

Curriculum Vitae – Ilona Petrikovics

Professor of Chemistry

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Academic Training

Post-doctoral Training in **Toxicology** at Texas A&M University, Department of Medical Pharmacology and Toxicology, College Station, TX (1990-1992)

Ph.D. in Medicinal Biology, (minors: Pharmacology/Chemotherapy and Microbiology), University Medical School, Debrecen, Hungary, Europe, 1985

Ph.D. in Organic Chemistry, (minor: Biochemistry), L. Kossuth University of Arts and Sciences, Debrecen, Hungary, Europe, 1982

M.S. in General Chemistry, L. Kossuth University of Arts and Sciences, Debrecen, Hungary, Europe, 1979

Work and Professional Experience

- (2014-Present) Professor of Chemistry, Sam Houston State University, Huntsville, TX. *Field: Drug formulation, Nano-delivery systems, Analytical method development for detecting drugs in biological fluids, Pharmacokinetics, Toxicity studies, Development of therapeutic agents to treat cyanide intoxication.*
- (2007-2014) Associate Professor of Chemistry, Sam Houston State University, Huntsville, TX. *Field: Enzyme mechanism in drug antagonism; Enzyme and drug delivery systems; Drug formulation, Chemical warfare agent antagonism.*
- (2006-2007) Battelle Contractor, U.S. Army Medical Research Institute of Chemical Defense, Aberdeen, MD. *Field: Cyanide research*
- (2004-2006) Research Fellow, Clinical Pharmacology Laboratory, Department of Anatomy, Physiology and Pharmacology, College of Veterinary Medicine, Auburn University, AL. *Field: Clinical Pharmacology (pharmacokinetics); Studies with drugs and metabolites (analytical method development)*
- (2004-2005) Associate Research Scientist, Department of Biochemistry & Biophysics, Texas A&M University, College Station, TX. *Field: Enzyme immobilization and nanotechnology applications for detection, decontamination and antagonism of chemical warfare agents.*
- (2003-2004) Research Analytical Chemist, Clinical Pharmacology and Analytical Chemistry Laboratory, Department of Veterinary Physiology and Pharmacology, College of Veterinary Medicine, Texas A&M University, College Station, TX. *Field: Clinical Pharmacology studies. Analytical detection method development for drugs and metabolites in body fluids and tissues; Drug stability studies.*
- (2002-2003) National Research Council Senior Fellow, U.S. Army Medical Research Institute of Chemical Defense, Aberdeen, MD. *Field: Analytical and toxicity (toxicokinetics) studies with chemical warfare agents.*
- (1992-2002) Assistant Research Scientist, Department of Medical Pharmacology and Toxicology, Texas A&M University, College Station, TX. *Field: Toxicology - Drug toxicity and antagonism; Drug delivery systems (Liposomes, enzyme carrier polymers, cyclodextrins, nano-encapsulation technology).*

- (1990-1992) Research Associate, Department of Medical Pharmacology & Toxicology, Texas A&M University, College Station, TX. Field: Toxicology - Mechanism of drug antagonism, enzyme mechanism and toxicokinetics in carrier red blood cells. (Noxious gases, pesticides).
- (1988-1990) Laboratory Head, Biogal Pharmaceutical Company Debrecen, Hungary. Field: Drug development; Trans-dermal drug delivery systems; Pharmacokinetics.
- (1985-1988) Research Fellow, Research Group of Antibiotics of the Hungarian Academy of Sciences, Debrecen, Hungary. Field: Synthesis and structural elucidation of novel beta-lactam antibiotics.
- (1982-1985) Research Associate, Dept. of Chemotherapy, University Medical School, Debrecen, Hungary. Field: Kinetic studies on microbial beta-lactamases; Beta-lactamase resistance.
- (1979-1981) Research Associate, Research Group of Antibiotics of the Hungarian Academy of Sciences, Department of Organic Chemistry, L. Kossuth University of Arts and Sciences, Debrecen, Hungary. Field: Synthesis and structural elucidation of penicillin and cephalosporin antibiotics.

Scholarly and Creative Contributions

Peer-Reviewed Publications

Articles

Total: 57

Since 2007 at SHSU total: 32

(Name of the student team members at SHSU underlined)

- (1) Petrikovics, I., Kiss, L., Chou, Ch., Ebrahimpour, A., Kovacs, K., Kiss, M., Logue, B., Chan, A., Manage, B.W.A., Boss, G.R., Gary A. Rockwood. Antidotal Efficacies of the Cyanide Antidote Candidate Dimethyl Trisulfide Alone and in Combination with Cobinamide Derivatives. Submitted to *J. M. Toxicol.* (manuscript number: JMTO-D-18-00086)
- (2) Kiss, L., Duke, A., Kovacs, K., Barcza, T., Kiss, M., Petrikovics, I., Thompson, D.E. Sealing Effects on the Storage Stability of the Cyanide Antidotal Candidate, Dimethyl Trisulfide. *Drugs Research and Development*. **2017**. Dec 6. doi: 10.1007/s40268-017-0220-x.
- (3) Dong, X., Kiss, L., Petrikovics, I., Thompson, D.E. Reaction of Dimethyl Trisulfide with Hemoglobin. *Chemical Research in Toxicology*, **2017**. Doi:10.1021/acs.chemrestox.7b00181
- (4) Kiss, L., Bocsik, A., Walter, F.R., Ross, J., Brown, D., Mendenhall, B.A., Crews, S.R., Lowry, J., Coronado, V., Thompson, D.E., Sipos, P., Szabó-Révész, P., Deli, M.A., Petrikovics, I. *In Vitro* and *In Vivo* Blood-Brain Barrier Penetration Studies with the Novel Cyanide Antidote Candidate Dimethyl Trisulfide in Mice. 160(2), 398-407, **2017**.
- (5) Kiss, L., Holmes, S., Chou, C.E., Dong, X., Ross, J., Brown, D., Mendenhall, B., Coronado, V., De Silva, D., Rockwood, G.A., Petrikovics, I., Thompson, D.E. Method development for detecting the novel cyanide antidote dimethyl trisulfide from blood and brain, and its interaction with blood. *Journal of Chromatography B*. **2017**, 1044: 149-157, DOI: 10.1016/j.jchromb.2017.01.010
- (6) Manandhar, E., Maslamani, N., Petrikovics, I., Rockwood, G.A., Logue, B.A. Determination of dimethyl trisulfide in rabbit blood using stir bar sorptive extraction gas chromatography-mass spectrometry. *Journal Chromatography A*. **2016**, 1461:10-7, DOI:10.1016/j.chroma.2016.07.046.

