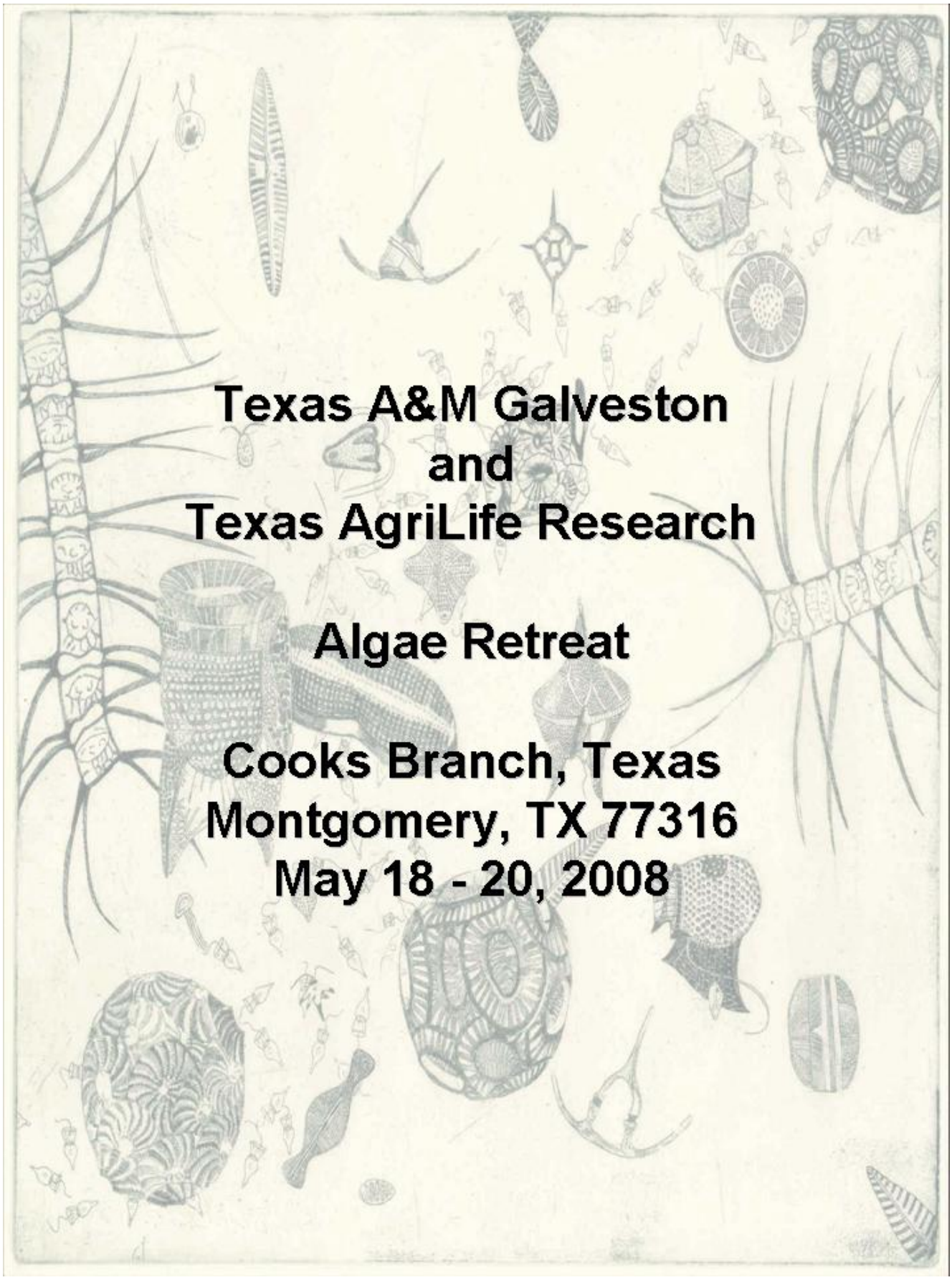

Texas A&M Galveston
and
Texas AgriLife Research
Algae Retreat
Cooks Branch, Texas
Montgomery, TX 77316
May 18 - 20, 2008

Texas A&M Galveston/ Texas AgriLife Research Algae Retreat
Cooks Branch, Texas
Montgomery, TX 77316
May 18 - 20, 2008

May 18, 2008

Greetings

Thank you for your interest in participating in the Texas Microalgae for Biofuels meeting. The meeting convenes May 18-20, 2008, at The Cook's Branch Conservancy in Montgomery, Texas. Drs. Antonietta Quigg, Bob Avant and William Seitz from Texas A&M University and Dr. Greg Mitchell of the Scripps Institution of Oceanography, are co-conveners.

We look forward to a productive meeting and to discussions of the current status of algae biofuel research at Scripps, Texas A&M System and General Atomics, and University of Texas, priorities for future research and development, opportunities for collaboration, and the steps needed to move forward. We hope to develop strategic partnerships for research, development, demonstration and commercialization of biofuels through the production of microalgae. We will discuss the technical and economical feasibility of producing biofuel and other industrial products as well as discuss the potential commercialization of these technologies.

Regards,
Antonietta Quigg, Bob Avant, William Seitz, and Greg Mitchell

Location and directions:
Cooks Branch
7720 FM 149, Montgomery, TX 77316 (see map on last page)

Kathy Hudson: cell phone 281-723-6812; Cook's Branch Office 936-449-9797
Greg Mitchell: cell phone 858-829-7842

From I-45 go west on FM 1488 to intersection with FM149. From Highway 290 go east on FM1488 to intersection with FM 149.

From intersection of FM 1488 and FM 149 go north on 149 about 4-5 miles parallel to RR track At Jackson Road/149 intersection turn right onto 149 across RR track. Continue about 1.5 mi on 149 from RR track to the entrance to 7720 Fm 149. There is a mail box with the address on it. Once on the property you will pass a normal gate, then a tall gate in a deer proof fence, continue about a mile to a fork in the property road. There will be a wooden sign in middle of the fork that indicates veer right to Fire Meadow Lodge or continue straight to The Pavilion. See below details to get to Lodge or Pavilion from this fork. Follow posted signs at turns.

Overnight Guests:
At fork in main road described above, take the right fork about a quarter mile to the Lodge. Instructions for your accommodations will be available in the main building at the Lodge.

For Guests attending meetings only (Monday or Tuesday)
The meetings will be held at the Pavilion. At fork in main road described above, continue straight less than a mile and cross a wooden bridge over Cook's Branch. Continue up hill ~200 yards and take first left. After about ¼ mile take left fork to the Pavilion.

Organizing Committee:
Antonietta Quigg, Assistant Professor, Texas A&M University at Galveston; (409) 740-4990 Office; (713) 614-1742 cell

Bob Avant, Director, Bioenergy Programs, Texas AgriLife Research; (512) 422-6171 cell

Bill Seitz, Regents Professor and Assoc. VP for Research, Texas A&M University at Galveston

Greg Mitchell, Professor, University of California, San Diego, Scripps Institution of Oceanography; (858) 534-2687 Office; (858) 829-7842 cell

Meeting Agenda - Outline

Sunday May 18
5pm Registration and accommodation assignment
6pm Dinner and social mixer - *keep it casual !!*

Monday May 19*
8-9am Breakfast
9am *Welcome and Introductions*
10.00am Coffee
10:30-12.30pm ***"Biology session"***

- *Introduction to using Algae for biofuels, current state of discussion on using photosynthetic organisms, Greg Mitchell*
- *Using bacteria for biofuels, genetic modification/engineering, Susan and Jim Golden*
- *Basic Review of Algal Culturing Techniques, Roy Lehman*
- *Scale- up of biofuel: Water, land, ecology and policy, Michael Webber*

12.30-1.30pm Lunch
1.30-3.30pm ***"Engineering session"***

- *What is the Pecos Project? Update and future directions; Shay Simpson*
- *Engineering Controls and Optimization for Microalgae Growth and Oil Production, Ron Lacey*
- *Electromechanical Algae Oil Extraction, Mike Werst*

3.30pm Coffee
4-5.30pm ***"Key Overviews"***

- *Challenges with terrestrial biofuels versus algae, Bob Avant*
- *Regulatory considerations for such facilities, Lance Robinson & Robert Adami*
- *Renewable feedstock for refining, Jim Gillingham*
- *GA Overview - algae perspectives. David Hazlebeck*

5.30 Discussion / Break outs

6.30pm Reception
7pm Dinner

*Each session will consistent of 3-4 talks, approximately 15-20 minutes each, followed by 30 minutes or so of discussion time

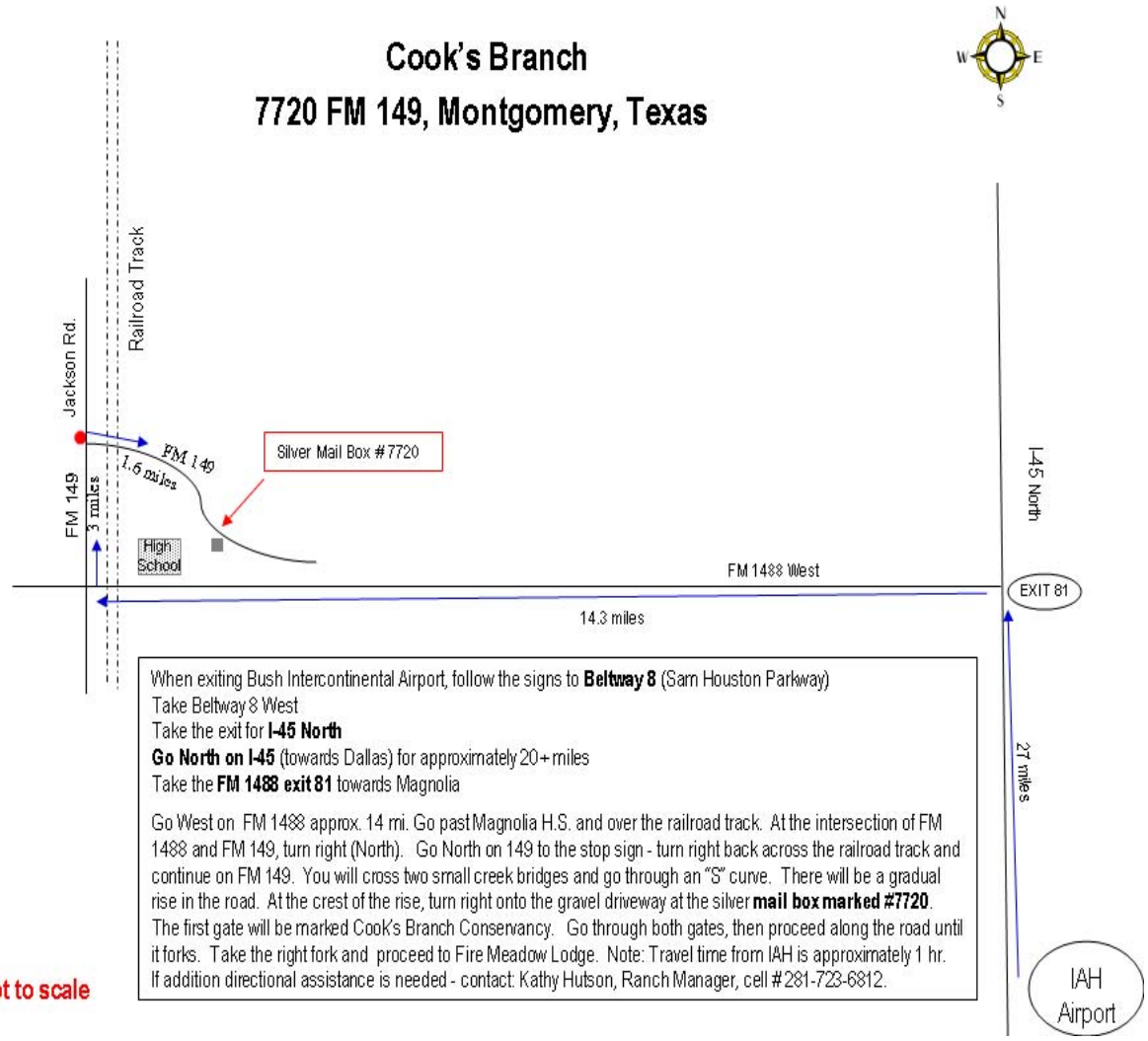
Tuesday May 20:
8-9am Breakfast
9am *Summary of key issues*
Biology, Engineering, integration
Discussion: A path forward to algal development and commercialization
10.30am Coffee
11-12.30pm *Coordination, Response to Future RFPs, etc…*
12.30-1.30pm Lunch

Participants (5/15/08)

Participant	Institution	Telephone	E-mail
Adami, Robert	TPWD- Aquaculture Inspection Program		
Avant, Robert	Texas AgriLife Research, Texas A&M University	512-422-6171 (cell)	bavant@tamu.edu
Baltensperger, David	Soil and Crop Sciences, Texas A&M University	979-845-3041	dbaltensperger@ag.tamu.edu
Bullock, Daniel	HARC	281- 364-6087	dbullock@harc.edu
Burow, Mark	Texas AgriLife Research, TAMU CS	806 746-6101	mburow@tamu.edu
Currie-Wood, Brett	Advanced Micro Devices	(512) 602-2425	brett.currie-wood@amd.com
Devarenne, Tim	Department of Biochemistry and Biophysics, TAMU CS	979 862-6509	tpd8@tamu.edu
Eddleman, Bobby	Texas A&M University Office of Technology Commercialization, TAMUS,	361-265-9201, ext. 204	b-eddleman@tamu.edu
Fajt, James	CS		jfajt@tamu.edu
Gillingham, James	Valero		Jim.Gillingham@valero.com
Golden, James	Department of Biology, TAMU CS	979 845-9823	jgolden@tamu.edu
Golden, Susan	Department of Biology, TAMU CS	979 845-9824	sgolden@tamu.edu
Hastings, Marilu	The Energy Foundation	415-561-6700	mhastings@mail.ef.org
Haut, Rich	HARC	281-364-6093 (office) 281-787-8768 (cell)	rhaut@harc.edu
Hazlebeck, David	General Atomics	858-455-4586	david.hazlebeck@gat.com
Hussey, Mark	Texas A & M University	979-845-7984	mhussey@tamu.edu
Lacey, Ron	Department of Biological and Agricultural Engineering, TAMU CS	979 845-7147	ron-lacey@tamu.edu
Lehman, Roy	TAMU Corpus Christi	361 825-5819	roy.lehman@tamucc.edu
Lester, Jim	HARC	281-364-6041	jlester@harc.edu

Participant	Institution	Telephone	E-mail
Loftin, R. Bowen	TAMUG	409-740-4403	loftin@tamug.edu
Mitchell, George	GPM, Inc.	713-377-5001	lbomke@mitchellfamilycorp.com
Mitchell, Greg	UCSD	858-534-8947	gmitchell@ucsd.edu
Patterson, C. O.	Department of Biology, TAMU CS	979 845-2187	cop@bio.tamu.edu
Quigg, Antonietta	TAMUG	409-740-4990	quigga@tamug.edu
Roberts, Adele	General Atomics	858-455-2517	adele.roberts@gat.com
Robinson, Lance	TPWD - Coastal Fisheries Division	281-534-0101	Lance.Robinson@tpwd.state.tx.us
Seitz, William	TAMUG	409-740-4406	seitzw@tamug.edu
Simpson, Shay	Texas AgriLife Research, TAMU CS	979 845-3659	shay-simpson@tamu.edu
Sui, Ruixiu	Dept of Biological and Agricultural Eng., TAMU CS	(979)845-7681	rsui@tamu.edu
Sullivan, Todd	Galveston Bay Biodiesel	713-888-0660	tsullivan@sullivaninterests.com
Thomasson, Alex	Dept of Biological and Agricultural Eng., TAMU CS		thomasson@tamu.edu
Umankant, Joshi	Galveston Bay Biodiesel	7132401036	jumakant@bioselectfuels.com
Vassilakis, Spiros	GPM, Inc.	713-377-5069	svassilakis@mitchellfamilycorp.com
Webber, Michael	University of Texas	(512) 475-6867	webber@mail.utexas.edu
Werst, Mike	University of Texas at Austin	(512) 232-1604	m.werst@mail.utexas.edu
White, John	Standard Renewable Energy Group, LLC	713-888-0660	jwhite@sreg-llc.com
Wu, Xiaoxi	General Atomics	858-455-4131	xiaoxi.wu@gat.com
York, Rob	Galveston Bay Biodiesel	281 768 4853	ryork@bioselectfuels.com

Cook's Branch
7720 FM 149, Montgomery, Texas



When exiting Bush Intercontinental Airport, follow the signs to **Beltway 8** (Sam Houston Parkway)
Take Beltway 8 West
Take the exit for **I-45 North**
Go North on I-45 (towards Dallas) for approximately 20+ miles
Take the **FM 1488 exit 81** towards Magnolia

Go West on FM 1488 approx. 14 mi. Go past Magnolia H.S. and over the railroad track. At the intersection of FM 1488 and FM 149, turn right (North). Go North on 149 to the stop sign - turn right back across the railroad track and continue on FM 149. You will cross two small creek bridges and go through an "S" curve. There will be a gradual rise in the road. At the crest of the rise, turn right onto the gravel driveway at the silver **mail box marked #7720**. The first gate will be marked Cook's Branch Conservancy. Go through both gates, then proceed along the road until it forks. Take the right fork and proceed to Fire Meadow Lodge. Note: Travel time from IAH is approximately 1 hr. If addition directional assistance is needed - contact: Kathy Hutson, Ranch Manager, cell # 281-723-6812.

Map not to scale

Curriculum vita
provided
by participants

Alphabetical order

BIOGRAPHICAL INFORMATION

Robert V. Avant, Jr., P.E. (Bob)

(2008)

Education:

M.S. Agricultural Engineering, 1976 Texas A&M University

B.S. Agricultural Engineering, 1975 Texas A&M University

Pflugerville High School, Pflugerville, Texas 1968

Experience:

Registered Professional Engineer licensed to practice in Texas.

31 years of public and private sector experience including:

- Bioenergy research management
- Agricultural production logistics
- Food, fiber, and oilseed research management
- Agricultural air quality engineering
- Environmental site selection and evaluation
- Environmental systems design
- Biomass and wind energy research management

Currently serves as Bioenergy Program Director at Texas AgriLife Research a part of the Texas A&M University System.

