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Positions

- 2020 to date **Dean of Academic Programs**, Rutgers-The State University of New Jersey, School of Environmental and Biological Sciences
- 2018 to date **Director**, Agricultural Science Education B.S./Ed.M. 4+1 Program , offered jointly by the Rutgers School of Environmental & Biological Sciences and Rutgers Graduate School of Education, <https://teachag.rutgers.edu/>
- 2014 to 2020 **Associate Dean for Academic Administration & Assessment**, Rutgers-The State University of New Jersey, School of Environmental and Biological Sciences
[Associate Dean Administrative Duties and Background](#)
- 2001 to date **Professor**, Department of Plant Biology and Pathology, Biotechnology Center for Agriculture and the Environment, Rutgers-The State University of New Jersey
- 1998 to 2007 **Director**, Plant Biology Graduate Program, Rutgers-The State University of New Jersey, The Graduate School-New Brunswick
- 1997 to 2001 **Associate Professor**, Biotechnology Center for Agriculture and the Environment, Plant Science Department, Rutgers-The State University of New Jersey
- 1991 to 1997 **Assistant Professor**, Center for Agricultural Molecular Biology and Plant Science Department, Rutgers-The State University of New Jersey, New Brunswick
- 1988 to 1991 **Research Fellow**, Roche Institute of Molecular Biology, Department of Biochemistry, Hoffmann-La Roche Inc., Nutley, New Jersey
- 1987 to 1988 **Postdoctoral Fellow**, Roche Institute of Molecular Biology Department of Biochemistry, Hoffmann-La Roche Inc., Nutley, New Jersey

Education

- 1987 **Ph.D.** in Biology, Rutgers University the State University of New Jersey, Newark, New Jersey
- 1981 **B.A.** in Biology, Rutgers Newark College of Arts and Sciences, Newark, New Jersey

Professional Service, Appointments and Distinction

- 2021 **NJ FFA Distinguished Service Award** Awarded to the Office of Academic Programs at SEBS in recognition of recognize the contributions to the FFA and high school Food, Agriculture and Natural Resources Education Programs in New Jersey.
- 2020 to 2023 **Editorial Board** (Third Tour of duty) *Journal of Biological Chemistry*, the American Society for Biochemistry and Molecular Biology

- 2019 **AAAS Fellow**, elected November 7, 2019 American Association for the Advancement of Science *For distinguished contributions to the field of plant biochemistry and molecular biology through discoveries in the biological transformations of sulfur and related metabolic pathways*
- 2019 to date **Associate Editor** for *Frontiers in Plant Nutrition*
- 2018 to date **Advisory Council** New Jersey Food, Agriculture and Natural Resources Advisory Council
- 2018 to date **Advisory Committee** State Teach Ag Results (STAR) program, a campaign of the National Association of Agricultural Educators to increase recruitment and retention efforts at the state level
- 2018 **Honorary State FFA Degree**, elected May 24, 2018 *In recognition of significant contributions to Food, Agriculture and Natural Resources Education in New Jersey.* FFA was formerly known as the Future Farmers of America
- 2018 to date **Advisory Committee** Curriculum for Agricultural Science Education www.case4learning.org
- 2018 **Advisory Committee** New Jersey Department of Education review of Food, Agriculture, Natural Resources Education programs
- 2017-2018 **Most Cited Rutgers Experts** Academic year 2017-2018, among the 50 Rutgers experts most cited in the news media, recognized in the October 29th issue of *Rutgers Today* https://news.rutgers.edu/news/rutgers-experts-news/20181028#.Xin_UTJKipo
- 2017 **Research Spotlight** Genetically Boosting the Nutritional Value of Corn Could Benefit Millions <https://news.rutgers.edu/genetically-boosting-nutritional-value-corn-could-benefit-millions/20171009#.XG8yNqJKipo>
- 2016 to 2017 **Fellow Academic Leadership Program, BIG10 Academic Alliance**
- 2017 **Research Spotlight** interview with Voice of America Victor Beattie “Genetically boosting the nutritional value of corn could benefit millions” October 10, 2017
- 2016 **Guest Editor** *PLOS Genetics*
- 2015 to date **Editorial Board** *Frontiers in Plant Nutrition*, specialty section of *Frontiers in Plant Science* and *Frontiers in Nutrition*
- 2015 to 2020 **Editorial Board** (Second Tour of duty) *Journal of Biological Chemistry*, the American Society for Biochemistry and Molecular Biology
- 2015 **Program Advisory Committee** Agricultural Science Advisory Committee of the South Hunterdon Regional High School Agricultural Science Program
- 2014 to date **Member** [New Jersey Agricultural Education Advisory Council](http://www.njagriculture.org), State of New Jersey Department of Agriculture
- 2011 to 2019 **Review Editor** for *Frontiers in Plant Nutrition*
- 2011 to date **Review Editor** *Frontiers in Plant Metabolism and Chemodiversity*
- 2010 to date **Review Editor** for *Frontiers in Plant Physiology*
- 2008 to 2013 **Editorial Board** for *Journal of Biological Chemistry*, the American Society for Biochemistry and Molecular Biology
- 2008 to 2011 **Editorial Board** for the *Plant Metabolic Network* (PMN) http://www.plantcyc.org/about/editorial_board.faces

- 2008 **Science Advisor** to Mannkind Corp, 61 South Paramus Road, Paramus, NJ 07652-1236
- 2008 **Science Advisory Board** to the National Science Foundation, Integrative Graduate Education and Research Traineeship (IGERT) program
- 2006 **Research Spotlight** interview on New Jersey Network, Public Television, “Plant Bacteria Link” NJN News, November 22, 2006
<https://www.sciencedaily.com/releases/2006/11/061108111509.htm> and
https://www.eurekalert.org/pub_releases/2006-11/rtsu-cao110706.php ; press release “Plants Lend Clues to Chlamydia Cure”
<https://medicalxpress.com/news/2006-11-scientists-clues-chlamydia.html>
- 2005 to 2008 **Editor** for *Advances in Photosynthesis and Respiration*, Springer Publishers monograph series resulting in a 2008 book publication, Title: “Sulfur Metabolism in Phototrophic Organisms” Series: [Advances in Photosynthesis and Respiration](#), Vol. 27 Hell, R.; Dahl, C.; Knaff, D.B.; Leustek, Th. (Eds.) ISBN: 978-1-4020-6862-1
- 2004 to 2007 **Editor** for *Photosynthesis Research*, the journal of the International Society of Photosynthesis Research
- 2003, 2004 & 2006 **Panelist** to the United States Department of Agriculture, Plant Biochemistry panel of the National Research Initiative Competitive Grants Program
- 2003 to 2006 **Mentor** at Compact for Faculty Diversity, The Institute on Teaching and Mentoring, <http://www.instituteonteachingandmentoring.org/Compact/>
- 2002 to 2006 **Editorial Board** for *The Plant Journal*, a publication of The Society for Experimental Biology
- 2002 **Sustained Research Excellence Award** Rutgers University-Cook College and the New Jersey Agricultural Experiment Station
- 1999 to 2003 **Scientific Advisory Board** for NuCycle Therapy, Inc., 255 Long Avenue, Hillside, NJ 07205 (currently Integrated BioPharma Inc.)
- 1999 to 2000 **Scientific Advisory Board** for Akkadix Inc., 11099 North Torrey Pines Rd, Suite 200, La Jolla, CA 92037
- 1997 to 2000 **Panelist** to the National Science Foundation, Integrative Plant Biology Program of the Division of Integrative Biology and Neuroscience, attended 5 panel meetings
- 1998-1999 **Scientific Advisory Board** for Phytotech, Inc., 1 Deer Park Dr., Monmouth Junction, NJ 08852
- 1997 **Research Excellence Award** given by Cook College and the New Jersey Agricultural Experiment Station
- 1991 to date **Peer Reviewer** of nearly 550 manuscripts and proposals for 63 different journals and agencies including: Agriculture; Algal Research; Amino Acids; Analytical Biochemistry; Methods in the Biological Sciences; Annals of Botany; [AoB Plants](#); Archives of Biochemistry and Biophysics; Austrian Science Fund; Bi-National American Israeli Research and Development Program; Biochemica Biophysica et Acta- General Subjects; Biochemica Biophysica et Acta- Proteins and Proteomics; Biochemical and Biophysical Research Communications; Biochemistry; Biological Chemistry; BMC-Genomics; ChemBioChem; Environmental and Experimental Botany; Current Opinion in Plant Biology; European Journal of Phycology;