- (7) Kovacs, K., Jayanna, P. K., Duke, A., Winner, B., Negrito, M., Angalakurthi, S., Yu, J.C.C., Füredi, P., Ludányi, K., Sipos, P., Rockwood, G.A., Petrikovics, I. A Lipid Base Formulation for Intramuscular Administration of a Novel Sulfur Donor for Cyanide Antagonism. *Current Drug Delivery*. **2016**, 13(8); 1351-1357. DOI: 10.2174/1567201813666160321115851.
- (8) Kovacs, K., Duke, A.C., Shifflet, M., Winner, B., Lee, S.A., Rockwood, G.A., Petrikovics, I. Parenteral dosage form development and testing of dimethyl trisulfide, as an antidote candidate to combat cyanide intoxication. *Pharmaceutical Development and Technology*. **2016**, 7:1-6, DOI: 10.3109/1083745.2015.1125923.
- (9) Stutelberg, M.W., Dzisam, J.K., Monteil, A.R., Petrikovics, I., Boss, G.R., Patterson, S.E., Rockwood, G.A., Logue, B.A. Simultaneous determination of 3-mercaptopyruvate and cobinamide in plasma by liquid chromatography-tandem mass spectrometry. *J.Chromatography B*, **2016**, 1008:181-188.
- (10) Bartling, C.M., Andre, J.C., Howland, C.A., Hester, M.E., Cafmeyer, J.T., Kerr, A., Petrel, T., Petrikovics, I., Rockwood, G.A. Stability characterization of a polysorbate80-dimethyl trisulfide formulation, a cyanide antidote candidate. *Drugs R.D.* **2016**, 16:109-127. DOI: 10.1007/s40268-016-0122-3.
- (11) Rockwood G.R., Thompson, D.E., Petrikovics, I. Dimethyl Trisulfide: A Novel Cyanide Countermeasure. *Toxicology and Industrial Health*. **2016**, DOI: 10.1177/0748233715622713. (Available online)
- (12) Roy, J.R., Budai, L., Kiss, L., Szilasi, M.E., Petrikovics, I., Budai, M. Liposomal Encapsulation of Photoprotector Molecules. *Research & Reviews: Journal of Pharmaceutics and Nanotechnology* **2015**. (e-ISSN: 2347-7857-3-101; p-ISSN:2347-7849).
- (13) Petrikovics, I., Budai. M., Kovacs, K. and Thompson, D.E. Past, Presence and Future of Cyanide Antagonism Research (From the ancient remedies to the recent combination therapy). *World J. Methodol*, 5(2): 88-100, **2015**. DOI: <http://dx.doi.org/10.5662/wjm.v5.i2.88>
- (14) Bhandari, R.K., Oda, R.P., Petrikovics, I., Thompson, D.E., Brenner, M., Mohan, S.B., Bebarta, V. S., Rockwood, G.A. Logue, B. A. Cyanide Toxicokinetics: The Behavior of Cyanide, Thiocyanate and 2-Amino-2-thiazoline-4-carboxylic Acid in Multiple Animal Models. *J. Anal. Toxicology*, (**2014**), 38(4) 218-225.
- (15) Wijesooriya, C., Budai, M. Budai, L., Szilasi, M. E. Szilasi, Petrikovics, I. Optimization of liposomal encapsulation for ceftazidime for developing a potential eye drop formulation. *Journal of Basic Clin. Pharm.* 4, 73-75, **2013**. IP: 178,48,84,89.
- (16) Manage, B.W.M., Petrikovics, I. Confidence Limit Calculation Method for Antidotal Potency Ratios (APR) Derived from two LD50 Values Determined by the Dixon Method. *Journal of World Methodology*, 26, 3(1): 7-10, **2013**. (<http://dx.doi.org/10.4329/wjm.v3.il.00>)
- (17) Budai, L., Kaszas, N., Grof, P., Lenti, K., Maghami, k., Klebovich, I., Petrikovics, I., Budai, M. Liposomes for topical use: physico-chemical comparison of vesicles prepared from egg or soy lecithin. *Sci. Pharm*, 81, 1151-66, **2013**. DOI: 10.3797/scipharm.1305-11
- (18) Kovacs K., Ancha, M., Jane M., Lee S., Angalakurthi, S., Negrito, M., Rasheed S. Nwaneri, A., Petrikovics I. Identification, Solubility enhancement and in vivo testing of a cyanide antidote

candidate. *European Journal of Pharm. Sci.* 49, 352-358. **2013**.
(<http://dx.dorg/10.1016/j.ejps.2013.04.007>)

