

CURRICULUM VITAE

DAVID L. HERRIN, PROFESSOR

PERSONAL

Birth: August 15, 1955 Waycross, GA
Address: Section of Molecular Cell and Developmental Biology and Institute for Cellular and Molecular Biology, School of Biological Sciences, University of Texas at Austin, Austin TX 78712; Email: herrin@mail.utexas.edu; Tel: 512 471-3843; Fax: 512 471-3843

DEGREES

1977 BS University of Miami, FL Major: Chemistry (*cum laude*)
1980 MA University of South Florida, Tampa (Zoology (Cell Biol), adv: AS Michaels)
1986 PhD University of South Florida, Tampa (Biology (Molecular Biol) adv: AS Michaels)

POSITIONS HELD

1978-81 Teaching Assistant, University of South Florida
1979 Research Assistant, Smithsonian Institution Radiation Biol Lab (adv: Dr M Margulies)
1981-84 Research Assistant and Fellow, University of South Florida
1985-88 Postdoctoral Fellow, University of Georgia (with Prof Gregory Schmidt)
1988-94 Assistant Professor, Botany Dept, University of Texas at Austin
1994-99 Associate Professor, Botany Dept, University of Texas at Austin
1999-01 Associate Professor, Molecular Cell and Develop Biol, University of Texas at Austin
2001- Professor, Molecular Cell and Developmental Biology, University of Texas at Austin

FELLOWSHIPS, HONORS, AWARDS

1979 Smithsonian Institution Research Fellowship (declined)
1980 Sigma XI Grant-in-Aid
1981-83 Graduate student representative to the USF Graduate Council
1982-84 University Graduate Fellowship, University of South Florida
1984 American Society for Cell Biology Student Travel Award
1987 *Walter J. Johnson Prize*
1986-88 University of Georgia-McKnight Foundation Postdoctoral Fellowship
1988-91 D.J. Sibley Faculty Fellowship, University of Texas at Austin
1989 Summer Research Assignment, University of Texas at Austin
1996 Rom Rhone International Travel Award, UT-Austin
1998 Research Internship Award (to recruit a new graduate student), UT-Austin
1998- Member, Institute for Cellular and Molecular Biology, UT-Austin
1998 Dean's Fellow, Fall Semester, University of Texas at Austin
2000 Rom Rhone International Travel Award, UT-Austin
2000 Research Internship Award (to recruit a new graduate student), UT-Austin
2003 College of Natural Sciences Teaching Excellence Award, UT-Austin

PROFESSIONAL SERVICE

National and International Service

1985- Ad hoc review of proposals for NSF, GSF, BNSF, KESF, USDA, BARD, EU, DOE
1985- Ad hoc review for the following journals: *Biochimie, Biotechniques, BMC Molecular Biology, Current Genetics, Eukaryotic Cell, European J. Phycology, FEBS J., FEBS Lett., J. Applied Phycology, J. Bacteriology, J. Biological Chemistry, J. Molecular Biology, J. Molecular Evolution, Molecular and Cellular Biology, Molecular Plant, Nucleic Acids Research, Photosynthesis Research, Phycological Research, Plant and Cell Physiology, Plant Cell, Plant Cell Reports, Plant Journal, Plant Molecular Biology, Plant Physiology, Proceedings National Academy Sciences USA, Protein*

Expression and Purification, Protist and RNA.

In recent years, I have reviewed 6-12 manuscripts per year.

- 1985- Ad hoc reviewer for a number of books, and many book chapters
- 1993 Panelist, U.S. DOE, Energy Biosciences Program Review
- 1995-96 Panelist, USDA NRICGP, Plant Genetic Mechanisms grant-panel
- 2002 Advisory Board, McGraw-Hill, PowerWeb Botany
- 2004 Panelist, NSF, Living Stocks Collections grant-panel
- 2006- Editorial Board, *Scientific Journal International*
- 2008 Panelist, NSF, Gene Expression grant-panel

Regional and Local Service

- 1990 Lectured, Summer Program for Texas High School Biology Teachers, UT-Austin
- 1997 Reviewed Biology textbooks for the Texas Education Agency
- 1998 Member, External Review Panel, Texas Advanced Research & Technology Program
- 1999-00 Reviewer, UT Undergraduate Research Applications
- 2000 Judge, Siemens-Westinghouse National Science Competition
- 2001 Judge, Texas State Science Fair (for secondary students)
- 2003 Invited participant, Harmful Golden Alga Workshop, Texas Parks and Wildlife
- 2003 Reviewer, UT Research Grant Applications
- 2003- Judge, College of Natural Sciences Undergraduate Research Exhibits
- 2005 Invited participant, Texas Harmful Algal Workgroup (TXHAB) Spring Meeting
- 2005 Invited participant, Harmful Golden Algal Workgroup Meeting, Austin
- 2005 Invited participant, Oklahoma-Texas Joint Meeting on Aquatics Research

PROFESSIONAL SOCIETIES (Current Membership Only)

- 1985- American Association for the Advancement of Science (AAAS)
- 1988- American Chemical Society (ACS)

RESEARCH INTERESTS

Chloroplast molecular biology (introns and their proteins and ribozymes, DNA repair, molecular evolution) and algal metabolism (related to biofuels)