Professional Activities:

- American Society of Biological and Agricultural Engineers (ASABE) (1972-Present) Numerous offices
- World Wide Ag Team Participant, John Deere Waterloo Works (1997)
- Cotton Incorporated Texas State Support Committee Advisor (1998-Present)
- Texas Agricultural Forum Steering Committee (1998-2006)
- Texas Agriculture Council (1998-2005)
- Texas A&M College of Agriculture Development Council (1998-Present)
- USDA Agricultural Air Quality Task Force (2001–Present)
- USEPA Clean Air Act Advisory Committee (2001–2008)
- President, Williamson County Farm Bureau
- Star of Texas Fair and Rodeo Board of Directors and Past President

Honors:

- Member of 8 academic honor societies in science, agriculture, and engineering
- Distinguished Graduate Student, Texas A&M University (1976)
- Texas' Agricultural Engineer of the Year (1989)
- Government Service Award from Professional Ag. Workers (2003)
- Distinguished Alumnus, Texas A&M College of Agriculture and Life Sciences (2005)
- Special Service Award, American Society of Agricultural and Biological Engineers, Texas Section (2006)

Military:

Served in U.S. Air Force from 1968 to 1972 with tours in Texas, Turkey, Germany, and Virginia.

David D. Baltensperger

CURRENT TITLE:

Professor, Head of Soil and Crop Sciences Department, Texas A&M University

DEGREES:

• B.S., Biology, Nebraska Wesleyan University, 1976
• M.S., Agronomy, University of Nebraska, 1978
• Ph.D., Agronomy, New Mexico State University, 1981

RESEARCH INTERESTS:

Previously, directed proso millet variety improvement program. Developed alternative crops and cooperated with other breeders in evaluating the adaptability of new germplasm to the Panhandle. Supervised High Plans Ag Lab and encouraged utilization for research.

EXTENSION INTERESTS:

Coordinated and directed variety testing program for Panhandle crops and disseminated information on cultural practices for Panhandle crops. Supervised High Plans Ag Lab coordinating field days and public relations.

MAJOR PROJECT ACTIVITIES:

Incorporated food quality traits into proso millet. Develop grass seed production technology for the region. Developed white wheats, irrigated wheats and spring wheats for the region. Developed improved sunflower, foxtail millet and prosomillet cultivars. Developed other adapted alternative crops including amaranth and canola. Developed crops for biofuels such as brown mustard, camalina and canola for biodiesel.

SELECTED PUBLICATIONS:

Book Chapters:

• Baltensperger, D. D. 2002. Progress with proso, pearl and other millets. p.100-103. In: J. Janick and A Whipkey (ed.). Trends in New Crops and New Uses. Proc. New Crops and New Uses Strength in Diversity, 5th. Atlanta, GA. ASHS Press, Alexandria VA.

Journals:

• Vogel, K. P., D. Tober, P. E. Reece, D. D. Baltensperger, G. Schuman, and R. A. Nicholson. 2005. Registration of 'NU-ARS AC2' Crested Wheatgrass. Crop Sci. 45(1):416-417. Univ. of Nebraska Agr. Res. Div. J. Series No. 14498.
• Vogel, K. P., D. Tober, P. E. Reece, D. D. Baltensperger, G. Schuman, and R. A. Nicholson. 2005. Registration of 'Haymaker' Intermediate Wheatgrass. Crop Sci. 45(1):415-416. Univ. of Nebraska Agr. Res. Div. J. Series No. 14497.
• Vogel, K. P., P. E. Reece, D. D. Baltensperger, G. Schuman, and R. A. Nicholson. 2005. Registration of 'Beefmaker' Intermediate Wheatgrass. Crop Sci. 45(1):414-415. Univ. of Nebraska Agr. Res. Div. J. Series No. 14499.
• Krall, J. M., S. M. Ali, D. D. Baltensperger, J. Nachtman, and R. Hybner. 2004. Registration of 'Forager' Pea. Crop Sci. 44(6):2271. Univ. of Nebraska Agr. Res. Div. J. Series No. 14429.
• Siles, M.M., W.K. Rusell, D.D. Baltensperger, L.A. Nelson, B. Johnson, L. D. Van Vleck, S. G. Jensen, and G. Hein. 2004. Heterosis for Grain Yield and Other Agronomic Traits in Foxtail Millet. Crop Sci. 44:1960-1965. Univ. of Nebraska Agr. Res. Div. J. Series No. 14005.
• Baltensperger, D. D., G. E. Frickel, L. A. Nelson, J. M. Krall, M. Vigil, J. Hain, J. Johnson, C. Stymiest, J. R. Rickertsen. 2004. Registration of 'Horizon' Proso Millet. Crop Sci. 44:688-689.
• Rife, C. L., D. L. Auld, H. C. Minor, W. F. Heer, D. D. Baltensperger, L. A. Nelson and D. Bordovsky. 2003. Registration of 'Abilene' Rapeseed. Crop Sci. 43:2306-2307.

• Guillen-Portal, F. R., W. K. Russell, D. D. Baltensperger, K. M. Eskridge, N. E. D=Croz-Mason, and L. A. Nelson. 2003. Best Types of Maize Hybrids for the Western High Plains of the USA. Crop Sci. 43:2065-2070.
• Nielsen, E. L., D. D. Baltensperger, E. D. Kerr, and C. L. Rife. 2003. Host Suitability of Rapeseed for *Heterodera schachtii*. J. Nematology 35(1):35- 38.
• Baenziger, P. S., B. Moreno-Sevilla, R. A. Graybosch, J. M. Krall, M. J. Shipman, R. W. Elmore, R. N. Klein, D. D. Baltensperger, L. A. Nelson, D. V. McVey, J. E. Watkins, and J. H. Hatchett. 2002. Registration of 'Wahoo' Wheat. Crop Sci. 42:1752-1753.
• Eghball, B., J. E. Gilley, D. D. Baltensperger, and J. M. Blumenthal. 2002. Long-Term Manure and Fertilizer Application Effects on Phosphorus and Nitrogen in Runoff. Trans. of the ASAE 45(3):687-694.
• Guillen-Portal, F. R., D. D. Baltensperger, L. A. Nelson, G. Frickel. 2001. Assessment of Hard Red Winter Wheat F2 and F3 hybrids for the Nebraska Panhandle. Communications in Soil Science and Plant Analysis 33(5&6):963-972.
• M. M. Siles, D. D. Baltensperger, L. A. Nelson, A. Marcon, and G. E. Frickel. 2001. Registration of Five Genetic Marker Stocks for Foxtail Millet. Crop Sci. 41(6):2011-2012.
• M.M. Siles, D.D. Baltensperger, L.A. Nelson. 2001. Technique for Artificial Hybridization of Foxtail Millet [*Setaria italica (L.) Beauv*.]. Crop Sci. 41(5):1408-1412.
• Agdag, M, L Nelson, D. Baltensperger, D. Lyon, S. Kachman. 2000. Row spacing Affects Grain Yield and Other Agronomic Characters of Proso Millet. Communications in Soil Science and Plant Analysis 32(13 & 14):2021-2032.
• Lyon, D. J., D. D. Baltensperger, and M. Siles. 2001. Wheat Grain and Forage Yields are Affected by Planting and Harvest Dates in the Central Great Plains. Crop Sci. 41:488-492.
• Shanahan, J., B. Schatz, D. Baltensperger, J. Sooby, and S. Kachman. 2000. Use of Shoot Reduction Treatments as a Means of Simulating Hail Injury to Proso Millet. Communications in Soil Science and Plant Analysis 31(17-18):2843-2854.
• Daugovish, O., D. J. Lyon, D. D. Baltensperger. 1999. Cropping Systems to Control Winter Annual Grasses in Winter Wheat (*Triticum aestivum*). Weed Tech 13:120-126.
• Guillen-Portal, F. R., D. D. Baltensperger, L. A. Nelson. 1999. Plant Population Influence on Yield and Agronomic Traits in 'Plainsman' Grain Amaranth. In: Perspectives on New Crops and New Uses. Ed. J. Janick. pp. 190-191.
• Baltensperger, D. D., L. A. Nelson, G. E. Frickel, and R. L. Anderson. 1997. Registration of 'Sunrise' Proso Millet. Crop Sci. 37:1380.

Other Publications:

• Baltensperger, D.D., D.J. Lyon, P.A. Burgener, G.L. Hein, R.M. Harveson, C.D. Yonts, J.F. Margheim, G.E. Frickel, and G.J. Foster. 2004. Brown Mustard Production. EC04-183a.
• Weichenthal, B.A., D.D. Baltensperger, K.P. Vogel, S.D. Masterson, J.M. Blumenthal and J.M. Krall. 2003. Annual Forages for the Nebraska Panhandle. NebGuide G03-1527-A.
• Margheim, J.F., D.D. Baltensperger, J.T. Cecil, R.C. Shearman, D.C. Laursen, A.P. Merrigan, J.M. Krall, C.D. Yonts, R.G. Wilson, S.D. Knox, J.E. Watkins and G.L. Hein. 2003. Kentucky Bluegrass Seed Production in Western Nebraska and Eastern Wyoming. EC 03-180.
• Fenster, C. R. and D. D. Baltensperger. 2003. Breaking the Ground The Evolution of Farming in the Panhandle of Nebraska Through 2002. RB344.

Biographical Sketch

THOMAS S. BIANCHI

Thomas Stephen Bianchi
Dept. of Oceanography
Texas A&M University
College Station, TX 77843-3146

Born: November 24, 1956
Richmond Hill, New York

A. PROFESSIONAL PREPARATION

1978	B.A.	(Biology)	Dowling College, Oakdale, N.Y.
1981	M.S.	(Marine Ecology)	S.U.N.Y at Stony Brook, NY.
1987	Ph.D	(Marine Science)	University of Maryland, CBL
1988-1990	Postdoctoral Fellow		IES, Millbrook, NY

B. APPOINTMENTS

1990-1994	Assistant Professor, Department of Biology, Lamar University, Beaumont, Texas.
1994-1998	Assistant Professor, Ecology, Evolution, and Organismal Biology Dept., Tulane University, New Orleans, Louisiana.
1998-2001	Associate Professor, Institute for Earth and Ecosystem Sciences, Dept. of EE Biology, Tulane University, New Orleans, Louisiana.
2002-2005	Professor, Dept. of Earth and Environmental Sciences, Tulane University, New Orleans, Louisiana
2006-present	Professor, Dept. of Oceanography, Texas A&M University, College Station, Texas

C. HONORS & AWARDS

1993	Fulbright Research Scholarship, U.S/Cyprus.
1994	Visiting Scientist Award, Stockholm University, Sweden.
1994	Lamar University Excellence in Research Award.
1994	Lamar University Excellence in Teaching Award.
1998	Mortar Board Excellence in Teaching at Tulane University
2000	Fulbright Research Scholarship, U.S./Sweden
2003	Marcus Wallenberg Foundation Symposium on Organic Geochemistry, The Royal Swedish Academy of Sciences, Stockholm, Sweden (invited plenary speaker)
2006	University of South Florida, St. Petersburg, FL, invited in the Eminent Scholar Lecture Series in Marine Sciences
2007	William Evans Fellowship, Research Scholar, Otago University, New Zealand

D. SELECTED PUBLICATIONS (Total 91)

Five Relevant:

Bianchi., T.S., Galler, J.J., and M.A. Allison. 2007. Hydrodynamic sorting and transport of terrestrially-derived organic carbon in sediments of the Mississippi and Atchafalaya Rivers. Estuar. Coastal Shelf Sci. 73: 211-222.

Bianchi, T.S., L.A. Wysocki, M. Stewart, T.R. Filley, and B.A. McKee. 2007. Temporal variability in terrestrially-derived sources of particulate organic carbon in the lower Mississippi River. Geochim. Cosmochim. Acta. 71: 4425-4437.

Bianchi, T.S., T. Sampere., M. Allison, E. A. Canuel, B.A. McKee, S. Wakeham, and B. Waterson. 2006. Rapid Export of Organic Matter to the Mississippi Canyon. EOS 87 (50): 565, 572-573.

Bianchi, T.S., Filley, T, Dria, K., and P. Hatcher. 2004. Temporal variability in sources of dissolved organic carbon in the lower Mississippi River. Geochim. Cosmochim. Acta 68: 959 – 967.

Bianchi, T.S., S. Mitra, and B. McKee. 2002. Sources of terrestrially-derived carbon in the Lower Mississippi River

and Louisiana shelf: Implications for differential sedimentation and transport at the coastal margin. Mar. Chem. 77: 211-223.

Five Other:

Allison, M. A., T. S. Bianchi, B. A. McKee, and T. P. Sampere. 2007. Carbon burial on river-dominated continental shelves: Impact of historical changes in sediment loading adjacent to the Mississippi River, Geophys. Res. Lett., 34, L01606, doi:10.1029/2006GL028362.

Shiller, A.M., S. Duan, P. van Erp, and T.S. Bianchi. 2006. Photo-oxidation of dissolved organic matter in river water and its effect on trace element speciation. Limnol. Oceanogr. 51: 1716-1728.

Wysocki, L.A, T.S. Bianchi., R. Powell and N. Reuss. 2006. Spatial variability in the coupling of organic carbon, nutrients, and phytoplankton pigments in surface waters and sediments of the Mississippi River plume. Estuar. Coastal Shelf Sci. 69: 47-63.

Duan, S., and T.S. Bianchi. 2006. Seasonal changes in the abundance and composition of plant pigments in particulate organic carbon in the lower Mississippi and Pearl Rivers (USA) Estuaries: 29: 427-442.

Green, R., T.S. Bianchi., and M. Dagg. 2006. An organic carbon budget for the Mississippi River turbidity Plume and plume contributions to air-sea CO_2 fluxes and bottom water hypoxia. Estuaries 29: 579-597.

E. SYNERGISTIC AND EDUCATIONAL ACTIVITIES

Panelist for: NOAA/EPA, Coastal Intensive Sampling Network (CISNET) - June, 1998
National Science Foundation, Chemical Oceanography - November, 1998; National Science Foundation, Chemical Oceanography - May, 1999; National Science Foundation, Chemical Oceanography – November, 1999; *Editorial Boards:* Associate Editor, Estuaries - 1998 – present; Advisory Board, Journal of Marine and Freshwater Research - 1998 – present. *Graduate Students:* 6 completed M.S. students; 4 completed Ph.D students; currently: 4 Ph.D students.

F. COLLABORATORS and OTHER AFFILIATIONS (past 48 months)

CURRENT COLLABORATORS: Ragnar Elmgren, Stockholm University; Alan Shiller, Univ. of Southern Mississippi; Patrick Hatcher, Ohio State Univ.; Tim Filley , Purdue Univ.; Liz Canuel, William and Mary - (VIMS)

GRADUATE ADVISORS: Jeffrey S. Levinton (M.S); Donald L. Rice (Ph.D)

CURRICULUM VITAE

MARK DAVID BUROW

Texas AgriLife Research and Extension Center (75%) Texas Tech University (25%)
Texas A&M System Dept. of Plant and Soil Sciences
1102 East FM 1294 15th and Detroit
Lubbock, TX 79403 Lubbock, TX 79409
phone: (806)-746-6101
FAX: (806)-746-6528
email: mburow@tamu.edu

EDUCATION

Ph.D., University of Wisconsin-Madison. 1990. Plant Breeding/ Plant Genetics, Biochemistry.
B.A., St. Olaf College, Northfield MN. 1981. Chemistry, Development in Latin America.

PROFESSIONAL EXPERIENCE

Associate Professor - Peanut Breeding and Genetics, Dept. of Soil and Crop Science, Texas A&M Univ. (75%), Dept. of Plant and Soil Sci., Texas Tech Univ. (25%), Sep. 2007- present.
Assistant Professor - Peanut Breeding and Genetics, Dept. of Soil and Crop Science, Texas A&M Univ. (75%), Dept. of Plant and Soil Sci., Texas Tech Univ. (25%), Feb. 2001- Aug. 2007. Duties: develop new peanut varieties and study genetics of peanut. Varietal improvement includes edible seed quality, high-oleic oil composition, development of peanut for biodiesel, resistance to disease and abiotic stress, and development of molecular markers for breeding.
Assistant Research Scientist, University of Georgia, Jan. 1999 - Jan. 2001.
Postdoctoral research associate, Texas A&M University, Feb. 1994 - Dec. 1998.
Postdoctoral research associate, Louisiana State University. Feb. 1991 -Dec. 1993. Growth of the green alga *Chlamydomonas reinhardtii* under high-CO and low-CO atmospheres, and identification of genes induced upon transfer to CO -limiting conditions.
Postdoctoral research associate, Louisiana State University. Mar. 1989 -Dec. 1990.
Graduate student, University of Wisconsin. Sep. 1982 - Jan. 1990.
Undergraduate student, St. Olaf College, Northfield, Minnesota. Sep. 1977-May 1981.

PROFESSIONAL ACTIVITIES

Publications relating to algae:

Burow, M. D., Chen, Z., Mouton, T., and J. V. Moroney. (1996) Isolation of cDNA clones induced upon transfer of *Chlamydomonas reinhardtii* cells to low CO_2. *Plant Mol. Biol.* 31: 443-448.

Chen, Z., Burow, M. D., Mason, C., and J. V. Moroney. (1996) A low CO_2 -inducible gene encoding alanine: "-ketoglutarate aminotransferase in *Chlamydomonas reinhardtii*. *Plant Physiol*. 112: 677-684.

Chen, Z.-Y., M. D. Burow, and J. V. Moroney. (1995) Characterization of genes induced by low CO in *Chlamydomonas reinhardtii*. in Mathis, P. (ed.) *Photosynthesis: from light to biosphere*. Vol. 5. Dordrecht: Kluwer Academic Publishers. pp 619-622.

Recent publications:

Burow, M. D., M. Gomez S., H. Upadhyaya, P. Ozias-Akins, B. Guo, D. J. Bertioli, S. C. de Macedo Leal-Bertioli, M. de Carvalho Moretzsohn, and P. Messenberg Guimarães. (2008) Genomics of Peanut, a Major Source of Oil and Protein. *in Genomics of Tropical Crop Plants*, P. H. Moore and R. Ming (eds.) Springer-Verlag.

Burow, M. D., C. E. Simpson, M. W. Faries, J. L. Starr, and A. H. Paterson. (accepted, pending revision) Molecular biogeographic study of recently-described B-genome *Arachis* species, also providing new insights into the origins of cultivated peanut. *Genome*.