- (19) Yu, J.C.C., Martin, S., Nasr, J., Stafford, K., Thompson, D.E., Petrikovics, I. LC-MS/MS Analysis of 2-Aminothiazoline-4-Carboxylic Acid as a Forensic Biomarker for Cyanide Poisoning. *Journal of World Methodology*, 26, 2(5), 1-7, **2012**. Doi:10.4329/wjm. v2.i5.1
- (20) Bhandari, R.K., Oda, R.P, Youso, S.I, Petrikovics, I., Bebart V.S., Rockwood, G.A. and Logue, B.A. Simultaneous determination of cyanide and thiocyanate in plasma by chemical ionization gas chromatography mass-spectrometry (CI-GC-MS). *Analytical and Bioanalytical Chemistry*, 404(8), 2287-2294, **2012**. (<http://dx.doi.org/10.1007/s00216-012-6360-5>).
- (21) Petrikovics, I., Yu, J.C.C., Thompson, D.E., Jayanna, P., Logue, B.A., Nasr, J., Bhandari, R.K., Baskin, S.I., Rockwood G.A. Plasma Persistence of 2-Aminothiazoline-4-Carboxylic Acid in Rat System Determined by Liquid Chromatography Tandem Spectrometry. *J. Chromatography B*, 81-84, 891-892, **2012**. DOI: 10.16/j.jchromb.201201.024.
- (22) Petrikovics, I., Thompson, D.E., Rockwood, G.A., Logue, B.A., Martin, S., Jayanna, J., Yu, J.C.C. Organ-Distribution of the Metabolite 2-Aminothiazoline-4-Carboxylic Acid in a Rat Model Following Cyanide Exposure. *Biomarkers*, 16(8):686-690. **2011**. DOI: 10.3109/1354750X.2011.626528.
- (23) Petrikovics, I., Jayanna, P., Childress, J., Budai, M., Martin, S., Kuzmitcheva, G., Rockwood, G. A. Optimization of liposomal lipid composition for a new, reactive sulfur donor, and in vivo efficacy studies on mice to antagonize cyanide intoxication, *Journal of Drug Delivery*, **2011**. DOI:10.1155/2011/928626.
- (24) Marzias, M.L., Frazier, K., Gundry, P.B., Ruiz, R.A., Petrikovics, I., Haines, D. Comparison of brain mitochondrial cytochrome c oxidase activity with cyanide LD50 yields insight into the efficacy of prophylactics. *Journal of Applied Toxicology*, **2011**. DOI 10.1002/jat.1709.
- (25) Szilasi, M., Budai, M., Budai, L., Petrikovics, I. Nanoencapsulated and microencapsulated enzymes in drug antidotal therapy. *Toxicology and Industrial Health*, **2011**. DOI:10.1177/0748233711416946.
- (26) Petrikovics, I., Wales, M., Budai, M., Yu, J.C.C., Szilasi M. Nano-Intercalated Organophosphorus Hydrolyzing Enzymes in Organophosphorus Antagonism. *AAPS Pharm. Sci. Tech.* **2011**. DOI: 10.1208/s12249-011-9728-5.
- (27) Jackson, R., Petrikovics, I., Lai, E.P.C., Yu, J.C.C. Molecularly Imprinted Polymer Stir Bar Sorption Extraction and Electrospray Ionization Tandem Mass Spectrometry for Determination of 2-Aminothiazoline-4-Carboxylic Acid in Forensic Urine Analysis. *Anal. Methods*. Volume 2(5), 552-557, **2010**.
- (28) Petrikovics, I., Baskin, S.I., Beigel, K.M., Schapiro, B.J., Rockwood, G.A., Manage, A.B.W., Budai, M., Szilasi M. Nano-intercalated Rhodanese in Cyanide Antagonism. *Nanotoxicology*, Vol. 4(2), 247-254, **2010**.
- (29) Petrikovics, I., Budai, M., Childress, J., Rockwood, G.A., Baskin, S.I., Szilasi, M. Characterization of Liposomal Vesicles Encapsulating Rhodanese for Cyanide Antagonism. *Drug Delivery*, Vol. 16(6), 312-319, **2009**.
- (30) Budai, M., Chapela, P., Budai, L., Wales, M.E., Petrikovics, I., Zimmer, A., Gróf, A., Klebovich, I., Szilasi M. Liposomal oxytetracycline and doxycycline: studies on enhancement of encapsulation efficiency. *Drug Discov. Ther.* Vol. 3, 13-17, **2009**.
- (31) Budai, M., Chapela, P., Gróf, P., Klebovich, I., Zimmer, A., Wales, M.E., Wild, J.R., Petrikovics, I., Szilasi, M. Physico-chemical characterization of stealth liposomes encapsulating an organophosphate hydrolyzing enzyme. *J. Liposome Res.* Vol. 2, 1-6, **2009**.

- (32) Petrikovics, I., Wales, M.E., Jaszberenyi, J.C., Budai, M., Baskin, S.I., Szilasi, M., Logue, B.A., Chapela, P., Wild, J.R. Enzyme-based intravascular defense against organophosphorus neurotoxins: Synergism of dentritic-enzyme complexes with 2-PAM and atropine. *Nanotoxicology*, Vol. 1, 85-92, **2007**.
- (33) Baskin, S.I., Petrikovics, I., Platoff, G.E., Rockwood, G.A., Logue, B.A. Spectrophotometric Analysis of the Cyanide Metabolite 2-Aminothiazoline-4-Carboxylic Acid (ATCA). *Toxicological Methods and Mechanism*, Vol. 16, 339-345, **2006**.
- (34) Arsenault, W.G., Boothe, D.M, Gordon, S.G., Miller M.W., Chalkley, J.R., Petrikovics I. Pharmacokinetics of carvedilol after intravenous and oral administration in conscious healthy dogs. *American Journal of Veterinary Research*, Vol. 66, 2172-2176, **2005**.
- (35) Logue, B.A., Kirschten, N.P., Petrikovics, I., Moser, M.A., Rockwood, G.A., Baskin, S.I. Determination of the cyanide metabolite 2-aminothiazoline-4-carboxylic acid in urine and plasma by gas chromatography-mass spectrometry. *Journal of Chromatography*, Vol. 819, 237-244, **2005**.
- (36) Petrikovics, I., Papahadjapoulos, D., Hong, K., Cheng, T-C., Baskin, S.I., Jiang, J., Jaszberenyi, J.C., Szilasi, M., McGuinn, W.D., Way, J.L. Comparing Prophylactic and Therapeutic Protection Against the Lethal Effects of Paraoxon. *Toxicological Sciences*, Vol. 77, 258-262, **2004**.
- (37) Petrikovics, I., Cheng, T.C., Papahadjapoulos, D., Hong, K., Yin, R., DeFrank, J.J., Jiang, J., Song, Z.H., McGuinn, W.D., Sylvester, D., Pei, L., Madec, J., Tamulinas, C., Jaszberenyi, J.C., Barcza, T., Way, J.L. Long Circulating Liposomes Encapsulating Organophosphorus Acid Anhydrolase in Diisopropylfluorophosphate Antagonism. *Toxicological Sciences*, 57, 16-21, **2000**.
- (38) Petrikovics, I., Hong, K., Papahadjapoulos, D., Yuzapavik, P., Jiang, J., Yin, R., Cheng, T.C., DeFrank, J.J., McGuinn, W.D., Sylvester, D., Way, J.L. In vitro Studies on Sterically Stabilized Liposomes (SL) as Enzyme Carriers in Organophosphorus (OP) Antagonism. *Drug Delivery*, Vol. 7, Issue 2: 83-89, **2000**.
- (39) Petrikovics, I., Hong, K., Omburo, G., Hu, Q., Pei, L., McGuinn, W.D., Sylvester, D., Tamulinas, C., Papahadjapoulos, D., Jaszberenyi, J.C., Way, J.L. Antagonism of Paraoxon Intoxication by Recombinant Phosphotriesterase Encapsulated within Sterically Stabilized Liposomes. *Toxicology and Applied Pharmacology*, Vol.156, 56-63, **1999**.
- (40) Petrikovics, I., Cannon, E.P., McGuinn, W.D., Pei, L. and Way, J.L. Cyanide Antagonism with Organic Thiosulfonates and Carrier Red Blood Cells Containing Rhodanese. *Fundamental and Applied Toxicology*, Vol. 24, 1-8, **1995**.
- (41) Pei, L., Petrikovics, I., Way, J.L. Antagonism of the Lethal Effect of Paraoxon by Carrier Erythrocytes Containing Organophosphorous Acid Anhydrase. *Fundamental and Applied Toxicology*, Vol. 28, 209-214, **1995**.
- (42) Petrikovics, I., McGuinn, W.D., Cannon, E.P., Pei, L., Way, J.L. Encapsulation of Rhodanese and Organic Thiosulfonates by Mouse Erythrocytes. *Fundamental and Applied Toxicology*, Vol. 23, 70-75, **1994**.
- (43) Pei, L., Omburo, G., McGuinn, W.D., Petrikovics, I., Dave, K., Raushel, F.M., Wild, J.R., DeLoach, J., Way, J.L. Encapsulation of Phosphotriesterase within Murine Erythrocytes. *Toxicology and Applied Pharmacology*, Vol. 124, 296-301, **1994**.
- (44) McGuinn, W.D., Baxter, L., Pei, L., Petrikovics, I., Cannon, E.P., Way, J.L. Antagonism of the Lethal Effects of Cyanide by Synthetic Water Soluble Cobalt (III) Porphyrin Compound. *Fundamental and Applied Toxicology*, Vol. 23, 76-80, **1994**.

