

CURRICULUM VITAE

NAME: HASSAN AHMAD

TITLE AND AFFILIATION:

PROFESSOR OF BIOCHEMISTRY 2002- present
Department of Chemistry
UT-Pan American/UT-Rio Grande Valley
Edinburg, Texas 78539

OFFICE ADDRESS:

Department of Chemistry SCNE-3.122
1201 W. University Drive
Edinburg, TX 78539
Tel: (956) 665-3372
Fax: (956) 665-5006
E-mail: hassan.ahmad@utrgv.edu

EDUCATION:

Ph.D. (Biochemistry) 1978-1983
Department of Chemistry
Aligarh Muslim University, Aligarh, India

M.Phil. (Biochemistry) 1978-1980
Department of Chemistry
Aligarh Muslim University, Aligarh, India

M.Sc. (Biochemistry) 1976-1978
Department of Chemistry
Aligarh Muslim University, Aligarh, India

B.Sc. (Chemistry) 1973-1976
Department of Chemistry
Aligarh Muslim University, Aligarh, India

POST-GRADUATE TRAINING:

Post-Doctoral Fellow 1986-1990
(Prof. Dr. Yogesh C. Awasthi; Mentor)
Department of Human Biol. Chem. & Genet
University of Texas Medical Branch
Galveston, Texas

Post-Doctoral Fellow 1985-1986
(Prof. Dr. Heinrich Kauss; Mentor)
Deutsches Forschungsgemeinschaft
University of Kaiserslautern
Kaiserslautern, Federal Republic of Germany

	Post-Doctoral Fellow (Prof. Dr. Mohammed Saleemuddin; Advisor) Department of Biochemistry Aligarh Muslim University Aligarh, India	1984-1985
AWARDS:	UT-System Regents' Outstanding Teaching Award	Aug. 2010
	UT-System Chancellor's Outstanding Teaching Award	Aug. 2003
	Provost's Award for Service Excellence	Aug. 2002
	UT-Pan American Provost Scholar's Award	April 2001
	College of Science and Engineering Research Excellence Award	Aug. 2000
	UTPA Honors Program Outstanding Service Award	May 2000
	Leadership Award for the UT-Pan American Student-Athletes	Feb. 2000
	Outstanding UT-Pan American Faculty Award for Professional Achievement	Sept. 1999

ACADEMIC AND PROFESSIONAL LEADERSHIP APPOINTMENTS:

Undergraduate Program Coordinator Department of Chemistry UTRGV, Edinburg, Texas 78539	2017-present
President, Board of Directors South Texas Technology Education Chartered High School, Weslaco, Texas-78596	2014-present
Member, Board of Directors South Texas Technology Education Chartered High School, Weslaco, Texas-78596	2002-present
Professor of Biochemistry Department of Chemistry UT-Pan American, Edinburg, Texas 78539	2002-present
Graduate Faculty UT-Pan American/UTRGV, Edinburg, Texas 78539	1996-present

Co-Director A PRIME TIME Program College of Sciences UTPA/UTRGV, Edinburg, Texas 78539	2013-2019
Program Director HHMI , Science Education Program Department of Chemistry UT-Pan American, Edinburg, Texas 78539	2004-2013
Department Chair Department of Chemistry UT-Pan American, Edinburg, TX 78539	2003-2009
Director Guerra Honors Program UT-Pan American, Edinburg, TX 78539	2011-2012
Assistant Director Guerra Honors Program UT-Pan American, Edinburg, TX 78539	2009-2011
Associate Professor of Biochemistry Department of Chemistry UT-Pan American, Edinburg, Texas 78539	1996-2002
Interim Department Chair Department of Chemistry UT-Pan American, Edinburg, Texas 78539	Sept.00-Dec.01
Program Coordinator, South Texas Doctoral Bridge Program Department of Chemistry UT-Pan American, Edinburg, Texas 78539	1999-2008
Graduate Faculty Texas A&M University, Kingsville, Texas 78363	1998-2005
Assistant Professor of Biochemistry Department of Chemistry UT-Pan American, Edinburg, Texas 78539	1992-1996
Research Assistant Professor Department of Human Biol. Chem. & Genet UT-Medical Branch, Galveston, Texas	1990-1992

COMMITTEE MEMBERSHIP:

(a) National Committees:

Member	Minority Education Sub-committee	1997-1999
---------------	----------------------------------	-----------

Society of Toxicology

(b) Institutional Committees:

Chair	University tenure and promotion committee University of Texas Pan American	2010-2011
Chair	Faculty Research Council University of Texas Pan American	1999-2000
Chair	Environmental Health and Occupational Safety Council University of Texas Pan American	1999-2002
Chair	Advisory Committee for MBRS Program University of Texas Pan American	2001-2002
Member	BS in Nutritional Science Program (Health Affairs)	2015-2017
Member	UTRGV School of Medicine Admission's Committee	2015-2018
Member	UTRGV School of Medicine Interview committee	2015-present
Member	UTRGV School of Medicine Diversity Committee	2015-2018
Member	College of Sciences Student Success Team	2018-present
Member	ITL Executive Faculty Design Team – UTRGV BS in Biomed Sci.	2014-2015
Member	University Honors Council	2009-2011
Member	Provost's Academic Leadership Committee	2006-2009
Member	Search Committee Director, Department of Environmental Health & Safety	2003-2004
Member	Faculty Research Council University of Texas Pan American	1997-2000
Member	Environmental Health and Occupational Safety Council University of Texas Pan American	1996-2010
Member	Radiation Safety/Biohazard Committee University of Texas Pan American	1996-2013
Member	Advisory committee for MBRS Program University of Texas Pan American	1995-1998
Member	Externally Funded Grants and Contracts Committee University of Texas Pan American	1994-1995

Member	Faculty Senate sub-committee on University Budget University of Texas Pan American	1993-1994
Alternate Member	New Science Building Task Force University of Texas Pan American	1995-1996
Member	University Library Committee University of Texas Pan American	1993-1997

(c) Other Committees:

Chair	College Counsel- College of Science and Math University of Texas Pan American	2011-2012
Chair	Search Committee for Department of Chemistry Professor/Chair Position University of Texas Pan American	2000-2001
Chair	Search Committee for Department of Chemistry Lecturer Position University of Texas Pan American	1999-2000
Chair	Department of Chemistry Faculty Tenure and Promotion Committee University of Texas Pan American	1996-1999
Member	College of Science & Engineering executive Committee	2006-2009

SEMINARS:

(a) Local, National, and International:

<i>Application of Bradford's protein reagent for the assay of protein and proteases</i> University of Kaiserslautern, West Germany	1985
<i>Glutathione S-transferases and detoxification mechanisms</i> Pathology Department Seminar Series University of Texas Medical Branch Galveston, Texas	1989
<i>Structure of human placental glutathione S-transferase</i> Mini-Symposium Department of Human Biol. Chem. & Genet University of Texas Medical Branch, Galveston, Texas	1990
<i>Role of Glutathione-S transferases in cellular defense mechanism</i> Department of Biochemistry Aligarh Muslim University, India,	1992

<i>Dietary Antioxidants and their Role in Prevention of Cancer</i> 1999 Faculty Colloquium Series University of Texas-Pan American, Edinburg, TX	1999
<i>Dietary Antioxidants and Prevention of Cancer</i> The Physical Science Department South Texas Community College, McAllen, TX	2001
<i>Role of Phytochemicals in Cancer Prevention</i> College of Agriculture, GB Pant University of Agricultural and Technology Pantnagar, India	2002
<i>Induction of Glutathione-S transferases and Cancer Prevention</i> Department of Biochemistry, Aligarh Muslim University, Aligarh, India	2002

PROFESSIONAL SOCIETY MEMBERSHIP:

Member	Association of Research in Vision and Ophthalmology	1989-2000
Member	American Association for Cancer Research	1993-2010
Member	American Society for Biochemistry and Molecular Biology	1996-2010

PROFESSIONAL SERVICE:

Member	Editorial Board <i>Enliven: Pharmacovigilance and Drug Safety</i>	2014- present
Member	Editorial Board <i>BioAccent: BAOJ-Chemistry</i>	2015-present
Member	Editorial Board <i>Gavin Publishers: Current Research in Biopolymers</i>	2016-Present
Reviewer	for following Journals: Journals Agriculture Food and Chemistry Journal of Pediatric Biochemistry Biochemical Pharmacology Journal of Environmental Toxicology	2008-present
External Reviewer	Candidate for promotion to full Professor University of Michigan-Dearborn	August 2014

BIBLIOGRAPHY:

(a) Published Refereed Articles:

1. Saleemuddin, M., **Ahmad, H.** and Husain, A. A simple, rapid and sensitive procedure for the assay of endoproteases using Coomassie Blue G-250. *Anal. Biochem.* 105: 202-205, 1980.
2. **Ahmad, H.** and Saleemuddin, M. Protein estimation in plant tissue homogenates using Coomassie Blue G-250 assay. *Ind. J. Exptl. Biol.*, 19: 280-282, 1981.
3. **Ahmad, H.** and Saleemuddin, M. Bromophenol Blue Protein assay: Improvement in Buffer tolerance and adaptation for measurement of proteolytic activity. *J. Biochem. Biophys. Methods*, 7: 335-343, 1983.
4. Saleemuddin, M. and **Ahmad, H.** Protein estimation using Coomassie Blue G-250 and related dyes. *J. Sci. Indust. Res.*, 43: 324-328, 1984.
5. **Ahmad, H.** and Saleemuddin, M. A Coomassie Blue binding assay for the micro-determination of immobilized protein. *Anal. Biochem.* 148: 533-541, 1985.
6. Awasthi, Y.C., Singh, S.V., **Ahmad, H.** and Moller, P.C. Immunocytochemical evidence that GST1, GST2 and GST3 gene loci for glutathione S-transferase are expressed in human lung. *Lung*, 165: 323-332, 1987.
7. **Ahmad, H.**, Singh, S.V. and Awasthi, Y.C. Drug metabolizing enzymes in rat lens. *Lens Res.*, 4: 283-294, 1987.
8. LaBelle, E.F., Singh, S.V., **Ahmad, H.**, Wronski, L. Srivastava, S.K. and Awasthi, Y.C. A novel dinitrophenyl glutathione stimulated ATPase is present in human erythrocyte membrane. *FEBS Letts.* 228: 53-56, 1988.
9. Awasthi, Y.C., Singh, S.V., **Ahmad, H.**, Moller, P.C. and Gupta, V. Expression of glutathione S-transferase isoenzymes in human small cell lung cancer lines. *Carcinogenesis*, 9: 89-93, 1988.
10. Singh, S.V., Haque, A.K., **Ahmad, H.**, Medh, R.D. and Awasthi, Y.C. Glutathione S-transferase isoenzymes in human lung tumors. *Carcinogenesis*, 9: 1681-1685, 1988.
11. Singh, S.V., **Ahmad, H.**, Kurosky, A. and Awasthi, Y.C. Purification and characterization of unique glutathione S-transferase from human muscle. *Arch. Biochem. Biophys.* 264: 13-22, 1988.
12. **Ahmad, H.**, Singh, S.V., Ansari, G.A.S., Medh, R.D., Kurosky, A. and Awasthi, Y.C. Differential expression of \forall , \cdot , and B classes of isoenzymes of glutathione S-transferase in bovine lens, cornea and retina. *Arch. Biochem. Biophys.* 266: 416-426, 1988.
13. **Ahmad, H.**, Singh, S.V., Srivastava, S.K. and Awasthi, Y.C. Glutathione S-transferase and glutathione peroxidase of bovine iris and ciliary body: characterization of isoenzymes. *Current Eye Res.*, 8: 175-184, 1989.
14. Gupta, V., Singh, S.V., **Ahmad, H.**, Medh, R.D. and Awasthi, Y.C. Glutathione and glutathione S-transferase in human plasma cell line resistant to melphalan. *Biochem. Pharmacol.* 38: 1993-

2000, 1989.

15. Singh, S.V., Nair, A., **Ahmad, H.**, Awasthi, Y.C. and Krishan, A. Glutathione S-transferase and glutathione peroxidase in doxorubicin-resistant murine leukemic P388 cells. *Biochem. Pharmacol.* 38: 3505-3510, 1989.
16. Wang, J., **Ahmad, H.**, Moller, P.C. and Awasthi, Y.C. Differential expression of glutathione S-transferase isoenzymes in porcine aorta smooth muscle and endothelial cells. *Clin. Chem. Enzy. Comms.* 2: 97-106, 1989.
17. Awasthi, Y.C., Singh, S.V., **Ahmad, H.**, Wronski, L.W., Srivastava, S.K. and LaBelle, E.F. ATP dependent primary active transport of xenobiotics-glutathione conjugates by human erythrocyte membrane. *Mol. Cell. Biochem.* 91: 131-136, 1989.
18. **Ahmad, H.**, Medh, R.D., Singh, S.V., Caccuri, A.M., Ansari, G.A.S. and Awasthi, Y.C. Anionic glutathione S-transferase of human erythrocytes, placenta and lung: Evidence for structural differences. *Enzyme*, 42: 129-135, 1989.
19. Singh, S.V., **Ahmad, H.**, and Krishan, A. Expression of glutathione S-transferases in human bladder cancer cell lines. *Biochem. Pharmacol.* 39: 1817-1820, 1990.
20. Gupta, S., **Ahmad, H.**, Haque, A.K. and Awasthi, Y.C. Glutathione S-transferases of human lung: Evidence that two distinct : type subunits are expressed differentially in human population. *Clin. Chem. Enzy. Comms.* 3: 115-124, 1990.
21. **Ahmad, H.**, Wilson, D.E., Fritz, R.R., Singh, S.V., Medh, R.D., Nagle, T.G., Awasthi, Y.C. and Kurosky, A. Primary and secondary structural analysis of glutathione S-transferase from human placenta. *Arch. Biochem. Biophys.* 278: 398-408, 1990.
22. Singhal, S.S., Gupta, S., **Ahmad, H.**, Sharma, R. and Awasthi, Y.C. Characterization of a novel μ class anionic glutathione S-transferase isoenzyme from human liver. *Arch. Biochem. Biophys.* 279: 45-53, 1990.
23. Sharma, R., Gupta, S., **Ahmad, H.**, Ansari, G.A.S. and Awasthi, Y.C. Stimulation of a human membrane ATPase by glutathione conjugates. *Toxicol. Applied Pharmacol.* 104: 421-428, 1990.
24. Sharma, R., Gupta, S., Singh, S.V., Medh, R.D., **Ahmad, H.**, LaBelle, E.F. and Awasthi, Y.C. Purification and characterization of dinitrophenylglutathione ATPase of human erythrocyte and its expression in other tissues. *Biochem. Biophys. Res. Commun.*, 171: 155-161, 1990.
25. Sharma, R., Gupta, S., Singhal, S.S., **Ahmad, H.**, Haque, A.K. and Awasthi, Y.C. Independent segregation of glutathione S-transferase and fatty acid ethyl ester synthase from pancreas and other tissues. *Biochem. J.*, 275: 507-513, 1991.
26. Singhal, S.S., Tiwari, N.K., **Ahmad, H.**, Srivastava, S.K. and Awasthi, Y.C. Purification and characterization of glutathione S-transferase from sugarcane (*Saccharum officinarum* L.) leaves. *Phytochemistry*, 30: 1409-1414, 1991.
27. Singhal, S.S., **Ahmad, H.**, Sharma, R., Gupta, S., Haque, A.K., and Awasthi, Y.C. Purification

- and characterization of human muscle glutathione S-transferase .. *Arch. Biochem. Biophys.* 285: 64-73, 1991.
28. Awasthi, Y.C., Singhal, S.S., Gupta, S., **Ahmad, H.**, Zimniak, P., Radomska, A., Lester, R. and Sharma, R. Purification and characterization of an ATPase from human liver which catalyzes ATP hydrolysis in presence of the conjugates of bilirubin, bile acids and glutathione. *Biochem. Biophys. Res. Commun.*, 175: 1090-1096, 1991.
 29. Singhal, S.S., Sharma, R., Gupta, S., **Ahmad, H.**, Zimniak, P., Radomska, A., Lester, R. and Awasthi, Y.C. The anionic conjugates of bilirubin and bile acids stimulate ATP hydrolysis by S-(Dinitrophenyl) glutathione ATPase of human erythrocyte. *FEBS Lett.* 281: 255-257, 1991.
 30. Rausch, U., **Ahmad, H.**, Maier, B. and Kauss, H. Proteinase nature of an enzyme capable of activating the galactosyltransferase involved in volume regulation of *Poteroochromonas malhamensis*. *Physiol. plant*, 82:93-98, 1991.
 31. **Ahmad, H.**, Singh, S.V. and Awasthi, Y.C. Inhibition of bovine lens glutathione S-transferase by hematin, bilirubin and S-Bromosulphophthalein. *Lens and Eye Toxicity Research*, 8:431-441, 1991.
 32. Medh, R., Saxena, M., Singhal, S.S., **Ahmad, H.** and Awasthi, Y.C. Characterization of a novel glutathione S-transferase isoenzyme from mouse lung and liver having structural homology to rat GST 8-8. *Biochemical J.*, 278:793-799, 1991.
 33. Awasthi, Y.C., Sharma, R., Mansour, A.M. and **Ahmad H.** Effect of *t*-butylated hydroxytoluene on glutathione-linked detoxification mechanisms in rat ocular tissues *in vivo* and *in vitro*. In *Ocular Pharmacology: Recent Advances*, (Gupta S.K. ed.) pp 39-48, Paryrus Publishing House, New Delhi, 1991.
 34. Singhal, S.S., Gupta, S., Saxena, M., Sharma, R., **Ahmad, H.**, Ansari, G.A.S. and Awasthi, Y.C. Purification and characterization of glutathione S-transferases from rat pancreas. *Biochem. Biophys. Acta*, 1079:285-292, 1991.
 35. Saxena, M., Sharma, R., Singhal, S.S., **Ahmad, H.**, and Awasthi, Y.C. The effect of doxorubicin on the transport of glutathione conjugates from human erythrocytes. *Biochem. Archives*, 7:285-292, 1991.
 36. **Ahmad, H.**, Sharma, R., Mansour, A.M. and Awasthi, Y.C. *t*-butylated hydroxytoluene enhances the intracellular levels of glutathione and related enzymes *in vitro* rat lens organ culture. *Exptl. Eye Res.*, 54:41-48 1992.
 37. Singhal, S.S., Saxena, M., **Ahmad, H.**, and Awasthi, Y.C. Glutathione S-transferases of mouse liver: Sex-related difference in the expression of various isoenzymes. *Biochim. Biophys. Acta*, 1116:137-146, 1992
 38. Singhal, S.S., Saxena, M., Awasthi, S., **Ahmad, H.**, Sharma, R., and Awasthi, Y.C., Gender related difference in the Expression of Glutathione S-Transferase in human colon. *Biochim. Biophys. Acta*, 1171:19-26, 1992