European Research Area in Plant Genomics (ERA-PG); Ecotoxicology and Environmental Safety; FEBS Letters; Food Chemistry; Frontiers in Microbiology; Frontiers Plant Science; Frontiers Plant Metabolism and Chemodiversity.; Functional and Integrative Genomics; Functional Plant Biology; German Federal Ministry of Education and Research 'Genome Analysis of the Plant Biological System'; International Journal of Molecular Sciences; Journal of Agricultural and Food Chemistry; Journal of Biological Chemistry; Journal of Experimental Botany; Journal of Molecular Evolution; Journal of Phycology; Journal of Plant Physiology; JZUS-Journal of Zhejiang University SCIENCE; Mada'nit Isreal Ministry of Agriculture and Rural Development; Molecular Catalysis National Science Foundation; Molecular Plant; Nature Chemical Biology; New Phytologist; Peer Journal; Pesticide Science; Photosynthesis Research; Physiologia Plantarum; Phytochemistry; Plant and Cell Physiology; Plant Cell; Plant Direct; Plant Journal; Plant Physiology; Plant Science; Plant Cell and Environment; Planta; PLOS One; PLOS Genetics; Proceedings of the National Academy of Sciences; Protoplasma; Stavros Niarchos Foundation-New Agriculture for a New Generation; Trends in Plant Science; United Kingdom Biotechnology and Biological Sciences Research Council (BBSRC); United States Department of Agriculture-NRI; [WikiJournal of Science](#)

Membership in Professional Societies

American Association for the Advancement of Science (AAAS), American Society for Biochemistry and Molecular Biology (ASBMB), American Society of Plant Biologists (ASPB), Sigma Xi, Theobald Smith Society Chapter of the American Society for Microbiology, National Science Teachers Association, Society for College Science Teachers

Patents and Patents Pending

- US Patent No. 20090158455 published June 18, 2009. Inventors: Thomas Leustek, Charles Gilvarg, André O. Hudson, Compositions and methods for modulating lysine production
- US Patent No. 6,821,781 issued November 23, 2004. Inventors: Thomas Leustek and Nilgun E. Tumer. Method for selecting transformed plant cells using ethionine and cystathionine gamma synthase as the selection agent and marker gene
- Patent pending WO2004082368 filed September 30, 2004. Inventors: Thomas Leustek and Yuying Luo. Improved plant transformation
- US Patent No. 6,576,819 issued June 6, 2003. Inventors: Thomas Leustek and Mitchell C. Tarczynski. Methods for modulating the levels of organic sulfur compounds in plants by transforming with (P)APS reductase DNA
- Patent pending WO20040237146 filed May 22, 2003. Inventor: Thomas Leustek. Floral transformation
- European patent EP1153135, issued November 14, 2001. Inventors: Thomas Leustek and Mitchell C. Tarczynski. Methods for modulating the levels of organic sulfur compounds in plants

- Patent pending WO0055303 filed November 4, 2000. Inventors: Thomas Leustek and Nilgun, E. Tumer. Transgenic Plants Having Improved Flavor Properties

Research Interests and Scholarship

My research interest is plant and microbial metabolism with special focus on intermediary metabolism, sulfur metabolism, mineral nutrition, nutrient sensing, and metabolic engineering. I use post-genomic tools, primarily with the *Arabidopsis thaliana* model, to understand how plants coordinate metabolism during growth and development and how plants sense and respond to nutrient levels in their environment.

Five of the most significant contributions that I have made to science include:

1. Identification in plants of a previously unknown pathway for sulfate assimilation, that we later found to also exist in specific lineages of prokaryotes. The sulfur assimilation pathway is characterized by an assimilatory 5'-adenylylsulfate (APS) reductase. I extensively studied the structure and function of this enzyme, defining a new class of reductases that uses glutathione as an electron donor, has a bi-domain structure consisting of a reductase domain and an electron transfer domain, and has an iron sulfur that is required for activity. I have also characterized the interaction of the two enzyme domains.
2. Identification in plants of a previously unknown pathway for the biosynthesis of lysine. We later found that this new lysine biosynthesis pathway exists in specific lineages of prokaryotes, primarily anaerobic prokaryotes and pathogenic prokaryotes including Chlamydia. The pathway is characterized by an enzyme, diaminipimelate aminotransferase (DAPL). The gene is essential in plants and prokaryotes, and cannot be complemented by exogenous application of lysine or its precursor diaminipimelate, therefore, provides a ideal target for herbicide or antibiotic discovery.
3. My research group characterized three genes and enzymes from plants responsible for the biosynthesis of methionine, including cystathionine- γ -synthase (CGS) and homoserine (HSK) kinase, and dihydrodipicolinate synthase (DHDPS). CGS is essential in plants and the mutant can be complemented with exogenously applied methionine, meaning that methionine or one of its metabolites is freely able to be transported through plants. Our identification of the CGS gene led to the discovery of a post-transcriptional, mRNA degradation mechanism, that is triggered by the cellular concentration of the methionine metabolite, S-adenosyl methionine. Through analysis of gene knock-down and overexpression plant lines it was demonstrated that CGS is a key bottleneck for methionine biosynthesis, whereas HSK is not a bottleneck; and DHDPS is a bottleneck for lysine and threonine biosynthesis.
4. Genetic analysis of the entire pathway of histidine biosynthesis revealed that mutation of His genes is embryo lethal, but application of exogenous histidine to heterozygous plants can rescue mutant embryos. These investigations revealed that histidine can be freely transported in plants.
5. The focus of my research group on sulfur (S) nutrition led to insight into how plants sense sulfate in the root zone. Two discoveries were made. The first is that a high affinity sulfate transporter SULTR1;2 also appears to function as a sulfate receptor. A second discovery, is

that the glutathione degradative enzyme. γ -glutamylcyclotransferase (GGCT1;2), functions to enhance glutathione concentration in the root tip during sulfur starvation. Glutathione is essential for root meristem function and is a pre-requisite for primary root growth, which is stimulated by sulfur starvation.

Publications [Citation Index h-index=50 (26 since 2016), i10-index=78 (47 since 2016)]

93. **Joshi NC, Meyer, AJ, Bangash SAK, Zheng Z-L, Leustek T** (2019) Arabidopsis γ -glutamylcyclotransferase affects glutathione level and root system architecture during sulfur starvation. *New Phytologist* 221: 1387-1397 <https://doi.org/10.1111/nph.15466>
92. **Xiang X, Wu Y, Planta J, Messing J, Leustek T** (2018) Overexpression of serine acetyltransferase in maize leaves increases seed-specific methionine-rich zeins. *Plant Biotechnology Journal*, <https://doi.org/10.1111/pbi.12851>
91. **Planta J, Xiang X, Leustek T, Messing J** (2017) Engineering sulfur storage in maize without apparent yield loss. *Proceedings of the National Academy of Sciences* 114: 11386–11391
90. **Zheng Z-L, Leustek T** (2017) Advances in Understanding Sulfur-Utilization Efficiency in Plants. In: *Plant Macronutrient Use Efficiency: Molecular and Genomic Perspectives in Crop Plants*. Hossain MA, Kamiya T, Burritt DJ, Fujiwara T, Tran L-S P eds., Elsevier, ISBN: 9780128113080
89. **Lee J, Joshi N, Pasini R, Dobson RCJ, Allison J, Leustek T** (2016) Inhibition of Arabidopsis growth by the allelopathic compound azetidine 2-carboxylate is due to the low amino acid specificity of cytosolic prolyl-tRNA synthetase. *The Plant Journal* 88:236-246 (First published: 31 August 2016) <https://doi.org/10.1111/tpj.13246>
88. **Leustek T, Zheng Z-L** (2015) SULTR1;2 in S Nutrient-Status Control in Arabidopsis. In: *Molecular Physiology and Ecophysiology of Sulfur*, Proceedings of the 9th International Plant Sulfur Workshop 2014, Freiburg Germany April 2014, Editors: De Kok, L.J., Hawkesford, M., Rennenberg, H., Saito, K., Schnug, E; Springer Publishing
87. **Chung J-S, Lee H-N, Leustek T, Knaff DB, Kim C-S** (2015) The *Arabidopsis thaliana* adenosine 5'-phosphosulfate reductase 2 (AtAPR2) participates in flowering time and glucose response. *Journal of Plant Biology* 58: 128-136
86. **Zheng Z-L, Zhang B, Leustek T**, (2014) Transceptors at the boundary of nutrient transporters and receptors: a new role for *Arabidopsis* SULTR1;2 in sulfur sensing. *Frontiers in Plant Science* 5:710 [doi: 10.3389/fpls.2014.00710](https://doi.org/10.3389/fpls.2014.00710)
85. **Xiang X, Pan G, Rong T, Zheng Z-L, Leustek T** (2014) A luciferase-based method for assay of 5'-adenylsulfate reductase. *Analytical Biochemistry* 460: 22-28
84. **Zhang B, Pasini R, Dan H, Joshi N, Zhao Y, Leustek T, Zheng Z-L** (2014) Aberrant gene expression in mutants of the Arabidopsis sulfate transporter SULTR1;2 suggests a possible regulatory role for this sulfate transporter in response to sulfur nutrient status. *The Plant Journal* 77: 185–197
83. **McKinnie SM, Rodriguez-Lopez EM; Vederas JC, Crowther JM, Suzuki H, Dobson RC, Leustek T, Triassi AJ, Wheatley MS, Hudson AO** (2014) Differential response of orthologous *L,L*-diaminopimelate aminotransferases (DapL) to enzyme inhibitory antibiotic lead compounds. *Bioorganic & Medicinal Chemistry* 22: 523-30
82. **Gao H, Subramanian S, Couturier J, Naik S, Kim S-K, Leustek T, Knaff D, Wu H-C, Vignols F, Huynh B, Rouhier N, Johnson M** (2013) *Arabidopsis thaliana* Nfu2 accommodates [2Fe-2S] or