PUBLICATIONS

1. Herrin, D., A. Michaels, and E. Hickey. **1981**. Synthesis of a Chloroplast Membrane Polypeptide on Thylakoid-Bound Ribosomes During the Cell Cycle of *Chlamydomonas reinhardtii* 137+. *Biochimica et Biophysica Acta* 655, 136-145.
2. Herrin, D. and A. Michaels. **1984**. Isolation, Fractionation and Analysis of Intact, Translatable RNA from Walled Algal Cells. *Plant Molecular Biology Reporter* 2, 24-28.
3. Herrin, D. and A. Michaels. **1984**. Gene Expression during the Cell Cycle of *Chlamydomonas reinhardtii*. In: Recombinant DNA and Cell Proliferation. G. Stein and J. Stein, eds. Academic Press, Orlando, pp. 87-106
4. Herrin, D. and A. Michaels. **1985**. *In Vitro* Synthesis and Assembly of the Peripheral Subunits of Coupling Factor CF1 (α and β) on Thylakoid-Bound Ribosomes. *Archives of Biochemistry and Biophysics* 237, 224-234.
5. Herrin, D., C. Helling and S.A. Watts. **1985**. Relative Levels of Actin and Actin Gene Sequences in Pyloric Caeca and Tube Feet of the Adult Starfish, *Luidia clathrata* (Echinodermata:Asteroidea). *Comparative Biochemistry and Physiology* 81, 143-147.
6. Herrin, D. and A. Michaels. **1985**. The Chloroplast 32 kDa Protein is Synthesized on Thylakoid-Bound Ribosomes in *Chlamydomonas reinhardtii*. *FEBS Letters* 184, 90-95.
7. Herrin, D.L., A.S. Michaels and A. L. Paul. **1986**. Regulation of Genes Encoding the Large Subunit of Ribulose-1,5-bisphosphate Carboxylase and the Photosystem II Polypeptides D-1 and D-2 during the Cell Cycle of *Chlamydomonas reinhardtii*. *Journal of Cell Biology* 103, 1837-1845.

8. Jensen, K., D.L. Herrin, F.G. Plumley and G.W. Schmidt. **1986**. Biogenesis of Photosystem II Complexes: Transcriptional, Translational and Post-translational Control. *Journal of Cell Biology* 103, 1315-1325.
9. Herrin, D.L. and G.W. Schmidt. **1987**. Chloroplast Gene Expression in Chloroplast Ribosome-deficient Mutants of *Chlamydomonas reinhardtii*. In: Progress in Photosynthesis Research Vol. IV. J. Biggins, ed. Martinus Nijhoff, Dordrecht, Netherlands, pp. 645-648.
10. Schmidt, G.W., L.E. Sieburth, K.H. Jensen, K. Greer, F.G. Plumley and D.L. Herrin. **1987**. Photosystem II Biogenesis: Roles of Nuclear Gene Products. In: Progress in Photosynthesis Research Vol. IV. J. Biggins, ed. Martinus Nijhoff, Dordrecht, Netherlands, pp. 637-644.
11. Herrin, D.L., F.G. Plumley, M. Ikeuchi, A.S. Michaels and G.W. Schmidt. **1987**. Chlorophyll-Antenna Proteins of Photosystem I: Topology, Synthesis and Regulation of the 20 kDa Subunit of *Chlamydomonas* Light-Harvesting Complex of Photosystem I. *Archives of Biochemistry and Biophysics* 254, 397-408.
12. Herrin, D.L. and G.W. Schmidt. **1988**. Rapid, Reversible Staining of Northern Blots Prior to Hybridization. *Biotechniques* 6, 196-200.
13. Herrin, D.L. and G.W. Schmidt. **1988**. Trans-Splicing of Transcripts for the Chloroplast *psaA1* Gene: In Vivo Requirement for Nuclear Gene Products. *Journal of Biological Chemistry* 263, 14601-14604.
14. Leu, S., D. Herrin and A. Michaels. **1989**. Regulation of Chloroplast Gene Expression in *Chlamydomonas reinhardtii*. In Proceedings of the Braunschweig Symposium on Applied Plant Molecular Biology, (G. Gallig, ed.), Technische Universitat, Braunschweig, pp. 22-37.
15. Michaels, A. and D. Herrin. **1989**. In Vitro Synthesis, Assembly and Function of a Photosynthetic Membrane Protein. *Plant Physiology* 89, 100-103.
16. Einspahr, K.J., M.P. Rodriguez-Rosales, K.S. Ha, D.L. Herrin, and G.A. Thompson, Jr. **1990**. Transmembrane Signaling in the Green Alga *Dunaliella salina* under Salt Stress. In Plant Lipid Biochemistry: Structure and Utilization, P.J. Quinn and J.L. Harwood, eds, Portland Press, London, pp. 351-356.
17. Herrin, D. and T. Worley. **1990**. A Rapid Procedure for the Isolation of Chloroplast DNA from *Chlamydomonas* using the TL-100 Ultracentrifuge. *Plant Molecular Biology Reporter* 8, 292- 296.
18. Michaels, A. and D. L. Herrin. **1990**. Translational Regulation of Chloroplast Gene Expression During the Light-Dark Cell Cycle of *Chlamydomonas*: Evidence for Control by ATP/Energy Supply. *Biochemical and Biophysical Research Communications* 170, 1082-1088.
19. Herrin, D.L., Y-F. Chen, and G.W. Schmidt. **1990**. RNA Splicing in *Chlamydomonas* Chloroplasts: Self-Splicing of 23S PreRNA. *Journal of Biological Chemistry* 265, 21134-21140.
20. Herrin, D.L., Y. Bao, A.J. Thompson, and Y.-F. Chen. **1991**. Self-Splicing of the *Chlamydomonas* Chloroplast *psbA* Introns. *Plant Cell* 3, 1095-1107.
21. Thompson, A.J. and D.L. Herrin. **1991**. In Vitro Self-Splicing Reactions of the Chloroplast Group I Intron *Cr.LSU* from *Chlamydomonas reinhardtii* and In Vivo Manipulation via Gene-Replacement. *Nucleic Acids Research* 19, 6611-6618.
22. Rodriguez-Rosales, M.P., D.L. Herrin, and G.A. Thompson, Jr. **1992**. Identification of Low Molecular Mass GTP-Binding Proteins in Membranes of the Halotolerant Alga *Dunaliella salina*. *Plant Physiology* 98, 446-451.
23. Herrin, D.L., J. F. Battey, K. Greer, and G.W. Schmidt. **1992**. Regulation of Chlorophyll Apoprotein Expression and Accumulation. Requirements for Carotenoids and Chlorophyll. *Journal of Biological Chemistry* 267, 8260-8269.
24. Thompson, A.J., X. Yuan, W. Kudlicki, and D.L. Herrin. **1992**. Cleavage and Recognition Pattern of a Double-Strand-Specific Endonuclease Encoded by the Chloroplast 23S