39. Singhal, S.S., Saxena, M., **Ahmad, H.**, Awasthi, S. Haque, A. and Awasthi, Y.C. Glutathione S-transferase of human lung: Characterization and evaluation of the ∇ -class isoenzymes against lipid peroxidation. *Arch. Biochem. Biophys.* 299:232-241, 1992
40. Awasthi, Y.C., Saxena, M., Sharma, R., Sharma, R., Singhal, S.S., and **Ahmad, H.** Role of GSTs and Dnp-SG ATPase in protection mechanisms against oxidative stress. *Int. J. Toxicol. Occupat. Environ. Hlth.* 1:77-83, 1992
41. Awasthi, S., Ahmad, F., Sharma, R. and **Ahmad, H.** Reversed-phase chromatographic method for specific determination of glutathione in cultured malignant cells. *Journal of Chromatography*, 584:167-173, 1992
42. **Ahmad, H.**, Singhal, S.S., Saxena, M. and Awasthi, Y.C. Characterization of two novel subunits of the alpha-class glutathione S-transferases of human liver. *Biochim. Biophys. Acta*, 1161:333-336, 1993
43. Srivastava, S.K., Singhal, S.S., **Ahmad, H.**, and Awasthi, Y.C. Quantitative and Qualitative sex-related differences in glutathione S-transferases of mouse kidney. *Biochemical Arch.*, 9:73-81, 1993
44. **Ahmad, H.** Singhal, S.S. and Awasthi, S. The inhibition of the ∇ , \cdot , and B class isoenzymes of glutathione S-transferases by sulfasalazine, 5-aminosalicylic acid and sulfapyridine. *Biochem. Arch.*, 8:355-361, 1993
45. Singhal, S.S., Saxena, M., **Ahmad, H.**, Mukhtar, H., Zaidi, S.I.M. and Awasthi, Y.C. Sex related difference in glutathione S-transferase isoenzymes of human skin. *Biochim. Biophys. Acta*, 1163:266-272, 1993
46. Sharma, R., **Ahmad, H.**, Singhal, S.S., Saxena, M., Srivastava, S.K. and Awasthi, Y.C. Comparative studies on the effect of butylated hydroxytoluene on glutathione and glutathione S-transferase in the tissues of male and female CD-1 mice. *Comp. Biochem. & Physiol.*, 105C:31-37, 1993
47. Awasthi, S., Srivastava, S.K., Ahmad, F., **Ahmad, H.**, and Awasthi, Y.C. Interaction of glutathione S-transferase-B with ethacrynic acid and its glutathione conjugate. *Biochim. Biophys. Acta*, 1164:173-178, 1993
48. **Ahmad, H.**, Tijerina, M.T., and Tobola, A, S. Preferential overexpression of a class mu glutathione S-transferase subunit in mouse liver by myristicin. *Biochem. Biophys. Res. Commun.* 236: 825-828, 1997
49. **Ahmad, H.**, Tobola, A. S., Silva, A and Castillo, R. (1998) Glutathione S-Transferase of goat lens: Evidence for expression of only class mu isoenzymes. *Current Eye Research*, 17: 1097-1101. 1998.
50. **Ahmad, H.** (2000) Polyacrylamide Slab Gel Electrophoresis of Proteins " *PACT Presents: A Collection of PACT Participant Activities; Terrific Science Press, Middletown, OH*, at www.terrificscience.org/PACT/pactpresents/index.htmlx

51. Liu, Y., **Ahmad, H.**, Luo, Y., Gardiner, D.T., Gunasekera, R.S., McKeehan, W.L., and Patil, B.S. (2001) Citrus Pectin: Characterization and Inhibitory Effect on Fibroblast Growth Factor-Receptor Interaction *Journal of Agricultural and Food Chemistry* 49:3051-3057.
52. Tian, Q., Miller, E.G., **Ahmad, H.**, Tang, L., and Patil, B.S. (2001) Differential Inhibition of Human Cancer Cells Proliferation by Citrus Limonoids *Nutrition and Cancer* 40:180-184.
53. Liu, Y., **Ahmad, H.**, Luo, Y., Gardiner, D.T., Gunasekera, R.S., McKeehan, W.L., and Patil, B.S. (2002) Influence of Harvest Time on Citrus Pectin and its in vitro Inhibition of Fibroblast Growth Factor Signal Transduction *Journal of the Science of Food and Agriculture* 82:469-477.
54. **Ahmad, H.**, Li, J., Polson, M., Mackie, K., Quiroga, W., and Patil, B. S. (2006) Citrus limonoids and flavonoids: Enhancement of phase-II enzymes and its potential in chemoprevention. In *Health Benefits of Citrus Patil, Broadbelt, Turner, and Miller eds.* ACS Press, Washington, DC.
55. Perez, J., Jayaprakasha, G.K., Valdivia, V., Munoz, D., Dandekar, D., **Ahmad, H.**, and Patil, B. (2009) Limonin Methoxylation Influences Induction of Glutathione S-Transferase and Quinone Reductase *J of Agric Food Chem* 57, 5279–5286
56. **Ahmad, H.**, V. Valdivia, A. Cadena, E. Martinez, B. Robles, R. Patel, A. Zapata, A. Mancha, W.S. Lai, R. Gelman, and M. Amor. (2009) Myristicin: Inducer of Phase-II Drug Metabolizing Enzymes and prospective Chemoprotective agent against Cancer. In *Acta Horticulturae*, Patil, B. ed., ISHS Press, Leuven, Belgium; Vol. 841 PP. 47-54.
57. Perez, J, Jayaprakasha, G. K., Cadena, A., Martinez, Elvia., Ahmad, H and Patil B.S (2010). In vivo induction of phase II detoxifying enzymes, glutathione transferase and quinone reductase by citrus triterpenoids *BMC Complementary and Alternative Medicine* 10, 51-57
58. Macossay, J., Sheikh, F. A., Cantu, T., Eubanks, T. M., Salinas, M. E., Farhangi, C. S., **Ahmad, H.**, Hassan, M. H., Khil, M-S., Maffi, S. K., Kim, H., and Bowlin, G.I. (2014). Imaging, Spectroscopic, Mechanical and Biocompatibility Studies of Electrospun Tecoflexregd EG 80A Nanofibers and Composites Thereof Containing Multiwalled Carbon Nanotubes, *Applied Surface Science* 321; 205-213
59. Sheikh, F. A. Macossay, J., Cantu, T., Zhang, X., Hassan, S. M., Salinas, M. E., Farhangi, C. S., **Ahmad, H.**, Kim, H., Bowlin, G. L. (2015). Imaging, Spectroscopy, Mechanical, Alignment and Biocompatibility Studites of Electrospun Medical Grade Polyurethane (Carbothane™ 575A) Nanofibers and Composite Nanofibers Containing Multiwalled Carbon Nanotubes. *Journal of the Mechanical Behavior of Biomedical Materials*, 41; 189-198
60. Macossay, J., Sheikh, F.A., **Ahmad, H.**, Kim, H., Bowlin, G. L., (2015). A comparative study of polyurethane nanofibers with different patterns and its analogous nanofibers containing MWCNTs. *Adv. Mater. Lett.* 6 (9), 768-773

(b) Manuscript under Preparation and/or Review:

1. Benavides, B, Mancha, A and **Ahmad, H.** (2019) Interaction of quercetin with different flavonoids increases induction of phase II enzymes in hepa-1c1c7 cancer cell line. Under preparation for *Agriculture and Food Chemistry*.

(c) Abstracts and Presentations in National and International Meetings:

1. Saleemuddin, M., Husain, A. and **Ahmad, H.** (1979) A highly sensitive and rapid calorimetric procedure for measurement of proteolytic activity in the secretions of gastrointestinal tract. Proc. 6th Conference of Association of Clinical Biochemist, Vishakapatnam, India.
2. **Ahmad, H.**, Husain, A. and Saleemuddin, M. (1980) A rapid, simple and highly sensitive calorimetric assay for the endoproteases using Coomassie Brilliant Blue G-250. Presented at the SBC India Annual meeting, March 1980, Bangalore. Ind. J. Biochem. Biophys. (Suppl.) 17:69.
3. **Ahmad, H.** and Saleemuddin, M. (1981) Evaluation of protein dye-binding procedures for the direct estimation of proteins in plant tissue homogenates. Presented at the SBC India Annual meeting, March 1981, Baroda. Ind. J. Biochem. Biophys. (suppl) 18:130.
4. **Ahmad, H.** and Saleemuddin, M. (1984) A novel micro dye binding assay for insolubilized proteins. Presented at the SBC India Annual meeting, March 1984, New Delhi. Ind. J. Biochem. Biophys. (suppl) 21:350.
5. **Ahmad, H.**, Singh, S.V., Moller, P.C., Leal, T. and Awasthi, Y.C. (1987) Immunocytochemical localization of glutathione S-transferase isoenzymes of human lung. Presented at the FASEB annual meeting. Washington, DC, March 29-April 2, 1987. Fed. Proc. (suppl) 46:1492.
6. **Ahmad, H.**, Singh, S.V., Kurosky, A. and Awasthi, Y.C. (1988) Glutathione S-transferase of human muscle is distinct from the γ , δ and B class of glutathione S-transferase isoenzymes. Presented at the annual meeting Las Vegas, Nevada, May 1-5, 1988. FASEB J., 2:8413.
7. Medh, R.D., Caccuri, A.M., **Ahmad, H.**, Singh, S.V., Ansari, G.A.S. and Awasthi, Y.C. (1988) Interrelationship among anionic isoenzymes of human glutathione S-transferase. Presented at the annual meeting Las Vegas, Nevada, May 1-5, 1988. FASEB J., 2:8414.
8. Kurosky, A., Wilson, D., Nagle, T.G. and **Ahmad, H.** (1988) Non-heroic protein/peptide sequencing in a centralized core facility. Presented at the annual meeting Las Vegas, Nevada, May 1-5, 1988. Applied Biosystems' FASEB/ASBC Protein Sequencer User Meeting, Las Vegas, NV.
9. Awasthi, Y.C., Singh, S.V., **Ahmad, H.**, Srivastava, S.K. and LaBelle, E.F. (1988) Evidence for the presence of a novel dinitrophenyl glutathione stimulated ATPase in human erythrocyte membrane. Presented at the annual meeting Las Vegas, Nevada, May 1-5, 1988. FASEB J., 2:8400.
10. Awasthi, Y.C., **Ahmad, H.**, Medh, R.D., Kurosky, A. and Singh, S.V. (1988) Subunits of glutathione S-transferases are differentially expressed in bovine lens, cornea and retina. Presented at the Annual ARVO meeting May 1-6, 1988 at Sarasota, Fla. Invest. Ophthalmol. Visual Sci. (suppl.) 29:99.