Gomez, S. M., N. N. Denwar, T. Ramasubramanian, C. E. Simpson, G. Burow, J. J. Burke, N. Puppala,

and M. D. Burow. (in press) Identification of Peanut Hybrids Using Microsatellite Markers and Horizontal Polyacrylamide Gel Electrophoresis. *Peanut Sci*.
Kottapalli, K. R., R. Rakwal, G. K. Agrawal, J. Shibato, M. Burow, P. Payton, and N. Puppala (in press) Proteomic analysis in mature seed of four peanut cultivars using two-dimensional gel electrophoresis reveals distinct differential expression of storage, antinutritive, and allergen proteins. *Plant Sci.*
López, Y., M. D. Burow, J. L. Ayers, M. R. Baring, and C. E. Simpson. (2007) TxAG-8 Peanut Germplasm. *J. Plant Registr.* 1: 150.
Kottapalli, K. R., M. D. Burow, G. Burow, J. Burke, and N. Puppala. (2007) Molecular Characterization of the U. S. Peanut Mini Core Collection using Microsatellite Markers. *Crop Sci.* 47: 1718-1727.
Baring, M. R., Y. Lopez, C.E. Simpson, M.C. Black, J. C. Cason, J. Ayers, and M. D. Burow (2006) Registration of 'Tamnut OL06' Peanut. *Crop Sci.* 46: 2720-2721.
Baring, M. R., C.E. Simpson, M. D. Burow, M.C. Black, J. C. Cason, J. Ayers, and Y. Lopez. (2006) Registration of 'Tamrun OL07' Runner Peanut. *Crop Sci.* 46: 2721-2722.
Muitia, A., Y. López, J. L. Starr, A. M. Schubert, and M. D. Burow. (2006) Introduction of Resistance to Root-knot Nematode (*Meloidogyne arenaria* Neal (Chitwood)) into High-Oleic Peanut. *Peanut Sci.* 33: 97-103.
Jesubatham, A. M., and M. D. Burow. (2006) PeanutMap: An Online Genome Database for Comparative Molecular Maps of Peanut. *BMC Bioinformatics* 7: 375.

PROFESSIONAL MEMBERSHIPS
American Association for the Advancement of Science, American Peanut Research and Education Society, Crop Science Society of America

COMMITTEES
American Peanut Research and Education Society: Chair, Peanut Quality Committee, Jul. 2002 - 2004; Fellows Committee, 2005 - 2007; Crop Germplasm Committee, Jul. 2001 - present; Associate Editor, *Peanut Science*, Jul. 2001 - present
Peanut Collaborative Research Support Program, Jul. 2001 - present.
Legume Crop Genome Initiative - Representative for Peanut, Jul. 2001 - present.
Legume Information System, Peanut representative, 2005-present
Peanut Genome Initiative, Steering Committee Member, 2004 - present
Texas Tech Univ., Genetics Teaching Committee, 2006 - present.

TEACHING
Courses taught:
Plant and Soil Science 6424, Plant Genetics and Genomics, Texas Tech University.
Plant and Soil Science 3421, Introduction to Genetics, Texas Tech University.
Graduate student major advisor:
PhD students: Nicholas Denwar (in progress, TTU)
MS students: Amade Muitia (grad TTU 2005), Jennifer Wallace (grad TTU 2005), Jamie Ayers (in progress, TTU), Vikas Belamkar (in progress, TTU)
Thesis committee member:
PhD students: Ram Shrestha (in progress, TTU), Jeffrey Wilson (TAMU, begin June 2008)
MS students: Heejeong Yang (TAMU, 2004), Jeffrey Wilson (TTU, 2008), Meenakshi Mittal (in progress)
Postdocs and Visiting Scientists
Yolanda Lopez (2002-2006), Michael Gomez Selvaraj (2006 - present); Izhack and Israela Wallerstein, Volcani Institute (2004-2005); Narayana Manivannan, Tamil Nadu Agricultural University (2007)

Biographical Sketch

Timothy P. Devarenne

Professional Preparation:

Michigan Technological University	General Biology	BS, 1991
	Plant Physiology	MS, 1993
University of Kentucky	Plant Phys./Biochem./Mol. Biol.	PhD, 2000
Boyce Thompson Institute	Plant Mol. Biol.	Postdoctoral, 2001-06

Field: - Regulation of protein kinases involved in the control of plant cell death and plant-pathogen interactions.

- Molecular biology and biochemistry behind algal biofuel biosynthesis in *Botryococcus braunii*.

Appointments:

2006 – present	Assistant Professor, Department of Biochemistry and Biophysics, Texas A&M University
2007	Visiting Scientist, Laboratory of Marine Biochemistry, Graduate School of Agriculture and Life Sciences, The University of Tokyo
2001 – 2006	Postdoctoral Fellow, Boyce Thompson Institute for Plant Research
2000	Visiting Scientist, Laboratory of Marine Biochemistry, Graduate School of Agriculture and Life Sciences, The University of Tokyo
1995 – 2000	Graduate Research Assistant, Agronomy Department, University of Kentucky
1994 – 1995	Research Technician, Department of Biological Sciences, DePaul University
1993 – 1994	Research Technician, Department of Biological Sciences, Michigan Technological University
1991 – 1993	Graduate Research Assistant, Department of Biological Sciences, Michigan Technological University
1991	Summer Internship, CIBA-GEIGY (now Syngenta), Research Triangle Park, North Carolina
1990	Summer Internship, CIBA-GEIGY (now Syngenta), Research Triangle Park, North Carolina
1988 – 1991	Undergraduate Student Researcher, Department of Biological Sciences, Michigan Technological University

Publications:

1. Devarenne TP and Martin GB (2007) Manipulation of Plant Programmed Cell Death Pathways During Plant-Pathogen Interactions. *Plant Sig & Behav.* 2:188-190.
2. Devarenne TP, Ekengren SK, Pedley KF, Martin GB (2006) Adi3 is a Pdk1-interacting AGC kinase that negatively regulates plant cell death. *EMBO J.* 25, 255-265.
3. Okada S, Devarenne TP, Murakami M, Abe H, Chappell J (2004) Characterization of botryococcene synthase enzyme activity, a squalene synthase-like activity from the green microalgae *Botryococcus braunii*, race B. *Arch. Biochem. Biophys.* 422:110-118.
4. Devarenne TP, Ghosh A, Chappell J (2002) Regulation of tobacco squalene synthase; a key enzyme in sterol biosynthesis. *Plant Physiol*. 129:1095-1106.
5. Okada S, Devarenne TP, Chappell J (2000) Molecular characterization of squalene synthase from the green microalgae *Botryococcus braunii*, race B. *Arch. Biochem. Biophys.* 373:307-317.
6. Thai L, Rush JS, Maul JE, Devarenne TP, Rodgers DL, Chappell J, Waechter CJ (1999) Farnesol is utilized for isoprenoid biosynthesis in plant cells *via* farnesyl diphosphate formed by successive monophosphorylation reactions. *Proc. Natl. Acad. Sci. USA* 96:13080-13085.
7. Devarenne TP, Shin DH, Back K, Yin S, Chappell J (1998) Molecular characterization of tobacco squalene synthase and regulation in response to fungal elicitor. *Arch. Biochem. Biophys*. 349:205-215.

8. Dean JV, Devarenne TP (1997) Peroxidase-mediated conjugation of glutathione to unsaturated phenylpropanoids. Evidence against glutathione S-transferase involvement. *Physiol. Plant*. 99:271-278.
9. Dean JV, Devarenne TP, Lee I-S, Orlofsky LE (1995) Properties of a Maize glutathione S-transferase that conjugates coumaric acid and other phenylpropanoids. *Plant Physiol*. 108:985-994.
10. Devarenne TP, Michael BS, Adler JH (1995) Biosynthesis of ecdysteroids in *Zea mays*. *Phytochem*. 40:1125-1131.

Professional Development/Involvement:

Article reviewer for: *Plant Physiology, Plant Cell, The Plant Journal, Journal of Biological Chemistry, Archives of Biochemistry and Biophysics, Molecular Biology of the Cell, FEMS Microbiology Letters, Journal of Phycology, Molecular Nutrition and Food Research*.

Grant Proposal Reviewer for: USDA-NRI Plant Genetic Mechanisms, Kentucky Science & Engineering Foundation, Natural Sciences and Engineering Research Council of Canada, Netherlands Organization for Scientific Research, United States-Israel Binational Science Foundation

Member of American Society of Plant Biologists (ASPB)

Departmental Activities:

Biochemistry and Biophysics Seminar Chairman

TAMU Biochemistry Graduate Association Faculty Advisor

Invited Talks:

Lost Pines Molecular Biology Conference, University of Texas M.D. Anderson Cancer Center Science Park, Smithville, TX, November, 2007.

Laboratory of Marine Biochemistry, Tokyo University, Tokyo Japan, May, 2007.

Plant Immunity Research Group, RIKEN Plant Science Center, RIKEN Yokohama Institute, Yokohama Japan, May, 2007.

Plant Pathology Department Seminar Series, Texas A&M University, April, 2007.

Plant Interactions with Pests and Pathogens Workshop, Plant & Animal Genome XV Conference, San Diego, CA, January, 2007.

Intracellular Signaling Minisymposium, Plant Biology 2006, ASPB annual meeting, Boston, MA, August, 2006.

Canisius College, Buffalo, NY, Biology Department graduate student seminar series, February, 2005.

2004 Plant Protein Phosphorylation Workshop, Snowbird, Utah, October, 2004.

Plant Defense Signaling Minisymposium, Plant Biology 2004, ASPB annual meeting, Orlando, FL, July, 2004.

Bobby R. Eddleman, PhD

Professor and Resident Director of Research
Texas AgriLife Research and Extension Center at Corpus Christi

EDUCATION:
B.S., Texas Tech University, 1959; M.S., Ph.D., North Carolina State University, 1962, 1966

PROFESSIONAL AND ACADEMIC APPOINTMENTS:
Assistant Professor, Texas A&M University, College Station, TX, 1964-66
Assistant Professor to Professor, University of Florida, Gainesville, FL, 1966-75
Director, Center for Rural Development, University of Florida, Gainesville, FL, 1973-75
Professor, Mississippi State University, Starkville, MS, 1975-86
Director, National/Regional Research Planning, Budget and Analysis, SAES, USDA, 1979-84
Professor & Resident Director, AgriLife Research and Extension Center, Corpus Christi, 1986-

RESEARCH EXPERTISE:

Expertise in economics of agricultural production systems; societal benefits from agricultural research; technological advance and structural change in agriculture; impact assessment of agricultural technology and policy; and non-point source pollution from agricultural cropland water runoff.

Administer Texas AgriLife Research programs at four locations in south Texas. Scope of the research includes cropping systems for agronomic crops (cotton, sorghum, corn, oilseeds, biofuels, and grasses), beef cattle reproduction/production, reproduction in the mare, forage production systems and native plants for livestock and wildlife, shrimp mariculture, sea urchins for human health and ecotoxicological research, and water quality from agricultural runoff.

CURRENT GRANT SUPPORT: (Lifetime Total 40; Value $6,100,000+, limited selection)

Behmann Brothers Foundation, Corpus Christi, TX, 1986-2008. “Alternative Systems for Producing Cotton, Corn, Grain Sorghum, Beef and Shrimp in the Coastal Bend”. $880,000.

EPA, TCEQ, TSSWCB, CBBEP, King Ranch, Inc., 1995- 2008. “Management Systems for Enhanced Water Quality from Agricultural Runoff”. $1,095,000.

University of Southern Mississippi, Gulf Coast Laboratory, USDA Consortium. 1988-2008. “U.S. Marine Shrimp Farming Program Consortium for Development of Shrimp Farming Systems for the Gulf Coast and South Atlantic Coast Regions”. $3,825,000.

RECENT PUBLICATIONS (Lifetime Total 145):
Refereed Journals:
J. D. Atwood, B. A. McCarl, Chi-Chung Chen, B. R. Eddleman, B. Nayada and R. Srinivasan. 2000. “Assessing Regional Impacts of Change: Linking economic and Environmental Models”. Elsevier Science, Agricultural Systems 63 (2000) 147-159.
AgriLife Research Bulletins/Reports:

B. R. Eddleman, B. A. McCarl and C.C. Chen. 1997. "Economic Benefits of Crop Variety Improvements in Texas". Annual Report of the IMPACT Assessment Team to the Vice-Chancellor, Agriculture Program, Texas A&M University System, College Station, TX.

B. R. Eddleman, B.A. McCarl and C. C. Chen. 1997. "Economic Benefits of LEPA Technology". Annual Report of the IMPACT Assessment Team to the Vice-Chancellor, Agriculture Program, Texas A&M University System, College Station, TX.

B. R. Eddleman, and U. Schneider. 1998. "Science and Technology in Texas Agriculture". Annual Report of the IMPACT Assessment Team to the Vice-Chancellor, Agriculture Program, Texas A&M University System, College Station, TX.

B. R. Eddleman, C. C. Chen and B. A. McCarl. 2000. "Economic Benefits from Dairy Technology Improvements and Technology Transfer by ILRI in Kenya". Impact Methods to Predict and Assess Contributions of Technology, N. P. Clarke (ed.), USAID Global Bureau Report, Washington, DC.

C. C. Chen, B. R. Eddleman, B. A. McCarl and J. Vitale. 2000. "Economic Impact of Improved Sorghum and Pearl Millet Technology and Alteration of Risk Aversion in Mali". Impact Methods to Predict and Assess Contribution of Technology, N. P. Clarke (ed.), USAID Global Bureau Report, Washington, DC.

B. R. Eddleman, C. C. Chen, B. A. McCarl, J. Angerer, J. Stuth, J. Corbet, P. Dyke and R. Kaitho. 2001. "Policy and Technology Options for Dairy Systems in East Africa to Meet Future Food Security and Economic Growth Goals: Economic and Environmental Assessment". Science and Technology for African Agriculture in the 21st Century: Towards a Regional Strategy for R&D and Technology Systems Options, Document No.S2, Special Program for African Agricultural Research, Forum for Agricultural Research in Africa. April. Addis Ababa. Ethiopia.

D. Ockerman and B. R. Eddleman. 2001. "Hydrologic Conditions and Water Quality in an Agricultural Area in Kleberg and Nueces Counties, Texas 1996-1998". U.S. Department of Interior, U.S. Geological Survey, Water-Resources Investigations Report 01- 4101, Austin, TX.

B. R. Eddleman and D. Gillig. 2002. "Forty Years of Progress in Texas Agriculture Through Science and Technology". Texas Agricultural Experiment Station, Texas A&M University System, College Station, TX.

B. R. Eddleman. 2003. "Reaping the Benefits of University Agricultural Research: An Economic Analysis". Texas Agricultural Experiment Station, Texas A&M University System, College Station, TX.

Trade Industry/Agency Reports:

B. R. Eddleman, C. Livingston, and W. B. Prince. 1999. "Analysis of Runoff Water from Croplands in the South Texas Coastal Plains". Beltwide Cotton Producers Research Conference. D. H. Herbert (ed.) Vol 2: 1295-1298.

B. R. Eddleman and L. Falconer. 2000. "Assessment of Surface Runoff Water Quality from Agricultural Croplands in the Odem Ranch Watershed". TNRCC, CBBNEP-34, February, Austin, TX.

B. R. Eddleman. 2000. "Rainfall and Runoff Water from Croplands in the South Texas Coastal Plains". Better Crops/Vol. 84 (No. 3) 20-23.

Jim Gillingham was recently appointed to the position of Senior Vice President, Alternative Fuels and Project Development for Valero. Valero's new Alternative Fuels group is concentrating on petroleum coke gasification and renewables including transportation fuels from biomass and wind energy. Jim has extensive operating, engineering and refinery management experience. He has just completed 2 ½ years as VP and Refinery Manager at Valero's large Port Arthur refinery acquired from Premcor in September 2005.

Jim received his Bachelor's and Master's degrees, both in chemical engineering, from Rice University, and began his career as a Process Engineer with Exxon in Corpus Christi. In 1977, he joined Coastal Corporation's Corpus Christi refinery. (That refinery today is Valero's Corpus Christi East Plant.) He then served six years in Belgium in various engineering and technical management positions for Coastal's RBP Refinery.

Upon returning to the United States, he joined Diamond Shamrock (which later became Ultramar Diamond Shamrock and finally Valero) at the Three Rivers Refinery as Assistant Plant Manager in 1985. Jim was Manager of Engineering and Director of Petrochemical Development at the company's headquarters in San Antonio from 1991 to 1998 before taking over as Plant Manager at the UDS Denver Refinery. He then moved to the McKee Refinery as Plant Manager in 2000, and where he was working when Valero acquired UDS in 2001.

In 2002, Jim moved to San Antonio to serve as the Western Region Vice President of Refining Operations overseeing Valero's Ardmore, McKee, Denver, Benicia and Wilmington refineries.

Jim has been married 29 years to Carol Kelly Gillingham. They have three children. Jimmy is a University of Texas and Loyola Law School graduate working in a chancery court in Chicago. Katie, a graduate of Colorado Art Institute is an Interior Designer practicing in Chicago, and youngest son Brian is a recent graduate in Mining Engineering from The Colorado School of Mines.

Biographical Sketch
Susan S. Golden

a. Professional Preparation

Mississippi University for Women	Biology *magna cum laude*	B.A. 1978
University of Missouri-Columbia,	Genetics	Ph.D. 1983
University of Chicago	Molecular Genetics	postdoctoral 1983-85

b. Appointments

Distinguished Professor, Department of Biology, Texas A&M University, 2003-present
Professor, Department of Biology, Texas A&M University, 1995-2003
Associate Professor, Department of Biology, Texas A&M University, 1990-95
Assistant Professor, Department of Biology, Texas A&M University, 1986-90

c. 10 Selected Publications (102 total)

Golden, S.S. 2008. Integrating the circadian oscillator into the life of the cyanobacterial cell. Cold Spring Harbor Sym. Quant. Biol. 72, in press.

Mackey, S.R., J-S. Choi, Y. Kitayama, H. Iwasaki, and S.S. Golden. 2008. Proteins found in a CikA-interaction assay link the circadian clock, metabolism, and cell division in *Synechococcus elongatus.* J. Bacteriol. 190: 3738–3746.

Ivleva, N.B. and S.S. Golden. 2007. Protein extraction, fractionation and purification from cyanobacteria *IN* Methods in Molecular Biology, ed. E. Rosato, Humana Press, Inc., Totowa, NJ., pp 365–373.

Clerico, E.M., J.L. Ditty, and S.S. Golden. 2007. Specialized techniques for site-directed mutagenesis in cyanobacteria *IN* Methods in Molecular Biology, ed. E. Rosato, Humana Press, Inc., Totowa, NJ., pp 155–171.