- [4Fe-4S] clusters and is competent for *in vitro* maturation of chloroplast [2Fe-2S] and [4Fe-4S] cluster-containing proteins. *Biochemistry* **52**: 6633-6645
81. **Jones-Held S, Ambrozevicius AP, Campbell M, Drumheller B, Harrington E, Leustek T** (2012) Two *Arabidopsis thaliana* dihydrodipicolinate synthases, DHPS1 and DHPS2, are unequally redundant. *Functional Plant Biology* **39**: 1058–1067
 80. **Hudson AO, Klartag A, Gilvarg C, Dobson RC, Garbelini-Marques F, Leustek T** (2011) Dual diaminopimelate biosynthesis pathways in *Bacteroides fragilis* and *Clostridium thermocellum*. *Biochimica Biophysica Acta-Proteins and Proteomics* **1814**: 1162-1168
 79. **Chung J-S, Noguera-Mazon V, Lancelin J-M, Kim S-K, Hirasawa M, Hologne M, Leustek T, Knaff DB** (2009) The interaction domain on thioredoxin for *Pseudomonas aeruginosa* 5'-adenylylsulfate reductase. *J Biol Chem* **284**: 31181-31189
 78. **Hudson AO, Gilvarg C, Leustek T** (2008) Biochemical and phylogenetic characterization of a novel diaminopimelate biosynthesis pathway in prokaryotes identifies a diverged form of *LL*-diaminopimelate aminotransferase. *J Bacteriol* **190**: 3256-3263
 77. **Kopriva S, Patron N, Keeling P, and Leustek T** (2008) Phylogenetic analysis of sulfate assimilation and cysteine biosynthesis in phototrophic organism. In: Hell R, Dahl C, Knaff D, and Leustek T (eds) *Sulfur Metabolism in Phototrophic Organism. Advances in Photosynthesis and Respiration*, vol 27. Springer, Dordrecht, pp 31-58
 76. **Dahl C, Hell R, Leustek T, and Knaff D** (2008) Introduction to sulfur metabolism in phototrophic organism. In: Hell R, Dahl C, Knaff D, and Leustek T (eds) *Sulfur Metabolism in Phototrophic Organism. Advances in Photosynthesis and Respiration*, vol 27. Springer, Dordrecht, pp 1-14
 75. **Martin MN, Saladores PH, Lambert, E, Hudson AO, Leustek T** (2007) Localization of members of the γ -glutamyl transpeptidase family identifies sites of glutathione and glutathione *S*-Conjugate hydrolysis. *Plant Physiol* **144**: 1715-1732
Pilar Saladores was a high-school research intern. She went on to receive her B.S. from the University of Rochester, M.S. from The Johns Hopkins University, and Ph.D. from University of Tübingen. She is currently a Senior Project Manager at Definiens, The Tissue Phenomics Company.
 74. **Muralla R, Sweeney C, Stepansky A, Leustek T, Meinke D** (2007) Genetic dissection of histidine biosynthesis in *Arabidopsis*. *Plant Physiol* **144**: 890-903
 73. **Kim SK, Gomes V, Gao Y, Chandramouli K, Johnson MK, Knaff DB, Leustek T** (2007) The two domain structure of 5'-adenylylsulfate reductase from *Enteromorpha intestinalis* is a requirement for efficient APS reductase activity. *Biochemistry* **46**: 591-601
 72. **McCoy AJ, Adams NE, Hudson AO, Gilvarg C, Leustek T, Maurelli AT** (2006) *L,L*-diaminopimelate aminotransferase, a trans-kingdom enzyme shared by *Chlamydia* and plants for synthesis of diaminopimelate/lysine. *Proc Natl Acad Sci (USA)* **103**: 17909-17914
 71. **Kim S-K, Rahman A, Conover RC, Johnson MK, Mason JT, Moore ML, Leustek T, Knaff DB** (2006) Properties of the cysteine residues and iron-sulfur cluster of the assimilatory 5'-adenylyl sulfate reductase from *Enteromorpha intestinalis*. *Biochemistry* **45**: 5010-5018
 70. **Stepansky A, Leustek T** (2006) Histidine biosynthesis in plants. *Amino Acids* **30**: 127-142
 69. **Hudson AO, Singh BK, Leustek T, Gilvarg C** (2006) An *L,L*-diaminopimelate aminotransferase defines a novel variant of the lysine biosynthesis pathway in plants. *Plant Physiol* **140**: 292-301

68. **Kim S-K, Rahman A, Mason JT, Hirasawa M, Miginiac-Maslow M, Keryer E, Knaff DB, Leustek T** (2005) The interaction of 5'-adenylylsulfate reductase from *Pseudomonas aeruginosa* with thioredoxin. *Biochemica Biophysica Acta-Bioenergetics* **1710**: 103-112
67. **Kim, SK, Rahman, A, Conover, RC, Johnson, MK, Mason, JT, Moore, ML, Knaff, DB and Leustek, T** (2005) Redox and site-directed mutagenesis studies of 5'-adenylylsulfate (APS) reductases in: "Photosynthesis: Fundamental Aspects to Global Perspectives", vol. 1, (D. Bruce and A. van der Est, eds.) Alliance Communications Group, Lawrence, KS, 905-907.
66. **Bagga S, Potenza C, Ross J, Martin MN, Leustek T, Sengupta-Gopalan C** (2005) Co-expression of cystathionine γ -synthase and β -zein in alfalfa leads to increase of β -zein accumulation. *In Vitro Cellular and Developmental Biology* **41**: 731-741
65. **Martin MN, Tarczynski MC, Shen B, Leustek T** (2005) The role of 5'-adenylylsulfate reductase in controlling sulfate reduction in plants. *Photosynthesis Research* **86**: 309-323
<http://dx.doi.org/10.1007/s1120-005-9006-z>
64. **Sors TG, Ellis DR, Na GN, Lahner B, Lee S, Leustek T, Pickering IJ, Salt DE** (2005) Role of sulfur assimilating enzymes in selenate reduction, tolerance and accumulation in *Astragalus*. *Plant J* **42**: 785-797
63. **Lee M-S, Martin MN, Hudson AO, Lee J, Muhitch MJ, Leustek T** (2005) Methionine and threonine synthesis are limited by homoserine availability and not the activity of homoserine kinase in *Arabidopsis thaliana*. *Plant J* **41**: 685-696
62. **Hudson AO, Bless C, Macedo P, Chatterjee SP, Singh BK, Gilvarg C, Leustek T** (2005) Biosynthesis of lysine in plants: Evidence for a variant of the known bacterial pathways. *Biochemica Biophysica Acta* **1721**: 27-36
61. **Hell R, Leustek T.** (2005) Sulfur metabolism in plants and algae--a case study for an integrative scientific approach. *Photosynth Res Dec*;86: 297-298
60. **Kim S-K, Rahman A, Bick, J-A, Conover RC, Johnson MK, Mason JT, Hirasawa, M, Leustek T, Knaff DB** (2004) Properties of the cysteine residues and iron-sulfur cluster of the sulfate assimilatory 5'-adenylyl sulfate reductase from *Pseudomonas aeruginosa*. *Biochemistry* **43**: 13478-13486.
59. **DiFraia C, Leustek T** (2004) Functional genomics study in *Arabidopsis thaliana* of histidine biosynthesis. *The Rutgers Scholar Volume 6*
<http://rutgersscholar.rutgers.edu/volume06/defraia-leustek/defraia-leustek.htm>
58. **Grebenok J, Leustek T, Nickla H, Podgorski GJ, Reedy M, Welker D** (2004) Student Handbook to GENES VIII/Lewin: Questions, Problems, and Solutions. Pearson Prentice Hall, Upper Saddle River, New Jersey.
57. **Di R, Kim J, Martin MN, Leustek T, Jhoo J, Ho CT, Tumer NE** (2003) Enhancement of the primary flavor compound methional in potato by increasing the level of soluble methionine. *J Agric Food Chem* **51**: 5695-5702.
56. **Tsakraklides GP, Martin M, Chalam, R, Tarczynski M, Schmidt A, Leustek T** (2002) Sulfate reduction is increased in transgenic *Arabidopsis thaliana* expressing 5'-adenylylsulfate reductase from *Pseudomonas aeruginosa*. *Plant J* **32**: 879-889
55. **Ravina CG, Chang C-I, Tsakraklides GP, McDermott JP, Vega JM, Leustek T, Gotor C, Davies JP** (2002) The *sac* mutants of *Chlamydomonas reinhardtii* reveal transcriptional and post-transcriptional control of cysteine biosynthesis. *Plant Physiol* **130**: 2076-2084