11. **Ahmad, H.**, Singh, S.V., Kurosky, A. and Awasthi, Y.C. (1988) Glutathione S-transferase of human muscle is distinct from the isoenzymes of GST1, GST2 and GST3 gene loci. Presented at the Annual meeting April 1988 Texas Genet. Soc. Annual Meeting, Denton, TX.
12. **Ahmad, H.**, Singh, S.V., Haque, A.K. and Awasthi, Y.C. (1989) Glutathione and related enzymes in human lung tumors. Society of Toxicology Annual meeting, Atlanta February 27–March 3, *The Toxicologists*, 9:830.
13. Gupta, S., Leal, T., Medh, R.D., **Ahmad, H.** and Awasthi, Y.C. (1989) Expression of glutathione S-transferase isoenzymes in mouse tissues. Presented at the Annual Meeting of Federation of American Societies of Experimental Biology (FASEB) New Orleans, Louisiana, March 19-23, 1989. *FASEB J.*, 3: A426.
14. **Ahmad, H.**, Medh, R.D., Singh, S.V., Awasthi, Y.C. and Gupta, V. (1989) Glutathione and related enzymes in a human plasma cell line resistant to melphalan. Presented at the Annual Meeting of Federation of American Societies of Experimental Biology (FASEB) New Orleans, Louisiana, March 19-23, 1989. *FASEB J.*, 3: A640.
15. Medh, R.D., Gupta, S., Wang, J., **Ahmad, H.** and Awasthi, Y.C. (1989) Characterization of mouse lung glutathione S-transferase isoenzymes. Presented at the Annual Meeting of Federation of American Societies of Experimental Biology (FASEB) New Orleans, Louisiana, March 19-23, 1989. *FASEB J.*, 3: A426.
16. Medh, R.D., **Ahmad, H.**, Singh, S.V., Gupta, V. and Awasthi, Y.C. (1989) Overexpression of glutathione S-transferase gene in a melphalan resistant plasma cell line. Sept-1989 Texas Genet. Soc. Annual Meeting, San Antonio, TX.
17. Awasthi, Y.C., Singh, S.V., Srivastava, S.K. and **Ahmad, H.** (1989) Glutathione S-transferase isoenzymes of bovine iris and ciliary body. Presented at the annual ARVO meeting April 30 – May 5, 1989, Sarasota, Fla. *Invest. Ophthalmol. Visual Sci. (suppl)*. 30(3):333.
18. Singh, S.V., Nair, S., **Ahmad, H.**, Awasthi, Y.C. and Krishan, A. (1989) Glutathione S-transferase isoenzymes in doxorubicin sensitive and resistant cells. Presented at the Annual meeting of the American Association of Cancer Research May 24-27, 1989 at San Francisco, CA.
19. Gupta, S, **Ahmad, H.**, Haque, A.K. and Awasthi Y.C. (1990) Glutathione S-transferase isoenzymes in lung among humans. Texas Genetic Society Annual Meeting, Austin, TX.
20. Sharma, R., Gupta, S., **Ahmad, H.**, Ansari, G.A.S. and Awasthi, Y.C. (1990) Glutathione conjugates stimulate ATP hydrolysis in membrane vesicles prepared from erythrocytes. Society of Toxicology Annual Meeting, Miami Beach, FL Feb-12-16. *The Toxicologist*, 10: 98.
21. **Ahmad, H.**, Wilson, D.E., Fritz, R.R., Singh, S.V., Medh, R.D., Nagle, G.T., Kurosky, A. and Awasthi, Y.C. (1990) Human placental glutathione S-transferase B: Primary and secondary structural analysis. Presented at the Federation of American Societies for Experimental Biology. 74th Annual Meeting. Washington, D.C., April 1-5, 1990. *FASEB J.*, 4: A1164.

22. Sharma, R., Gupta, S., **Ahmad, H.** and Awasthi, Y.C. (1990) Glutathione S-transferase of human pancreas. Presented at the Federation of American Societies for Experimental Biology. 74th Annual Meeting. Washington, D.C., April 1-5, 1990. FASEB J., 4: A2050.
23. Singhal, S.S., Gupta, S., **Ahmad, H.**, Sharma, R. and Awasthi, Y.C. (1990) Characterization of a novel ∇ -class anionic glutathione S-transferase isoenzyme from human liver. Presented at the Federation of American Societies for Experimental Biology. 74th Annual Meeting. Washington, D.C., April 1-5, 1990. FASEB J., 4: A1164.
24. Gupta, S., **Ahmad, H.**, Haque, A.K. and Awasthi, Y.C. (1990) Variable expression of the ∇ -class glutathione S-transferase isozymes in human lungs. Presented at the Federation of American Societies for Experimental Biology. 74th Annual Meeting. Washington, D.C., April 1-5, 1990. FASEB J., 4: A580.
25. **Ahmad, H.**, Sharma, R., Mansour, A.M. and Awasthi, Y.C. (1990) Effect of butylated hydroxytoluene (BHT) on glutathione and glutathione-linked enzymes of rat ocular tissues. Presented at the Annual ARVO meeting April 29 – May 4, 1990, Sarasota, Fla. Invest. Ophthalmol. Visual Sci. (suppl.), 31(4):583.
26. Awasthi Y.C., Sharma, R., Mansour, A. and **Ahmad, H.** (1990) Effect of BHT on the GSH-linked detoxification system of rat ocular tissues: Possible protective role against oxidative damage. International Symposium on Ocular Pharmacology and Therapeutics held at the Satellite meeting of International Congress of Eye Research at New Delhi, India Aug. 1990.
27. Saxena, M., **Ahmad, H.**, Singhal, S.S., Medh, R.D. and Awasthi, Y.C. (1991) Characterization of a novel glutathione S-transferase isoenzyme from mouse liver. Federation of American Societies for Experimental Biology. 75th Annual Meeting. Atlanta, Georgia, April 21-25, 1991. FASEB J., 5: A422.
28. Singhal, S.S., Gupta, S., **Ahmad, H.**, Sharma R. and Awasthi, Y.C. (1991) Evidence that human muscle glutathione S-transferase does not belong to the ∇ , δ or B class. Federation of American Societies for Experimental Biology. 75th Annual Meeting. Atlanta, Georgia, April 21-25, 1991. FASEB J., 5: A422.
29. **Ahmad, H.**, Tiwari, N., Singhal, S.S. and Awasthi, Y.C. (1991) Glutathione S-transferase of sugarcane (*Saccharum officinarum* L) leaves. Presented at the Federation of American Societies for Experimental Biology 75th Annual Meeting. Atlanta, Georgia, April 21-25, 1991. FASEB J., 5: A1202.
30. **Ahmad, H.**, Sharma, R. and Awasthi, Y.C. (1991) Effect of induction of glutathione-linked detoxification system on lipid peroxidation in rat lens. Presented at the Annual ARVO meeting Sarasota, FL, Apr-28-May03. Invest. Ophthalmol. Visual Sci. (suppl.) 32:724.
31. Zaidi, S.I.A., Evans, B.N., Raza, H., Agarwal, R., **Ahmad, H.**, Awasthi, Y.C. and Mukhtar, H. (1991) Altered expression of glutathione S-transferase isozymes in murine and human skin tumors. *Annual meeting of the Society for Investigative Dermatology*, Seattle WA, May 1-3.
32. Singhal, S.S. **Ahmad, H.**, Saxena, M., and Awasthi, Y.C. (1992) Sex-related differences in the expression of glutathione S-transferase isoenzymes in mouse liver at the FASEB meeting.

Anaheim, California, April 5-9 FASEB J., 6: A1881.

