during the early events of the *Glycine max-Bradyrhizobium japonicum* symbiosis. Plant Cell 3:299-308.

Bagga, S., D.S. Sutton, J.D. Kemp, and C. Sengupta-Gopalan. 1992. The constitutive expression of the bean seed storage protein beta-phaseolin gene in different tissues of transgenic alfalfa does not ensure phaseolin accumulation in non-seed tissues. Plant Mol. Biol. 19: 951-958.

Bagga, S. Adams, H., Kemp, J. D. and Sengupta-Gopalan, C. 1995. Accumulation of the 15kD zein protein in novel protein bodies in transgenic tobacco. Plant Physiol. 107:13-23.

Temple, S.J., Kunjibettu, S. and Sengupta-Gopalan C. 1996. Total glutamine synthetase activity during nodule development in soybeans is controlled at the level of transcription and holoprotein turnover. Plant Physiol. 112:1723-1733.

Bagga, S., F. Rodriguez, J.D. Kemp and C. Sengupta-Gopalan. 1997. Co-expression of the maize beta- and delta- zein genes results in stable accumulation of the delta- zein in ER derived protein bodies formed by the beta-zein. Plant Cell 9:1683-1696.

Ortega, J.L., Temple, S.J., and C. Sengupta-Gopalan. 2001. Constitutive overexpression of cytosolic glutamine synthetase (GS_1) gene in transgenic alfalfa demonstrates that GS_1 may be regulated both at the level of RNA and protein turnover. PlPhysiol 126:109-121.

Morey, K., Ortega, J.L., and Sengupta-Gopalan, C. 2002. Cytosolic glutamine synthetase in soybean (Glycine max) is encoded by a multigene family and the members are regulated in an organ-specific and developmental manner. Plant Physiol. 128: 182-193.

Potenza, C., Aleman, L., and C. Sengupta-Gopalan. 2004. Targeting transgene expression in Research, Agricultural and Environmental Applications: Promoters Used in Plant Transformation. *In Vitro* Cellular and Developmental Biology – Plant 40:1-22.

Bagga, S., Armendaris, A., Endres, M., Klypina, N., Ray, I.M., Sutton, D., Kemp, J.D., and Sengupta-Gopalan, C. 2004. Genetic engineering for ruminal stable high methionine protein in alfalfa. Plant Science 106: 273-283.

Zozaya, M., Potenza, C., Ortega, J.L., and C. Sengupta-Gopalan. 2005. Nitrogen and metabolic regulation of the expression of plastidic glutamine synthetase in alfalfa (*Medicago sativa*) Plant Science 168:1041-1052.

Ortega, J.L., Moguel-Esponda, S., Potenza, C. Conklin, C.F., Quintana, A. and C.Sengupta-Gopalan. 2006. The 3'-untranslated region of the cytosolic form of glutamine synthetase from soybean contains regulatory elements that alter message stability and translational efficiency. Plant J. 45:832-846.

Seger, M., Ortega, J.L., Bagga, S., Sengupta-Gopalan, C. 2009. Repercussion of mesophyll-specific overexpression of a soybean cytosolic glutamine synthetase gene in alfalfa (*Medicago sativa* L) and tobacco (*Nicotiana tabaccum*). Plant Science. 176: 119-129.

Simon, B. and Sengupta-Gopalan, C. (2010). The 3'untranslated region (Medicago sativa) of the two cytosolic glutamine synthetase (GS_1) genes in alfalfa regulates transcript stability in response to glutamine. Planta 232: 1151-1162.

Aleman L., Ortega, J.L., Uribe, D.J., Holguin, F.O., Garcia-Ibilcieta, D. and Sengupta-Gopalan, C. 2010. Sucrose phosphate Synthase expression has a role in carbon and nitrogen metabolism in alfalfa root nodules. Planta 231:233-244.

Seger, M., Gebril, M., Tabilona, J.R., Peel, A., Sengupta-Gopalan, C. 2015. Impact of concurrent overexpression of cytosolic glutamine synthetase (GS1) and sucrose phosphate synthase (SPS) on growth and development in transgenic tobacco. PLANTA 241 (1), 69-81

Gebril S., Seger M., Villanueva F.M., Ortega J.L., Bagga S., Sengupta-Gopalan C. 2015 Transgenic alfalfa (*Medicago sativa*) with increased sucrose phosphate synthase activity shows enhanced growth when grown under N2-fixing conditions. Planta 242:1009-24.

Ortega, J.L., *Rajpakse, W., Bagga, S., Sengupta-Gopalan, C. An intragenic approach to confer glyphosate resistance in chile (*Capsicum annuum*) by introducing an *in vitro* mutagenized chile *EPSPS* gene encoding for a glyphosate resistant EPSPS protein. *PLOS One*: April 12, 2018. https://doi.org/10.1371/journal.pone.0194666

Kaur H, Peel A, Acosta K, Gebril S, Ortega JL, Sengupta-Gopalan C. Comparison of alfalfa plants overexpressing Glutamine Synthetase with those overexpressing Sucrose Phosphate Synthase demonstrates a signaling mechanism integrating Carbon and Nitrogen metabolism between the leaves and nodules. Plant Direct (In Review).

Patents:

Gopalan, C. S., Seger, M., Ortega, J. L., "Effects of heterologous expression of a maize SPS gene on nitrogen and carbon status, development, growth and forage quality in alfalfa and other legumes," United States Regular Patent. Issued August 2016

Gopalan, C. S., Ortega, J. L., "Method of enhancing translation of foreign genes in plants" US Patent # 9902,996, issued on Feb 27, 2018