- (45) Cannon, E.P., Leung, P., Hawkins, A-Zitzer., Petrikovics, I., Deloach, J., Way, J.L. Antagonism of Cyanide Intoxication with Murine Carrier Erythrocytes Containing Bovine Rhodanese and Sodium Thiosulfate. *Journal of Toxicology and Environmental Health*, Vol. 41, 267-274, **1994**.
- (46) Pei, L., McGuinn, W.D., Omburo, G., Hawkins, A-Zitzer., Petrikovics, I., Cannon, E.P., Way, J. L. Spectrophotometric Determination of Paraoxonase within Mouse Carrier Erythrocytes. *Biochemistry and Applied Biotechnology*, Vol. 23, 35-41, **1994**.
- (47) McGuinn, W.D., Cannon, E.P., Chui, C.K., Pei, L., Petrikovics, I., Way, J.L. The Encapsulation of Squid Diisopropylphosphorofluoridate-Hydrolyzing Enzyme within Mouse Erythrocytes. *Fundamental and Applied Toxicology*, Vol. 21, 38-43, **1993**.
- (48) Pei, L., McGuinn, W.D., Petrikovics, I., Cannon, E.P., Way, J.L. Determination of Organophorous Acid Anhydrase in Blood. *Toxicology Methods*. Vol. 3, Issue 4: 261-267, **1993**.
- (49) Petrikovics, I., Jaszberenyi, J.C., Hernadi, F., Sztaricskai, F., Bogнар, R., Batta, Gy., Benesch, L. Synthesis and Bioactivity of beta-Lactamase Inhibitory Iodopenicillanic Acid Derivatives. *Acta Chim. Acad. Sci. Hung.*, Vol. 128, Issue 1:41-52, **1991**.
- (50) Leung, P., Cannon, E.P., Petrikovics, I., Way, J.L. In Vivo Studies on Rhodanese Encapsulation in Mouse Carrier Erythrocytes. *Toxicology and Applied Pharmacology*, Vol. 110, 268-274, **1991**.
- (51) Jaszberenyi, J.C., Pitlik, J., Kollar, K., Petrikovics, I., Erdodine-Kover, K., Batta, Gy. Synthesis and 1,3-Dipolar Cycloadditions of 2-Methylenecephalosporins. *Acta Chim. Acad. Sci. Hung.*, Vol. 126, 81-97, **1989**.
- (52) Hernadi, F., Petrikovics, I., Jaszberenyi, J.C., Frommer-Filep, M. Inhibition of Beta-Lactamases by Halopenicillanic Acid Derivatives. *International Journal of Experimental Clinical Chemotherapy*, Vol. 2, Issue 4: 209-214, **1989**.
- (53) Hernadi, F., Jaszberenyi, J.C., Petrikovics, I. Complex Analysis Methods for Study of Beta-Lactamase Inhibitors. *American Clinical Products Review*, Vol. 5, 18-27, **1986**.
- (54) Hernadi, F., Jaszberenyi, J.C., Petrikovics, I. Complex Biological Analysis Methods for Study of beta- Lactamase Inhibitors. *American Biotechnology Lab.*, Vol. 3, 0-20, **1985**.
- (55) Kiss, L., Gal, Z., Tothmartinez, B.L., Petrikovics, I. Use of Chromatofocusing for Separation of Beta-Lactamases. *Journal of Chromatography*, Vol. 262, 379-384, **1983**.
- (56) Jaszberenyi, J.C., Petrikovics, I., Gunda, E.T., Hosztafi, S. On the Mannich-reaction of Cephalosporin Sulphoxides and Sulphones. *Acta Chim. Acad. Sci. Hung.*, Vol. 110, 81-84, **1982**.
- (57) Jaszberenyi, J.C., Dinya, Z. Punyczki, M., Kover, E.K., Schag, J., Petrikovics, I. Synthesis and Beta-Lactamase Inhibitory Properties of Derivatives of Beta-Lactam Antibiotics. *Biol. Natural Products*, Vol. 3, 78-81, **1981**.