33. Saxena, M. Singhal, S.S., Awasthi, S. **Ahmad, H.**, and Awasthi, Y.C. (1992) Purification and characterization of dinitrophenyl S-glutathione (Dnp-SG) ATPase from human muscle, at the FASEB meeting. Anaheim, California, April 5-9, 1992 FASEB J., 6:1280.
34. Awasthi, S, Sharma, R., and **Ahmad, H.** (1992) A simple and specific procedure for the quantitation of reduced glutathione in cultured tumor cells. Annual meeting of the American Association for Cancer Research, May 20-23, San Diego, CA
35. **Ahmad, H.**, Singhal, S.S., Saxena, M., and Awasthi, Y.C. (1993) Primary structure of the γ -class glutathione S-transferase at the FASEB meeting Washington DC, May 21-25. The FASEB J. vol. 7, A-838, 1993.
36. **Ahmad, H.**, Silva, A., Tobola, A., Mariel, J.E., Tijerina, M.T., and Castillo, R. (1995) Selective Expression of Glutathione S-Transferase in Ovine Ocular Tissue. Presented at Annual meeting April 14-19, 1996 Fort Lauderdale, Fla Investigative Ophthalmology and Visual Science Vol. 36 Page S526
37. Tijerina, M.T. Farooqui, M, and **Ahmad H.** (1996) Myristicin induces glutathione transferase isoenzymes in mouse tissues. Society of Toxicology Annual Meeting, The Toxicologist, 30:286.
38. Tobola, A.S., Tijerina, M.T., Castillo, R., and **Ahmad, H.** (1996) Effect of myristicin on induction of mouse liver glutathione S-transferase. Annual meeting April 20-24, 1996 Washington, DC. Proceedings of the American Association for Cancer Research Annual Meeting Volume 37, page 386.
39. **Ahmad, H.**, Tobola, A.S. Castillo, R and Silva, A. (1996) Glutathione s-transferase of goat lens: Purification and characterization os isoenzymes. ARVO Annual meeting, April 21-26, 1996 Fort Lauderdale, Fla. Investigative Ophthalmology and Visual Science Vol. 37 Page B623
40. Ansari, N.H., Zhang, W., Chan L.L., Campbell, G., **Ahmad, H.** (1996) Role of free radicals in diabetic retinopathy. Proceedings of the Fourth Biennial University of Texas System Texas Mexico Border Health Symposium. South Padre Island, TX, October, 23-25, 1996
41. Valdez, F., Tobola, A.S. and **Ahmad, H.** (1997) Inhibition of human lung glutathione S-transferase pi by sulfonamides. Society of Toxicology, Cincinnati, OH March 9-13, published in Fundamental and applied Toxicology vol.36, page 79
42. Tobola, A., Munoz, J., Valdez, F., Tanguma, R., Izaguirre, N and **Ahmad, H.** (1997) Inhibition of glutathione S-transferase pi in human cancer cell lines by sulfonamides at the April 12-16, 1997, San Diego, Proceedings of the American Association of Cancer Research, Vol 38, page 395
43. **Ahmad, H.**, Valdez, F., Tobola, A.S., Izaguirre, N., Gonzalez, J., Reyes, C., Tanguma, R., and Spurgeon, D.W. (1997) catalytic and structural properties of glutathione s-transferase from cotton boll weevil. March 6, 1997 New Orleans, LA. *FASEB Journal* Vol., 11, Page A1021.
44. Munoz, J. and **Ahmad, H.** (1998.) Characterization of glutathione and glutathione linked

enzymes in human small cell lung cancer cells (H128) selected for resistance against cisplatin. Presented at the 89th Annual Meeting of the American Association for Cancer Research, New Orleans, LA, March 28-Apr. 1, 1998 and the abstract was published in *Proceedings of the Annual Meeting of American Association for Cancer Research* Volume 39, page 259.

- 45 Cortez, G. N., Tobola, A. S. Ochoa, M., Sanchez, E, Saldivar, E., Reyas, C., and **Ahmad, H.** (1999) "The comparative effect of myristicin on glutathione and glutathione S-transferase levels in target tissues of Fischer 344 rats." Presented at the 90th Annual Meeting of American Association for Cancer Research held at Philadelphia, PA April, 10-14, 1999 and the abstract was published in *Proceedings of the Annual Meeting of American Association for Cancer Research* Volume 40, page 259.
- 46 **Ahmad, H.**, Ochoa, M., Cortez, G. N., and Tobola, A. S. (1999). "Induction of DT-diphorase and glutathione S-transferase by myristicin in Fisher 344 rat liver." Presented at the Annual Meeting of *American Society of Biochemistry and Molecular Biology* held at San Francisco, CA, May 16-20, 1999 and the abstract was published in *FASEB Journal*, Volume 13, page A1531.
- 47 Liu, Y., **Ahmad, H.**, Gardiner, D.T., and Patil, B. S. (1999) "Best grapefruit harvest time for potential health benefits of pectin." Presented at the Annual Meeting of *American Society for Horticultural Science* to be held at Minneapolis, MN, July 28-31.
- 48 **Ahmad, H.** Saldivar, E and Sanchez, E. (2000) "Detoxification of The Carcinogens 4-nitroquinoline 1-oxide And Benzo(a)pyrene-4,5-oxide by Myristicin Induced Glutathione S-transferases in Mouse Liver." Presented at the 91th Annual Meeting of American Association for Cancer Research held at San Francisco, CA, May April1-4, 2000 and the abstract was published in *Proceedings of the Annual Meeting of American Association for Cancer Research* Volume 41, page 571.
- 49 **Ahmad, H.**, Sanchez, E. Cortez, G, Saldivar, E. Ochoa L and Arguello R. (2000) "glutathione and glutathione-related enzymes in diabetic and non-diabetic human cataract lenses" presented at the XIV International Congress of Eye Research held at Santa Fe, NM Oct. 15-20.
- 50 Q. Tian, Y. Liu, E. G. Miller, **H. Ahmad**, L. Tang and B. S. Patil (2000) "Characterization of obacunone glucosides and its potential inhibition of human cancer cells" presented at the International Conferences and Exhibition on Nutraceuticals and Functional Foods to be held at Houston, TX, Sept. 13-17.
- 51 Y. Liu, **H. Ahmad**, Y. Luo, D. T. Gardiner, W.L. McKeehan, and B. S. Patil (2000) "Seasonal changes in grapefruit pectin and its inhibitory effect on fibroblast growth factor signal transduction" presented at the International Conferences and Exhibition on Nutraceuticals and Functional Foods held at Houston, TX, Sept. 13-17.
- 52 Liu, Y., **Ahmad, H.**, Luo, Y., Gardiner, D.T., McKeehan, W.L., and Patil, B.S. (2000) "Citrus pectin Characterization of citrus pectin and inhibition of fibroblast growth factor signal transduction process presented at the International Citrus Congress held in Orlando, FL, Dec.3-7.
- 53 Gunasekera, R.S., R.S., Kan, M., Liu, Y., McKeehan W. L., **H. Ahmad**, and B. S. Patil (2001) Activity of Citrus Pectin and other Heparan Sulfate Mimetics at the FGFR Complex. To be presented at the 11th Annual Research Conference on Diet, Nutrition and Cancer. Washington,

DC. July 16-17, 2001,

- 54 Mendoza, A., **Ahmad, H.**, Escalante, M.X., Sanchez, J.M., Kato, H., and Zaremba, C.M. Age-Strain, Gender-Related Differences on the induction of Glutathione S-transferase by Myristicin in Mice. Presented at the Annual Biomedical Research Conference for Minority Students held at Orlando, Florida. Oct. 31-Nov.03, 2001
- 55 Liu, Y., W.L.McKeehan, B.S.Patil, **H. Ahmad**, Y.Luo, D.T.Gardiner & R.Gunasekera. 2003 Characterization of citrus pectin and inhibition of the fibroblast growth factor signal transduction process. 9th, International Society of Citriculture; 2003, Orlando, FL. *Poceedings of the International Society of Citriculture* 1: 676-680.
- 56 Mackie, K. M., Ortega, P., Quiroga, W., Poliquit, D. M., and **Ahmad, H.** Induction of glutathione S- transferase by flavonoids in mice. Presented at the 94th annual national meeting of the American Association for Cancer Research in Washington DC, July 14, 2003.
- 57 Quiroga, W., Garza, T., Cantu, M., Diaz-Miron, J., Maani, N., Patil, B., and **Ahmad, H.** Induction of Phase-II Drug Metabolizing Enzymes in Mouse Tissues by Citrus Flavonoids. Presented at the 8th International Union of Biochemistry and Molecular Biology and 2004 Annual American Society of Biochemistry and Molecular Biology (IUBMB & ASBMB) joint meeting; The FASEB Journal Vol. 18, # 8, Page C23. Boston, July12-16, 2004.
- 58 **H. Ahmad**, J. Li, M. Polson, K. Mackie, W. Quiroga and B.S. Patil. Citrus limonoids and flavonoids: Enhancement of phase II enzymes and its potential in chemoprevention. Presented at the 228th ACS National Meeting, Philadelphia, PA, August 22-26, 2004.
- 59 Patil B., Liu, Y., **Ahmad, H.**, and McKeehan W. Consumed byproducts of citrus are good sources of healthy pectin. Presented at the 229th ACS National Meeting, San Diego, CA, March 13-17, 2005.
- 60 **Ahmad H.** Can Citrus Bioactive Compounds Increase Beneficial Enzyme Activity *to Prevent Cancer?* Presented at the Mini-Symposium: Citrus and Human Health, by Texas A&M Fruits and Vegetable Center Valencia, California July 13, 2006.
- 61 **Ahmad H.** Increasing Beneficial Enzymes Activity with Citrus Compounds. Presented at the Texas Produce Convention, San Antonio, Texas. August 10-12, 2006.
- 62 Perez, J., Jayaprakasha, G.K., **Ahmad, H.**, and Patil, B.S Potential Cancer Prevention by Citrus: Nomilin and its Deacetalated Form Induce Phase II Detoxifying Enzymes presented at the American Society for Horticultural Science Annual Conference held at Scottsdale, AZ, July 16-19 2007.
- 63 **H. Ahmad**, V. Valdivia, A. Cadena, E. Martinez, B. Robles, R. Patel, A. Zapata, A. Mancha, W.S. Lai, R. Gelman, and M. Amro. (2007) Myristicin: Inducer of Phase-II Drug Metabolizing Enzymes and prospective Chemoprotective agent against Cancer. Presented at the Second International Symposium on Human Health Effects of Fruits and vegetables, Houston TX
- 64 Win Shun Lai, Anthony Zapata, Annie Mancha, Barbara Robles, Rachel Gelman, G.K

Jayaprakasha, Deepak V. Dandekar, Bhimanagouda S. Patil, and **Ahmad, H.**, (2008) The Effects of Limonin modification to Limonin 7-Methoxime on the induction of Phase II Enzymes in Balb/c Mice presented at the Annul meeting of the American Association for Cancer Research, to be held at San Diego, April 11-4.