- rRNA Intron of *Chlamydomonas reinhardtii*. *Gene* 119, 247-251.
25. Plumley, F.G., T.A. Martinson, D.L. Herrin, M. Ikeuchi and G.W. Schmidt. **1993**. Structural Relationships of the Photosystem I and Photosystem II Chlorophyll a/b and a/c Light-harvesting Apoproteins of Plants and Algae. *Photochemistry and Photobiology* 57, 143-151.
26. Dyer, T. Thompson, A., and D. Herrin. **1993**. Chloroplast Molecular Biology. In Plant Molecular Biology LabFax, R.R.D. Croy, ed., Bios Scientific, Oxford, pp. 293-311.
27. Hwang, S. and D.L. Herrin. **1993**. Characterization of a cDNA Encoding the 20 kDa Subunit of LHCl from *Chlamydomonas reinhardtii*. *Current Genetics* 23, 512-517.
28. Bao, Y. and D.L. Herrin. **1993**. Nucleotide Sequence and Secondary Structure of the Chloroplast Group I Intron *Cr.psbA-2*: Novel Features of this Self-splicing ribozyme. *Nucleic Acids Research* 21, 1667.
29. Memon, A., D.L. Herrin and G.A. Thompson, Jr. **1993**. Intracellular Translocation of a 28 kDa GTP-binding Protein During Osmotic Shock Induced Cell Volume Regulation in *Dunaliella salina*. *Biochimica et Biophysica Acta* 1179, 11-22.
30. Thompson, A.J. and D.L. Herrin. **1994**. A Chloroplast Group I Intron Undergoes the First Step of Reverse Splicing into Host 5.8S rRNA: Implications for Intron-Mediated RNA Recombination, Intron Transposition and 5.8S rRNA Structure. *Journal of Molecular Biology* 236, 455-468.
31. Hwang, S. and D.L. Herrin. **1994**. Circadian Regulation of *lhc* Gene Transcription in *Chlamydomonas reinhardtii*. *Plant Molecular Biology* 26, 557-569.
32. La Claire, J.W., R. Chen and D.L. Herrin. **1995**. Identification of a Myosin-like Protein in *Chlamydomonas reinhardtii* (Chlorophyta). *Journal of Phycology* 31, 302-306.
33. Deshpande, N., M. Hollingsworth, and D.L. Herrin. **1995**. The *atpF* Group II Intron-Containing Gene from Spinach Chloroplasts is not spliced in Transgenic *Chlamydomonas* Chloroplasts. *Current Genetics* 28, 122-127.
34. Memon, A.R., R. Kawazoe, X. Zhang, D.L. Herrin and G.A. Thompson. **1995**. Low Molecular Mass GTP-Binding Proteins in *Chlamydomonas reinhardtii* Wild Type and a Wall-less Strain. Characterization and Comparison with GTP-Binding Proteins of *Dunaliella salina*. *Plant Physiology and Biochemistry* 33, 225-234.
35. Memon, A., S. Hwang, N. Deshpande, G.A. Thompson and D.L. Herrin. **1995**. Novel Aspects of the Regulation of a cDNA (*Arf1*) from *Chlamydomonas* with High Sequence Identity to Animal ADP-Ribosylation Factor 1. *Plant Molecular Biology* 29, 567-577.
36. Hwang, S., R. Kawazoe and D.L. Herrin. **1996**. Transcription of *tufA* and other Chloroplast-Encoded Genes is Regulated by a Circadian Clock in *Chlamydomonas*. *Proceedings of the National Academy of Sciences, USA* 93, 996-1000.
37. Durrenberger, F., A.J. Thompson, D.L. Herrin and J.D. Rochaix. **1996**. Double Strand Break-Induced Recombination in Chloroplasts of *Chlamydomonas reinhardtii*. *Nucleic Acids Research* 24, 3323-3331.
38. Deshpande, N., Y. Bao and D.L. Herrin. **1997**. Evidence for Light/Redox Regulated Splicing of the *psbA* Introns in *Chlamydomonas* Chloroplasts. *RNA* 3, 37-48.
39. Wang, J., H-H. Kim, X. Yuan and D.L. Herrin. **1997**. Purification, Biochemical Characterization and DNA-Protein Interactions of the I-CreI Endonuclease Produced in *Escherichia coli*. *Nucleic Acids Research* 25, 3367-3376.
40. LaClaire, J.W. and D.L. Herrin. **1997**. Co-isolation of High Quality DNA and RNA from Coenocytic Green Algae. *Plant Molecular Biology Reporter* 15, 263-272.
41. Holloway, S. and D.L. Herrin. **1998**. Processing of a Composite Large Subunit rRNA: Studies with *Chlamydomonas* Mutants Deficient in Maturation of the 23S-like rRNA. *Plant Cell* 10, 1193-1206.
42. Herrin, D.L., T.-C. Kuo and M. Goldschmidt-Clermont. **1998**. RNA Splicing in the Chloroplast. In: The Molecular Biology of Chloroplasts and Mitochondria in *Chlamydomonas*. J-D. Rochaix, M. Goldschmidt-Clermont and S. Merchant, eds, Kluwer Academic Press, Dordrecht, The Netherlands, pp. 183-195.