Ivleva, N.B., T. Gao, A. LiWang, and S.S. Golden. 2006. Quinone sensing by the circadian input kinase of the cyanobacterial circadian clock. Proc. Natl. Acad. Sci. USA, 46:17468-17473.

Zhang, X., G. Dong, and S.S. Golden. 2006. The *pseudo*-receiver domain of CikA regulates the cyanobacterial circadian input pathway. Mol. Microbiol. 60:658-668.

Ivleva, N.B., M.R. Bramlett, P.A. Lindahl, and S.S. Golden. 2005. LdpA: a component of the circadian clock senses redox state of the cell. EMBO J. 24, 1202–1210. http://www.nature.com/emboj/journal/v24/n6/full/7600606a.html

Vakonakis, I., D.A. Klewer, S.B. Williams, S.S. Golden, and A.C. LiWang. 2004. Structure of the N-terminal domain of the circadian clock-associated histidine kinase SasA. J. Mol. Biol. 42:9-17.

Williams, S.B., I. Vakonakis, S.S. Golden, and A.C. LiWang. 2002. Structure and function from the circadian clock protein KaiA of *Synechococcus elongatus*: a potential clock input mechanism. Proc. Natl. Acad. Sci. USA, 99:15357-15362. http://www.pnas.org/cgi/content/full/99/24/15357

Iwasaki, H., S.B. Williams, Y. Kitayama, M.. Ishiura, S.S. Golden, and T. Kondo. 2000. A KaiC-interacting sensory histidine kinase, SasA, necessary to sustain robust circadian oscillation in cyanobacteria. Cell 101:223–233.

d. Synergistic Activities

1. Editor, *Journal of Bacteriology* (1996-2006). I performed a service for the microbiology community by handling 125-150 manuscripts a year for the journal for a decade.

2. I serve on external boards, such as the Energy Biosciences Council, DOE (2000-2003), the Board of Governors Nominating Committee for the American Academy of Microbiology (of which I am a Fellow), and grant review panels for federal agencies.
3. My laboratory has trained 60 undergraduate students in individual research projects (includes 36 women and 11 members of underrepresented groups), of whom at least 20 went on to graduate or professional school, and one received an NSF individual graduate fellowship and NIH NRSA. One undergraduate received an ASM national fellowship. Many more (>60) have been given lab experience as assistants in media and solution preparation, and basic microbiology techniques.
4. I teach undergraduate students in Introductory Biology and Microbial Biotechnology. In the absence of a suitably contemporary text, I overhauled the biotechnology course in spring 2002, teaching with presentations created from new information in the literature and gleaned from other sources, providing a rich exposure to biotechnology for the students.
5. My laboratory is the leading developer of genetic tools for the cyanobacterium *Synechococcus elongatus* PCC 7942, and the collaborator with JGI for analysis of the genome. We freely provide plasmids, strains, and protocols to the research community on request.

e. Collaborators & Other Affiliations
(i) Collaborators (past 48 months; excluding advisees listed below)
Texas A&M: M.R. Bramlett, D. Bell-Pedersen, V. Cassone, Y. Cho, D. Earnest, A. Holzenburg, T. Gao, A. Gonzales, S. Green, H. Guo, C. Kao, D. Klewer, P. Lindahl, J. Sacchettini, P. Sandoval, J. Sun, T.L. Thomas, I. Vakonakis, J. Xiong, M. Zoran; Vanderbilt: C.H. Johnson; Michigan State: B. Montgomery; Nagoya: M. Ishiura, H. Iwasaki, Y. Kitayama, T. Kondo; Technion: N. Adir, O. Beja, D. Man-Aharonovich, Y. Mandel-Gutfreund, D.B. Rusch, M. Shmoish, I. Sharon, S. Tzahor, U. Weingart, S. Yooseph, G. Zeidner; Tel Aviv: D. Horn; Southwestern: Y. Liu; Univ. of Houston: Y. Xia; University of St. Thomas: B.E. Anderson; Venter Institute: J.C. Venter, S. Williamson; University of California-Merced: A. C. LiWang, Y.-I. Kim, C. Carruthers; Indiana University: B. Stein
(ii) Graduate and Postdoctoral Advisors
PhD: Louis A. Sherman (Purdue) Postdoc: Robert Haselkorn, University of Chicago
(iii) Thesis Advisor and Postgraduate-Scholar Sponsor (last 5 years)
Thesis advisor for (17 total): Texas A&M currently- G. Dong, H. Guo, X. Zhang
Others- S. Mackey (St. Ambrose), H. Min (Purdue Univ.), C. Thomas (USDA, Athens Georgia) Y. Chen (Synthetic Genomics)
Postdoctoral advisor last 5 years (20 total): Texas A&M currently- C. Emani, C.K. Holtman, T. Wood, G. Zeidner; Others- N.B. Ivleva (Monsanto), J-S. Choi (Korea Basic Science Inst.), E. Clerico (Univ. Mass.), J.L. Ditty (Univ. St. Thomas), M. Katayama (Univ. Tokyo), M. Mutsuda (Nagoya), S.B. Williams (Univ. Utah), T. Wu (UT Southwestern)

Biographical Sketch: **James W. Golden**

(a) Professional Preparation

University of Maryland-College Park	Microbiology	B.S. 1977
University of Missouri-Columbia	Biology	Ph.D. 1983
The University of Chicago	Molecular Microbiology	1983-1986

(b) Appointments

1996-present	Professor, Department of Biology, Texas A&M University
1997	College of Science AFS Distinguished Faculty Achievement Award for Teaching
1995-1996	Texas A&M University Honors Program Teacher/Scholar Award
1990-1996	Associate Professor, Department of Biology, Texas A&M University
1987-1990	Searle Scholar Award
1986-1991	NSF Presidential Young Investigator Award
1986-1990	Assistant Professor, Department of Biology, Texas A&M University
1983-1986	NIH Postdoctoral Fellow with Dr. Robert Haselkorn
1985	Cold Spring Harbor Laboratory Summer Course: Molecular Biology of Plants
1978-1982	NIH Predoctoral Trainee, University of Missouri-Columbia
1974-1977	Senatorial and UMCP Scholarships, University of Maryland-College Park

(c) (i) Five publications most closely related to proposal:

Aldea, M. R., R. A. Mella, and J. W. Golden, 2007. Sigma factor genes *sigC*, *sigF*, and *sigL* are upregulated in heterocysts of the cyanobacterium *Anabaena* sp. strain PCC 7120. J. Bacteriol. 189: 8392-8396. http://jb.asm.org/cgi/content/abstract/189/22/8392

Wu, X., D. W. Lee, R. A. Mella, and J. W. Golden. 2007. The *Anabaena* sp. strain PCC 7120 *asr1734* gene encodes a negative regulator of heterocyst development. Mol. Microbiol. 64:782-794. http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-2958.2007.05698.x

Khudyakov, I. Y., and J. W. Golden. 2004. Different functions of HetR, a master regulator of heterocyst differentiation in *Anabaena* sp. PCC 7120, can be separated by mutation. Proc. Natl. Acad. Sci. USA 101:16040-5. http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=15520378

Wu, X., D. Liu, M. H. Lee, and J. W. Golden. 2004. *patS* minigenes inhibit heterocyst development of *Anabaena* sp. strain PCC 7120. J. Bacteriol. 186: 6422-6429. http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=15375122

Yoon, H.-S., M. H. Lee, J. Xiong, and J. W. Golden. 2003. *Anabaena* sp. strain PCC 7120 *hetY* gene influences heterocyst development. J. Bacteriol. 185: 6995-7000. http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=14617665

(ii) Five other significant publications:

Carrasco, C. D., S. D. Holliday, A. Hansel, P. Lindblad, and J. W. Golden. 2005. Heterocyst-specific excision of the *Anabaena* sp. strain PCC 7120 *hupL* element requires *xisC*. J. Bacteriol. 187: 6031-6038. http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=16109944

Lee, M. H., M. Scherer, S. Rigali, and J. W. Golden. 2003. PlmA, a new member of the GntR family, has plasmid maintenance functions in *Anabaena* sp. strain PCC 7120. J. Bacteriol. 185:4315-4325. http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=12867439

Liu, D., and J. W. Golden. 2002. *hetL* overexpression stimulates heterocyst formation in *Anabaena* sp. strain PCC 7120. J. Bacteriol. 184:6873-6881. http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=12446638

Khudyakov, I. Y., and J. W. Golden. 2001 Identification and inactivation of three group 2 sigma factor genes

in *Anabaena* sp. strain PCC 7120. J. Bacteriol. 183:6667-6675. http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=11673438
Yoon, H.-S., and J. W. Golden. 1998. Heterocyst pattern formation controlled by a diffusible peptide. Science 282:935-938. http://www.sciencemag.org/cgi/content/full/282/5390/935

(d) Synergistic Activities

1. I have a strong record of active and innovative participation in undergraduate and graduate education and science training as evidenced by my two teaching awards listed above. For most of the last 20 years, I have taught introductory biology to freshman honors students each fall.
2. High school, undergraduate, and graduate students have obtained training in scientific research by working on research projects in my laboratory.
3. My laboratory has trained many women and underrepresented minority students. There are currently two women and one underrepresented minority student in my laboratory.
4. I have participated in campus programs that bring underrepresented minority high school students into the laboratory during the summer.
5. I have participated in the University Honors Program Undergraduate Research program and have served as a poster judge for campus-wide research experience programs.

(e) Collaborators & Other Affiliations

Collaborators and Co-Editors.

D. P. Giedroc, Biochemistry, Texas A&M University, College Station, TX
A. Hansel, Molecular and Cellular Biophysics, Friedrich-Schiller University, Jena, Germany
P. Lindblad, Department of Physiological Botany, Uppsala University, Uppsala, Sweden
T. Lu, Biochemistry, Texas A&M University, College Station, TX
S. Rigali, Centre d'Ingenierie des Proteines, Universite de Liege, Liege, Belgium

Graduate and Postdoctoral Advisors.

Graduate advisor: Donald L. Riddle, University of Missouri-Columbia
Postdoctoral advisor: Robert Haselkorn, The University of Chicago

Thesis Advisor and Postgraduate-Scholar Sponsor.

Graduate Students: 8 total; 3 current, 5 past

Current: M. Ramona Aldea, Rodrigo A. Mella-Herrera, Krithika Kumar
1994 Tai-Fen Wei, Research Scientist, unknown biotech company in Vancouver, Canada
1997 K. S. Ramaswamy, Research Scientist, Midland Cert. Reagents, Midland, Texas
1997 Claudio Carrasco (M.S.), Research Scientist, Ambion, Austin, Texas
1998 Ho-Sung Yoon, Assistant Professor, Kyungpook Natl. Univ., Daegu, South Korea
2002 Duan Liu, Postdoctoral Research Associate, Texas A&M University

Postdoctoral scholars: 11 total; 2 current, 9 past

Current: Sushanta Saha, Xiaofan Zhang
Wu Xiaoqiang, research scientist, TAMU
Dong Lee, post doc TAMU
Ivan Khudyakov (visiting scientist), St. Petersburg, Russia
Martin H. Lee, senior research scientist, Targeted Growth, Seattle, WA

DR. DAVID A. HAZLEBECK (GENERAL ATOMICS)
PROGRAM MANAGER

QUALIFICATIONS

20 years of industrial experience in chemical process research and development

EDUCATION

Ph.D., Chemical Engineering, University of California, San Diego, 1989

B.S., Chemical Engineering, University of Delaware, 1984

EXPERIENCE

- Currently, program manager for Biofuel projects, Vitrification, Commercial Supercritical Water Oxidation (SCWO), and Hydrolysis
- Project manager for $4.9M commercial SCWO plant
- Project engineer (technical lead) for $7.7M DARPA/Navy-funded hydrothermal oxidation program

Curriculum Vitae

Ronald E. Lacey, Ph.D., P.E.

Professor of Biological and Agricultural Engineering
201 Scoates Hall, MS 2117, Texas A&M University
College Station, Texas 77843-2117
Professional Engineer, State of Texas, License Number 86580

Degrees Awarded

Bachelor of Science in Agricultural Engineering, 1977, University of Kentucky, Graduated with High Distinction, University Honors Program
Master of Science in Agricultural Engineering, 1979, University of Kentucky
Doctor of Philosophy in Agricultural Engineering, 1992, University of Kentucky

Professional Experience

Texas A&M University, Texas Agricultural Experimentation Station, College Station, Texas, September 2004 to present, Professor of Biological and Agricultural Engineering with tenure; September, 1998 to August 2004, Associate Professor of Biological and Agricultural Engineering with tenure; October, 1992 to August, 1998, Assistant Professor of Agricultural Engineering; member of the Food Science and Technology faculty; member of the Molecular and Environmental Plant Sciences faculty.

University of Kentucky, Lexington, Kentucky, March 1990 to October 1992, Graduate Research Assistant

Taco Bell, Inc., Irvine, California, December, 1988 to March, 1990, Director of Engineering Services; June, 1985 to November, 1988, Manager, Mechanical and Process Engineering

Pizza Hut, Inc., Wichita, Kansas, May, 1983 to June 1985, Mechanical Engineer, Research and Development

The Pillsbury Company, Minneapolis, Minnesota, May, 1981 to May, 1983, Assistant Research Scientist, Research and Development

Recent Refereed Publications:

Buser, M. D.; Jr., C. B. P.; Shaw, B. W. & Lacey, R. E. (2007), Particulate matter sampler errors due to the Interaction of particle size and sampler performance characteristics: Ambient PM10 samplers, *Transactions of the ASABE* **50**(1), 229-240.

Buser, M. D.; Parnell Jr., C. B.; Shaw, B. W. & Lacey, R. E. (2007), Particulate matter sampler errors due to the interaction of particle size and sampler performance characteristics: Ambient PM2.5 samplers, *Transactions Of The ASABE* **50**(1), 241--254.

Buser, M. D.; Parnell Jr., C. B.; Shaw, B. W. & Lacey, R. E. (2007), Particulate matter sampler errors due to the interaction of particle size and sampler performance characteristics: Background and theory, *Transactions Of The ASABE* **50**(1), 221--228.

Faulkner, W. B.; Shaw, B. W. & Lacey, R. E. (2007), Coarse fraction aerosol particles: theoretical analysis of rural versus urban environments, *Applied Engineering in Agriculture* **23**(2), 239--244.

He, C. J.; Davies Jr., F. T. & Lacey, R. E. (2007), Separating the effects of hypobaria and hypoxia on lettuce: growth and gas exchange, *Physiologia Plantarum* **131**(2), 226--240.

He, C. J.; Davies, F. T.; Lacey, R. E. & Rao, S. (2007), The influence of ethylene and hypobaria on CO2 assimilation, dark-period respiration, and growth of lettuce (Lactuca sativa L. cv. buttercrunch), *Hortscience* **42**(4), 994--994.

Huang, Y.; Lan, Y.; Hoffmann, W. C. & Lacey, R. E. (2007), Multisensor data fusion for high quality data analysis and processing in measurement and instrumentation, *Journal of Bionics Engineering* **4**.

He, C.; Jr., F. T. D. & Lacey, R. E. (2006), Hypobaric conditions affect gas exchange, ethylene evolution and Growth of Lettuce For Advanced Life Support Systems (ALS), *Habitation* **11**, 49--61.

He, C. J.; Davies Jr., F. T.; Lacey, R. E. & Rao, S. T. (2006), Effect of hypobaria, oxygen, and carbon dioxide on gas exchange, ethylene evolution, and growth of lettuce plants for NASA advanced life support systems, *Hortscience* **41**(4), 1059--1059.

Peschel, J. M.; Haan, P. K. & Lacey, R. E. (2006), Influences of soil dataset resolution on hydrologic modeling, *Journal Of The American Water Resources Association* **42**(5), 1371--1389.

Wang, L.; Jr., C. B. P.; Shaw, B. W. & Lacey, R. E. (2006), A theoretical approach for predicting number of turns and cyclone pressure drop, *Transactions of the ASABE* **49**(2), 491--503.

Wang, L. J.; Parker, D. B.; Parnell Jr., C. B.; Lacey, R. E. & Shaw, B. W. (2006), Comparison of CALPUFF and ISCST3 models for predicting downwind odor and source emission rates, *Atmospheric Environment* **40**(25), 4663--4669.

Afinowicz, J. D.; Munster, C. L.; Wilcox, B. P. & Lacey, R. E. (2005), A process for assessing wooded plant cover by remote sensing, *Rangeland Ecology & Management* **58**(2), 184-190.

Capareda, S. C.; Boriack, C. N.; Mukhtar, S.; Mutlu, A.; Shaw, B. W.; Lacey, R. E. & Jr., C. B. P. (2005), The recovery of ammonia and hydrogen sulfide from ground level area sources using dynamic isolation flux chambers - bench scale studies., *Journal of the Air and Waste Management Association* **55**, 999--1006.

Wang, L.; Jr., C. B. P.; Shaw, B. W.; Lacey, R. E.; Buser, M. D.; Goodrich, L. B. & Capareda, S. C. (2005), Correcting PM10 over-sampling problems for agricultural particulate matter emissions: preliminary study, *Transactions of the ASAE* **48**(2), 749--755.

Wang, L.; Wanjura, J. D.; Jr., C. B. P.; Lacey, R. E. & Shaw, B. W. (2005), Performance characteristics of a low-volume PM10 sampler, *Transactions of the ASAE*, 48 2, 739--748.

Wanjura, J. D.; Buser, M. D.; Jr., C. B. P.; Shaw, B. W. & Lacey, R. E. (2005), A simulated approach to estimating PM10 and PM2.5 concentrations downwind from cotton gins, *Transactions of the ASAE* **48**(5), 1919--1925.

Wanjura, J. D.; Jr., C. B. P.; Shaw, B. W. & Lacey, R. E. (2005), The design and evaluation of a low-volume total suspended particulate sampler, *Transactions of the ASAE* **48**(4), 1547--1552.

Current Grants and Contracts

General Atomics research contract, 2007 – 2008, *Production of Biodiesel from Microalgae: Optimize environmental conditions for microalgae growth and oil production.* $573,300 total for project, PI – R. E. Lacey, $172, 620 under direct control for this research objective.

NASA Advanced Human Support Technologies Program (NASA NRA 03-OBPR-01), 2004 – 2008, *Plant Growth at Sub-Ambient Atmospheric Pressures with Control of the Partial Pressures of Constituent Gases*, PI: Dr. Davies, Co-I: **Dr. Lacey**, $556,404 total, $174,176 under direct control.