- 65 **Ahmad, H.**, Lai W. S., Robles, B., Gelman R., Mancha A.M., Barron, D, Jaggi S., Hanes, J. (2009) Myristicin prevents Benzo(a) pyrene induced carcinogenesis in mouse lung and stomach. Presented at the annul meeting of the American Association for Cancer Research, held at Denver, CO, April 18-22, 2009.
- 66 Vemu, S., Alanbari, Nour., Plas, Daniel., and Ahmad, H. The long term effects of Rotenone on *Lymnaea stagnalis* and a possible animal model for Parkinson's disease. Presented at the College of Sciences Research Conference, University of Texas San Antonio, San Antonio, TX Oct 9, 2015.
- 67 Benavidez, B and **Ahmad, H.** Interaction of Quercetin with Different Flavonoids and Induction of Phase-II Enzymes in Hepa-1c1c7 and MCF-7 Cells. Presented at the society of Toxicology annual meeting, San Antonio, TX March-12-15, 2018
- 68 Hassan Ahmad¹, Melissa Kreimerman¹, Jose Rodrigues¹, Brandon Tiu¹, Daisy Mendez, Jaysonn Vel, Maximo Rey, Tomas Hernandez, Diego Sanchez, and Jameela Banu Investigating the Effects of Chia Seed Consumption on Phase II Detoxification Enzymes and Lipid Peroxidation in Rat Liver, Society of Toxicology annual meeting, Washington D,C March-10-14, 2019

GRANT SUPPORT:

(a) Active Grant Award:

Core Leadership Team member	09/01/2017-08/31/2021
Saraswathi Nair (PI)	
HHMI-Inclusive Excellence initiative	

(b) Pending Grant:

Senior Personal	01/01/2019-12/31/2024
Mohammed Uddin (PI)	
Department of Defense DSEC	
Co-Investigator	06/01/2019-05/31/1921
Jameela Banu (PI)	
NIH P21 Program	

(c) Past Grants Award at UTPA/UTRGV:

Co-Director-UTPA/UTRGV

Director- Dr. Mohammed Farooqui 2014-2017
Accelerated Professional Relevant Integrated Medical Education A PRIME program
UT System TIME Initiative
Total direct cost \$1,700,000, Total Direct Cost to UTPA: \$313,370
Lead Institution: Univ. of Texas at El Paso
Dr. Donna Ekal, PI

Program Director

HHMI Undergraduate Science Education Program 2008-2013
Howard Hughes Medical Institute
9/1/2008 -8/31/2012
Total Direct Cost **\$1,200,000**

Principal Investigator

Mechanism of Anticarcinogenic Effects of Myristicin 2004-2009
NIH/National Institute of Cancer
7/1/2004 - 6/31/2009
Total Direct Cost **\$150,000**

Program Director

HHMI Undergraduate Science Education Program 2004-2008
Howard Hughes Medical Institute
9/1/2004 -8/31/2008
Total Direct Cost **\$1,300,000**

Co-Director/Mentor

"South Texas Doctoral Bridge Program" 2004-2008
NIH/National Institute of General Medical Sciences
Total direct cost **\$596,345**, Total Direct Cost to UTPA: **\$104,925**
Lead Institution: Univ. of Texas Health Science Center at San Antonio
Dr. Damon Herbert, PI

Co-Investigator

"Exploring Biological Activities of Citrus Limonoids:
A Multidisciplinary Approach" 2002-2006
USDA
Total Direct cost **\$ 1,075,165**; Total Direct Cost to UT-Pan American **\$126,368**
Lead Institution: Texas A&M Univ. Kingsville Citrus Center at Weslaco.
Dr. Bhimu Patil, PI

Co-Investigator

Biological Activities of Citrus Flavonoids 2002-2004
THECO/ATP program
01/01/2002 - 12/31/2003
Total direct Cost **\$249,370**; Total direct Cost to UTPA **\$49,926**

*Lead Institution: University of Texas at Austin.
Dr. Jennifer Brodbelt, PI*

Collaborator 2002-2005
Collaborative Initiative to attract under representative students to Agriculture and Food Science careers.
USDA-HSI Program
01/01/2002 - 12/31/2004
Total direct Cost **\$299,734**; Total Direct Cost to UT-Pan American **\$24,734**
*Lead Institution: Texas A&M Univ. Kingsville Citrus Center at Weslaco.
Dr. Bhimu Patil, PI*

Principal Investigator 1998-2002
"Glutathione/Glutathione Transferase-Mediated Mechanisms of Drug Resistance"
National Institute of General Medical Sciences.
Total Direct Cost: **\$473,277**

Principal Investigator: 1994-1998
"Glutathione Transferase Mediated Mechanisms of Drug Resistance"
Department of Health and Human Services (National Institute of General Medicine) Minority Biomedical Research Support (MBRS) grant
Total Direct cost **\$379,000**

Principal Investigator 1994-1998
"Anticataractogenic Mechanism of Antioxidants"
National Eye Institute.
Total Direct Cost: **\$75,000**

Principal Investigator 1996-1998
"Role of Free radicals in Diabetic Retinopathy"
Texas Coordinating Board's Advance Research Program
Total Direct Cost: **\$30,311**

Principal Investigator 1992-1993
"Anticataractogenic Mechanisms of Antioxidants"
Faculty Research Council
Total Direct Cost: **\$3,500**

Principal Investigator 1994-1995
"Evaluation of Anticarcinogenic Properties of Parsley Leaf"
Faculty Research Council
Total Direct Cost: **\$3,500**

(d) Past Grants Award at UT-Medical Branch:

Principal Investigator 1992-1993
"Glutathione Mediated Mechanism of Drug Resistance"
UTMB Small Grant Program
Total Direct Cost: **\$12,500**

Co-Principal Investigator 1990-1995
"Detoxification of Xenobiotics in Erythrocytes"
National Institute of General Medical Sciences
Total Direct Coat: **\$475,000**

Co-Principal Investigator 1991-1996
"Detoxification of Xenobiotics in Ocular Tissues"
National Eye Institute
Total Direct Cost: **\$458,456**

(e) Past Grants Application not funded:

Co Investigator 2002-2003
Prevention/Delay of Diabetic retinopathy by Antioxidants Therapy
THECO/ARP program
01/01/2002 - 12/31/2003
Total Direct Cost **\$49,000**
Lead Institution: University of Texas medical Branch at Galveston
Dr. Naseem Ansari, PI

Principal Investigator 1998-2000
"Glutathione S-transferase -Mediated detoxification in
in Boll Weevil (*Anthonomus grandis*)"
USDA-National Research Initiative Competitive Grants Program.
Total Direct Cost: **\$213,102**

Co-principal Investigator 1998-1999
"Preventing Diabetic Retinopathy by
antioxidant-based Nutritional Supplementation"
Texas Coordinating Board's Advance Research Program
Total Direct Cost: **\$39,000**

Co-principal Investigator: 1996 -1997
"A Novel Approach for Elucidation of Early Stages of Cataract".
Texas Higher Education Coordinating Board grant
Total Direct Cost **\$30,950**

Co-principal Investigator: 1996 - 2000

"Undergraduate Biological Sciences Education Program".