43. Holloway, S.P, Deshpande, N.N. and D.L. Herrin. **1999**. The Catalytic Group I Introns of the *psbA* Gene of *Chlamydomonas reinhardtii*: Secondary Structures, ORFs and Evolutionary Implications. *Current Genetics* 36, 69-78.
44. Minko, I., Holloway, S.P., Nikaido, S., Odom, O.W., Carter M., Johnson C.H. and D.L. Herrin. **1999**. Renilla Luciferase as a Vital Reporter for Chloroplast Gene Expression in *Chlamydomonas*. *Molecular and General Genetics* 262, 421-425.
45. Kawazoe, R., S. Hwang and D.L. Herrin. **2000**. Requirement for Cytoplasmic Protein Synthesis during Circadian Peaks of Transcription of Chloroplast-Encoded Genes. *Plant Molecular Biology* 44, 699-709.
46. Kuo, T-C. and D.L. Herrin. **2000**. A Kinetically Efficient Form of the *Chlamydomonas* Self-Splicing Ribosomal RNA Precursor. *Biochemical Biophysical Research Communications* 273, 967-971.
47. Kuo, T-C. and D.L. Herrin. **2000**. Quantitative Studies of Mn^{2+} -Promoted Specific and Non-specific Cleavages of a Large RNA: Mn^{2+} -GAAA Ribozymes and the Evolution of Small Ribozymes. *Nucleic Acids Research* 28, 4197-4206.
48. Odom, O.W., S.P. Holloway, N.N. Deshpande, J. Lee and D.L. Herrin. **2001**. Mobile Introns from the *psbA* gene of *Chlamydomonas reinhardtii*: Highly Efficient Homing of an Exogenous Intron Containing its Own Promoter. *Molecular and Cellular Biology* 21, 3472-3481.
49. Li, F. and D.L. Herrin. **2002**. FUGOID: Functional Genomics of Organellar Introns Database. *Nucleic Acids Research* 30, 385-386.
50. Lee, J. and D.L. Herrin. **2002**. Assessing the Relative Importance of Light and the Circadian Clock in Controlling Chloroplast Translation in *Chlamydomonas reinhardtii*. *Photosynthesis Research* 72, 295-306.
51. Li, F, S.P. Holloway, J. Lee and D.L. Herrin. **2002**. Nuclear Genes that Promote Splicing of Group I Introns in the Chloroplast 23S rRNA and *psbA* genes in *Chlamydomonas reinhardtii*. *The Plant Journal* 32, 467-480.
52. Chang, M.P., F.Li, O.W. Odom, J. Lee and D. L. Herrin. **2003**. A Cosmid Vector Containing a Dominant Selectable Marker for Cloning *Chlamydomonas* Genes by Complementation. *Plasmid* 49, 75-78.
53. Lee, J. and D.L. Herrin. **2003**. Mutagenesis of a Light-Regulated *psbA* Intron Reveals the Importance of Efficient Splicing for Photosynthetic Growth. *Nucleic Acids Research* 31, 4361-4372.
54. Odom, O.W., D. Shenkenberg, J. Garcia and D.L. Herrin. **2004**. A Horizontally Acquired Group II Intron in the Chloroplast *psbA* Gene of a Psychrophilic *Chlamydomonas*: In Vitro Self-Splicing and Genetic Evidence for Maturase Activity. *RNA* 10, 1097-1107.
55. Herrin, D.L. and J. Nickelsen. **2004**. Chloroplast RNA Processing and Stability (Review). *Photosynthesis Research* 82, 301-314.
56. Carter, M.L., A. Smith, H. Kobayashi, S. Purton and D.L. Herrin. 2004. Structure, Circadian Regulation and Bioinformatic Analysis of the Unique Sigma Factor Gene in *Chlamydomonas reinhardtii*. *Photosynthesis Research* 82, 339-349.
57. Kim, H-H., L. Corina, J-K. Suh, and D.L. Herrin. **2005**. Expression, Purification, and Biochemical Characterization of the Intron-Encoded Endonuclease, I-Crell. *Protein Expression and Purification* 44, 162-172.
58. Misquitta, R. and D.L. Herrin. **2005**. Circadian Regulation of Chloroplast Transcription: A Review. *Plant Tissue Culture* 15, 83-101.
59. Mahan, K.M., O.W. Odom, and D.L. Herrin. **2005**. Controlling Fungal Contamination in *Chlamydomonas reinhardtii* cultures. *Biotechniques* 39, 457-458.
60. Kuo, T-C., O.W. Odom and D.L. Herrin. **2006**. Unusual Metal Specificity and Structure of the Group I Ribozyme from *Chlamydomonas reinhardtii* 23S rRNA. *FEBS Journal* 273, 2631-2644.
61. Bao, Y. and D.L. Herrin. **2006**. Mg^{2+} Mimicry in the Promotion of Group I Ribozyme Activities by Aminoglycoside Antibiotics. *Biochemical and Biophysical Research*

- Communications* 344, 1246-1252.
62. Zicker, A.A., C.S. Kadakia and D.L. Herrin. **2007**. Distinct Roles for the 5' and 3' Untranslated Regions in the Degradation and Accumulation of Chloroplast *tufA* mRNA: Identification of an Early Intermediate in the *In Vivo* Degradation Pathway. *Plant Molecular Biology* 63, 689-702.
 63. Odom, O.W., K-H. Baek, R.N. Dani and D.L. Herrin. **2008**. *Chlamydomonas* Chloroplasts Can Use Short Dispersed Repeats (SDRs) and Multiple Pathways to Repair a Double-Strand Break in the Genome. *Plant Journal* 53, 842-853.
 64. Herrin, D.L. **2009**. Chloroplast RNA Processing and Stability. In: *The Chlamydomonas Sourcebook*, 2nd Ed., Vol. 2 (D. Stern, E. Harris, eds.), Academic Press, pp. 937-965.
 65. Corina, L.E., W. Qiu, A. Desai and D.L. Herrin. **2009**. Biochemical and mutagenic analysis of I-Crell reveals distinct but important roles for both the H-N-H and GIY-YIG motifs. *Nucleic Acids Research* 37, 5810-5821.
 66. Odom, O.W. and D.L. Herrin. **2010**. An Unprecedented Group II Intron from *Chlamydomonas subcaudata* (Chlorophyceae) that has Two Large Open Reading Frames – Potentially Encoding a Reverse Transcriptase-Maturase-Endonuclease and a Novel Protein. *Journal of Phycology*, in press.
 67. Kwon, T., E. Huq and D.L. Herrin. **2010**. Microhomology-Mediated and Nonhomologous Repair of a Double-Strand Break in the Chloroplast Genome of *Arabidopsis*. *Proceedings of the National Academy of Sciences USA*, in press.
 68. Odom, O.W. and D.L. Herrin. Group II Intron Invasion and Reverse Transcription are Associated with Evolutionary Loss of Group I Introns in *Chlamydomonas* spp. In prep.
 69. Kawazoe, R., B. Venghaus, M.C. Carter, K.M. Mahan and D.L. Herrin. Absence of Fluctuations in Chloroplast RNA Polymerase Core Activity or Abundance of the Sigma Factor in Light-Dark Cycling *Chlamydomonas*. In preparation.
 70. Liming, L. and D.L. Herrin. A Rhodanese-Like Enzyme is Required for Chloroplast Translation in *Chlamydomonas*. In preparation.
 71. Qiu, W. and D.L. Herrin. Evolution of a Catalytic Endonuclease Domain into a DNA-Binding Domain in I-Crell. In preparation.