Book Chapters

Total: 8;
SHSU: 1

- (1) David Thompson and Ilona Petrikovics. Cyanide physicochemical properties, synthesis, uses and applications in: "Toxicology of Cyanides and Cyanogens: Experimental, Applied and Clinical Aspects", pp.41-53, Eds. Hall, A.H., Isom, G.E., Rockwood G.A., John Wiley & Sons, Chichester, West Sussex, UK. **2015**.
- (2) Baskin, S.I., Petrikovics, I., Kurche, J.S., Nicholson, J.D., Logue, B.A., Maliner, B.I., Rockwood, G.A. Insights on Cyanide Toxicity and Methods of Treatment. In: *Pharmacological Perspectives of Toxic Chemicals and Their Antidotes*, pp 105-146. Eds. Flora, S. J. S., Romano, J. A., Baskin, S. I. and Sekhar, K. Narosa Publishing House, New Delhi, India, **2004**.

- (3) Cheng, T-C., Harvey, S.P., DeFrank, J.J., Petrikovics, I., and Rastogi, V.P. Bacterial Ezymes – Potential Applications for Personnel/Casualty Decontamination Against G, V, and H, D Chemical Agents. In: *Pharmacological Perspectives of Toxic Chemicals and Their Antidotes*, pp 87-95. Eds. Flora, S. J. S., Romano, J. A., Baskin, S. I. and Sekhar, K. Narosa Publishing House, New Delhi, India, **2004**.
- (4) Way, J.L., Pei, L., Petrikovics, I., McGuinn, D.W., Tamulinas, C., Hu, Q-Z., Cannon, E.P., Hawkins, A-Zitzer. Organophosphorus Antagonism by Resealed Recombinant Paraoxonase. In: *Erythrocytes as Drug Carriers in Medicine*. Eds. Sprandel and Way, pp. 89-91, Plenum Press, New York, **1996**.
- (5) Petrikovics, I., McGuinn, W.D., Cannon, E.P., Pei, L., Pu, L., Chen, A., Way, J.L. Carrier Red Blood Cells in Cyanide Antagonism. In: *Resealed Carrier Red Blood Cells as Bioreactors*. (Eds. Way and Deloach). Adv. Biosci. 92: 125-129. Pergamon Press, Oxford, U.K., **1993**.
- (6) Pei, L., McGuinn, W.D., Petrikovics, I., Pu, L., Way, J.L. Hydrolysis of Paraoxon by Paraoxonase Encapsulated within Carrier Murine Erythrocytes. In: *Resealed Carrier Red Blood Cells As Bioreactors*. (Eds. Way and Deloach). Adv. Biosci. 92:131-135. Pergamon Press, Oxford, U.K., **1993**.
- (7) Way, J.L, Baxter, L., McGuinn, W.D., Hawkins, A-Zitzer, Petrikovics, I. Occupational Hazards and Ocular Toxicity. In: *Ophthalmic Toxicology*. Ed.: Georges C.Y. Chiou. pp. 291-305, Raven Press, Ltd., New York, **1992**.
- (8) Way, J.L., Cannon, E.P., Leung, P., Hawkins, A-Zitzer, Pei, L. and Petrikovics, I. Antagonism of the Lethal Effects of Cyanide with Resealed Murine Carrier Erythrocytes Containing Rhodanese and Thiosulfate. In: *The Use of Resealed Erythrocytes as Carriers and Bioreactors*, Eds.: Magnani M and Deloach J.R., pp. 159-163, Plenum Press, New York, **1992**.

Proceedings

Total: 8

- (1) Petrikovics, I., Cheng, T-C., Papahadjapoulos, D., Hong, K., Yin, R., DeFrank, J.J., Jiang, J., McGuinn, W.D., Pei, L., Szilasi, M., Jaszberenyi, J.C., Barcza, T., Way, J.L. Diisopropylfluorophosphate (DFP) Antagonism by Recombinant Organophosphorus Acid Anhydrolase (OPAA) Encapsulated within Sterically Stabilized Liposomes (SL). *Proceeding on Chemical and Biological Medical Treatment Symposia (CMBTS III)*. Spiez, Switzerland, Europe. 48, **2002**.
- (2) Cannon, E.P., Hawkins, A., McGuinn, W.D., Petrikovics, I., Leung, P., Way, J.L. Antagonism of the Lethal Effects of Cyanide with Rhodanese Containing Murine Carrier Erythrocytes. *Proc. West. Pharmacol. Soc.* 35:187-190, **1992**.
- (3) Hernadi, F., Jaszberenyi, J. C., Petrikovics, I. Beta-Lactamase Inhibitors. *Dubrovnik Congress, Chemother.* 5(2):161-162, **1983**.
- (4) Jaszberenyi, J.C., Bogнар, R., Hernadi, F., Petrikovics, I., Benesch, L., Kover, E.K., Batta, Gy. Beta-Lactamase Inhibitory Penicillanic Acid Derivatives. Synthesis, Stereochemistry, Bioactivity. *Proc. Int. Congr. Chemother.*, 41:38-51, **1983**.
- (5) Hernadi, F., Jaszberenyi, J.C., Benesch, L., Czink, I., Petrikovics, I., Filep, F.M. and Schmidt, T. Synthesis and Study of Iodopenicillanic Acid Derivatives in a Complex Model System. *Proc. Int. Congr. Chemother.*, 55: 52-89, **1983**.

- (6) Jaszberenyi, J.C., Punyiczki, M., Petrikovics, I. Enzyme-Inhibitor Interactions: Beta-Lactamase enzymes. *Sejtosztudas Farmakol.*, 10:75-92, **1981**.