Howard Hughes Medical Institute grant

Total Direct Cost **\$1,599,038**

FORMAL TEACHING:

- | | |
|---|--------------|
| <u>At the Department of Chemistry</u> | 1992-present |
| UT-Pan American/UT-Rio Grande Valley | |
| • General Chemistry CHEM-1301 | |
| • General chemistry Laboratory CHEM-1101 | |
| • Introduction to Biochemistry CHEM-3303 | |
| • Biochemistry Laboratory CHEM-3103 | |
| • Advanced/Graduate Biochemistry CHEM-4302 | |
| • Medical Biochemistry new course developed CHEM-3307 | 2015-present |
| • Graduate Biochemistry CHEM-5305 | 1998-2005 |
| • Graduate Biochemistry CHEM-6305 | 2006-present |
| • Nutritional and Exercise Biochemistry CHEM 3320 | 2019-2020 |
|
 | |
| <u>At Texas A&M, College Station/Kingsville</u> | 2001-2013 |
| • <i>Phytochemicals in Fruits and Vegetables to Improve Human Health</i> , offered through Texas A&M system Trans-Texas Video Conference Network. | |
| Graduate course HORT-640 | |

SUPERVISORY TEACHING:

(a) Graduate Students Supervised:

Maria T. Tijerina (Biology)	M.S.	1994-1996
Jesus Munoz (Biology)	M.S.	1995-1997
Jesus Garcia (Biology)	M.S.	1996-1997
Eduardo Saldevar (Biology)	M.S.	1997-1999
Acacia Mendoza (Biology)	M.S.	1999-2001
Kimberly Mackie (Biology)	M.S.	2002-2007
Annie Marie Mancha (Chemistry)	M.S.	2006-2009
Ofelia Ramos (Chemistry)	M.S.	2009-2010
Brenda Benavides (Chemistry)	M.S.	2009-2011

(b) Thesis Committees of Graduate Students:

Maria T. Tijerina (Biology)	M.S.	1994-1996
Jesus Munoz (Biology)	M.S.	1995-1997
Eduardo Saldevar (Biology)	M.S.	1997-1999

Yan Lui (<i>Texas A&M, Kingsville</i>)	M.S.	1998-2000
Michael Gay (Biology)	M.S.	1998-2000
Roxane Garza (Biology)	M.S.	1999-2002
Heather Quintanilla (Biology)	M.S.	1999-2002
Jiaxing Li (<i>Texas A&M, College Station</i>)	M.S.	2001-2003
Acacia Mendoza (Biology)	M.S.	1999-2001
Kimberly Mackie (Biology)	M.S.	2001-2007
Thomas Eubank (Biology)	M.S.	2002-2004
Jose Perez (<i>Texas A&M, College Station</i>)	M.S.	2005-2007
Annie Mancha (Chemistry)	M.S.	2006-2008
Julian Medrano (Chemistry)	M.S.	2008-2011
Brenda Benavides (Chemistry)	M.S.	2009-2011
Nilda Camerana (Chemistry)	M.S.	2009-2014
Ofelia Ramos (Chemistry)	M.S.	2009-2010
Frances Morales (Experimental Psychology)	M.S.	2011-2012
Maria Ester Salinas (Chemistry)	M.S.	2010-2013
Iram Lopez (Chemistry)	M.S.	2012-2014
Carlos Rivera (Chemistry)	M.S.	2013-2014
Yanmei Hu (Chemistry)	M.S.	2013-2015
Homero Cantu (Biology)	M.S.	2013-2015
Shane Askar (Chemistry)	M.S.	2013-2015
Mariana Ocampo (Chemistry)	M.S.	2014-2016
Jared Jaksik (Chemistry)	M.S.	2017-2018
Aminur Chowdhury (Chemistry)	M.S.	2018-2019
Precious Okwuchukwu (Chemistry)	M.S.	2019-present
Tess Ruiz (chemistry)	M.S.	2019-present
Alejandro Palacios (Chemistry)	M.S.	2019-present

(c) Undergraduate Students Supervised:

Anna Maria Espinosa (<i>Chemistry major</i>)	1993-1994
Araceli Silva (<i>Chemistry major</i>)	1993-1995
Jesus Eduardo Mariel (<i>Biology major</i>)	1994-1995
Rogelio Castillo (<i>Biology major</i>)	1994-1996
Andrea Trager (<i>Biology major</i>)	1995-1996
Fernando Valdez (<i>Biology major</i>)	1995-1997
Mario Salazar (<i>Biology major</i>)	1996-1997
Roxana Tanguma (<i>Biology major</i>)	1996-1997
Joanne Gonzalez (<i>Chemistry major</i>)	1996-1997
Nilda Izaguirre (<i>Chemistry major</i>)	1996-1998
Cassandra Reyes (<i>Chemistry major</i>)	1997-1998
Lyssa Ochoa (<i>Chemistry major</i>)	1997-1998
Melissa Ochoa (<i>Biology major</i>)	1997-1998
Josefina De La Tejera (<i>Chemistry major</i>)	1997-1998
Grace Cortez (<i>Chemistry major</i>)	1997-1999

Erica Sanchez (<i>Chemistry major</i>)	1998-1999
Norma Magee (<i>Biology major</i>)	1998-2000
Christina De la Fuente (<i>Biology major</i>)	1998-1999
Anthony Conley (<i>Biology major</i>)	1998-2000
Jeffrey Pierce (<i>Biology major</i>)	1999-2000
Juan Martinez (<i>Chemistry major</i>)	2000-2001
Mirna Escalante (<i>Biology major</i>)	2000-2001
Chalam Mulukutla (<i>Biology major</i>)	2000-2001
Charles Zaremba (<i>Biology major</i>)	2000-2001
Haruna Kato (<i>Chemistry major</i>)	2000-2002
Joy De Los Reyes (<i>Biology major</i>)	2001-2002
Natalie Ayala (<i>Biology major</i>)	2001-2002
Donna Palquit (<i>biology major</i>)	2002-2003
Priscilla Alcalá (<i>Biology major</i>)	2002-2003
Walter Quiroga (<i>Chemistry major</i>)	2002-2004
Trini J. Garza (<i>Biology major</i>)	2003-2004
Monica Cantu (<i>Biology major</i>)	2003-2005
Jose Diaz-Miron (<i>Chemistry major</i>)	2003-2005
Natalia Maani (<i>Chemistry major</i>)	2003-2005
Flor Limas (<i>Biology major</i>)	2004-2005
Julie Rivas (<i>Biology major</i>)	2004-2005
Adriana Cadena (<i>Chemistry major</i>)	2004-2006
Elvia Martinez (<i>Biology major</i>)	2005-2006
Saifullah Nasir (<i>Biology major</i>)	2005-2006
Charisma Garcia (<i>Biology major</i>)	2005-2006
Violeta Valvidia (<i>Biology major</i>)	2005-2007
Diana Munoz (<i>Chemistry major</i>)	2005-2008
Moath Amro (<i>Chemistry major</i>)	2006-2007
Roshni Patel (<i>Biology major</i>)	2006-2008
Barbara Robles (<i>Biology major</i>)	2006-2008
Anthony Zapata (<i>Biology major</i>)	2006-2008
Win Shun Lai (<i>Biology major</i>)	2006-2008
Daniel Barron (<i>Biology major</i>)	2007-2008
Rachel Gilman (<i>Biology major</i>)	2007-2008
Sonam Jaggi (<i>Biology major</i>)	2007-2009
Naghham Alatrash (<i>Chemistry major</i>)	2008-2009
Paul Praraduiso (<i>Biology major</i>)	2008-2009
Jonathan Langoria (<i>Chemistry major</i>)	2008-2009
Damaris Garcia (<i>Biology major</i>)	2008-2009
Briana Chapa (<i>Biology major</i>)	2008-2010
Bilal Nasif (<i>Biology major</i>)	2008-2010
Stephanie Gallegos (<i>Biology major</i>)	2008-2011
Alessandro Valvede (<i>Chemistry major</i>)	2009-2010
Ashley Bose (<i>Chemistry major</i>)	2009-2011
Bernie Garcia (<i>Biology major</i>)	2009-2010
Mike Cantu (<i>Biology major</i>)	2009-2011

Anjali Gomez (<i>Biology major</i>)	2010-2011
Iram Lopez (<i>Biology major</i>)	2010-2011
Cynthia Tran (<i>Biology major</i>)	2010-2012
Stephanie Rico (<i>Biology major</i>)	2010-2012
Emanuel Valverde (<i>Chemistry major</i>)	2011-2012
Lilia Sanchez (<i>Biology major</i>)	2011-2013
Andrea Jimenez (<i>Biology major</i>)	2012-2013
Angela Thomas (<i>Biology major</i>)	2012-2013
Ryan Palacios (<i>biology major</i>)	2013-2014
Maria Flor (<i>biology major</i>)	2013-2015
Dana Lyn Castillo (<i>Chemistry major</i>)	2013-2015
Madeleine Marshall (<i>chemistry major</i>)	2014-2015
Jieun Lee (<i>biology major</i>)	2014-2015
Angela Alaniz (<i>chemistry major</i>)	2015-2016
Diana Munoz (<i>chemistry major</i>)	2015-2016
Sarah George (<i>Biochemistry major Rice University</i>)	2016-2016
Guillermo Cano (<i>Biology major</i>)	2016-2017
Melissa Kreimerman (<i>chemistry major</i>)	2015-2018
Brandan Tiu (<i>Biology major</i>)	2016-2018
Enrique Arredondo (<i>MSA student to BS chemistry major</i>)	2016-2019
Danielle Duran	2019-present
Osiel Escobedo	2019-present

(d) Honors Thesis Students:

- (1) **Natalie Ganceres:** (1997-1998) Thesis Committee Member
Title: *“Isolated Lung System: A comparative Study and Applications to the Medical Field.”*
- (2) **Grace Cortez:** (1998-1999) Thesis Advisor
Title: *“The comparative effects of Myristicin on Glutathione S-Transferase levels in Target Organ of Fisher 344 rats.”*
- (3) **Melissa Ochoa:** (1998-1999) Thesis Advisor
Title: *“Myristicin’s Effect on the detoxification System of Male Fisher 344 rats.”*
- (4) **Dalia C. Galicia:** (1998-1999) Thesis Committee Member
Title: *“Calcium Intake in Peripubesecent Mexican-American Females.”*
- (5) **Juan A. Contreras:** (1998-99) Thesis Committee Member
Title: *“The relationship between Acanthosis Nigricans and Type 2 Diabetes.”*
- (6) **Jeffrey Pierce:** (1999-2000) Thesis Advisor
Title: *“The Role of the Glutathione Efflux Pump Protein in Cisplatin Resistant Lung Cancer cells.”*
- (7) **Christina De la Fuente** (1999-2000) Thesis Committee Member