EXTERNAL RESEARCH GRANTS

Current support:

Texas Advanced Research Program (003658-0144-2007). 5/15/08-5/14/10 (24 months).
Enhancing Ethanol Production in *Chlamydomonas* by Genetic Modification. \$75,000 (Direct).

Previous Grants:

- 1989 Faculty Research Award, UT-Austin. Self-splicing Chloroplast Introns. \$8000
- 1989 Robert A Welch Foundation. Catalytic RNA: Structural and Mechanistic Studies of a Self-Splicing Molecule. \$75,000; 6/89-6/92.
- 1989 NSF, Biochemistry Program (DMB 89-05303). RNA Splicing in Chloroplasts: Mechanism and Function of Group I Introns. \$190,000; 8/89-8/92.
- 1992 Robert A Welch Foundation (F-1164). Structure and Chemistry of Chloroplast Group I Ribozymes. \$93,000; 6/1/92-5/30/95.
- 1992 USDA, National Research Initiative Competitive Grants Program (92-37301-7682). Splicing and Mobility of Chloroplast Group I Introns. \$100,000; 9/15/92-9/14/94.
- 1994 Texas Advanced Technology Program (ATP-326). Rare-Cutting Restriction Endonucleases for The Human Genome Project Derived from Introns. \$155,000; 1/1/94-12/31/95.
- 1994 USDA, National Research Initiative Competitive Grants Program (92-37301-7682). Regulation of RNA Splicing in Chloroplasts. \$120,000; 9/1/94-8/31/96.
- 1995 Robert A Welch Foundation (F-1164). Catalytic RNA: Structural and Mechanistic Studies of a Self-splicing Molecule. \$105,000 (\$35,000/yr Direct); 6/1/95-5/31/98.

- 1996 USDA NRICGP (96-35301-3420). Splicing and Mobility of Chloroplast Introns. \$195,000 (\$57,000/yr Direct); 9/1/96-8/31/99.
- 1997 NSF-NATO (DGE-9617550). Vital Markers for the Study of Chloroplast Gene Expression. Postdoctoral Fellowship for Dr. Irina Minko. \$46,000 (Direct); 1/97-3/98.
- 1998 Robert A Welch Foundation (F-1164). Catalytic RNAs and Site-Specific Endonucleases Derived from Group I Introns". \$135,000 (Direct); 6/1/98-5/31/01.
- 1999 USDA NRICGP (99-35301-7847). 9/1/99-4/1/2002. RNA Splicing and Turnover in Chloroplasts. \$130,000 (\$58,000/yr Direct).
- 2001 Robert A Welch Foundation (F-1164). Catalytic RNAs and Site-Specific Endonucleases Derived from Group I Introns. \$150,000 (Direct); 6/1/01-5/31/04.
- 2002 World Health Organization (Director's Initiative Grant). 3/02-12/31/02. Biological Control of Mosquitoes with Bioengineered Algae. \$15,000 (Direct).
- 2002 US Dept of Energy (DE-FG03-02ER15352). 9/1/02-8/31/05. Regulation of Chloroplast Group I Intron Splicing. \$300,000 (Total).
- 2003 US Fish and Wildlife Service, Texas Parks and Wildlife Dept. (Grant #128312). 11/1/03-9/30/06. DNA-Based Detection and Partial Genome Analysis of the Harmful Golden Alga, *Prymnesium parvum*. \$254,359 (\$221,181 Direct). Co-PI (John La Claire, PI).
- 2004 Robert A Welch Foundation (F-1164). 6/1/2004-5/31/2007. Catalytic RNAs and Site-Specific Endonucleases Derived from Group I Introns. \$150,000 (Direct).
- 2005 US Fish and Wildlife Service and Texas Parks and Wildlife Dept. 11/1/05-8/31/07 (21 months). Development of Molecular Biomarkers for Determining *Prymnesium parvum* Bloom Status and Ichthyotoxicity. \$192,783 (\$167,637 Direct). Co-PI (John La Claire, PI).
- 2005 US Dept of Energy (DE-FG03-02ER15352). 9/1/05-8/31/09 (48 months, including a 12-month no-cost extension) Factor-Assisted Splicing in Chloroplasts. \$360,000 (Total).
- 2007 Robert A Welch Foundation (F-1164). 6/1/2007-5/31/2010 (36 months). Biochemistry and Biotechnology of the Homing Endonuclease I-Crell. \$150,000 (Direct).
- 2009 US Defense Advanced Research Projects Agency, BAA 08-07 Biofuels (01-1262-52-1000-000). An Integrated and Economic Approach to make JP-8 from Algae. Co-PI at UT-Austin. Lead organization, Science Applications International Corporation (SAIC). Total award, \$19,700,000; 9/2008-9/010. Support for my lab was for a summer student.