Patent Applications

Total: 11
SHSU: 3

Issued Patents at SHSU:

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Total: 89

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Presentations at Regional Meetings by My Students at SHSU (Since 2007)

Total: 64

(Name of the team member students at SHSU underlined)

- 1) Warnakula, I.K., Kiss, M., Rios, C.T., Vergara, M., Gaspe Ralalage, R.D., Whiteman, A.C., Petrikovics, I. Storage Stability Studies with the SwRI Formulated Cyanide Antidote Dimethyl Trisulfide, Texas Academy of Science Meeting, March 2-4, **2018**, Midland, Texas. (Abstract 020.158)
- 2) Warnakula, I.K., Kiss, M., Rios, C.T., Vergara, M., Gaspe Ralalage, R.D., Barcza, T., Petrikovics, I. Redox reactions with dialkyl polysulfides. *ACS Regional Meeting*, October 29-November 1, **2017**, Lubbock, TX. (Abstract #: 2821927)
- 3) Rios, C.T.S., Vergara M.N., Ebrahimpour, A., Kiss, M., Warnakula, I.K., Gaspe Ralalage, R.D., Hewa R., C.C., Barrera, I., Petrikovics, I. *In vitro* and *in vivo* characterization of the cyanide antidote SDX6F2. *ACS Regional Meeting*, October 29-November 1, **2017**, Lubbock, TX. (Abstract #:2821909)
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- 5) Hewa R., C. C.; Gaspe Ralalage, R. D.; Warnakula, I.K.; Ebrahimpour, Afshin; Petrikovics, I. "Modelling Blood Brain Barrier (BBB) penetration by in-vitro parallel artificial membrane permeability study with the newly formulated cyanide (CN) antidote, dimethyl trisulfide (DMTS), *Texas Academy of Science Annual Meeting*, March, 3-5, **2017**, Belton, TX. (Abstract#: 017.044G)
- 6) Gaspe Ralalage, R.D., Hewa R., C.C., Ebrahimpour, A., Petrikovics, I., *In vitro* sulfur donor reactivity of various cyanide antidote candidates, *Texas Academy of Science Annual Meeting*, March, 3-5, **2017**, Belton, TX. (Abstract #: 007.006G)
- 7) Carpenter, M., Kefer, E., Warnakula, I.K., Barrera, I., Gaspe Ralalage, R.D., Ebrahimpour, A. and Petrikovics, I.; *Blood Partitioning and Elimination Study with SMDEX, a New Cyanide Antidote*, *Texas Academy of Science Annual Meeting*, March, 3-5, **2017**, Belton, TX. (Abstract#: 019.292G)
- 8) Coronado, V., Kiss, L., Ross, J., Lowry, J., Petrash, T., Chou, C.E., Holmes, S., De Silva, D., Petrikovics, I. *In vivo* investigations (efficacy and pharmacokinetics) with a New Cyanide Antidote. *Texas Academy of Science*, March 4-6, **2016**, Junction, TX.

- 9) Hewa R., C.C., Gaspe R., R.D., Ebrahimpour, A., Petrikovics, I., Determining the Surfactant and Stirring Effects on the Permeability of Dimethyl Trisulfide (DMTS) in the Parallel Artificial Membrane Permeability Assay (PAMPA). *American Chemical Society, Southwest Regional Meeting*, November, 10-13, **2016**, Galveston, TX. (Abstract #: 544)
- 10) Gaspe R., R.D., Hewa R., C.C., Ebrahimpour, A., Petrikovics, I., Different Sulfur Donor Efficacy for Cyanide Intoxication In vitro. *American Chemical Society, Southwest Regional Meeting*, November, 10-13, **2016**, Galveston, TX. (Abstract #: 498)
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- 21) Ross, J., Chou, C.E., Brown, D., Dong, X., Coronado, V., Mendenhall, B., Roy, J.R., Kiss, L., Thompson, D.E., Petrikovics, I. Method Development and Optimization for Detection of

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 - 27) Kiss, L., Holmes, S., Roy, R.J., Ross, J., Brown, D., Petrikovics, I. New cyanide antidote (sulfur donor X) and its pH dependence for oral formulation efficacy. *TAS Meeting*, March 6-8, **2015**, San Antonio, TX.
 - 28) Shiffley, M., Stephens E., Lucio J., Lee, S.A., Miller, E.N., Petrikovics, I. Use of synthetic and garlic sulfur donors to treat cyanide intoxication. *SHSU Undergraduate Research Symposium*, April **2014**, Huntsville, TX.
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 - 34) Angulakurthi, S.K., Ancha, M., Smith, M.A., Jane, M.A., Lee, S.A., Nwaneri, A.C., Kovacs, K., Petrikovics, I. Screening and Formulation of Selected Sulfur Compounds as Antidotes in Cyanide Toxicity. *TAS Meeting*, March **2012**, Alpine, TX.

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- 36) Coveyou, K., Angalakurthi, S., Kovacs, K., Petrikovics, I. HPLC. *Fifth Annual Undergraduate Research Symposium*, April, **2012**, Huntsville, TX.
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- 41) Wijesooriya, C., and Petrikovics, I. Liposomal encapsulation of ceftazidime for developing an eye-drop formulation, *ACS Regional Meeting*, November, **2012**, Baton Rouge, TX.
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- 43) Winner, B.M., Nasr, J., Negrito, M., Rasheed, S., Ngo, P., Petrikovics, I. Micellar Encapsulation of Sulfur Donors to Combat Cyanide Antagonism. *ACS, 67th Southwest Regional Meeting*. November 9-12, **2011**, Austin, TX.
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- 48) Stafford, K., Yu, J., Petrikovics, I. Development of a New Analytical Method for the Determination of the Biomarker, 2-Aminothiazoline-4-Carboxylic Acid (ATCA), in Mice after Cyanide Exposure. *3rd Annual Sam Houston State University Honors Undergraduate Research Symposium*. April 23, **2010**, Huntsville, TX.