54. **Lancien M, Martin M, Hsieh MH, Leustek T, Goodman H, Coruzzi G** (2002) *Arabidopsis glt1-T* mutant defines a role for NADH GOGAT in the non-photorespiratory ammonium assimilatory pathway. *Plant J* **29**: 347-358
53. **Leustek T** (2002) Sulfate Metabolism. In: *The Arabidopsis Book*, eds. C.R. Somerville and E.M. Meyerowitz, American Society of Plant Biologists, Rockville, MD, doi/10.1199/tab.0017 <http://www.aspb.org/publications/arabidopsis/>
52. **Kim J, Lee M, Chalam R, Martin M, Leustek T, Boerjan W** (2002) Constitutive overexpression of cystathionine γ -synthase in *Arabidopsis thaliana* leads to accumulation of soluble methionine and S-methylmethionine. *Plant Physiol* **128**: 95-107
51. **Bick JA, Setterdahl AT, Knaff DB, Chen Y, Pitcher LH, Zilinskas BA, Leustek** (2001) Regulation of the plant-type 5'-adenylylsulfate reductase by oxidative stress. *Biochemistry* **40**: 9040-9048
50. **Sanda SL, Leustek T, Theisen MJ, Garavito M, Benning C** (2001) Recombinant *Arabidopsis* SQD1 converts UDP-glucose and sulfite to the sulfolipid head group precursor UDP-sulfoquinovose *in vitro*. *J Biol Chem* **276**: 3941-3946
49. **Rotte C, Leustek T** (2000) Differential subcellular localization and expression of ATP sulfurylase and APS reductase during ontogenesis of *Arabidopsis thaliana* leaves indicates that cytosolic and plastid forms of ATP sulfurylase may have specialized functions. *Plant Physiol* **124**: 715-724
48. **Gao Y, Schofield O, Leustek T** (2000) Characterization of sulfate assimilation in marine algae focusing on the enzyme 5'-adenylylsulfate (APS) reductase. *Plant Physiol* **123**: 1087-1096
47. **Hatzfeld Y, Lee S, Lee M, Leustek T, Saito K** (2000) Functional characterization of a gene encoding a fourth ATP sulfurylase isoform from *Arabidopsis thaliana*. *Gene* **248**: 51-58
46. **Leustek T, Bick JA** (2000) The evolution of sulfur assimilation in plants. In: *Sulfur nutrition and sulfur assimilation in higher plants*, C Brunold, J-C Davidian, L De Kok, H Rennenberg, I Stulen, eds. Paul Haupt Publishers, Bern, Switzerland, The Netherlands, pp 1-15
45. **Crawford NM, Kahn ML, Leustek T, Long SR** (2000) Chapter 16-Nitrogen and Sulfur. In: *Biochemistry and Molecular Biology of Plants*, BB Buchanan, W Gruissem, RL Jones, eds. American Society of Plant Physiologists, Rockville, MD, pp. 786-849
44. **Leustek T, Martin MN, Bick JA, Davies JP** (2000) Pathways and regulation of sulfur metabolism revealed through molecular and genetic studies. *Annu Rev Plant Physiol Plant Mol Biol* **51**: 141-166 (top 1% most cited papers - ISI Web of Science)
43. **Bick JA, Dennis JJ, Zylstra GJ, Nowack J, Leustek T** (2000) Identification of a new class of 5'-adenylylsulfate (APS) reductase from sulfate-assimilating bacteria. *J Bacteriol* **182**: 135-142
42. **Kim J, Leustek T** (2000) Repression of cystathionine γ -synthase in *Arabidopsis thaliana* produces partial methionine auxotrophy and developmental abnormalities. *Plant Sci* **151**: 9-18
41. **Marty I, Douat C, Tichit L, Kim J, Leustek T, Abagnac G** (2000) The cystathionine- γ -synthase gene involved in methionine biosynthesis is highly expressed and auxin-repressed during wild strawberry (*Fragaria vesca* L.) fruit ripening. *Theor Appl Genet* **100**: 1129-1136
40. **Lee M-S, Leustek T** (1999) Identification of the gene encoding homoserine kinase from *Arabidopsis thaliana* and characterization of the recombinant enzyme derived from the gene. *Arch Biochem Biophys* **372**: 135-142
39. **Chiba Y, Ishikawa M, Kijima F, Tyson RW, Kim J, Yamamoto A, Nambara E, Leustek T, Wallsgrove RM, Naito S** (1999) Evidence for autoregulation of cystathionine γ -synthase mRNA stability in *Arabidopsis*. *Science* **286**: 1371-1374

38. **Kim J, Chiba Y, Yamamoto A, Naito S, Leustek T** (1999) Nucleotide sequence polymorphisms in the cystathionine gamma-synthase gene of *Arabidopsis thaliana* (Accession Nos., AF039206 and AB010888). *Plant Physiol* **120**: 635-636
37. **Leustek T, Saito K** (1999) Sulfate transport and assimilation. *Plant Physiol* **120**: 637-643
36. **Lappartient AG, Vidmar JJ, Leustek T, Glass ADM, Touraine B** (1999) Inter-organ signaling in plants: regulation of ATP sulfurylase and sulfate transporter genes expression in roots mediated by phloem-translocated compound. *Plant J* **18**: 89-95
35. **Lee S, Leustek T** (1999) The effect of cadmium on sulfate assimilation enzymes in *Brassica juncea*. *Plant Science* **141**: 201-207
34. **Raux E, McVeigh T, Peters SE, Leustek T, Warren MJ** (1999) The role of *Saccharomyces cerevisiae* Met1p and Met8p in sirohaem and cobalamin biosynthesis. *Biochem J* **338**: 701-708
33. **Pilon-Smits EAH, Hwang SB, Lytle CM, Zhu YL, Tai JC, Bravo RC, Chen YC, Leustek T, Terry N** (1999) Overexpression of ATP sulfurylase in Indian mustard leads to increased selenate uptake, reduction, and tolerance. *Plant Physiol* **119**: 123-132
32. **Nozaki T, Arase T, Shigeta Y, Asai T, Leustek T, Takeuchi T** (1998) Cloning and bacterial expression of adenosine-5'-triphosphate sulfurylase from the enteric protozoan parasite *Entamoeba histolytica*. *Biochimica et Biophysica Acta - Protein Structure & Molecular Enzymology* **1429**: 284-291
31. **Lee S, Leustek T** (1998) APS kinase from *Arabidopsis thaliana*, genomic organization, expression, and kinetic analysis of the recombinant enzyme. *Biochem Biophys Res Comm* **247**: 171-175
30. **Bick JA, Åslund F, Chen Y, Leustek T** (1998) Glutaredoxin function for the carboxyl terminal domain of the plant-type 5'-adenylylsulfate (APS) reductase. *Proc Natl Acad Sci (USA)* **95**: 8404-8409
29. **Bick JA, Leustek T** (1998) Plant sulfur metabolism-the reduction of sulfate to sulfite. *Current Opinion in Plant Biology* **1**: 240-244
28. **Chen YC, Leustek T** (1998) Three genomic clones from *Arabidopsis thaliana* encoding 5'-adenylylsulfate reductase (Accession Nos. AF016282, AF016283 and AF016284) (PGR98-030). *Plant Physiol* **116**: 869
27. **Campbell M, Hahn F, Poulter CD, Leustek T** (1998) Analysis of the isopentenyl diphosphate isomerase gene family from *Arabidopsis thaliana*. *Plant Molecular Biology* **36**: 323-328
26. **Summers PS, Nolte K, Cooper AJL, Borgeas H, Leustek T, Rhodes D, Hanson AD** (1998) Identification and stereospecificity of the first three enzymes of 3-dimethylsulfoniopropionate biosynthesis in a chlorophyte alga. *Plant Physiol* **116**: 369-378.
25. **Takahashi H, Yamazaki M, Sasakura N, Watanabe A, Leustek T, de Almeida-Engler J, Engler G, Van Montagu M, Saito K** (1997) Regulation of cysteine biosynthesis in higher plants: A sulfate transporter induced in sulfate-starved roots plays a central role in *Arabidopsis thaliana*. *Proc Natl Acad Sci (USA)* **94**: 11102-11107
24. **Gage DA, Nolte KD, Rhodes D, Leustek T, Cooper AJL, Hanson AD** (1997) Biogenic dimethylsulfide: Synthesis of its precursor 3-dimethylsulfoniopropionate in marine algae. *Nature* **387**: 891-894
23. **Havkinfrenkel D, Dorn R, Leustek T** (1997) Plant tissue culture for production of secondary metabolites. *Food Technology* **51**: 56-61