INVITED LECTURES AND SEMINARS

- 1985 University of South Florida, Biology Department.
- 1987 Argonne National Laboratory, Chicago, IL.
- 1987 University of Texas at Austin, Botany Department.
- 1988 Third International Conference on *Chlamydomonas*- Cellular and Molecular Biology of *Chlamydomonas* -Cold Spring Harbor, NY. Symposium speaker.
- 1990 Fourth International Conference on the Cellular and Molecular Biology of *Chlamydomonas*, Delavan, WI. Symposium speaker.
- 1991 International Congress of Plant Molecular Biology, Tuscon, Arizona. Presented by my postdoctoral associate, A.J. Thompson, in the section on "RNA Processing".
- 1991 University of Texas at Austin, Department of Chemistry and Biochemistry.
- 1992 Arizona State University, Center for the Study of Early Events in Photosynthesis.
- 1994 Sixth International Conference on the Cell and Molecular Biology of *Chlamydomonas*, Lake Tahoe, CA. Symposium speaker.
- 1996 Seventh International Conference on the Cell and Molecular Biology of *Chlamydomonas*, Regensburg, Germany. Symposium speaker.
- 1996 Texas A&M University, Biology Department.
- 1997 American Society of Microbiology Annual Meeting, Miami, FL. Symposium speaker.
- 2000 Ninth International Conference on the Cell and Molecular Biology of *Chlamydomonas*, The Netherlands. Symposium speaker.
- 2000 University of Texas at Austin, Molecular Cell and Developmental Biology Section.

- 2005 Botanical Society of America Annual Meeting, Austin TX. Symposium speaker.
2006 Twelfth International Conference on the Cell and Molecular Biology of *Chlamydomonas*, Portland, OR. Platform speaker.
2007 SUNY-Buffalo, Biology Department.
2008 EMBO Workshop: Thirteenth International Conference on the Cellular and Molecular Biology of *Chlamydomonas*, Hyères, France. Platform Speaker.

TEACHING EXPERIENCE

Courses taught:

University of South Florida

- Genetics Discussion Section, University of South Florida, 1978
Cell Biology Laboratory, University of South Florida, 1979-1981

University of Texas at Austin:

- Bio 322: Structure, Physiology, and Reproduction of Seed Plants, ~100 students in 2 lecture sections, team-taught with one other Professor, 1989-2004
Bio 122L: Laboratory for Bio 322, ~100 students, team-taught with one other Professor, 1989-2004
Bio 350M/388: Plant Molecular Biology (25-40 graduate & undergraduate students), 1989-present, a lecture course for graduate students and seniors
Bot 394: Plant Molecular Biology Seminar (~5 students), 1990-2001
Bio 212: Genetics and Evolution (~200 students in 2 lecture sections), team-taught with Don Levin, 2000
Bio 206: Laboratory Experiments in Biology- Structure and Function of Organisms (250 students), 1989-1990
Bio 205: Cellular and Molecular Biology Laboratory (~400 students), 1991-1992
Bio 344: Molecular Biology, lecture course (85-170 students), 2001, 2003-present
Bio 393: Molecular Biology of RNA, graduate seminar course, 2005-2006
Bio 393: Biofuels (Molecular Biology and Biotechnology), graduate seminar course, 2010

Current teaching at UT-Austin:

- Molecular Biology (Bio 344), ~40 lecture-hours
Plant Molecular Biology (Bio 350M/Bio388), ~40 lecture-hours
Biofuels (Bio 393), ~2 hrs/wk seminar and literature-based course

COURSE AND CURRICULUM DEVELOPMENT

In addition to writing lectures and teaching in the courses listed above, I organized and/or developed the following:

- Bot 394: Plant Molecular Biology Seminar (Organizer, 1990-2001)
Bot 120c: Structure and Physiology of Seed Plants - Laboratory
- Developed 2 new physiology labs Spring 1991, and 2 more Spring 1992
Bio 206: Structure and Function of Organisms-Laboratory
- Developed 1 new lab exercise (Fall 1991)
2002-03 Received a FAST Tex award to develop an animation of DNA Recombination (it is on my web site for Bio 344)

UNIVERSITY AND DEPARTMENTAL COMMITTEES (active ones are in bold)

University

- 2001-04 Member, Graduate Assembly
2003 Member, Graduate Teaching Awards Committee

College of Natural Sciences

- 1988-93 Member, Hazardous Materials Committee
1988-89 Member, Molecular Biology Planning Committee
1988-89 Member, Molecular Biology Seminar Series Committee

- 1993-96 Member, Executive Committee, Graduate Program in Molecular Biology
- 1993-96 Member, Advisory Committee, Institute for Cellular and Molecular Biology
- 1993 Member, College Planning Committee
- 1994-96 Member, Search Committee for Director of the ICMB Institute
- 1995 Member, Subcommittee to explore Molecular Evolution as an area of emphasis
- 1995 Member, Oversight Committee to Establish a DNA Analysis Facility
- 1999-01 Member, Safety Committee
- 2000-05 Member, Course and Curriculum Committee
- Division of Biological Sciences (ended w/reorganization on 9/99)
 - 1989-99 Member, Course and Curriculum Committee
 - 1990-99 Member, Graduate Studies Committee
- School of Biological Sciences (formed 9/99)
 - 1993- Member, Graduate Studies Committee, Cell and Molecular Biology Program
 - 1999- Member, Graduate Studies Committee, Plant Biology Graduate Program
 - 1999 Member, Executive Committee, Cell and Molecular Biology Graduate Program
 - 1999 Admissions Committee, Cell and Molecular Biology Graduate Program
 - 1999- Safety Officer, Bio Labs Bldg.
 - 2000- Member, Graduate Studies Committee, Microbiology Graduate Program
 - 2000- Member, Space Committee for Painter Hall
 - 2003-05 Member, Admissions Committee, Cell and Molecular Biology Graduate Program
- Department of Botany (ended w/reorganization in 9/99)
 - 1988-99 Member, Graduate Studies Committee, Botany Graduate Program
 - 1988-89 Member, Search Committee for Plant Cell Biologist Position
 - 1989-90 Member, Computer Committee
 - 1989-92 Organizer, Departmental Seminar Program (Fall semesters)
 - 1990-99 Member, Course and Curriculum Committee
 - 1990-93 Recording Secretary for Faculty Meetings
 - 1994-95 Member, Search Committee for Plant Developmental Biologist
 - 1994 Member, Promotion Committee for Dr. Louis Morejohn
 - 1994-98 Member, Graduate Affairs Committee
 - 1995-98 Member, Search Committee for Sibley Professor
 - 1996-99 Member, Space Committee
 - 1998 Member, Faculty Salary Advisory Committee
- Molecular Cell and Developmental Biology Section (formed 9/99)
 - 1999-01 Member, Seminar Committee
 - 2000 Chair, Promotion Committee for Dr. Alan Lloyd
 - 2001 Chair, Faculty Research Evaluation Committee
 - 2001 Member, Long-Range Planning Committee
 - 2002 Member, Search Committee for Plant Molecular Geneticist
 - 2002 Member, Faculty Research Evaluation Committee
 - 2003-06 Chair, Faculty Research Evaluation Committee
 - 2003-05 Member, Search Committee for Sibley Professor
 - 2005 Member, Post-Tenure Review Committee for Dr. John La Claire
 - 2007 Member, Post-Tenure Review Committee for Dr. Mona Mehdy
 - 2007 Member, Promotion Committee for Dr. Jeffrey Chen
 - 2007- Member, Plant Biology Graduate Program Committee
 - 2007 Member, Peer Teaching Evaluations Committee
 - 2008 Member, Promotion Committee for Dr. Alan Lloyd
 - 2009 Member, 3rd-year Review Committee (for Sibum Sung)