U. S. Department of Agriculture-Cooperative States Research, Education, and Extension Service (CSREES) Special Research Grant Program, 2002 – 2008, *Air Quality: Odor, Dust, and Gaseous Emissions from Concentrated Animal Feeding Operations in the Southern Great Plains*, Project Director: Dr. Sweeten (TAES)

Roy L. Lehman, Ph.D.

Professor of Biology
Director, Laguna Madre Field Station
Harte Research Associate, HRI
Texas A&M University-Corpus Christi
College of Science and Technology
6300 Ocean Drive
Corpus Christi, Texas 78412-5802
Email: roy.lehman@tamucc.edu

Professional Preparation

Corpus Christi State University	Secondary Education	B. S.	1980
Corpus Christi State University	Biology and Geology	M.S.	1982
Texas A&M University	Botany	Ph.D	1993

Appointments

2006 – Present	Professor of Biology, Texas A&M University-Corpus Christi
2001 – Present	Director, Laguna Madre Field Station
2000 – 2006	Associate Professor of Biology, Texas A&M University-Corpus Christi
1998 – 1999	Coordinator, Environmental Science Program, Texas A&M University-CC
1993 – 2000	Assistant Professor of Biology, Texas A&M University-Corpus Christi
1992 – 1993	Research Scientist. Center for Coastal Studies, Corpus Christi, Texas

Most Pertinent Publications

Lehman, Roy L. 2008. Reef Algae. Pp. 87-94 *In*: J. W. Tunnell, Jr., Ernesto A. Chavez & Kim Withers (Eds.) *Coral Reefs of the Southern Gulf of Mexico.* Texas A&M Press, College Station, Texas. 194 pp.

Fikes, R, L. Smith and Roy L. Lehman. 2007. Characterization of a High Energy Macroalgal Community in Quintana Roo, Mexico Using Digital Image Analysis. Texas J. Science. 59(2):103-112.

Lehman, Roy L., Ruth O'Brien and Tammy White. 2006. *Plants of the Texas Coastal Bend.* Texas A&M Press, College Station, Texas. 416 pp.

Lehman, Roy L., Ruth O'Brien and Tammy White. 2002. *Plants of Webb County, Texas*. Grunwald Printing, Corpus Christi, Texas. 48 pp.

Mott, Joanna B. and Roy L. Lehman. 2002. Study to Evaluate Sources of *E. coli* Isolates from Corpus Christi Bay Associated with Storm Drain Outfalls using PFGE. Texas General Land Office, Coastal Coordination Council, and NOAA. Final Report Contract #02-586R. 17 pp.

Mott, Joanna B. and Roy L. Lehman. 2001. DNA Fingerprinting to Identify Sources of Bacteria in Coastal Waters of Texas. Final Report-Phase II, Contract # 00-214 R. Texas General Land Office, NOAA Award No. 870Z0251. 62 pp.

Lehman, Roy L. 1999. A checklist of benthic marine macroalgae from the Corpus Christi Bay area. *Texas Journal of Science*. 51(3):241-252.

Rhudy, K. B., V. K. Sharma, R. L. Lehman and D. A. McKee. 1999. Seasonal variability of the Texas "Brown Tide" (*Aureoumbra lagunensis)* in relation to environmental parameters. *Estuarine Coastal and Shelf Science*. 48:565-574.

Wood, T.M, R. L. Lehman and J. Bonner. 1997. Ecological impacts of bioremediation field study experiments. *In* Proceedings: In situ and On-site Bioremediation: The Fourth International Symposium. Battelle, New Orleans, Louisiana. 4: 119-124.

Synergistic Activities

I have been a faculty member at Texas A&M University-Corpus Christi for over fifteen years (since 1993). My teaching and research activities focus on botany and especially Phycology. My graduate students and research projects are varied and encompass a wide range of topics. Most work is on seaweeds, freshwater algae, sea grasses, mangroves, coral reef ecology and terrestrial plants of the Texas Coastal Bend. Currently, I have funded projects on Bacterial Source Tracking (BST) of *E. coli* using DNA (PFGE), Bio-Fuels from algae (seed funds to begin work) and evaluating Cyanobacteria in coastal aquifers.

I am a Texas certified educator and was appointed as Director of the Laguna Madre Field Station in 2001. In this position, I have developed research projects, educational modules and outreach activities for students (JHS, HS, UG and Grad.) to enhance their use of the Laguna Madre Field Station as a hands-on training and research facility. This is also been an excellent and successful method of recruiting students into the math and science fields.

I have chaired over 21 student committee that have successfully completed graduate degrees at TAMU-CC and been a member of over 35 graduate committees in Biology and Environmental Science. Currently, I primarily teach upper level and graduate courses including PhD level classes. Courses include Marine Botany, Plant Taxonomy, Marine Plankton, Plant Ecology and Phycology.

I am an active member of the Phycological Society of America and currently Membership Director on the Executive Committee. In addition, I am a member of the Texas Academy of Science, Estuarine Research Federation, Sigma Xi and the International Society of Reef Studies. I have peer-reviewed for journals and completed grant reviews for funding agencies including NSF.

Collaborators

Dr. Joanna Mott (TAMU-CC)
Dr. Egon Weber (TAMU-CC)
Graduate Advisor (PhD) Dr. James Manhart (TAMU, College Station)

BRIEF CURRICULUM VITAE

L. James Lester
Houston Advanced Research Center
The Woodlands, Texas 77381

Education: B.A. in Zoology, 1969, University of Texas at Austin.
Ph.D. in Zoology, 1975, University of Texas at Austin.

Recent Professional Experience:

2006 – present	Vice President, Houston Advanced Research Center
2002 – 2006	Director, Environment Group, Houston Advanced Research Center
1991 – 2002	Professor, Biology and Environmental Science Programs, University of Houston-Clear Lake, Texas,
1991 – 2002	Director, Environmental Institute of Houston, University of Houston System

Selected Publications:

Lester, L.J. and M.J.R. Pante. 1992. Effects of salinity and temperature on growth of penaeid shrimp. pp. 515-534. *In* A. W. Fast and L. J. Lester (eds) Marine Shrimp Culture: Principles and Practices. 862 p. Elsevier, Amsterdam.

Lester, L.J. 1992. Marine species introductions and native species vitality: Genetic consequences of marine introductions. pp. 79-90. *In* R. DeVoe (ed) Proceedings of the Conference on Introductions and Transfers of Marine Species. South Carolina Sea Grant Consortium, Charleston.

Lester, L.J. (Editor) 1996. Report of the Ecosystems Subpanel. pp. 24-95. *In* J. D. Wilson, S. Strawn and D.Hitchcock (eds). Houston Environment 1995. Houston Advanced Research Center, Houston, Tx.

Lester, L.J. (ed.) 1997. A Question of Balance: Building Blocks for Environmental Education in Texas. Env. Inst. Houston, Houston. TX.

Lester, L.J. 1998. Seagrass conservation and environmental awareness through education and public outreach. *In* W. Pulich (ed.) Texas Seagrass Conservation Plan, Texas Parks and Wildlife Dept., Austin, TX.

Lester, L.J. and L. Gonzalez. 2002. State of the Bay, A Characterization of the Galveston Bay Ecosystem, Second edition. Publication GBEP T-7 of the Galveston Bay Estuary Program and As-186/02 of the Texas Commission on Environmental Quality, Austin, Texas. 162 pp.

Lester, L.J. and L. Gonzalez. 2002. Final Report on Status and Trends Database Maintenance Project. GBEP Galveston Bay Information Center. http://bayinfo.tamug.tamu.edu/gbeppubs/s&t2002/s&t2002.html

Lester, L.J., L.A. Gonzalez, and P. Weeks. Ecosystem-Based Management of Galveston Bay, Texas. In: [Day, J.W. and A. Yáñez-Arancibia]. The Gulf of Mexico: Ecosystem-Based Management, Bulletin 89, 50-Years update, Volume V. Forthcoming.

Selected Published Abstracts:

Lester, L.J. and L. Gonzalez. 2002. Anomalous Trends in a Meta-analysis of the Phytoplankton-based Food Webs of Galveston Bay . The Coastal Society 18th International Conference, Converging Currents: Science, Policy and Culture at the Coast. Galveston, Texas.

Lester, L.J. and L. Gonzalez. 2003. Trends in Water and Sediment Quality and Living Resource Abundance in Tributaries and Sub-Bays of Galveston Bay. Galveston Bay Estuary Program State of the Bay Symposium VI Plenary Session. League City, Texas.

Selected Invited Presentations:

Lester, L.J. and L. Gonzalez, 2001. Status and Trends of Key Environmental Indicators. State of the Bay Symposium, Galveston, Texas.

Lester, L.J., 2001. Environmental Quality In and Around Houston. Leadership Houston Meeting. Houston, Texas.

Lester, L.J., 2003. Building a Sustainable Vision for the Future. Panel member at Clean Texas Partnership Conference. Plano, Texas.

Lester, L.J., 2003. Understanding and Communicating Ozone Science. Panel member at Clearing the Path to Clean Air: SIP Innovations Conference. Arlington, Virginia.

Selected Recent Presentations:

Lester, L.J. and L. Gonzalez. 2001. Galveston Bay Characterization Highlights. Galveston Bay Estuary Program State of the Bay Symposium V. Galveston, Texas.

Lester, L.J. and L. Gonzalez. 2003. Trends in Water and Sediment Quality and Living Resource Abundance in Tributaries and Sub-Bays of Galveston Bay. Galveston Bay Estuary Program State of the Bay Symposium VI Plenary Session. League City, Texas.

McNutt, J.A.S. and L.J. Lester. 2003. Investigating the Relative Importance of Feeding Habitat and Nesting Habitat on Population Trends among Colonial Waterbirds in the Galveston Bay System. Water Birds of Texas Conference. Galveston, Texas.

Gonzalez, L. and L.J. Lester. 2004. Comparative Risk of Invasive Species in the Lower Galveston Bay Watershed. GLO Coastal Issues Conference. Corpus Christi, Texas.

Lester, L.J. and L. Gonzalez. 2005. The State of Galveston Bay. Galveston Bay Estuary Program State of the Bay Symposium VII Plenary Session. Houston, Texas.

Lester, L.J., I.D. Awosika-Olumo and R.R. Arafat. 2005. Assessment of the Environmental Public Health Indicators for Houston. National Environmental Public Health Tracking Conference. Atlanta, Georgia.

Selected Consultancies and Professional Service:

National Science Foundation, Small Business Innovation Research, panel member on grants related to aquaculture and ocean science, 1995 - 2000.

Texas Parks and Wildlife Dept., consultant on the Texas seagrass conservation plan, 1996-1997.

Texas A&M Sea Grant Program, Academic and Government Advisory Committee 1995 - present

Galveston Bay Estuary Program Monitoring and Research Committee, 1998 to present, Chair 2001 - present

Galveston Bay Foundation, advisory trustee 1995 – 2002, executive committee member, 2002 – 2007

Biography: R. (Richard) Bowen Loftin

Professional Preparation

Texas A&M University	Physics	B.S.	1970
Rice University	Physics	M.A.	1973
Rice University	Physics	Ph.D.	1975
Rice University	Materials Science	Postdoc	9/74 – 12/75

Appointments

12/05 to present Professor of Industrial and Systems Engineering, Texas A&M University, College Station, Texas

5/05 to present Vice President and Chief Executive Officer, Professor of Maritime Systems Engineering, Texas A&M University at Galveston, Galveston, Texas

8/00 to 5/05 Professor of Electrical and Computer Engineering (Adjunct 5/05 to present) and Professor of Computer Science, Old Dominion University, Norfolk, Virginia

8/00 to 5/05 Executive Director, Virginia Modeling, Analysis & Simulation Center and Director of Simulation Programs, Old Dominion University, Norfolk, Virginia

9/99 to 4/00 Chair, Department of Computer Science, University of Houston, Houston, Texas

8/94 to 8/00 Professor of Computer Science and Director, NASA/University of Houston Virtual Environments Research Institute, University of Houston, Houston, Texas

9/77 to 8/94 Professor of Physics (9/88 to present), Associate Professor of Physics (9/80 to 8/88; tenure awarded 9/82), and Assistant Professor of Physics (9/77 to 8/80), University of Houston-Downtown, Houston, Texas

9/76 to 8/77 Assistant Professor of Physics, Texas A&M University at Galveston, Galveston, Texas

7/76 to 8/76 Lecturer in Physics, University of Houston, Houston, Texas

1/76 to 7/76 Lecturer in Physics, University of Houston-Downtown, Houston, Texas

Publications

R.B. Loftin. "Shared Virtual Environments for Aerospace Training," *Computer Graphics Annual Conference Proceedings, SIGGRAPH 96*, pp. 495-496.

R.B. Loftin. "Hands Across the Atlantic," *IEEE Computer Graphics & Applications 17* (2), pp. 78-79 (March-April, 1997).

J.P. Bliss, P.D. Tidwell, R.B. Loftin, R. Johnston, C. Lyde, and B. Weathington. An Experimental Evaluation of Virtual Reality for Training Teamed Navigation Skills. In *Proceedings of the Human Factors and Ergonomics Society 1997 Annual Meeting*. New York: Association for Computing Machinery.

R.B. Loftin. Human-Computer Interactions in Shared Virtual Environments. In *Proceedings of the 1999 International Conference on Human-Computer Interaction*, Munich, Germany, August 20-28, 1999.

S. Su, R.B. Loftin, D.T. Chen, Y.-C. Fang, and C.-Y. Lin. "Distributed Collaborative Virtual Environment: Pauling World," in *Proceedings of the Tenth International Conference on Artificial Reality and Tele-existence*, Taipei Taiwan, October 25-27, 2000.

R.B. Loftin and P. Kinney. "Training the Hubble Space Telescope Flight Team," *IEEE Computer Graphics & Applications 15* (5), pp. 31-37 (September, 1995).

R.B. Loftin. "Aerospace Applications of Virtual Reality," *Computer Graphics 30* (4), pp. 33-35, 1996.

M.C. Salzman, C. Dede, R.B. Loftin, and J. Chen. A model for understanding how Virtual Reality aids complex conceptual learning. *Presence 8*, No. 3, pp. 293-316 (June, 1999).

C. Dede, M. Salzman, R.B. Loftin, and D. Sprague. Multisensory Immersion as a Modeling Environment for Learning Complex Scientific Concepts. In Wallace Feurzeig and Nancy Roberts, Editors, *Modeling and simulation in science and mathematics education*. New York: Springer-Verlag, 1999.

C.-R. Lin, R.B. Loftin, and H.R. Nelson, Jr. Interaction with Geoscience Data in an Immersive Environment. In *Proceedings of the 2000 IEEE Virtual Reality Conference*, New Brunswick, NJ, March 18-22, 2000, pp. 55-62.

Synergistic Activities

- Principal creator of the first Virtual Reality system for education (1993)
- Primary architect of ScienceSpace, a collection of virtual environments for learning (individual and collaborative) in science
- Developer of first intelligent tutoring system for teaching problem solving skills
- Principal developer of shared virtual environments for mission planning and training of astronauts for the International Space Station

Collaborators & Other Affiliations

Collaborators (Old Dominion University = ODU, University of Houston = UH, George Mason University = GMU)
N.R. Bailey (ODU), L. Belfore (ODU), J. Casey (UH), J.M. Catanzaro (ODU), J.X. Chen (GMU), D. Dryer (ODU), H. Garcia (ODU), R.C. Gaskins III (ODU), I. Kakadiaris (UH), P. Kenney (ODU), E. Leiss (UH), A. Lusso (ODU), T. Mastaglio (Mymic LLC), F.D. McKenzie (ODU), N. Park (Mymic LLC), G. Perry (UH), M. Petty (University of Alabama in Huntsville), M. Phillips (ODU), L. Rosenblum (NSF), M.W. Scerbo (ODU), J. Seevinck (ODU), L. Williams (NASA)

Graduate and Postdoctoral Advisors

Graduate Advisor: Prof. Harold E. Rorshach (Rice University), deceased
Postdoctoral Advisor: Prof. Franz Brotzen (Rice University), retired

Thesis Advisor and Postgraduate-Scholar Sponsor

Post-Graduate Scholars: M. Harders (ETH Zurich); 3 total
Doctoral Students: R. King (ODU) and R. Chapman (ODU); 7 total
Master's Students: 58 total

AJ ROBERTS (GENERAL ATOMICS)
PROJECT MANAGER

QUALIFICATIONS

21 years of experience in instrumentation, control, and analysis of chemical process systems, including gasification and energy recovery

Manager of all biofuels projects at GA

EDUCATION

B.S., Chemical Engineering, University of California, San Diego, 1985

EXPERIENCE

2007-Present, project manager on the GA side for the Texas Emerging Technology Fund project to design and build a algal based bio-oil demonstration plant at the Texas AgriLife Research facility in Pecos, Texas

2007-Present, project manager for the Strategic Fuel Supply project in partnership with Texas AgriLife Research. This project provides research and development for using algae as a feedstock in the biofuel industry to support military use of alternative fuels

2006-2007, project manager for Battlefield Clutter Waste to Energy projects. These projects involve the design, construction, and testing of equipment that converts waste to energy for the military.

Previous to 2006

Software and controls manger for thermal systems to destroy and recover energy from hazardous materials funded by DARPA, the U.S Army, the Department of the Air Force, as well as commercial applications; responsible for providing resources, expertise, and documentation on controls and instrumentation for all projects involving SCWO, gasification, and energy recovery technologies; developed automated controls, electrical design, and control software used in SCWO and gasification systems, including One Button operation of complex chemical processing

Lance Robinson
Curriculum Vitae

Education

- 1982 B.S. Auburn University
- 1986 M.S. Fairleigh Dickinson University & West Indies Laboratory

Position

2/02 – present Texas Parks & Wildlife Department
Regional Director, Coastal Fisheries Division
Dickinson Marine Laboratory

Responsible for managing the monitoring programs in Texas' coastal waters from Sabine Lake on the Texas-Louisiana border, Galveston, Matagorda and San Antonio Bays and the commercial oyster lease fishery; Agency point-of-contact for marine invasive species issues. Selected special studies/projects: Synoptic survey of non-indigenous species in tidal bayous of Galveston Bay; Biological Review Team to assess status of the eastern oyster relative to the Endangered Species Act; Gulf of Mexico Oyster Fishery Management Plan; Gulf & South Atlantic Panel on Aquatic Invasive Species

4/91 – 2/02 Texas Parks & Wildlife Department
Galveston Bay Ecosystem Leader, Coastal Fisheries Division
Seabrook Marine Laboratory

Responsible for the coordination and field collection of biologic, sociologic and economic data pertaining to the fishery and ecosystem management in the Galveston Bay ecosystem. Selected special studies/projects: Development of baseline monitoring for Perkinsus marinus (dermo) prevalence and intensity; short-term impacts to oyster reefs from seismic air gun surveys; evaluation of bycatch reduction devices in commercial shrimp trawls.