22. **Leustek T, Smith M, Murillo M, Singh DP, Smith AG, Woodcock SC, Awan SJ, Warren MJ** (1997) Siroheme biosynthesis in higher plants: analysis of an S-adenosyl-L-methionine-dependent uroporphyrinogen III methyltransferase from *Arabidopsis thaliana*. *J Biol Chem* **272**: 2744-2752
21. **Leustek T** (1997) Molecular genetics of sulfonucleotide reduction in higher plants. *Sulphur Metabolism in Higher Plants*. WJ Cram, LJ De Kok, I Stulen, C Brunold, H Rennenberg, eds., Backhuys Publishers, Leiden, The Netherlands, pp 211-213
20. **Kim J, Leustek T** (1996) Cloning and analysis of the gene for cystathionine- γ -synthase from *Arabidopsis thaliana*. *Plant Molecular Biology* **36**: 1117-11124
19. **Setya A, Murillo M, Leustek T** (1996) Sulfate reduction in higher plants: Molecular evidence for a novel 5'-adenylylphosphosulfate (APS) reductase. *Proc Natl Acad Sci (USA)* **93**: 13383-13388
18. **Leustek T** (1996) Molecular genetics of sulfate assimilation in plants. *Physiologia Plantarum* **97**: 411-419
17. **Selvan S, Grewal PS, Leustek T, Gaugler R** (1996) Heat-shock enhances thermotolerance of infective juvenile insect-parasitic nematodes *Heterorhabditis bacteriophora* (Rhabditida: Heterorhabdidae). *Experientia* **52**: 727-730
16. **Murillo M, Foglia R, Diller A, Lee S, Leustek T** (1995) Serine acetyltransferase from *Arabidopsis thaliana* can functionally complement the cysteine requirement of a *cysE* mutant strain of *Escherichia coli*. *Cell Molec Biol Res* **41**: 425-433
15. **Murillo M, Leustek T** (1995) ATP sulfurylase from *Arabidopsis thaliana*. and *Escherichia coli* are functionally equivalent but structurally and kinetically divergent. Nucleotide sequence of two ATP sulfurylase cDNAs from *Arabidopsis thaliana* and analysis of a recombinant enzyme. *Arch Biochem Biophys* **323**: 195-204
14. **Belanger F, Leustek T, Chu B, Kriz AK** (1995) Evidence for the thiamine biosynthetic pathway in higher-plant plastids and its developmental regulation. *Plant Molec Biol* **29**: 809-821
13. **Rosenthal E, Leustek T** (1995) A multifunctional protein in *Urechis caupo* has both ATP sulfurylase and APS kinase activities. *Gene* **165**: 243-248
12. **Jain A, Leustek T** (1994) A cDNA clone for 5'-adenylylphosphosulfate kinase from *Arabidopsis thaliana*. *Plant Physiol* **105**: 771-772
11. **Leustek T, Murillo M, Cervantes M** (1994) Cloning of a cDNA encoding ATP sulfurylase from *Arabidopsis thaliana* by functional expression in *Saccharomyces cerevisiae*. *Plant Physiol* **105**: 897-902
10. **Wang H, Goffreda M, Leustek T** (1993) Characteristics of an Hsp70 homolog localized in higher plant chloroplasts similar to DnaK, the Hsp70 of prokaryotes. *Plant Physiol* **102**: 843-850
9. **Leustek T** (1992) Is Grp78 a sensor of cellular secretory activity? In, *Genetic Engineering, Principles and Methods*, Volume 14. JK Setlow, ed., Plenum Press, pp. 125-137
8. **Leustek T, Amir-Shapira D, Toledo H, Brot N, Weissbach H** (1992) Autophosphorylation of 70 kDa heat shock proteins. *Cell Mol Biol* **38**: 1-10.
7. **Leustek T, Toledo H, Brot N, Weissbach H** (1991) Calcium-dependent phosphorylation of the glucose regulated protein, Grp78. *Arch Biochem Biophys* **289**: 256-261.
6. **Amir-Shapira D, Leustek T, Dalie B, Weissbach H, Brot N** (1990) Hsp70 proteins, similar to *Escherichia coli* DnaK, in chloroplasts and mitochondria of *Euglena gracilis*. *Proc Natl Acad Sci (USA)* **87**: 1749-1752

5. **Leustek T, Kirby EG** (1990) Cell cultures of Douglas-fir grown under conditions of water stress: selection and physiology. *Tree Physiol* **6**: 317-326
4. **Leustek T, Dalie B, Amir-Shapira D, Brot N, Weissbach H** (1989) A member of the Hsp70 family is localized in mitochondria and resembles *Escherichia coli* DnaK. *Proc Natl Acad Sci (USA)* **86**: 7805-7808
3. **Leustek T, Hartwig R, Brot N, Weissbach H** (1988) The regulation of ribulose biphosphate carboxylase expression in *Rhodospirillum rubrum*. Characteristics of mRNA synthesized in vivo and *in vitro*. *J Bacteriol* **170**: 4065-4071
2. **Leustek T, Kirby EG** (1988) The influence of glutamine on growth and viability of suspension cultures of Douglas-fir after exposure to polyethylene glycol. *Tree Physiol* **4**: 371-380
1. **Kirby EG, Leustek T, Lee MS** (1987) Nitrogen nutrition. In: *Cell and Tissue Culture in Forestry*, Volume 1. General Principles and Biotechnology. JM Bonga, D Durzan, eds. Martinus Nijhoff Publishers, Boston. pp. 67-88

Associate Dean Administrative Duties and Background

I have served as the Associate Dean for Academic Administration & Assessment at the Rutgers University, School of Environmental and Biological Sciences (SEBS) since February 1, 2014. The initial term was for 3-years and I was renewed in the position for a second 3-year term on February 1, 2017 and then a third term on February 1, 2020. Prior to joining the Dean's office I was a faculty member in the Department of Plant Biology, where I managed an internationally recognized research program focusing on the biological transformations of sulfur in plant and microbes, supported by nearly \$5,000,000 in extramural grant support. During the research phase of my career I trained fourteen postdoctoral fellows and graduated eight Ph.D. students, five M.S. students, and many undergraduate research interns, some of whom became co-authors on peer-reviewed publications. Although my primary duties currently are administrative I continue to maintain a research program and continue to publish peer reviewed original research.

My current position reports to the Dean of Academic Programs and duties are to provide leadership and oversight of all academic programs at the undergraduate level. The major responsibilities include: 1) management and coordination of the School's curricular processes, including liaison with Curriculum Coordinators, the functions of the Curriculum and Educational Policy Committee and the Faculty Forum; 2) oversight of academic assessment for the undergraduate programs offered at the school as well as of the overall academic performance of the School to ensure achievement of learning goals; 3) development of academic agreements with other universities and institutions; 4) administration of teaching assistantships and part-time lectureships; 5) leadership initiatives at SEBS, cross-school initiatives at the Rutgers-New Brunswick campus, and cross-campus/university level initiatives; and 6) other duties as agreed to in consultation with the Dean of Academic Programs. The position also includes membership on the Executive Deans Cabinet and the Department Chairs Council and my duties require me to work cooperatively with various offices across the university including academic programs, academic services, teacher education, cooperative education, graduate programs, special programs, and honors programs; and outside the university including NJ county colleges, NJ and out-of-state secondary schools, NJ Department of Agriculture and NJ Department of Education and leadership organizations and committees including FFA, Curriculum for Agricultural Science Education (CASE), and Agricultural Education Advisory Council.

Context

The School of Environmental and Biological Sciences <https://sebs.rutgers.edu/>, located on the George H. Cook Campus, traces its roots back to 1864 when it was established as the land-grant college of New Jersey, then known as the Rutgers Scientific School. SEBS maintains a strong commitment to the land-grant mission outlined in the Morrill Act of 1862. There are ~3,400 undergraduates and ~430 graduate students enrolled at SEBS, and there are 445 faculty. SEBS is one of 30 schools and colleges in the Rutgers-The State University of New Jersey system located at 3 regional campuses in New Brunswick, Newark, and Camden. The [New Brunswick campus](#), where SEBS is located, is the flagship division of the university with a combined student enrollment of approximately 50,000 full- and part-time students.

Research, teaching, and outreach at SEBS address the biological spectrum from microorganisms to ecosystems, the physical and chemical environment, and the integration of

fundamental sciences with human and societal dimensions. Our emphasis is on both the fundamental sciences and the social and human dimensions of food and environmental systems.

The school is home to the New Jersey Agricultural Experiment Station and Cooperative Extension. Given that New Jersey is a highly urbanized state with the third largest trade port in the nation, SEBS hosts cutting edge programs on new use agriculture; biosecurity; food, nutrition, and health; land use and development; and economic development.

SEBS hosts 12 academic departments, 21 majors, and 34 minors/certificates. The undergraduate majors include: animal science, plant science, biology, biochemistry, microbiology, biotechnology, agriculture and food systems, landscape architecture, environmental planning and design, food science, nutritional science, ecology evolution and natural resources, marine science, environmental sciences, environmental engineering, meteorology, human ecology, entomology, environmental economics, exercise science, and public health. In addition to instruction in the classroom, field, and laboratory, our students have extensive opportunities for experiential learning on and off campus, including a growing emphasis on international experiences through short- and long-term study abroad. Students also have access to a robust program of basic research as well as applied research and outreach hosted by the New Jersey Agricultural Experiment Station laboratories, farms, business incubators, and marine stations throughout the state.