ADVISING

- 1994-95 Advisor for the Botany B.S. degree

UNDERGRADUATE RESEARCH SUPERVISION

- 1990 Franklin Weisser (supported by an NSF REU award)
- 1991 Melanie Andrews (supported by Summer Research Program in Molecular Biology)
- 1992 Robyn Beach (supported by Summer Research Program in Molecular Biology)
- 1993 Alice Tien
- 1994 Ken Jenkins (supported by my ATP grant)
- 1994-95 Travis Scoggins (supported by my ATP grant)
- 1994 Liza Gergen (supported by Summer Undergrad Research Program)
- 1995 Sara Lara (supported by Summer Undergrad Research Program)
- 1995-97 Hieu Cam (Summer Research Program, and UT Undergrad Research Fellowship)
- 1996 Eve Sansone (supported by the Summer Undergrad Research Program)
- 1996 David Hawkins
- 1998 *Matthew Carter (became my graduate student)
- 1998 Daniel Azen
- 1998 Kristie H. Moss (supported by Summer Undergrad Research Program)
- 1999 Jay Farrington (supported by Summer Undergrad Research Program); *Radhika Dani (Undergraduate Research Fellowship)
- 2000 Scott Miller
- 2000-01 Sameer Islam
- 2001 Iris Chiu
- 2002 Jerry Chen, Rhyne Simon, Meredith Allen, *David Shenkenberg (J Chen and D Shenkenberg received Undergraduate Research Fellowships)
- 2003 *David Shenkenberg, *Josh Garcia, *Amy Desai (received an MCDB Research Scholarship)
- 2004 Keren Hilgendorf, Rosina Amua-Sekyi, Chantal Lucia, *Crystal Kadakia
- 2005 John Liao, *Kristina Mahan, Grace Tsieu, *David Fudman, Sean Grunsten (supported by the NSF REU program)
- 2006 Julie Kim, *Kristina Mahan (supported by my Welch and DOE grants), Smitha Shivaprasad, *Brad Venghaus (supported by my DOE grant)
- 2007 *Brad Venghaus (Undergrad Research Fellowship), Wayne Bowden, John Nguyen
- 2008 *Brad Venghaus, David Kim, Dipesh Desai (supported by my ARP grant)
- 2009 Dipesh Desai (supported by my ARP grant), SeongJoon Kang

* author or co-author on a publication or manuscript in preparation.

GRADUATE STUDENT SUPERVISION (As Principal Advisor)

Graduated (and position obtained after graduation or current position)

- 1991 Yu-Fen Chen, MA, Botany (Research Technician, research institute in Taiwan)
- 1993 Xiaoqin Yuan, MA, Biology (Research Technician, M.D. Anderson Cancer Center)
- 1993 Yijia Bao, PhD, Biology (Senior Scientist, Corning Corp.)
- 1994 Seongbin Hwang, PhD, Botany (Chair of Molecular Biotechnology, Sejong U, Korea)
- 1995 Jinshan Wang, MA, Botany (Research Technician, UT-Austin)
- 1996 Nita Deshpande, PhD, Biology (Programmer, Protein Design Group, UC-San Diego)
- 1998 Tai-Chih Kuo, PhD, Botany (Asst. Professor, Taipei Medical University, Taiwan)
- 2000 Hyong-Ha Kim, PhD, Botany (Senior Scientist at KIST, Seoul, Korea)
- 2000 Ryo Kawazoe, PhD, Biology (Postdoctoral Fellow, Osaka Bioscience Institute)
- 2002 Mandi Vaughn, MA, Plant Biology (supervisor at Hollister-Steer, Spokane, WA)
- 2002 Fei Li, PhD, Plant Biology, (Asst. Professor, New York U)
- 2003 Jaesung Lee, PhD, Plant Biology (Postdoctoral Associate, UC-San Diego)
- 2004 Rachel Misquitta, MA, Microbiology (Graduate student, NYU Medical College)
- 2004 Anitha Yerrabelli, MA, Microbiology (NIH, Bethesda)
- 2005 Alicia Zicker, PhD, Biology (Project Director, Cedra Pharmaceutical)
- 2005 Laura Corina, PhD, Plant Biology (Assoc. Dean, Quincy College)
- 2006 Matthew Carter, MA, Biology (Agilent Technologies)

2010 Weihua Qiu, PhD, Plant Biology

2010 Liming Luo, PhD expected Dec. 2010

Breakdown: 19 total, 12 PhD (6m/6f), 7 Masters (6f/1m); 5 domestic/13 International

Current Graduate Students:

Taegun Kwon, 6th-year PhD student, Plant Biology (expected graduation, 12/2010 or 5/2011)

SeongJoon Kang, 2nd-yr PhD student, Plant Biology

I have served on the thesis committees of 3 M.A. students and ~55 Ph.D. students at UT. Some of the latter students are listed below:

Ph.D. Students Advised (other than as Major Advisor) over the years 1995-09

Student	Thesis Committee	Qualifying Exam ^a	Status
1. Ahn, Yong Tae	Yes	No	Graduated
2. An, Sungwhan	Yes	Yes	Graduated
3. Banerjee, Sangeeta	Yes	No	Graduated
4. Blazier, Chris	Yes	Yes	Current
5. Cai, Zhengqiu	Yes	Yes	Current
6. Castillon, Alicia	Yes	Yes	Graduated
7. Chen, Chun-Jen	Yes	No	Graduated
8. Chen, Yuh-Fen	Yes	Yes	Graduated
9. Chen, Xin	Yes	No	Graduated
10. Goertzen, Leslie	No	Yes	Graduated
11. Grow, Matthew	No	Yes	Graduated
12. Guisinger, Mary	Yes	Yes	Graduated
13. Kim, Soo-Hwan	Yes	Yes	Graduated
14. Hsieh, Hsu-Liang	Yes	Yes	Graduated
15. Hung, Chiiung-Yu	Yes	Yes	Graduated
16. Huang, Ching-Jung	Yes	No	Graduated
17. Huang, Chun-Yuan	Yes	Yes	Graduated
18. Hwang, Kyongmin	Yes	Yes	Graduated
19. Kang, Hyuno	No	Yes	-
20. Kim, Soo-Hwan	Yes	Yes	Graduated
21. Larkin, Leah	No	Yes	Graduated
22. Lee, Insuk	Yes	No	Graduated
23. Lee, Yew	Yes	Yes	Graduated
24. Liu, Hongbo	Yes	Yes	Graduated
25. Liu, Yen-Ting		Yes	Current
26. Manning, Schonna	Yes	Yes	Current
27. Min, Kyung-Jin	No	Yes	Graduated
28. Myers, Chris	Yes	No	Graduated
29. Narayanan, Krishna	Yes	No	Graduated
30. Nobles, David	Yes	Yes	Graduated
31. Oglesby, Amanda	No	Yes	-
32. Pan, Meide	Yes	Yes	Graduated
33. Payne, Thomas	Yes	Yes	Graduated
34. Rainey, Mark	No	Yes	Graduated
35. Repass, John	Yes	Yes	Graduated

36. Reichler, Stuart	Yes	Yes	Graduated
37. Sims, Robert	No	Yes	Graduated
38. Talarski, Aimee	Yes	Yes	Current
39. Tong, Chii-Gong	Yes	Yes	Graduated
40. Weiss, Janna	No	Yes	Graduated
41. Wu, Yaning	No	Yes	Graduated
42. Yan, Nan	No	Yes	Graduated
43. Yaznik, Juhi	No	Yes	Current
44. Yoon, Ki-Hoon	No	Yes	Graduated
45. Zhang, Fan	Yes	Yes	Graduated
46. Zhang, Hua	Yes	Yes	Graduated
47. Zhang, Xiaoqing	Yes	Yes	Graduated
48. Zhou, Li	No	Yes	Current

^a In graduate programs that had two parts to the exam, "No" means that I did not participate in part I (the general test).

POSTDOCTORAL SUPERVISION

Dr. Andrew Thompson, 1/90-6/92 (Senior Research Scientist, Department of Molecular Biology, Horticulture Research International, Sussex, UK)
 Dr. Pilar Maria Rodriguez-Rosales, 1989-1991, Fulbright Fellow with Dr. Guy Thompson, who was the principal advisor (Research Scientist, Biochimica Vegetal Division, Estacion Experimental del Zaidin, Granada, Spain)
 Dr. Abdul Memon, 8/91-12/94, associated with Dr. Guy Thompson and myself (Professor, Marmara Research Institute, Istanbul, Turkey)
 Dr. Stephen Holloway, 11/92-9/97 (Senior Research Associate, Biochemistry Department, UT Health Science Center-San Antonio)
 Dr. Irina Minko, NSF/NATO Postdoctoral Fellow 1/96-3/97 (Investigator, Oregon Health Sciences University, Portland, OR).
 Dr. O.W. Odom, 10/97-5/10

VISITING SCHOLARS (& OTHERS)

Sari Jaakola (M.S.), 9/96-12/96, visiting scientist from University of Helsinki, Finland
 Ananya Roy (M.S.), 11/08-6/09, researcher on the DARPA project

ACADEMIC, OUTREACH AND OTHER STUDENT-RELATED SERVICES

1989-93 Sponsor/Research Advisor in the Young Scholars program for Exceptional High School Students (the program ended in 1994)

Students sponsored:

1989 Heather Van Buskirk, Rushsylvania, Ohio
 1990 Heather Van Buskirk, Rushsylvania, Ohio
 1991 Nike Sheth, Texarkana, Texas
 1991 Colby Leider, Austin, Texas
 1992 Nike Sheth, Texarkana, Texas
 1993 Lee Moody, Texarkana, Texas

Note: H. van Buskirk and N. Sheth won first prizes in State Science Fair competitions with their projects, and presented them at National (H.V.B.) and International (N.S.) Science Fairs.

1988-08 Frequent participant in the annual UT Cell and Molecular Biology Retreat

- 1990 Mentor and Lecturer, Honors Colloquium, UT-Austin
- 1992 Supervised senior research project of Mark Chung, Anderson High School (Austin)
- 1996 Lecture and hands-on lab experience to first-graders at Doss Elementary School (Austin) on the "Biology of Algae" (Mrs. Smith's class)
- 1996 Judged the annual Doss Elementary School Science Fair
- 1997 Attended the annual SACNAS (Society for the Promotion of Chicanos/Latins and Native Americans in Science) meeting to recruit students for UT-Austin
- 2001 Lecturer, Honors Colloquium, UT-Austin
- 2001 Supervised research of Mary Chang, an LBJ Science Academy student. Mary won a scholarship in the national Intel Science Competition with her project.
- 2003 Presented poster on golden algal research at "Parent's Day" and "UT Explore".
- 2004 Supervised research of Crystal Kadakia, Texas Academy of Science & Math
- 2009 Supervised research project of Juan Belman, a high school student in the ACS-sponsored Project SEED (for under-represented groups)