1/88 – 4/91 Auburn University, Alabama
Sr. Research Associate, Department of Fisheries & Allied Aquaculture

Responsible for planning and implementing research addressing the distribution, abundance, population structure, dynamics and exploitation of commercially important marine and estuarine species.
Selected special studies/projects: Oyster mariculture; bycatch reduction in recreational shrimp trawls; habitat utilization by postlarval and juvenile Penaeid shrimp; abiotic and biotic factors affecting microhabitat use by fish and shrimp; structure, performance and assumptions of riverine habitat suitability index models.

GEORGE P. MITCHELL

George P. Mitchell is the former chairman and chief executive officer of Mitchell Energy & Development Corp., a *Fortune* 500 company, which was listed on the New York Stock Exchange, prior to its merger in January 2002 with Devon Energy Corporation. A native of Galveston, Texas, Mr. Mitchell graduated from Texas A&M University with a degree in petroleum engineering, with additional emphasis in geology.

Following service as a captain in the Army Corps of Engineers during World War II, he joined a newly formed wildcatting company, first as a consulting geologist and engineer and later as a partner. He was named president in 1959, and under his leadership the company grew and evolved into one of the nation's largest independent oil and gas producers. During his career, Mr. Mitchell participated in approximately 10,000 wells, including more than 1,000 wildcats. He and his company found upwards of 200 oil and 350 gas discoveries.

In the 1960's, Mr. Mitchell envisioned a real estate project on a scale never seen in the booming Houston area – a complete new town. The Woodlands, a 25,000-acre planned community located 27 miles north of downtown Houston, opened in late 1974. When sold in 1997 to the partnership of Crescent Real Estate Equities Co. and Morgan Stanley Real Estate Fund II, it had a population of 48,000, led Houston's market in new home sales for seven consecutive years, and was the state's new home sales leader. Today the acreage totals 27,000 and the population is 85,000.

Mr. Mitchell was personally instrumental in the founding of the Houston Advanced Research Center (HARC), a contract and grant research institution headquartered at The Woodlands' Research Forest. HARC consists of 10 collaborative universities, including the original members: the University of Houston, Texas A&M University, Rice University, and The University of Texas at Austin. He was also instrumental in bringing to the Research Forest high-tech research and commercial spin-offs of Baylor College of Medicine and The University of Texas M.D. Anderson Cancer Center and Health Science Center. He founded the Center for Global Studies, a HARC educational institute that sponsors conferences on environmental and global growth-related issues. In conjunction with the series, Mr. Mitchell and his wife Cynthia established the Mitchell Prize, $100,000 in awards at each major conference, to encourage research into environmental and growth issues and problems.

Mr. and Mrs. Mitchell have also taken leading roles in the rejuvenation of Galveston's historic Strand District by restoring 17 commercial buildings. In 1985, they revived the mid-winter Mardi Gras celebration in Galveston, which now draws 500,000 visitors annually.

Mr. Mitchell was an advisor to Project Independence and a member of the National Petroleum Council. He served three terms as president and two terms as chairman of the Texas Independent Producers & Royalty Owners Association. He is a member of the All-American Wildcatters, American Association of Petroleum Geologists, and American Institute of Mining Engineers, as well as numerous other professional, business, educational, and civic organizations. Mr. Mitchell served as a member of Texas' Select Committee on Higher Education and the Texas Governor's Science and Technology Council. In 1988, he was elected as a trustee of the Universities Research Association, a director of the Gas Research Institute, and a member of the World Resources Institute Council. In 1989, he was selected as a member of the President's Circle of the National Academy of Sciences.

Honors accorded Mr. Mitchell include Texas A&M's Distinguished Alumni Award (1977); the medal for distinguished achievement from Texas A&M Geosciences and Earth Resources Advisory Council (1980); the Horatio Alger Award, the American Society of Mechanical Engineers' first Award for Distinguished

Service in the Petroleum Industry, and an honorary doctoral degree from the University of Houston (1984); *The Galveston Daily News'* Citizen of the Year and the Ima Hogg Historical Achievement Award (1988); Global Tomorrow Coalition's Lorax Award for contributions to the environment (1989); Merrill Lynch, Ernst & Young and *Inc. Magazine*'s Master Entrepreneur of the Year (1992); the Boy Scouts of America's Hornaday Award for Environmental Achievement (1993); Galveston's Leonora Kempner Thompson Community Enrichment Award (1993); the American Institute of Architects' Jefferson Award, the Texas Business Hall of Fame Award, the National Preservation Honor Award, and Texas A&M's Aggie of the Year (1994); the Governor's Award for Historic Preservation presented to Mr. and Mrs. Mitchell by Governor George W. Bush (1995); the Houston Chapter of the Texas Society of Certified Public Accountants' honoree, and the Mirabeau B. Lamar Award (1996); The Nature Conservancy of Texas' Lifetime Achievement honoree (1997); the Texas Society of Architects' first Cornerstone Award presented to Mr. and Mrs. Mitchell, the Galveston Historical Foundation's Spirit of *Elissa* Award, and the Galveston Chamber of Commerce's Christie Mitchell Award (1999); Prevent Blindness Texas' People of Vision Award presented to Mr. and Mrs. Mitchell and the World Future Society's Distinguished Service Award (2000); the National Trust for Historic Preservation's Crowninshield Award presented to Mr. and Mrs. Mitchell, the Texas Society of Professional Engineers' Engineering Dream Team member, and the Pioneer Oil Producers Society's Distinguished Service Award (2001); the Institute for Energy Law's John Rogers Award (2003); the Railroad Commission of Texas' Pioneer Award and induction into the Corps of Cadets Hall of Honor at Texas A&M University (2004); the US Association for the Club of Rome's Aurelio Peccei Lifetime Achievement Award presented to Mr. and Mrs. Mitchell, Texas A&M Foundation's Sterling Evans Medal, Preservation Texas' Clara Driscoll Award presented to Mr. and Mrs. Mitchell, Philanthropic Honoree for The Senior Place, Texas Alliance of Energy Producers' Legends Medal (2006); Honorary Doctor of Letters Degree from Texas A&M University (2007) and induction into the Texas Tennis Hall of Fame (2007).

Brian Gregory Mitchell
Scripps Institution of Oceanography, UCSD, La Jolla, CA 92093-0218,
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PROFESSIONAL PREPARATION:

University of Texas at Austin, Aquatic Biology with honors, 1977 B.S. Special Honors in Botany
University of Southern California, Biology (Biological Oceanography), 1987 Ph.D.

APPOINTMENTS:
2000-Present Research Biologist, UC San Diego, Scripps Institution of Oceanography and
2000-Present Senior Lecturer, UC San Diego; 1994-2000 Lecturer
1994-2000 Associate Research Biologist, UC San Diego, Scripps Institution of Oceanography
1990-1992 Program Scientist Ocean Biogeochemistry Program, NASA Headquarters, Washington, D. C.; Program Scientist SeaWiFS
1988-1994 Assistant Research Biologist, UC San Diego, Scripps Institution of Oceanography
1987-1988 Postdoctoral Scholar UC San Diego Scripps Institution of Oceanography
1986-1987 Bio-optical oceanographic consultant, Biospherical Instruments, Inc.

SELECTED PEER-REVIEWED PUBLICATIONS (OUT OF MORE THAN 70 TOTAL)

Hewes, C.D., Mitchell, B.G., Moisan, T.A., Vernet, M., Reid, F.M.H. (1998) The phycobilin signatures of chloroplasts from three dinoflagellate species: a microanalytical study of *dinophysis caudata, D. fortii* and *D. acuminata* (Dinophysiales, Dinophyceae). *Journal of Phycology.* 34: 945-951

Mitchell, B.G. and D.A. Kiefer (1988), Chlorophyll a specific absorption and fluorescence excitation spectra for light-limited phytoplankton. *Deep-Sea Research*, 35: 639-663.

Mitchell,B.G. and Kiefer,D.A. (1988) Variability in pigment specific particulate fluorescence and absorption spectra in the northeastern Pacific Ocean. *Deep-Sea ReearchI* 35, 665-689.

Mitchell, B.G., E.A. Brody, O. Holm-Hansen, C.R. McClain, and J. Bishop, 1992. Light limitation of phytoplankton biomass and macro-nutrient utilization in the Southern Ocean. *Limnol.Oceanogr.*, 36(8): 1,662-1,677.

Moisan, T.A. and B.G. Mitchell, 1999. Photophysiological adaptation of *Phaeocystis antarctica* Karsten under PAR Light Limitation. *Limnol.Oceanogr.* 44(2): 247-258

Moisan, T.A., M. Olaizola and B.G. Mitchell, 1998. Xanthophyll cycling in *Phaeocystis antarctica* Karsten: Changes in cellular fluorescence. *Marine Ecology Progress Series* 169:113-121

Moisan, T.A. and B.G. Mitchell (2001) UV absorption by mycosporine-like amino acids in *Phaeocystis antarctica* Karsten induced by photosynthetically available radiation. *Marine Biology*, 138: 217-227.

Sosik, H.M. and B. G. Mitchell (1991) Absorption, fluorescence and quantum yield for growth in nitrogen-limited Dunalliella tertiolecta. Limnology and Oceanography, 36(5): 910-922.

Sosik, H.M. and B.G. Mitchell (1994) The effects of temperature on growth and light absorption in *Dunalliela tertiolecta* (chlorophyceae) *Journal of Phycology*, 30: 833-840.

Sosik, H.M. and B. G. Mitchell (1995) Absorption by phytoplankton, photosynthetic pigments, and detritus in the California Current system. Deep-Sea Research, 42(10): 1717-1748.

Stramski, D. R.A. Reynolds, M. Kahru & B.G. Mitchell, 1999. Estimation of particulate organic carbon in the Ocean from satellite remote sensing. *Science*, 285: 239-242.

Curriculum Vitae

C. O. Patterson

Professor of Biology and Biotechnology
Department of Biology, Texas A&M University
College Station, Texas 77843-3258
phone (979) 845-2187 e-mail: cop@mail.bio.tamu.edu FAX: (979) 845-2891

PERSONAL: Born 12 March 1943 at Merkel, Texas U.S. Citizen

EDUCATION:

Postdoctorate	Indiana University at Bloomington (1972-77), Microbiology
Ph.D.	University of Texas at Austin (1971), Zoology

AREAS OF EXPERTISE AND RESEARCH EMPHASIS:

Physiology and systems biology of photosynthetic microbes, including algae and cyanobacteria , photosynthetic metabolism, nutrient uptake and utilization, techniques of mass culture and cultivation.

SOCIETY MEMBERSHIPS:

American Society of Plant Biologists, Phycological Society of America, American Association for the Advancement of Science, Phi Beta Kappa, Sigma Xi, Texas Academy of Science

SELECTED PUBLICATIONS:

C. O. Patterson and Jack Myers: Photosynthetic production of hydrogen peroxide by *Anacystis nidulans*. *Plant Physiology* 51: 104-109 (1973).

_____: Bioengineering as a tool in water resource management. In *Complete Watereuse, Procedings of a Symposium of the American Institute of Chemical Engineers,* L.K. Cecil, ed. New York (1973).

Stevens, S.E., C.O. Patterson and Jack Myers: Production of hydrogen peroxide by blue-green algae: A survey. *Journal of Phycology* 9: 427-430 (1973).

Hegeman, G.D., and C. O. Patterson: Qualitative requirements and utilization of nutrients by bacteria. in *Handbook of Nutrition and Food* Vol 1, Section D: 39-56, M. Rechcigl, ed., CRC Press, Cleveland (1977).

C. O. Patterson, J. B. Glover, and S. E. Stevens: A controlled-temperature apparatus for measurement of hydrogen peroxide production. *Analytical Biochemistry* 85, 63-70 (1978).

_____and G. D. Hegeman: Metabolism of cyclopropane carboxylic acid by bacteria. In *Microbial Degradation of Pollutants in Marine Environment,* A.W. Bourquin and P.H. Prichard, eds., U.S. Environmental Protection Agency: 89-96 (1979).

C. O. Patterson, M. Holtzapple, and B.D. Etter: Advances in experimental apparatus for algal growth. in *Conceptual Designs for a Food Production, Water and Waste Regeneration Module,* O.W. Nicks, ed., SRC Report 4-5873-2 NASA Johnson Space Center, NAG9-253. pp 125-130 (1988).

B.D. Etter and C.O. Patterson: Measurement of fluid mechanical properties of algal suspensions for engineering designs. in *Regenerative Life Support Systems,* O.W. Nicks, ed. SRC Report 5-5873-3 NASA Johnson Space Center, NAG9-253. pp 126-131 (1989).

M. Holtzapple, F.E. Little, M.E. Makela and C.O. Patterson: Analysis of an algae-based closed ecological life support system, Part I, Model Development. *Acta Astronautica,* 19: 353-364 (1989).

SELECTED PUBLICATIONS, CONTINUED:

M. Holtzapple, F.E. Little, W. Moses and C.O. Patterson: Analysis of an algae-based closed ecological life-support system, Part II, Options and weight analysis. *Acta Astronautica,* 19: 365-375 (1989).

G.D. Hitchens, T.D. Rogers, O.J. Murphy, and C.O. Patterson: A new photocatalytic material based on algal cells. *Biochemical and Biophysical Research Communications* 175: 1029-1035 (1991).

G.D. Hitchens, T.D. Rogers, O.J. Murphy, C.O. Patterson and R.H. Hearn: Deposition of Metallic Platinum in Blue Green Algae Cells. in *Enzymatic Conversion of Biomass for Fuels Production, a Symposium of the American Chemical Society,* ACS Symposium Series 556: Chapter 12, pp 246-254 (1994).

R.D. VanPutte and C.O. Patterson: Isolation and Purification of Plasma Membranes from Three Species of Marine Microalgae. Journal of Phycology 31 (3S), (1995).

R.D. VanPutte and C.O. Patterson: Fatty Acid Composition of Microalgal Plasma Membranes. Plant Physiology 111S, 133 (1996).

R.D. VanPutte and C.O. Patterson: Response of Microalgae to Volatile Aromatic Hydrocarbons. Journal of Phycology 32 (3S), 48 (1996).

R.D. VanPutte and C.O. Patterson: A Mechanism of Toxicity by Volatile Aromatic Hydrocarbons Is Disruption of Cytoplasmic Membrane Lipids. Phycologia 36 (4), 116 (1997).

R.D. VanPutte and C.O. Patterson: Plasma Membrane Fluidity Analyzed in Cells Exposed to Volatile Aromatic Hydrocarbons Using the Fluoroprobe Diphenylhexatriene. J. Phycol. 34, 60 (1998).

C.O.Patterson: Harmful Algal Blooms: Toxic Algae and Algal Toxins. in Encyclopedia of Aquaculture, Robert Stickney, ed., John Wiley & Sons publishers, New York, pp17-25, (2000).

R.D. VanPutte and C.O. Patterson: Micro-algal Plasma Membranes Purified by Aqueous Two-Phase Partitioning. Transactions of the Illinois State Academy of Science 96, 71-86 (2003).

AWARDS RECEIVED:

College Board Special Recognition Award for contributions to excellence in education and collaboration among school and college faculty, 1997

Distinguished Achievement Award for Excellence in Teaching, University-wide award, TAMU, 2005.

OTHER:

National Advisory Board for the College-Level Examination Program (CLEP) in Biology, Chair of this committee, 2002-present.

Judge, Siemens-Westinghouse Science Talent Search, 2004 – present.

Science Vertical Teams Committee, Chair, 2006 - present. This is a project to revise high school science curricula, jointly sponsored by Texas Education Agency and Texas Higher Education Coordinating Board.

Commission for a College-Ready Texas, member 2007 - 2008. appointed by Governor Rick Perry, State of Texas.

SHAY LYNN SIMPSON

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Bryan, Texas 77802
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PERSONAL INFORMATION

Born October 12, 1970, Stephenville, Erath County, Texas, USA

HIGHLIGHTED EMPLOYMENT HISTORY

Project Manager, Bioenergy Program
Texas Agricultural Experiment Station, Texas A&M University System, College Station, Texas, USA

- Manage projects including timeline, budget, research activities, reporting, resoureces, and personnel.
- Assist in managing corporate relations activities.
- Assist in development of research focus related to bioenergy.
- Work cooperatively with graduate students, research associates, and professors.

Research Associate, Department of Biological and Agricultural Engineering
Texas Agricultural Experiment Station, Texas A&M University System, College Station, Texas, USA; October 2002 – October 2007

Manager, Marketing/Processing Technology, Technical Services Department
National Cotton Council of America, Memphis, Tennessee, USA; January 1996 – February 2001

EDUCATION

M.S. Agricultural Engineering
May 1996, Texas A&M University, College Station, Texas, USA
Thesis: Performance Characteristics of a Low Pressure Cyclone for Axial-Flow Fan Exhausts

B.S. Agricultural Engineering
December 1993, Texas A&M University, College Station, Texas, USA

PROFESSIONAL QUALIFICATIONS

Engineer-in-Training, Registered in Texas, #18822 current

AWARDS

American Society of Agricultural Engineers Texas Section 2004 Young Engineer of the Year

AREA OF INTEREST RELATED TO ALGAE

Managing project funded by General Atomics/DOD – Production of Biofuel from Algae, and project funded by State of Texas ETF – Algae Biofuels – Technology to Transform the World. Managing construction of 1/16 acre ponds in Pecos, TX, and laboratory set up to support the research on algae. Managing research project consisting of team of researchers focused on algae identification and selection, laboratory analysis, in-situ measurement development, and environmental control and evaluation of algae growth.

Dr. Antonietta Quigg

Assistant Professor

Departments of Marine Biology and Oceanography
Texas A&M University
5007 Avenue U, Galveston, TX, 77551
Phone: 1 409 740 4990
Email: quigga@tamug.edu
Website: http://www.marinebiology.edu/phytoplankton.htm

Professional Preparation

La Trobe University, Australia.	Majors in Biochemistry & Chemistry,	B. Sci. 1989.
La Trobe University, Australia.	Major Biochemistry.	B. Sci. (Hons), 1990.
Monash University, Australia.	Biological Sciences.	Ph. D., 2000.
Rutgers University, NJ, USA.	Ecology & Evolution.	2001-2003

Appointments

Aug. 2003 – P Assistant Professor, Departments of Marine Biology, and Oceanography, Texas A&M University at Galveston, Texas, USA.