Accomplishments

My performance in the role of Associate Dean of Academic Administration and Assessment has been formally acknowledged in several ways. Upon my reappointment to the position in 2017 Executive Dean Robert M. Goodman noted “I am pleased with the energy and leadership that you have brought to this position and I look forward to continuing our work together.” In 2015, 2017, and 2018 I was reviewed as part of the Senior Administrative Performance Review cycle and received the highest recommendation on all occasions. In 2016 I was nominated for and appointed a Fellow in the [Academic Leadership Program](#) of the BIG10 Academic Alliance. From the B10AA website: “This intensive experience develops the leadership and managerial skills of faculty who have demonstrated exceptional ability and academic promise.” I have also been nominated to and have served on eight Rutgers-New Brunswick Chancellor’s level leadership committees and task forces. In recognition of my contributions to Food, Agriculture and Natural Resources Education I was privileged to receive an Honorary State FFA Degree and have been appointed to several State and National steering committees including the New Jersey Agricultural Education Advisory Council; Advisory Committee for the Curriculum for Agricultural Science Education; and the Advisory Committee for the New Jersey Department of Education.

Since joining the academic dean’s office in 2014 I have established a robust program for assessment of student learning where none existed before. Assessment of student learning is an essential component for measuring the effectiveness of an institution of higher education. I formed an *Instructional Assessment Committee*, which I manage; that provides best-practices information to programs and collects, reviews, and provides feedback on assessment reports submitted annually by the programs. In my role, I also attend the annual departmental planning meetings (the Dean’s office team meets individually with each department chair on an annual basis to review accomplishments and to plan for the coming year) to help with assessment planning.

Rutgers University adopted formal, university-level institutional assessment practices after an accreditation review by the *Middle States Commission on Higher Education*. Rutgers' central administration left the individual schools to develop their own, local assessment practices, but gave oversight and reporting responsibility to a university-level committee known as the *Executive Council on Assessment*. As a result of my leadership efforts, in each of the past 4 years SEBS has ranked highly on an annual assessment review and was given an overall rating of "Making Reasonable Progress." After the spring 2018 review the University Assessment Committee noted: "The ACLO¹ reviewers were impressed by the excellence of the report itself, and not just its content. Because of the care taken in the writing of the report, and the detail presented within it, the report is exemplary. The strong leadership in SEBS over the past few years in the area of learning outcomes assessment is evident on every page of the document. The solidity and sustainability of the assessment process itself within SEBS, the engagement of the faculty, and the extent of the changes throughout the school and its programs, are examples for other schools. As you can see from the Narrative Response, we find this to be a job well done." In addition, excerpts from the committee Narrative Response include: "This is an exceptional report. It is a model for how a school should prepare an annual assessment report.." and "... we will give the summative evaluation of Meets Current ACLO Standards, not because every standard is met exactly, but because the structure and process in place is so impressive, so well-conceived, and provides such a solid sustainable assessment program for the school. As a result, SEBS is now well on its way to integrating assessment into the philosophy of undergraduate education."

As a result of my accomplishments on program assessment I was invited to serve on an assessment working group of the *Executive Council on Assessment* in anticipation of the 2018 Middle States review of Rutgers-New Brunswick. I also was invited to meet with the Middle States team on 3/20/2018. The [Middle States reaccredited Rutgers on June 21, 2018](#).

As an addition to the assessment program initiative, I worked with our undergraduate programs to overhaul SEBS internet presence by developing a uniform school-wide webpage template that all the Majors have adopted. Whereas before the SEBS undergraduate program webpages presented information inconsistently our school now has a full suite of clear and easy to navigate undergraduate program webpages that are consistent across all of our programs. Our new webpages are a resource to students and program marketing efforts as well as providing easy evaluation access for SEBS *Instructional Assessment Committee*, the committee responsible for program assessment evaluation. See the websites at: <https://sebs.rutgers.edu/majors/>

I also have overhauled the processes of curriculum oversight and review, which is the charge of the SEBS *Curriculum and Education Policy Committee* (CEP). The CEP reviews all new and changed courses and curricula as well as educational policies. Prior to 2014 the committee functioned using paper proposals filed in three-ring binders. Procedure/policies were transmitted by word-of-mouth. I immediately set about updating the process to electronic form. Proposals are now submitted electronically (co-opting the Qualtrics survey tool) and metadata are stored in an electronic database. Clear instructions on proposal preparation, procedures and policies are located on a website, <http://sebscourseapproval.rutgers.edu/>, which also serves as the portal for proposal submission. Today the SEBS CEP Committee functions using a modern web-based

¹ In 2017 the *Executive Council on Assessment* was divided into three committees, one of which is the *Assessment Council on Learning Outcomes* (ACLO), which now reviews school assessment reports.

system. The electronic database facilitates propagation of CEP-generated information to multiple destinations including the registrar's office Master Course List, the NJ State mandated Rutgers New Brunswick Undergraduate Catalog, the degree audit and academic advising system used by all students called Degree Navigator, and the Core Curriculum certified course database used by students for class registration.

As a part of my responsibilities for curricular matters I work with programs and faculty to prepare new and revised courses and curricula from conception to deployment. I have worked to steer programmatic initiatives to expand areas of opportunity. Rutgers University uses a Responsibility Centered Management budget model that provides opportunities for entrepreneurial initiatives for revenue enhancement.

A part of my duties also involves being the SEBS liaison to New Jersey State Food, Agriculture and Natural Resources Education initiatives through the New Jersey Department of Agriculture. A number of New Jersey secondary schools host the Curriculum in Agricultural Science Education ([CASE](#)). Working with the New Jersey Department of Agriculture I established an articulation program with the secondary schools that allows students completing the CASE curriculum to receive college credit for CASE courses taken at their secondary school, if they are subsequently admitted to and matriculate at SEBS. This program expanded in 2017 from secondary schools in New Jersey to secondary schools throughout the Nation that teach the CASE curriculum. Development of the articulation agreements requires me to collaborate with the secondary schools. To facilitate the collaboration I designed a website in 2017 to guide secondary schools and to guide students on how to claim their academic credit (click [HERE](#)). And I developed an informational poster advertising the SEBS/CASE program (electronic version available on our CASE website, click [HERE](#)). As a result of my work with CASE I was invited to serve on the CASE Advisory Committee, as well as the New Jersey Agricultural Education Advisory Council and the New Jersey Department of Education Advisory Council that reviews the Agricultural Education programs managed by the NJ Department of Agriculture all of which I continue to serve. In 2018 I received an Honorary State FFA Degree for my work on the CASE program, and have been appointed to several State and National steering committees including the Advisory Committee for the Curriculum for Agricultural Science Education; and the State Teach Ag Results (STAR) program, a part of the Teach Ag campaign of the National Association of Agricultural Educators. Further, I have taken leadership of the Agricultural Science Education Dual-Degree Program between the SEBS and the Rutgers Graduate School of Education. I am currently in the process of revitalizing this important program and I serve as the interim-director of the program.

Another of my responsibilities is to serve as the SEBS liaison with NJ county colleges, tasked with developing transfer articulation agreements to facilitate the transition of county college transfer students to SEBS. Although the transfer of a student's county college credits to Rutgers is legislated by the NJ Statewide Transfer Agreement, wherein all the credits are transferred, as a practical matter the students have often not taken the courses needed for their desired major. The transfer agreements that I facilitate, are a guide to the county college courses necessary for seamless transition to a specific major at SEBS. With these transfer articulations we are hoping to reduce the time-to-graduation for transfer students; which has been identified as a problem at Rutgers.

I also serve as the SEBS liaison to Rutgers New Brunswick Career Services Office. In this role I serve on the Post-Graduation Survey Committee that advises on the annual survey administered

to all graduating seniors at the Rutgers New Brunswick Campus. I have worked with Career Services to modify the survey to improve the response rate from SEBS students and to be able to use the survey results for program assessment.

I also serve as the SEBS liaison to the Rutgers New Brunswick Undergraduate Catalog committee. The undergraduate catalog, which is mandated by state law and is the contract between students and the university, is published every three years. I am currently working on the third revision cycle for the SEBS section of the catalog. This work required that I learn in exquisite detail each of the SEBS undergraduate programs and courses.

I have also represented SEBS at a variety of university functions including the Career Services *Career Knights of Distinction Awards Dinner*, as a Marshall to University Commencement and Convocation ceremonies for the Graduate School New Brunswick and SEBS, and site-visits to for student recruitment purposes including the Students2Science program and FFA conventions.

As Associate Dean I also have served or do currently serve on a number of university-wide committees.