- 49) Stafford, K. New Analytical Method Development for Determination of the Biomarker, 2-Aminothiazoline-4-Carboxylic Acid (ATCA), in Mice after Cyanide Exposure. Sam Houston State University College of Criminal Justice, *2nd Annual Undergraduate Conference*. April 21, **2010**, Huntsville, TX. (First Place Award)
- 50) Martin, S., Kuzmicheva, G., Jayanna, P., Wales, M., Petrikovics, I. Modeling Oral Administration of Organophosphorus Hydrolyzing Enzyme (OPH) Against Paraoxon Intoxication. *3rd Annual Sam Houston State University Honors Undergraduate Research Symposium*. April 23, **2010**, Huntsville, TX.
- 51) Stafford, K., Yu, J. C.C., Myagmarjav, B.E., Petrikovics, I. Sample Preparation Method Development for Determining the Biomarker, 2-Aminothiazoline-4-Carboxylic Acid (ATCA), from Mice Liver after Cyanide Exposure. *113th Annual Meeting of Texas Academy of Science*, March 4-6, **2010**, Tarleton State University at Stephenville, TX.
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- 54) Pipken, A., Petrikovics, I., Thompson, D.E. Tailoring a surface enhanced Raman Sensor for the detection of the cyanide metabolite, 2-aminothiazoline-4-carboxylic acid. *113th Annual Meeting of Texas Academy of Science*, March, 4-6, **2010**, Tarleton State University at Stephenville, TX.
- 55) Stafford, K., Jackson, R., Yu, J.C.C, Petrikovics, I. Analytical Method Development for Determining the Biomarker, 2-Aminothiazoline-4-Carboxylic Acid (ATCA), in Mice Liver After Cyanide Exposure. *ACS 65th Southwest Regional Meeting*, November 4-7, **2009**, El Paso, TX.
- 56) Martin, S., Kuzmicheva, G., Stafford K., Petrikovics, I. Determining the Optimal Condition for Rhodanese Incorporation into Liposomes. *ACS 65th Southwest Regional Meeting*, November 4-7, **2009**, El Paso, TX.
- 57) Childress, J., and Petrikovics, I. Determination of the Optimal Composition and Encapsulation Efficiency for Liposome Encapsulated Rhodanese. *11th Annual Meeting of Texas Academy of Science*, March 6-8, **2008**, Corpus Christie, TX.
- 58) Chapela, P., Wales, M.E., Budai, M., Petrikovics, I. Optimal Liposomal Composition for the Encapsulation of Organophosphorous Hydrolase (OPH). *11th Annual Meeting of Texas Academy of Science*, March 6-8, **2008**, Corpus Christie, TX.
- 59) Chapela, P., Petrikovics, I., Wales, M.E. Encapsulation of Organophosphate Hydrolase in Poly(lactic Acid) Microspheres. *ACS Regional Meeting*, October, **2008**, Little Rock, Arkansas.
- 60) Childress, J., Budai, M., Rockwood, G.A. Baskin, S.I., Petrikovics, I. Determining the Time Stability for Stealth Liposomes Encapsulating Rhodanese and Evaluating the in Vitro Efficacy of Co-Encapsulation of Rhodanese with a Sulfur Donor. *ACS Regional Meeting*, October, **2008**, Little Rock, Arkansas.

- 61) Farrar, J., Chapela, P., Petrikovics, I. Activity and Stability of Encapsulated Acetylcholinesterase. *ACS Regional Meeting*, October, **2008**, Little Rock, Arkansas.
- 62) Spurlin, J., Chapela, P., Petrikovics, I., Yu, J.C.C. Encapsulation Efficiency of Organophosphorous Hydrolase in Lecithin Liposomes as Determined by Capillary Electrophoresis, *ACS Regional Meeting*, October, **2008**, Little Rock, Arkansas.
- 63) Ramirez, D.A., Chapela, P., Petrikovics, I. Encapsulation of Piroxicam in Liposomes. *ACS Regional Meeting*, October, **2008**, Little Rock, Arkansas.
- 64) Chapela, P., Budai, M., Petrikovics, I. Liposomal Encapsulation of Tetracycline Derivatives. *ACS Southwestern Regional Meeting*, November 4-7, **2007**, Lubbock, TX. (Poster #: 50514)

Recognitions/Honors and Awards/Nominations/Membership (2007- 2016)

Recognitions (National, Regional and SHSU)

- Interviewed for articles reporting on my toxicology research at SHSU and my contributions to students at SHSU: *The Houstonian*, **2010**; *Today @ SAM* (**Jan. 2010**); *Grant Scope* **2010**; *Today @ Sam* (Sept, **2013**); Interview about the CN research (You tube), **2014**.

Honors and Awards / Nominations (National and SHSU)

Awards:

- College of Sciences Faculty Excellence in Research Award at Sam Houston State University (**2013**)
- SHSU Faculty Excellence in Scholarly and Creative Accomplishment Award, (**2013**)
- Sponsored Research Award Recipient (SHSU, ORSP) (**2013**)

Nominations:

- SHSU Mentor Award (**2010** and **2011**)
- SHSU Research Award (**2011** and **2012**)
- Society of Toxicology National Mentor Award (**2012** and **2015**)

External Funding (SHSU, 2006-2014) (Completed)

- 1) ***“Catalytic Bio-Scavengers with Broad Specificity Against OP Nerve Agents”***
NIH Funding, 5 UG1 NS058035-02. Principal Investigator: Wild, James, R. (TAMU)
10/01/06 – 09/30/11, \$1,710,206.

- Sub-Award with TAMU-SHSU (2007-2011), Principal Investigator at SHSU: Dr. Ilona Petrikovics. Sub-Award#: 570376. Type: Contract. Total: **\$400,861**.

2) ***“Investigation of Next Generation Cyanide Antidotes”***

Project Leader at the Army: Dr. Gary Rockwood, Principal Investigator at SHSU: Dr. Ilona Petrikovics, Type: Contract

- NIH: NIAID/USAMRICD Interagency Agreements (W911NF-07-D-0001), USAMRICD under the auspices of the US Army Research Office Scientific Services Program administered by Battelle (Delivery order 0557, Contract No TCN 08284). (SHSU-22023)
 - Y1: (Sept1, 2008-Aug 31, 2009): **\$191,712**
 - Y2: (Sept1, 2009-Aug 31, 2010): **\$208,305**
- NIH: NIAID/USAMRICD Interagency Agreements (W911NF-07-D-0001), USAMRICD under the auspices of the US Army Research Office Scientific Services Program administered by ORISE. (SHSU-28023)
 - Y1: (Sept 1, 2010-Aug 31, 2011): **\$218,682**
- NIH: NIAID/USAMRICD Interagency Agreements (W911NF-07-D-0001), USAMRICD under the auspices of the US Army Research Office Scientific Services Program administered by Battelle (Delivery order 0557, Contract No TCN-11-078). (SHSU-28031).
 - Y1: (Sept 1, 2011-Aug 31, 2012): **\$237,844**
- CounterACT Program, National Institutes of Health Office of the Director, and the National Institute of Allergy and Infectious Diseases, Inter Agency Agreement Number Y1-OD-1561-01/A120-B. P2011-01, and the USAMRICD under the auspices of the US Army Research Office of Scientific Services Program Contract No. W911NF-11-D-0001.
 - Y1: (Sept 1, 2012-Aug 31, 2013): **\$219,680** (SHSU-22064)
 - Y2: (Sept 28, 2013-Sept 27, 2014): **\$195,434** (SHSU220641-203751-20)