Publications:

(i) Five Most Closely Related

1. **Quigg, A.,** Davis, S. E. and Roelke, D. F. **2007.** Changes in Freshwater Inflows and How They Effect Texas Bays. Final Report of the Coastal Coordination Council pursuant to National Oceanic and Atmospheric Administration Award No. NA05NOS4191064. pp. 47.
2. **Quigg, A.,** Kevekordes, K., Raven, J. A. and Beardall, J. **2006** Limitations on microalgal growth at very low photon flux densities: the role of energy slippage and H^+ leakage. *Photosynthesis Research*, 88: 299-310.
3. Raven, J.A., Andrews, M. and **Quigg, A**. **2005** The evolution of oligotrophy: implications for the breeding of crop plants for low input agricultural systems. *Annals of Applied Biology*, 146: 1-20.
4. **Quigg, A**. and Beardall, J. **2003** Protein turnover in relation to maintenance metabolism at low photon flux in two marine microalgae. *Plant, Cell and Environment* 26: 1-10.
5. **Quigg, A.,** Beardall, J. and Wydrzynski, T. **2003** An investigation of the photosynthetic O_2 – evolving reactions in two marine microalgae as a function of the photon flux during growth. *Functional Plant Biology* 30: 301-308.

(ii) Five Other Significant

1 Navarro, E., Miao, A.J., Baun, A., Behra, R., Bloch Hartmann, N.I., Filser, J., **Quigg, A**., Santschi, P.H., Sigg, L. **2008**. Ecotoxicity of nanomaterials on photosynthetic organisms and fungi: state of the art and future needs. Environmental Science and Technology, Accepted.
2. **Quigg, A**. **2008** Ecological Stoichiometry: Trace Elements. *In* Encyclopedia of Ecology. Elsevier. *Invited Chapter,* In press for release July 2008.
3.Finkel, Z. V., **Quigg, A.**, Chiampi, R., Schofield, O. and Falkowski, P. G. **2007** Phylogenetic diversity in Cd:P regulation by marine phytoplankton. *Limnology and Oceanography*, 52: 1131-1138.
4. **Quigg, A**., Reinfelder, J.R. and Fisher, N. S. **2006** Copper-uptake kinetics in diverse marine phytoplankton. *Limnology and Oceanography,* 51: 893-899.
5. **Quigg, A.,** Finkel, Z.V., Irwin, A.J., Reinfelder, J.R., Rosenthal, Y., Ho, T-Y., Schofield, O., Morel, F. M. M. and Falkowski, P.G. **2003** The evolutionary inheritance of elemental stoichiometry in marine phytoplankton. *Nature* 425: 291-294.

Synergistic Activities:
Advancements in understanding the physiological and biophysical mechanisms phytoplankton use to acclimate to differing light and nutrient environments; development of an extended Redfield ratio; evolution of phytoplankton in regards to the changing redox chemistry in the ocean – biological and chemical analyses. Mapping primary production on seasonal scales across the Gulf of Mexico as well as in response to freshwater inflows in estuarine environments. Presentations in classes, seminars, at local, national and international meetings to disseminate new research results on interdisciplinary research. Reviewer of scientific articles and as a panelist. Over 100 days at sea on various research cruises.

Student affliations:
Current: Amanda Thronson (MS Biology), Federico Alvarez (MS Oceanography), Jamie Steichen (MS Oceanography), Leslie Rulon (MS Wetland Ecology), Allison skinner (PhD Oceanography).
Graduated: Linda Roehrborn (MS Oceanography 2006)
Committee member: Elizabeth Neyland (MS Biology), Rachel Nueneoff (MS Wildlife and Fisheries Sciences), Emily Kane (MS Wildlife and Fisheries Sciences), Shelton Gay (Ph.D Oceanography), Bridget Maloney (MS Wildlife and Fisheries Sciences), Saijin Zhang (Ph.D Oceanography), Cliffton Nunnally (Ph. D Oceanography), Nicole Towers (MS Biology). **Graduated:** Alyson Azzara (MS Oceanography), Lindsay Glass (MS Wildlife and Fisheries Sciences), Jennifer Stone (MS Biology)
Sponsored postdoctoral fellow: Dr. Aijin Miao (2007-2009)

Current Support:
Texas Sea Grant., "Freshwater inflows: influence of nutrient and sediment load on our ability to define beneficial flows for Galveston bay". Quigg, lead-PI, 2008 – 2010 ($355,391). Funded.
TCEQ, Galveston Bay Estuary Program. "Freshwater inflows and the health of Galveston bay". Quigg, lead-PI, 2008 – 2009 ($70,000). Funded.
Texas Water Development Board, "Phytoplankton Responses to Freshwater Inflows in the Trinity-San Jacinto Estuary". Quigg, lead-PI, 2008 – 2009 ($32,000). Funded.
Texas General Land Office, Coastal Management Program, "Freshwater inflows and the health of Galveston bay: influence of nutrient and sediment load on the base of the food web". Quigg, lead-PI, 2007 – 2009 ($163,710). Funded.
Texas Advanced Research Program, "Shipward - Exotic and invasive species around the world: Concerns for Texas". Quigg, lead-PI, 2006 – 2009 ($98,337). Funded.
NSF, Major Research Instrument Awards, "Acquisition of Instruments to Facilitate and Enhance Research Projects and Undergraduate Education in Aquatic Environmental Biogeochemistry at TAMUG". Quigg, co_PI, 2005 – 2008 ($72,842). Funded.

William A. Seitz

Education	1966- 1970	Rice University	Houston, TX
	BA, Chemical Physics (Magna Cum Laude)		
	1970- 1973	The University of Texas	Austin, TX
	PhD, Chemical Physics		
Professional experience	1973- 1974	University of Texas	Austin, TX
	Lecturer		
	1974- 1977	Rice University	Houston, TX
	Visiting Assistant Professor		
	1980- 1986	Texas A&M University	Galveston, TX
	Head, Department of Marine Sciences		
	1986 - 1992	Texas A&M University	Galveston, TX
	Dean, Moody College of Marine Technology		
	1992 - 1994	Texas A&M University	Galveston, TX
	Associate Campus Dean for Research and Director of Continuing Education		
	1995	Heinz Center	Washington, DC
	Senior Fellow (on faculty development leave)		
	1977 - Present	Texas A&M University	Galveston, TX
	Assistant, Associate, Full Professor		
	2002 – 2005	Texas A&M University	Galveston, TX
	Professor and Head, Dept. of Marine Sciences		
	2005 – present	Texas A&M University	Galveston, TX
	Regents Professor and Assoc. VP for Research and Grad. Studies and Interim Assoc. VP for Academic Affairs		
Patents and Publications	Over 90 publications in refereed journals and 4 U. S. patents		
Research Interests	Complexity and Quantum Theoretical Approaches to Large Molecular Systems (Nanotechnology and Biopolymers)		
	Drug design of Nitric Oxide Donors for Biomedical Applications		
	Environmental Systems Theories and Modeling		

Honors and Awards	Phi Beta Kappa, Woodrow Wilson Fellow, Fulbright Fellow, Outstanding Faculty Member (1983, TAMUG), Regents Professor (Texas A&M University System)

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Dr. Ruixiu Sui

Biological & Agricultural Engineering Department,
Texas A&M University,
College Station, TX 77843

EDUCATION

Ph.D. Biosystems Engineering, University of Tennessee 1999
M.S. Agricultural Engineering, University of Tennessee 1987
B.S. Radio-physics, Lanzhou University, China 1979

WORK EXPERIENCE

Mar 07-- Research Associate Professor Texas A&M University
Jul 05/Feb 07 Associate Research Engineer Texas A&M University
Apr 01/Jun 05 Assistant Research Professor Mississippi State University
Jun 99/Mar 01 Postdoctoral Research Assistant Mississippi State University
Jan 96/May 99 Graduate Research Assistant University of Tennessee at Knoxville
Aug 91/Sep 95 Department Head Chinese Academy of Agricultural Sciences
Jan 88/Dec 95 Research Associate/Associate Professor Chinese Academy of Agricultural Sciences
Mar 86/Dec 87 Visiting Scholar/Grad. Res. Assistant University of Tennessee at Knoxville
Sept 79/Feb 86 Research Assistant Chinese Academy of Agricultural Sciences

PATENTS

High Accuracy Auto-Ranging Photometer
Ruixiu Sui, C. J. Li, Y. X. Li, and G. L. Sheng. China Patent No.: 92200050.6
Optical-Reflectance-Based Mass-Flow Sensor
J. Alex Thomasson and **Ruixiu Sui**. US Patent No.: 6,809,821

AWARDS

Research Paper Impact Award for scientific publication with the greatest impact on Mississippi agriculture ($500 personal award and plaque); awarded by MAFES. 2003. Thomasson, J. A. and **Ruixiu Sui**. 2003. Mississippi Cotton Yield Monitor: Three Years of Field Test Results. *Applied Engineering in Agriculture*. Vol. 19(6): 631-636
Scientific Research Achievement Award, Ministry of Agriculture of China, 1983.

SELECTED PUBLICATIONS (from total publications of 68)

Five Most Relevant Refereed Publications:

1. **Sui, Ruixiu**, J. A. Thomasson, J. Hanks, and J. Wooten. 2008. Ground-based sensing system for weed mapping in cotton. *Computer and Electronics in Agriculture*, Vol. 60 (1):31-38. Elsevier B.V.

2. **Sui, Ruixiu,** and J. Alex Thomasson. 2006. Ground-Based Sensing System for Cotton Nitrogen Status Determination. *Transaction of the ASABE.* Vol. 49(6):1983-1991.

3. J. Alex Thomasson, **Ruixiu Sui**, Graeme Wright, and Andrew Robson. 2006. Optical Peanut Yield Monitor: Development and Testing. *Applied Engineering in Agriculture.* Vol. 22(5): 809-818.

5. **Sui, Ruixiu**, J. B. Wilkerson, W. E. Hart, L. R. Wilhelm, and D. D. Howard. 2005. Multi-Spectral Sensor for Detection of Nitrogen Status in Cotton. *Applied Engineering in Agriculture*, Vol. 21(2) 167-172.

Five Other Refereed Publications:

6. **Sui, Ruixiu**, J. Alex Thomasson, Robert Mehrle, Matt Dale, Calvin D. Perry, and Glen Rains. 2004. Mississippi Cotton Yield Monitor: Beta test for Commercialization. *Computers and Electronics in Agriculture.* Vol. 42(3):149-160. Elsevier Science B. V.

7. Thomasson, J. A. and **Ruixiu Sui**. 2003. Mississippi Cotton Yield Monitor: Three Years of Field Test Results. *Applied Engineering in Agriculture.* Vol. 19(6): 631-636

8. **Sui, Ruixiu**, and J. A. Thomasson. 2002. Test of Temperature and Stray-Light Effect on Mass-Flow Sensor for Cotton Yield Monitor. *Applied Engineering in Agriculture.* Vol. 18(4): 127-132

9. Thomasson, J. A., **Ruixiu Sui**, M. S. Cox, and A. Al-Rajehy. 2001. Soil reflectance sensing for determining soil properties in precision agriculture. *Transaction of the ASAE.* Vol. 44(6): 1445-1453.

10. **Ruixiu Sui** and Guancun Bai. 1992. Application of Electronic Technology in Agriculture. In: *Application of New Electronic Technology*. 81-84. China Science and Technology Press. Beijing, China.

CURRENT BIOENERGY PROJECTS

1. Co-PI; Harvesting high-biomass sorghum to deliver a consistent high-quality bioenergy feedstock to processing plants; $300,000; 09/01/07 to 08/31/09; DOE and AgriLife Research Bioenergy Initiatives Program.

2. Co-PI; Develop rapid analytical techniques to quantify nutrients, oil content and composition of microalgae; $172,620; 12/05/07 to 12/04/08; General Atomics.

Biographical Sketch – **J. Alex Thomasson**

EDUCATION

Ph.D., Agricultural Engineering, 1997, University of Kentucky
Dissertation: Image processing solution to cotton color measurement problems in gin process control.

M.S., Agricultural Engineering, 1989, Louisiana State University
Thesis: Tree species determination in the Atchafalaya Basin of Louisiana based on digital analysis of remotely sensed multispectral video imagery.

B.S., Agricultural Engineering, 1987, Texas Tech University

EXPERIENCE

January 2005 – present, Professor, Department of Biological & Agricultural Engineering, Texas A&M University, College Station, TX. Teaching and research in bioenergy and cotton production and processing (including ginning, precision agriculture, electronic sensor development, remote sensing, GPS, GIS, spectroscopy)

July 1999-December 2004, Associate Professor; July 1997-June 1999, Assistant Professor, Department of Agricultural and Biological Engineering, Mississippi State University, Mississippi State, MS. Teaching and research in bioenergy, precision agriculture (including remote sensing, sensor development, GPS, and GIS), and crop processing (including process waste utilization, crop quality measurement, process improvement). Also, July 1998-December 2002, Agricultural Research Coordinator, Remote Sensing Technologies Center, Mississippi State University.

June, 1989-July, 1997, Agricultural Engineer / Research Scientist, U.S. Cotton Ginning Laboratory, USDA/ARS, Stoneville, MS. Research in cotton ginning: bioenergy from cotton gin waste, instrumentation and image analysis for cotton quality assessment, computer control of ginning process.

AWARDS

2003 Research Paper Impact Award, for scientific publication with greatest impact on Mississippi agriculture; awarded by Mississippi State University's Division of Agriculture for the paper, "Mississippi Cotton Yield Monitor: Three Years of Field Test Results," published in Transactions of the ASAE.

2002 Researcher of the Year Award for Mississippi State University's Division of Agriculture.

SELECTED PROFESSIONAL ACTIVITIES

Member, American Society of Agricultural & Biological Engineers (ASABE), and Committees: IET-312 Image Processing , PM-50 Cotton Engineering , FPE-704 Special Crops Processing , and PM-54 Precision Farming .

Member, American Society for Photogrammetry and Remote Sensing (ASPRS)

2008. Panel member, SBIR review for USDA.

1998-2002. Associate Editor, Power and Machinery Division ASAE.

1998-1999. Leader of Objective 1 (Sensors and Data Acquisition Technologies), USDA S-283 Southern Regional Project on Precision Agriculture.

SELECTED RESEARCH ACTIVITIES

Five Most Recent Peer-Reviewed Journal Articles

Wei, L., J. A. Thomasson, R. M. Bricka, R. Sui, J. R. Wooten, and E. P. Columbus. 2008. Syn-Gas Quality Evaluation for Biomass Gasification with a Downdraft Gasifier. *Trans. ASABE* (pending).

Ge, Y., C. L. S. Morgan, and J. A. Thomasson. 2007. A new perspective to near infrared reflectance spectroscopy: a wavelet approach. *Trans. ASABE* 50(1):303-311.

Ge, Y., J. A. Thomasson, C. L. S. Morgan, and S. W. Searcy. 2007. VNIR diffuse reflectance spectroscopy for agricultural soil property determination based on regression kriging. *Trans. ASABE* 50(3):1081-1092.
Sui, R., J. R. Hanks, J. R. Wooten, and J. A. Thomasson. 2007. Ground-Based Sensing System for Weed Mapping in Cotton. *Computers & Electronics Agric.* (in press).
Sui, R., and J. A. Thomasson. 2006. Ground-based sensing system for cotton nitrogen status determination. *Trans. ASABE* 49(6): 1983-1991.

Five Other Relevant Publications

Ge, Y., C. L. S. Morgan, and J. A. Thomasson. 2007. A new perspective to near infrared reflectance spectroscopy: a wavelet approach. *Trans. ASABE* 50(1):303-311.
Ge, Y., J. A. Thomasson, C. L. S. Morgan, and S. W. Searcy. 2007. VNIR diffuse reflectance spectroscopy for agricultural soil property determination based on regression kriging. *Trans. ASABE* 50(3):1081-1092.
Ge, Y., and J. A. Thomasson. 2006. Wavelet incorporated spectral analysis for soil property determination. *Trans. ASABE* 49(4):1193-1201.
Thomasson, J. A., R. Sui, M. S. Cox, and A. Al-Rajehy. 2001. Soil reflectance sensing for determining soil properties in precision agriculture. *Trans. ASAE* 44(6):1445-1453.
Thomasson, J. A., M. P. Menguc, and S. A. Shearer. 1993. Modeling light propagation in cotton with radiation heat transfer methods. ASAE Paper No. 931610. St. Joseph, Mich.: ASAE.

Current Research Support

Production of Biodiesel from Algae
PIs: M. Burow, R. Lacey, J. A. Thomasson, Texas A&M University
Dates: Oct. 1, 2007 to Sep. 30, 2009
Amount: $1,100,000 ($150,000 under Thomasson's direct control)
Source: General Atomics, Inc.