Ongoing Committee Work

Core Requirements Committee- A cross-school committee at Rutgers-New Brunswick charged with management of the learning-based core curriculum including: course certification, course retirement, and course/program review. This is an ongoing committee on which I have served from 2014 to date. Locally at my school, I work with faculty to prepare and submit core certification proposals and I work with departments to fulfill ongoing assessment reporting requirements for their certified courses.

Undergraduate Academic Affairs Leadership Council- This Council of the Rutgers-New Brunswick Office of Undergraduate Affairs is charged with identifying and discussing cross-school issues impacting undergraduate academic affairs at Rutgers-New Brunswick. This is an ongoing committee on which I serve.

Executive Council on Assessment- This Council of the Rutgers-New Brunswick Chancellors Office is charged with establishment of policy over the assessment of student learning and standards for evaluation of each school's assessment practices. In addition, ESA reviews annual assessment reports submitted by each school and returns constructive critique to the schools. The Council has recently been divided into two groups, one of which is concerned with assessment of academic programs- now referred to as the *Assessment Council of Learning Outcomes* (ACLO). I serve as an ongoing member of the ACLO.

Teaching Evaluation Council Working Group- This Working Group of the Rutgers-New Brunswick Provost's Office is charged with formulating the "elements of a teaching evaluation plan," that is, the series of questions whose answers constitute a plan. The group aims to formulate questions, and allow each department and school to propose answers appropriate to their discipline and to the configuration of their faculty, which can be used for retention, tenure, promotion, and other employment-related decisions, and formative assessments, which are designed to help faculty improve their teaching. The group will also provide a library of protocols and examples from Rutgers and from selected peer institutions. The working group is also charged with considering whether to recommend campus-wide modifications to the Student Instructional Rating Survey to the Chancellor and the deans, based on research in the scholarship of learning and teaching into ways to reduce bias and to focus survey instruments on issues where student input is most relevant.

One-Time Task Force Work

Chancellor's Task Force on the Transfer Student Experience- Task force charged by the Rutgers New Brunswick Chancellors office to evaluate the policies and programming that support transfer students as well as to propose recommendations to improve transfer student transition from other institutions to Rutgers. The task force presented its report to the Chancellor Rutgers-New Brunswick on August 22, 2016.

Self-Study Working Group on Educational Effectiveness and Assessment- The working group organized by the Rutgers New Brunswick Chancellors Office is charged with preparation of a self-study document in anticipation of the 2018 accreditation review by the Middle States Commission on Higher Education. The working group submitted the self-study in summer 2017.

Chancellor's Clicker Task Force- Student response systems, commonly referred to as "clickers," have become an important learning tool in higher education. A growing number of faculty are using the technology to promote active learning, student engagement, and assessment; but a lack of centralization has resulted in the use of multiple clicker systems, which inadvertently has created problems for different stakeholders including students, faculty and staff. The Clicker Task Force was charged with evaluating clicker needs on the Rutgers New Brunswick Campus.

Chancellor's Task Force on Non-Traditional Students- Charged with reviewing policies and curricular programming that support non-traditional students at Rutgers New Brunswick.

Undergraduate Academic Affairs Graduation Rate Working Group- As a member of the BIG10 Academic Alliance Rutgers University-New Brunswick is aiming to improve its 4-year graduation rate. The rate is currently 59.2%, firmly in the middle of the conference. The task force was convened to review the factors that contribute to the graduation rate and to recommend ways to improve it.

Review Committees- 2017 Presidential Fellowship Review Committee- The awards honor outstanding members of the Rutgers community selected for their exceptional contributions to teaching, research, or public service through a program of five awards. 2019 Ernest E. McMahan-Class of 1930 Award is given to an individual or a group within Rutgers University that has made a significant and creative contribution to the extension of the educational resources of the University to the people of New Jersey through such means as continuing education or extramural programs. Programs eligible for this award can be credit or non-credit, on-campus or off-campus.

Competitive Grants and Awards

- 2019 EnviroKure, Inc., Title: Development of a system to measure root growth response to biostimulants. \$3,000
- 2017 Professor Charles Gilvarg Memorial Fund for Plant Metabolic Engineering, \$9,000
- 2016 Professor Charles Gilvarg Memorial Fund for Plant Metabolic Engineering, \$5,000
- 2015 Bridge Grant New Jersey Agricultural Experiment Station, Sulfur Nutrient Sensing in Plants, \$35,000
- 2015 Professor Charles Gilvarg Memorial Fund for Plant Metabolic Engineering, \$6,000
- 2014 Professor Charles Gilvarg Memorial Fund for Plant Metabolic Engineering, \$6,000
- 2013 National Science Foundation, REU Supplement to Title: "Collaborative Research: Genetic and Biochemical Dissection of Plant Sulfate Transceptor," IOS-1121521, \$12,000
- 2012 National Science Foundation, REU Supplement to Title: "Collaborative Research: Genetic and Biochemical Dissection of Plant Sulfate Transceptor," IOS-1121521, \$6,000
- 2011-2014 National Science Foundation, Title: "Collaborative Research: Genetic and Biochemical Dissection of Plant Sulfate Transceptor," IOS-1121521, \$340,001
- 2006-2009 Cook College and NJAES Competitive Intramural Awards Program Research Infrastructure Awards, Title: "A Multi-Detection Microplate Reader for Biotechnology, Plant Biology, Turf Science, and Animal Science Research" \$35,000, with Co-PI's Carol A. Bagnell, Elisabetta Bini, Wendie Cohick, Bingru Huang, Melinda Martin, Barbara Zilinskas
- 2006 National Science Foundation, Title: "Equipment supplement request to Lysine biosynthesis in plants", IBN-0623079, \$10,000
- 2005-2008 US Department of Agriculture, Title: "Mechanisms of electron transport in sulfate assimilation", \$300,000, Co-PI David Knaff Texas Tech University
- 2005-2009 National Science Foundation, Title: "Lysine biosynthesis in plants", IBN-0449542, \$330,000, Co-PI Charles Gilvarg Princeton University
- 2005 National Science Foundation, Research Experiences for Undergraduates, "The Role of Histidine in Plant Development", IBN-0530993, \$6000
- 2004-2009 National Science Foundation, Title: "The Role of Histidine in Plant Development", IBN-0419745, \$367,064
- 2004 National Science Foundation SBIR Phase I, Title: "Production of Human Interferon in *Brassica juncea*", with Burt Ensley of Nucycle Therapy, Inc., \$50,000
- 2003-2004 NuCycle Therapy Inc. Title: "Phase II, Expression of Recombinant Proteins in Plants", \$170,000
- 2003-2007 National Institutes of Health Pre-doctoral Fellowship, Title: "Doctoral training in the biochemistry of transsulfuration enzymes", \$163,280, with Andre Hudson
- 2003 National Science Foundation, A Real-Time PCR Machine to Quantify Gene Expression DBI-0302581, \$40,000, Co-PI with Nilgun Tumer
- 2003 National Science Foundation, Research Experiences for Undergraduates, "Regulation of Sulfate Assimilation in Plants", IBN-0335619, \$5,000
- 2003 Rutgers University, Academic Excellence Fund, "Analytical Chemistry Support for Agricultural and Environmental Research, \$170,000, CoPI with Gerben Zylstra

- 2002-2005 US Department of Agriculture, Title: Mechanisms of electron transport in sulfate assimilation, \$210,000, Co-PI with David Knaff Texas Tech University
- 2002 National Science Foundation, Research Experiences for Undergraduates, Supplement to IBN-9817594, \$5,000
- 2001 Rutgers University SROA Title: "Metabolic Profiling in Aid of Gene Discovery", \$50,000
- 2001 Cook College Plant Fund, Title: "Metabolic Profiling in Aid of Gene Discovery", \$10,000
- 2001-2002 NuCycle Therapy Inc. Title: Selenium enriched plant material for chemoprevention, \$141,894
- 2001-2005 National Science Foundation, Title: Defining and manipulating the fate of glutathione and glutathione S-conjugates, \$331,794, Co-PI with Dr. Melinda Martin, Assistant Research Professor in the Leustek Group
- 1999-2002 Pioneer Hi-Bred International Inc., "Expression and characterization of PAPS/APS reductases" \$50,000
- 1999-2003 National Science Foundation, Title: Regulation of sulfate assimilation in plants. IBN-9817594, \$300,000
- 1998-2002 National Science Foundation, Research Experiences for Undergraduates, Supplement to MCB-9728661, \$8,000
- 1998-2002 National Science Foundation, Title: Methionine biosynthesis in higher plants. MCB-9728661, \$298,255
- 1997-1998 Office of Naval Research, Title: Biosynthesis of dimethylsulfoniopropionate (DMSP) in marine algae. Expansion of project N000149610212 \$43,590
- 1996-1998 Pioneer Hi-Bred International, Inc., Methionine Biosynthesis in Higher Plants, \$40,000
- 1997-1998 National Science Foundation, Research Experiences for Undergraduates, Supplement to IBN-9601146, \$10,600
- 1996-1999 National Science Foundation, Molecular Genetics of Sulfate Assimilation in Plants IBN-9601146, \$250,650
- 1996-1997 National Science Foundation, Research Experiences for Undergraduates, Supplement to IBN-9408031, \$5,250
- 1996-1999 Office of Naval Research, Title: Biosynthesis of dimethylsulfoniopropionate (DMSP) in marine algae. N000149610212, \$166,616
- 1995-1996 National Science Foundation, Research Experiences for Undergraduates, Supplement to IBN-9408031, \$4,250
- 1995-1996 Co-investigator with Dr. R. Gaugler. US Department of Agriculture. Title: Enhanced biological control potential of entomopathogenic nematodes through genetic engineering for thermotolerance, \$82,124
- 1994-1996 National Science Foundation, IBN-9408031, Title: Characterization of the genes for sulfate activation from higher plants, \$140,000
- 1993-1994 National Science Foundation, IBN-9301921, Title: Characterization of the genes for sulfate activation from higher plants, \$50,000
- 1993-1995 Co-investigator with Dr. R. Gaugler. USDA National Agricultural Research Project. Title: Enhanced biological control potential of entomopathogenic nematodes through genetic engineering for thermotolerance, \$329,000