- Title:** “*Characterization of Heat Shock Factor-1 and Heat Shock Binding Protein-1 in Caenorhabditis elegans using Green Fluorescent protein and β -Galactosidase Activity.*”
- (8) **Omar Rodriguez** (1999-2000) Thesis Committee Member
Title: “*The Effect of Acetaminophen on the Development of Atherosclerosis and on the Response to Vascular Injury in the Hypercholesterolemic Rabbit Model.*”
- (9) **Roberto Moreno:** (1999-2000) Thesis Advisor
Title: “*A Comparison in Estrogen Receptor Levels Between eNOS Knock-out & Wild-Type Mice.*”
- (10) **Cynthia Luna** (1999-2000) Thesis Committee Member
Title: “*The Arabidopsis hsl1 but not cop2 Mutant is Blocked in Systemic Acquired Resistance.*”
- (11) **Jesus A. Rodriguez** (1999-2000) Thesis Committee Member
Title: “*Myocardial Remodeling in Transgenic Mice: Post Occlusion/Reperfusion.*”
- (12) **Mirna X. Escalante** (2000-2001) Thesis Advisor
Title: “*The Effect of Myristicin as a Function of Age in the Induction of Glutathione-S-Transferase in Target Organ of A/J Mice.*”
- (13) **Reynaldo Lejah** (2000-2001) Thesis Committee Member
Title: “*A descriptive Analysis of Lung Cancer Among Men and Women of Selected Counties along the Texsa-Mexico Border.*”
- (14) **Chalam V. Mulukutla** (2000-2001) Thesis Committee Member
Title: “*Does Arch Hypoplasia Affects Recoarctation of the Aorta or Mortality? When Should a Patient Have Surgery to Repair a Coarctation of the Aorta?.*”
- (15) **Micheal Luna** (2000-2001) Thesis Committee Member
Title: “*A T>C Transition Intron 6 of the Galactocerebrosidase Gene is Associated with Abnormal Splicing.*”
- (16) **Yvette Almendarez** (2000-2001) Thesis Committee Member
Title: “*Effect of Spermatogenesis on the sterility of Drosophila Pseudoobscura and drosophila perimilis Hybrid Males.*”
- (17) **Alvero Morena** (2000-2001) Thesis Committee Member
Title: “*The effect of Simulated Acid rain on the Development and Biomass of Rephanus sativus.*”
- (18) **Haruna Kato** (2001-2002) Thesis Advisor
Title: “*Age-Dependent Change of Glutathione S-Transferase Induction Capacity in Rat Tissues Using Myristicin.*”

- (19) **Mohammed Owais Ahmed** (2001-2002) Thesis Committee Member
Title: *“Repeatability of Rapid-PCR Fingerprinting in Hard Ticks.”*
- (20) **Amanda Garza** (2001-2002) Thesis Committee Member
Title: *“A Diastereoselective Synthesis of (Z)-1-Trimethylgermyl-1-alkenes.”*
- (21) **Linda Jo Saenz** (2001-2002) Thesis Committee Member
Title: *“Incidences of tuberculosis in the Rio Grande Valley.”*
- (22) **Donna Poliquit** (2002-2003) Thesis Advisor
Title: *“Glutathione S-transferase and Quinone reductase induction by flavonoids in mouse Hep c1c1 cells.”*
- (23) **Laura Rubinos** (2003-2004) Thesis Committee Member
Title: *“Involvement of sulfonylurea receptor1 and ATP dependent potassium channels in glucose metabolism under conditions of T2DM.”*
- (24) **Flor Limas** (2004 2005) Thesis Advisor
Title: *“Induction of Glutathione S-Transferase and Quinone Reductase by Flavanoids in Mammalian Cancer Cells.”*
- (25) **Charisse Lloren** (2004 2005) Thesis Committee Member
Title: *Purification and Analysis and Metallothioneins*
- (26) **Sharifa Llemit** (2004 2005) Thesis Committee Member
Title: *“Cloning and analysis of metal tolerance protein gene from the Ni hyperaccumulator Thlaspi montanum (var siskiyouense) strephanthus poly glaioides.”*
- (27) **Natalia Maani** (2004-2005) Thesis Advisor
Title: *“The Induction of Glutathione-S Transferase and NAD(P)H: Quinone Oxidoreductase by Flavonoids in Colo205 and HepG2 Cell Lines.”*
- (28) **Wendy Lai** (2005-2006) Thesis Advisor
Title: *“Synthesis of glucoside via transglycosylation in ionic liquid.”*
- (29) **Mathew Carroll** (2005-2006) Thesis Committee Member
Title: *“Synthesis of a 2, 5-diphenyl substituted Lamellarin-like Compound.”*
- (30) **Moath Amro** (2006-2007) Thesis committee Chair
Title: *“Comparative studies of myristicin induction on murine detoxification enzymes in different strains.”*
- (31) **Juan Carlos Martinez** (2006-2007) Thesis committee member
Title: *“Ubiquitin Chain Formation by Rsp5.”*
- (32) **Glee-Ann Llemit** (2006-2007) Thesis committee member

- Title:** "Characterization of P450 enzymes from corn and wheat involved in herbicide tolerance."
- (33) **Rejh Lester Cabrera** (2006-2007) Thesis committee member
Title: "The use of remote sensing and atomic absorption spectrometry to assess the effect of nickel toxicity in non-accumulator and hyperaccumulator plant species."
- (34) **Isabella Garcia** (2007-2008) Thesis Committee member
Title: "Diastereoselective Synthesis of Novel β -Lactams: Exploratory Approach Toward New Heterocycles."
- (35) **Joshua Garcia** (2007-2008) Thesis Committee member
Title: "Novel Synthetic Routes to Lamisil, an Antifungal Agent."
- (36) **Frances Rachel Morales** (2007-2008) Thesis committee member
Title: "Bismuth nitrate-catalyzed Michael reaction of indols in water."
- (37) **Sonia Rivera** (2008-2009) Thesis committee member
Title: "Bismuth nitrate-catalyzed novel synthesis of heterocycles."
- (38) **Win shun Lai** (2008-2009) Thesis Advisor
Title: "Induction of phase II enzymes glutathione transferase and quinine reductase by limonin and methoxyamine substituted limonin."
- (39) **Cynthia Miranda** (2008-2009) Thesis committee member
Title: "Chromium AND Manganese Reduction by *Streptomyces* Isolates from the Laguna Madre"
- (40) **Karla Miranda** (2008-2009) Thesis committee member
Title: Role of phosphates in E2F Associated Apoptosis
- (41) **Alcides Amador** (2009-2010) Thesis committee member
Title: "Novel diastereoselective synthesis of both (E) and (Z)-trisubstituted alkenes containing phenyl and thiophene moieties."
- (42) **Lorena E. Reyna** (2009-2010) Thesis committee member
Title: Novel diastereoselective synthesis of both (E) and (Z)-trisubstituted alkenes containing phenyl and naphthyl moieties.
- (43) **Bilal Nasif** (2009-2010) Thesis Advisor
Title: Structure activity relationship of the flavonoids on the induction of GST in human cancer cell lines.
- (44) **Anne House** (2009-2010) Thesis committee member
Title: The facile reaction of (E)-1-alkenylboronate esters with 4-biphenylmagnesium bromide. Isolation and characterization.
- (45) **Bernardo Garcia** (2009-2010) Thesis Advisor

Title: Synergetic effect of Flavonoids on the induction of Glutathione S-Transferase by Hesperidin in cancer cell lines.

- (46) **Ashley Bose** (2010-2011) Thesis Advisor
Title: Induction of Phase II Enzymes by Resveratrol in Hepa1c1c7 and MCF7 Cancer Cell Lines.
- (47) **Daniela Garza** (2010-2011) Thesis Committee member
Title: Cloning, Expression, Optimization and Purification of *P. aeruginosa* DnaE2
- (48) **Linda Figueroa** (2010-2011) Thesis committee member
Title: Identifying the Neuronal Signaling Pathway(s) Responsible for Maternal Separation Induced Perseverative Behavior in Sprague-Dawley Rats.
- (49) **Cynthia Tran** (2011-2012) Thesis Advisor
Title: Coupling of proteins and peptides on to nanotubes and other polymer-electrospun fibers: Potential application in protein purification and biosensors.
- (50) **Stephanie Rico** (2011-2012) Thesis Advisor
Title: *In vitro* Detoxification mechanism enhancement by antioxidants: Possible implication in cancer chemoprevention.
- (51) **Edgar Casillas** (2012-2013) Thesis committee member
Title: Characterization of the Functional Role of Phosphatases Involved in Rb/E2F-Associated Apoptosis
- (52) **Ryan Palacios** (2013-2014) Thesis Advisor
Title: Characterizing Effect of Nanofiber Composition on Immobilized Enzyme Activity and Stability
- (53) **Humberto Salazar** (2013-2014) Thesis committee member
Title: Cloning, Purification, and Characterization of *Pseudomonas aeruginosa* Arginyl-tRNA Synthetase: A Novel Antibiotic Target
- (54) **Angela Thomas** (2013-2014) Thesis committee member
Title: Exploring complementary and alternative medicine (CAM): A study of ayurveda and its viability in treating the most prevalent diseases in the Unites States
- (55) **Daniel Aragon** (2014-2015) Thesis committee member
Title: Circadian modulation of associative conditioning in *lymnaea stagnalis*
- (56) **Angelica Alaniz** (2015-2016) Thesis Advisor
Title: Expression of Biosynthetic Enzymes in a Gastropod Model of Parkinson's Disease