Harvesting High-Biomass Sorghum to Deliver a Consistent High-Quality Bioenergy Feedstock to Processing Plants
PI: J. A. Thomasson
Dates: Jan. 1, 2008 to Dec. 31, 2009
Amount: $210,000 ($70,000 under Thomasson's direct control)
Source: Texas AgriLife Research Bioenergy Initiative

Enhancing Profit through Technologies for Mapping Quality, Yield, & $/Acre in Cotton Fields
PI: J. A. Thomasson, Texas A&M University
Co-I: J. A. Thomasson, Texas A&M University
Dates: Sep. 1, 2007 to Aug. 31, 2009
Amount: $300,000 ($150,000 under Thomasson's direct control)
Source: Texas AgriLife Research, Cropping Systems Initiative

Physical Model of Lint Cleaning
PI: J. A. Thomasson, Texas A&M University
Co-I: R. Sui, Texas A&M University
Dates: Jul. 1, 2005 through Dec. 31, 2008
Amount: $111,000 (all under Thomasson's direct control)
Source: Cotton Incorporated

Bioenergy Alliance High-Tonnage Bioenergy Crop Production and Conversion into Conventional Fuels
PIs: K. Hall, M. Holtzapple, J. Blumenthal, S. Searcy, J. A. Thomasson, and S. Capareda
Dates: Jul. 1, 2008 to Jun. 30, 2009
Amount: $1,000,000 ($80,000 to be under Thomasson's direct control)
Source: U.S. DOE

UMAKANT JOSHI

17033 BUTTE CREEK ROAD, # 1506
HOUSTON, TX-77090..
PHONE : 281 583 1677
CELL : 713 890 2562
EMAIL : UMAKANTJOSHI@HOTMAIL.COM

SUMMARY OF EXPERTISE :

- 10 years experience in Petrochemicals industries, which 4 years in Process design and 6 years in production and application of polyethylene group of chemicals such as Low-density polyethylene,(LDPE), Linear low density polyethylene (LLDPE), High density polyethylene (HDPE), Polyesters (PETA), plastic processing and Bio-Diesel.
- This experience covers front end engineering process design (FEED) on licensees behalf, familiar with feed management to ethylene manufacturing, compounding, extrusion and the modification needed to satisfy various applications.
- Involvement in Polyester (PTA) projects from grass root development to completion of which selection of technology, checking of process design on process simulations such as PRO II (Provision) and HYSIS, P&ID's, mass & energy balances, equipment data sheets.
- Has carried out process safety tests such as hydro, vacuum, and Nitrogen leakage tests.
- Has prepared detailed chemical process flow diagrams in addition to material energy balances, plant layouts, equipment lists, specifications for tanks and vessels including process reactors, packed and tray columns, exchangers, heaters, pumps, piping, dryers, centrifuges, sizing bins, silos, valves, water softening plants, utilities, all of which were subsequently used to develop capital cost estimates.
- Has represented licensees, and been directly involved in the technology transfer of proprietary processes technology for ethylene feed, LDPE, LLDPE, HDPE, Polyesters, extrusion, Co-extrusion, naphtha cracking, catalytic reformer, Bio-Diesel and glycerin purification.
- Experienced in the use of procedures such as HAZOP, to ensure the overall safety of personnel, equipment and the environment. Hands-on work has involved hazardous, toxic and explosive materials, as well as non-hazardous materials.

EDUCATION:

1995 **B.S. Chemical Engineering**
Faculty of Technology & Engineering, M.S.University of Baroda; India

1991 **Diploma in Petrochemicals**
Polytechnic, M.S.University of Baroda; India

WORK HISTORY :

March 2006 – June 2007. **WORLEYPARSONS; Houston, TX**
Process Engineer

- Working as a process engineer for Ethylene feed process technology supplied by ABB Lummus for a $ 2 Billion NCP project for Chevron-Phillips.

- Full involvement and contribution in design, engineering, P&IDs reviews, HAZOP & safety reviews, in addition to licensor packages.
- Independently handle process simulations & calculations and prepare PFDs, P&IDs, heat and material balances.
- Process studies for new equipment; develop process design information for heat exchangers, vessels, control valves and piping systems.
- Perform hydraulic calculations for piping systems using line sizing and / or process simulation software: single and two phase flows.
- Perform PSV calculations, able to identify and evaluate applicable relief scenarios with iPRSM software.
- Developed the glycerol derivative products from very basics that is from reaction chemistry to pilot plant design for one of their client.

June 2000 – March 2006 **ALTE-REGO CORPORATION; Etobicoke, ON**
Department Foreman
Managed the Blown film extrusion operations of packaging products firm ($ 80 Million in Sales) utilizing the polyethylene group of chemicals such as LDPE, LLDPE, and HDPE.
Also involved in extruders troubleshooting, products development, quality control and technical support to extrusion process engineering.
Invented the tem profile of Bio-plastics for easy processing.

January 2003 – December 2005 **CANENTEC ENVIRONMENT INC.; North York, ON**
Chief Process Engineer

- Involved as a Project / Business consultant for Bio-Diesel industries managing projects in scope from $ 2 Million to $ 50 Million.
- According to customer requirements designed the complete Bio-Diesel business involving the preparation of feasibility reports, selection of feed-stocks, preparation of complete design including P&ID's, mass and energy balances, equipment design of reactors, distillation-columns, storage-tanks, pumps, heat exchangers and quality testing parameters.
- Utilised Aspen Plus modules for designing the process and process equipments.

June 1996 – April 2000 **HALDIA PETROCHEMICALS LTD.; West Bengal, India**
Chemical Process Engineer

- Assigned the detailed evaluation of conceptual design for a $ 1250 Million project. of 260 KTA of LLDPE / LDPE by Basell using "Spherilene gas phase swing process" and 300 KTA of HDPE using Mitsui slurry CX process.
- Carried out the front end engineering design (FEED) of Naphtha cracker, LLDPE / HDPE and Polyester plant which covered the conceptual design and detail analysis of process technology, P&ID's, mass & energy balances, equipment design and process control instrumentation.
- Carried out design of cracking furnaces, reactor, distillation-columns, piping, pumps, heat exchangers / condensers, pallet transferring systems from cutter to silos. Involved in commissioning of these plants.
- Member of a team of 5 engineers during design evaluation and commissioning stage.

Michael Evan Webber, Ph.D.

PROFESSIONAL PREPARATION

University of Texas at Austin	B.S. with High Honors	Aerospace Engineering	1995
University of Texas at Austin	B.A. with Special Honors	Liberal Arts	1995
Stanford University	M.S.	Mechanical Engineering	1996
Stanford University	Ph.D. Minor	Electrical Engineering	2001
Stanford University	Ph.D.	Mechanical Engineering	2001

APPOINTMENTS

2007 - Present	Assistant Professor, Mechanical Engineering, UT Austin
2006 - Present	Associate Director, Center for International Energy & Environmental Policy, UT Austin
2006 - Present	Fellow, Strauss Center for International Security and Law, UT Austin
2004 - 2006	Associate Engineer, RAND Corporation, Santa Monica, CA
2000 - 2004	Senior Scientist, Pranalytica, Inc., Santa Monica, CA
1995 - 2000	Graduate Research Assistant, Stanford University

SELECTED PUBLICATIONS most closely related to energy, water and air quality

Books: Energy Technology and Policy for Morgan Claypool's series *Lectures on Energy and the Environment: Technology, Science and Society* (2008).

Journal Publications:

D. Hoppock and M.E. Webber, Energy Use and Production in the Wastewater Treatment Sector. ASME *Journal of Energy Resources and Technology*, 2008. (*in review*).

M.C. Lott and M.E. Webber, "An Interactive and Online Framework For Analyzing Tradeoffs in Texas Energy Choices," ASME *Journal of Energy Resources Technology* (*in review*).

C.W. King and M.E. Webber, "The Water Intensity of the Plugged-in Automotive Economy," *Journal of Environmental Science and Technology*, Feb 2008.

M.E. Webber, T. MacDonald, M.B. Pushkarsky, C.K.N. Patel, Y. Zhao, N. Marcillac and F.M. Mitloehner, "Agricultural ammonia sensor using diode lasers and photoacoustic spectroscopy," *Meas. Sci. Technol*. 16, pp. 1547–1553, 2005. (Outstanding Paper award as MS&T's best paper for 2005, measurement science category.)

ADDITIONAL PUBLICATIONS

S.M. Cohen, G.T. Rochelle and M.E. Webber, "Turning CO2 Capture On & Off in Response to Electric Grid Demand in Texas: A Baseline Analysis of Emissions and Economics," ASME *Journal of Energy Resources Technology* (*in review*).

C.W. King and M.E. Webber, "The Growing Water Intensity of Transportation Fuels," ASME *Journal of Energy Resources Technology* (*in review*).

C.W. King and M.E. Webber, "The Water Intensity of Transportation," *Journal of Environmental Science and Technology (in review)*.

M.E. Webber, "The Water Intensity of the Transitional Hydrogen Economy," *Environmental Research Letters*, August 2007 (published by the Institute of Physics).

M.E. Webber, J. Wang, S.T. Sanders, D.S. Baer and R.K. Hanson, "In Situ Combustion Measurements of CO, CO2, H2O and Temperature Using Diode Laser Absorption Sensors," *Proceedings of the Combustion Institute*, 28, pp. 407-413, 2000.

SYNERGISTIC ACTIVITIES

Dr. Webber holds two patents related to emissions monitoring and environmental-mitigation technologies. Webber's research and insights on energy have been featured in the *New York Times*, *PBS*, and in every major newspaper in Texas. Michael Webber is Assistant Professor of Mechanical Engineering, Associate Director of the Center for International Energy and Environmental Policy in the Jackson School of

Geosciences, and Fellow of the Strauss Center for International Security and Law at the LBJ School of Public Affairs at UT Austin, where he teaches and conducts research at the nexus of engineering, science and public policy for topics related to energy and the environment. He has authored more than twenty peer-reviewed scientific articles, mostly related to energy and the environment, including one publication on emissions-monitoring that was honored as the outstanding paper of 2005 in *Measurement Science and Technology*. In addition, Dr. Webber has created an interdisciplinary series of four new classes on energy and the environment targeted for a range of students from incoming freshmen to graduate students.

- Member, Electric Utility Commission, City of Austin
- Editorial Advisory Board, *Environmental Research Letters* (published by the Institute of Physics)
- Member of the Renewable & Sustainable Energy Team as a part of Governor Perry's Industry Cluster Initiative in Texas (2006-present)
- Organizer, "Thirst for Power: The Global Nexus of Energy & Water," Symposium at the AAAS Annual Meeting, Boston, MA, February 15, 2008.
- Track Chair, "Energy, Emissions and Environment," ASME Energy Sustainability 2008
- Member, Energy Depletion Task Force, City of Austin (2007-present)
- Commencement Speaker, Cockrell School of Engineering graduation ceremony (May 2006)
- Advisory board member of Power Across Texas, a non-profit dedicated to energy issues in Texas
- Marshall Memorial Fellowship, German Marshall Fund (2007)
- Next Generation Fellowship, American Assembly (2006)
- Board Member for the Hope Street Group, a 501(c)3 non-partisan nationwide network of young business professionals who are promoting policies for sustainable economic growth (2004-2006)
- National Science Foundation Fellowship (1995-1998)

RESEARCH PROJECTS: Over the last five years, Dr. Webber has created more than $14 million of sponsored research programs from foundations, industry, and government agencies such as the Office of the Secretary of Defense, DARPA, USDA, EPA, Texas State Energy Conservation Office, Texas Commission on Environmental Quality, and the Texas Water Development Board.

COLLABORATORS AND OTHER AFFLIATIONS

Collaborators: Frank Mitloehner (UC-Davis); British Consulate, Houston, Texas; Dr. Robert Harriss, (Houston Advanced Research Center); Dr. Janet Ellzey (U. of Texas); Dr. Carolyn Seepersad (U. of Texas); Dr. Gary Rochelle (U. of Texas); Dr. Dave Allen (U. of Texas); Dr. Ian Duncan (U. of Texas); Dr. Roberton Williams (U. of Texas); Dr. Denny Ellerman (MIT); Dr. Mort Webster (MIT); Dr. Ron Prinn (MIT).

Affiliations: Adjunct Researcher, RAND Corporation; Consultant, Pranalytica, Inc.

THESIS ADVISOR*:* Dr. Ron Hanson, Stanford University

PhD DISSERTATIONS (in process): Ian Partridge, Colin Smith, Stuart Cohen, Cassandra Telenko, Michael O'Donnell, Melissa Lott, Ashlynn Holman, David Wogan

Michael D. Werst

Senior Engineering Scientist

The University of Texas at Austin Center for Electromechanics
http://www.utexas.edu/research/cem/who_werst.html

Education

B.S.M.E The University of Texas at Austin 1984

Experience

Mr. Michael Werst is a principle investigator at The University of Texas at Austin Center for Electromechanics. He has over 25 years of experience working in research and development, including: energy storage and power conversion hardware design, manufacture, and testing; mechanical and thermal analysis; and materials and process engineering. Mr. Werst has over 62 technical publications and he is the author or co-author of 23 peer-reviewed journal published papers.

RESEARCH AREAS/AREAS OF INTEREST

Electromechanical energy storage and power generation systems, high energy and power dense rotating machines and their applications

RECENT PROGRAMS

- Electromagnetic Cell Distention for Algae Oil Extraction--process development and commercialization
- Magnetic Gear--development of high torque density magnetic gearbox designs for wind energy, ship drive and hybrid vehicle applications
- Superconducting Trapped Field Magnet Motor Demonstration--design, build and demonstrate usefulness of superconducting trapped field magnets in competitive permanent magnet based machines
- Electromagnetic Aircraft Launch System--design, manufacture, and testing of prototype energy storage generator and support technology transfer to industrial partners
- Air Core Pulse Generator for Navy Electromagnetic Aircraft Launch System--pulse generator design with aggressive power and energy densities
- Eddy Current Brake--novel deceleration device that uses graded conductivity and wavenumber to maximize force
- Navy Railgun Prototype Launcher Concept Study--EM launcher conceptual design study
- Electromagnetic Missile Launcher Topologies--design study of linear induction motors EM missile topologies

JOHN D. WHITE

WORK EXPERIENCE:

Standard Renewable Energy Group, LLC., Houston, Texas
Co-Founder, CEO and Chairman of the Board – 2006-Present

Jones, Walker, Waechter, Poitevent, Carrère & Denègre, L.L.P., The Woodlands, Texas
Special Counsel -2003
Managing Partner, Houston Office – 2004-2006

Winstead Sechrest & Minick P.C., Houston, Texas
Shareholder -1992 - 2003
Managing Shareholder, Houston Office - 1993 to 2002
Head of Environmental and Energy Section -1992 -1995; 2000 -2001

Haynes and Boone L.L.P., Houston, Texas
Partner -1990 -1992
Management Committee -1990 -1992

Watt, White & Craig, Houston, Texas
Founding Partner -1982 -1990
Managing Partner -1988 -1990

Texaco Inc., Houston, Texas
Legal Department -1978 -1981

United States Air Force – Judge-Advocate, 1973 - 1978

LEGAL EXPERIENCE:

Counselor to businesses and individuals in a broad range of legal areas and business goals. While in private practice, served as outside general counsel to a number of businesses.

Experience also includes a diverse docket of business disputes, including partnership, corporate and stockholder actions, securities fraud, employment issues and other complex business matters. While historical emphasis has been in the energy and environmental industry, clientele was very diversified.

Trained in Arbitration and Mediation Techniques -- AAA one-day arbitrator training - 1988; Attorney-Mediator Institute Training and Certification - 1993; served as mediator and Neutral Arbitrator on several occasions; served as counsel for clients in excess of 15 arbitrations and 80 mediations.

PROFESSIONAL LICENSES:
AND ASSOCIATIONS:

American, Texas and Houston Bar Associations
Director, Texas Young Lawyers Association, 1980-1982; Chairman of the Board, 1981-1982
Grievance Committee, Harris County Committee for State Bar of Texas, 1984-1987; Chairman 1986-1987
Fellow, American Bar Foundation
Fellow, Texas Bar Foundation
Charter Fellow, Houston Bar Foundation
Permitted to practice before the Supreme Court of the United States; Court of Appeals for the 5th Circuit and U. S. District Courts for the Southern, Eastern and Northern Districts of Texas.

EDUCATION:

MADRID HIGH SCHOOL, Madrid, Spain, 1966

TEXAS A & M UNIVERSITY, B.A., 1970
Distinguished military student; member, Ross Volunteers; Commander First Wing Corps of Cadets

UNIVERSITY OF TEXAS LAW SCHOOL, J.D., 1972

CIVIC AFFAIRS
AND CLUB MEMBERSHIPS:

Regent, Texas A&M University System 2003 to Present; Chairman of the Board, 2005-2007; Vice Chairman 2007-Present
Director, Association of Former Students, Texas A&M University, 2002 to 2003
Director, Greater Houston Partnership, 2002; 2005; 2007- present
Director, Texas Institute for Genomic Medicine, 2005-Present; Chairman of the Board 2005-Present
Member, Executive Committee, University of Texas Law Alumni Association, 2002 to Present
Member, Greater Houston Partnership Economic Development Advisory Committee, 1996 to 1998
; 2008
Member, Board of Visitors Texas A & M Galveston, 1994 -2000
Director, Ed Rachal Foundation, 1995 to Present; Chairman of the Board, 1998 to Present
Director, Texas Lyceum Association, 1986 -1989
Director, Texas Aggie Bar Association, 2000 to Present; President 2001-2002
Member, Leadership Houston Class III, 1985 -1986
Fellow, American Leadership Forum – 2003 – 2004, Class XXI
Member, International Committee -Houston Livestock Show & Rodeo, 1992 to Present
Member, Texas A & M Corps Development Council, 1987 -1991
Member, Texas A & M College of Education Council, 1992 -1996
Member, Texas A & M LegisLeader program, 2000 -Present
Member, Texas A & M Vision 2020 Project, Faculty Committee

PERSONAL:

Fifth Generation Texan
Born Kenedy, Texas -August 26, 1948
Married to the former Daisy Mary Sloan - Event Planner
Two daughters: Niccole Greeley - M.D., UT Health Science Center, Houston, Faculty
Jacqueline - Social worker, Johns Hopkins Medical Center
Three grandsons: John, Spencer and Grant Greeley

HOBBIES: Ranching

DR. XIAOXI WU (GENERAL ATOMICS)
PRINCIPLE ENGINEER

QUALIFICATIONS

11 years of experience working with algal cultivation system modeling and development
Chemical/biochemical process development and R&D project and program management

EDUCATION

Ph.D. and Ms.Sc (Cum Laude), Biotechnology Engineering, Ben-Gurion University of the Negev, Israel, 2001
B.S., Chemical Engineering, Beijing University of Chemical Technology, China, 1996

EXPERIENCE

2008.4–Present, General Atomics, Principle Engineer:

- Algae biofuel internal research & development

2006.10-2008.3 ZanAqua Technology, Director of Systems Development

- Water purification system development research & development management

2004.7-2006.9 Greenfuel Technologies, Chief Scientist

- Emission to biofuel system research & development using algal cultivation

2003.9-2004.6 Rutgers University, Research Associate

- Biodegradation of PAH in sediments modeling

2002.1-2003.9 Washington State University, Postdoc Research Associate

- Water quality monitoring package development using electrodes

PUBLICATION

10 peer reviewed papers, including:

- Wu, X. and Merchuk, J.C., 2001. A Model Integrating Fluid Dynamics in the Photosynthesis and Photoinhibition Processes, Chemical Engineering Science 56:3527-3538.
- Wu, X., and Merchuk, J.C., 2002. Simulation of Algae Growth in a Bench Scale Bubble Column, Biotechnology and Bioengineering 80(2):156-168.
- Wu, X., and Merchuk, J.C., 2004. Simulation of Algae Growth in a Bench Scale Internal Loop Airlift Reactor, Chemical Engineering Science 59(14): 2899-2912.

4 patents pending, 1 Chinese patent