Teaching

11:126:481 Molecular Genetics (3 credits)- Since 1991 I have had sole responsibility for an upper level undergraduate lecture course in molecular genetics. The course is taught once per year and is a requirement for undergraduate majors in the Biotechnology Curriculum. It attracts 70 to 160 students each time that it is taught.

11:765:609 Scientific Communication in Plant Biology (2 credits)- Since 2012 I have had sole responsibility for this course in the Graduate Program in Plant Biology for first year students.

11:015:103 Portals for Academic Student Success (1 credit)- Since 2016 I have taught one section of this course required of all Freshman whose GPA for their first term at the School of Environmental and Biological Sciences was less than 2.0 and is designed to help students with study skills, planning, and visioning.

Plant Gene Transfer- Since 2006 I have taught 2 laboratories in this upper-level undergraduate course focusing on *Arabidopsis thaliana* transformation and on reporter gene assay.

Molecular Genetics Lab- from 1991 to 1996 I was responsible for 30% of the laboratory course that accompanies molecular genetics lecture. I designed the experiments for a section focusing on experiments in eukaryotic molecular genetics using yeast as the model system. The laboratory exercises included the cloning of plant cDNAs by functional complementation of yeast auxotrophic mutants, mating, sporulation and segregation analysis, knock-out gene replacement, plasmid rescue, positive mutant selection strategies, and transformation. Because I have taken on the role of the director of the Plant Biology Graduate Program I no longer participate in molecular genetics lab.

Miscellaneous courses- Since 1996, each year I teach 1 to 4 guest lectures in the following graduate courses, Plant Physiology, Plant Biochemistry, Introduction to Plant Biology, Advanced Plant Genetics. From 1993 to 1996 I was responsible for half of the graduate course Plant Development. Before 1996 I gave guest lectures in undergraduate courses in Plant Physiology, Proteins and Enzymes, Biochemistry of Organized Systems and Microbial Genetics.

Postdoctoral Fellows

Naveen Joshi, 2012 to 2016, Project title "Molecular and Biochemical characterization of a plant sulfur transceptor"

Andre' O. Hudson, 2006 to 2008, Project title: "Lysine biosynthesis in plants and microorganisms", Current Position: Professor Rochester Institute of Technology, Director of the Thomas H. Gosnell School of Life Sciences

Asya Stepansky, 2005 to 2006, Project title: "The role of histidine in plant development", Currently Director of DNA technologies Skyline Genomics Inc.

Yuying Luo, 2001 to 2004, Project title: "Development of *Brassica juncea* as a host for production of recombinant proteins", Current position: Unknown

Afroza Rahman, 2001-2003, Project title: "Enzymology of sulfate reducing enzymes from plants and bacteria", Current position: Unknown

Galina Kourteva, 2001 to 2003, Project title: "Development of *Brassica juncea* as a host for production of recombinant proteins", Current Position: Research Scientist at Hoffman LaRoche

- Julie-Ann Bick, 1997-2001, Project title: "Enzymology of sulfate reducing enzymes from plants and bacteria", Current Position: Research Scientist at Aventis Corporation
- Yu Gao, 1998 to 2001, Project title: "Regulation of dimethylsulfoniopropionate synthesis in marine algae", Current position: Research Scientist at Maine Medical Center
- Yichang Chen 1994-1998, Project title: "Sulfate assimilation in plants", Current position, Computer Analyst at cch-lis.com
- Ajay Jain, 1993-1994, Project title: "Characterization of APS kinase from plants"
- Barbara Wilson 1993-1994, Project title: "Analysis of Hsp70 genes in plants", Current Position: unknown
- Lee-Ann Weinstein/Schein, Project title: "Analysis of Hsp70 genes in plants", Current Position: Research Scientist at the University of Medicine and Dentistry of New Jersey
- Miguel Cervantes-Cervantes, 1992-1993, Project title: "Cloning of sulfate assimilation genes from *Arabidopsis thaliana*", Current Position: Instructor and Coordinator of Undergraduate Studies, Department of Biological Sciences, Rutgers University Newark

Graduate Students Degree Completed

- Jose Planta, Ph.D. 2017. Graduate Program in Microbiology and Molecular Genetics. Dissertation Title: "Enhanced sulfur assimilation drives expression of the sulfur-rich seed storage proteins in maize," Currently: Postdoctoral Fellow at Michigan State University
- Xiaoli Xiang, Ph.D. 2014, Sichuan Agricultural University, performed her dissertation research in my group from 2012 to 2014. Dissertation Title: "Coordination between methionine storage and cysteine and methionine biosynthesis in maize". Currently: Postdoctoral Fellow at the Institute of Biotechnology and Nuclear Technology, Sichuan Academy of Agricultural Sciences, Chengdu 610061, China
- Jiyeon Lee, Ph.D. 2010, Plant Biology Graduate Program. Dissertation Title: "Analysis of the enzymological properties of prolyl-tRNA synthetases in plants focusing on the misactivation of the proline analog azetidine-2-carboxylic acid" Currently: Associate Research Scholar at the University of Oklahoma Health Sciences Center
- Varinnia Gomes, M. Phil. 2009, Food Science Graduate Program, Thesis title: "The two domain structure of 5'-adenylylsulfate reductase from *Enteromorpha intestinalis* is a requirement for efficient APS reductase activity" Currently: Technical Services Manager at Cumberland Packing Corp.
- Andre' O. Hudson, Ph.D. 2006, Plant Biology Graduate Program. Dissertation title: "Lysine biosynthesis in *Arabidopsis thaliana*: The characterization of an *L,L*-diaminopimelate aminotransferase that defines a novel variant of the lysine biosynthesis pathway" Currently Professor at the Rochester Institute of Technology
- Minsang Lee, Ph.D. 2003. Plant Biology Graduate Program. Dissertation title: "The role of homoserine kinase and substrate availability on the regulation of methionine biosynthesis in *Arabidopsis thaliana*", Current Position: Regulatory Affairs Manager, Monsanto Corporation
- George Tsakraklides, M.S. 2002. Plant Biology Graduate Program. Thesis title: "Study of sulfate assimilation in *Arabidopsis thaliana* transgenic plants expressing the *Pseudomonas aeruginosa* homolog of APS reductase"

- Current position: Market Research and Insight Manager at Implicit research R&D
- Radhika Chalam, M.S. 2001, Plant Biology Graduate Program. Thesis title: "Molecular and biochemical approaches to study the methionine biosynthetic pathway in *Arabidopsis thaliana* L."
- Current position: Associate Scientist at Eli Lilly and Company
- Jungsup Kim, Ph.D. 2000. Plant Biology Graduate Program. Dissertation title: "The role of cystathionine gamma-synthase in regulation of methionine biosynthesis in transgenic *Arabidopsis thaliana* L. and *Solanum tuberosum* L" Current position: Professor Jeju National University
- Chwen-In Chang, M.S. 1999. Plant Biology Graduate Program. Thesis title: "Heat shock proteins in plants"
- Sangman Lee, Ph.D. 1999. Plant Biology Graduate Program. Thesis title: "Molecular analysis of sulfate assimilation in higher plants: effect of cysteine, sulfur, and nitrogen nutrients, heavy metal stress, and genomic DNA cloning" Current position: Associate Professor Kyungpook National University
- Carmen Rotte, M.S. 1998, Thesis title: "Subcellular localization of sulfur assimilation enzymes in *Arabidopsis thaliana* (L.) HEYNH." Current position: Press and Public Relations Officer Max Planck Institute for Biophysical Chemistry Goettingen
- Huisheng Wang, M.S. 1993. Plant Biology Graduate Program. Thesis title: Characterization of a chloroplast localized 70 kDa heat shock protein, CHsp70" Current position: Senior Scientist Celgene