External Funding (SHSU, 2014-2016) (Completed)

- 1) NIH-NIAID/USAMRICD-IAA-1 Program. ***“Efficacy Testing of Next Generation Cyanide Antidotes; Preclinical Development of Novel Cyanide Medical Countermeasures”*** Principal Investigator at ICD: Dr. Gary Rockwood; at SHSU: Dr. Ilona Petrikovics; at SDSU: Dr. Brian Logue
 - Y1: \$836,018 (2014-2015)
 - Y2: \$876,206 (2015-2016)
- NIH-NIAID/ USAMRICD-IAA-1 Program: (SHSU Subcontract with ICD). ***“Investigations on Advanced Formulated Cyanide Antidotes; Blood Brain Barrier (BBB) Penetration; Brain Targeting”***

Principal Investigator: Dr. Ilona Petrikovics
Co-PI: Dr. David Thompson

- Y1: (Sept1, 2014-Aug 31, 2015): **\$176,530** (SHSU 220860-203751-20)
- Y2: (Sept1, 2015-Aug 31, 2016): **\$193,631** (SHSU 220861-203751-20)

External Funding (SHSU, 2016-2018) (Present)

- NIH-NIAID/ USAMRICD-IAA-1 Program: (SHSU Subcontract with ICD). ***“Preclinical Development Studies with Cyanide Countermeasures: Brain Targeting Investigations.”***
Principal Investigator: Dr. Ilona Petrikovics
Co-PI: Dr. David Thompson
 - Y1: (Sept1, 2016-Aug 31, 2017): **\$235,649 (awarded)**
 - Y2: (Sept1, 2017-Aug 31, 2018): **\$239,025 (awarded)**

External Funding (SHSU, 2018-2020) (Pending)

- NIH-NIAID/ USAMRICD-IAA-1 Program: (SHSU Subcontract with ICD). ***“In Vitro and In Vivo Investigation of New Generation Formulations for the Cyanide (CN) Antidote Dimethyl Trisulfide (DMTS) with Enhanced Bioavailability.”***
Principal Investigator: Dr. Ilona Petrikovics
Co-PI: Dr. David Thompson
 - Y1: (Sept1, 2018-Aug 31, 2019): **\$241,908 (pending)**
 - Y2: (Sept.1, 2019-Aug 31, 2020): **\$243,245 (pending)**

Total to SHSU since 2007: \$2,517,353 (awarded) plus \$485,153 (pending); (total of \$3,002,506)

Research Collaborations

National Level Collaborations

- Dr. James Wild and Dr. Melinda Wales (Texas A&M University, Department of Biochemistry, Biophysics) (OP Antagonism)
- Dr. Brian Logue (South Dakota State University) (Cyanide Antagonism)
- Dr. Gary Rockwood (Cyanide research), Dr. Douglas Cerazoli (OP Antagonism) (U.S. Army Medical Research Institute of Chemical Defense).
- Dr. Gerry Boss (University of California, San Diego) (Cyanide Antagonism)
- Dr. Steven Patterson (University of Minnesota) (Cyanide Antagonism)
- Dr. Randall Peterson (Harvard University) (Cyanide Antagonism)

- Dr. Matthew Brenner (University of California, Irvine) (Cyanide Antagonism)

International Level Collaborations

- Dr. Marianna Budai, Dr. Kristof Kovacs and Dr. Imre Klebovich (Semmelweis Medical University, Hungary, Europe)
- Dr. Pirooska Revesz and Dr. Peter Sipos (Faculty of Medicine, Department of Pharmaceutical Formulation Technology, University of Szeged, Hungary, Europe)
- Dr. Deli Maria (Biological Research Institute of Biophysics, Department of Molecular Neurobiology, Szeged, Hungary, Europe)
- Professor Csaba Jaszberenyi (Technical University of Budapest, Hungary, Europe)

Institutional Level of Collaborations

- Dr. Donovan Haines (Chem. Dept., Co-PI, Army Grant, 2011-2012)
- Dr. David Thompson (Chem. Dept., Co-PI, Army Grant, 2010-2012; 2012-2014)
(2014-2016)
- Dr. Jorn Yu (College of Criminal Justice, Co-Investigator, 2011-2012)

Service

Scientific Services (National, International)

- Editorial Board Member for "World Journal of Methodology" (2011-2015), and (2016-2019)
- Scientific Advisor for Battelle, Contract Lab. (2013)
- Serving as a Reviewer for Grant Proposals / Scientific Journal Reviewer (2007-Present)

Scientific Society Membership

- Full Member of the American Society of Toxicology; Also Member of the Nanotoxicology Sub-Section (1992-2002), and (2007-Present)
- American Chemical Society (2009-Present)

Committee Membership (SHSU)

- SHSU IUCAC Committee Member (2011-2015; 2016-Present)
- SHSU New Animal Facility Committee Member (2012-2013)
- SHSU College of Science Awards and Recognition Committee (2013-2015; 2016-Present)
- SHSU Distinguished Professor Review Committee (2014-Present)

Facility Development / Emergency Service

- Developed animal facility in CFS Building for Toxicology Research Purposes (Worked on it for two years, it was ready by 2010)

- Federal Emergency Management Agency (FEMA) Emergency Contact Person (**2013-2015**)

Recruitment

- Recruiting, periodically interviewing for positions such as Research Faculties, Post-doctoral Research Associates, Research technicians; Setting up job announcement with SHSU HR Department. (**Continuously as needed**)

Other Services (SHSU)

- Regular participating in various departmental service activities; DPTC; Gibbs/Farrington Committees
- Mentoring, advising, training (animal training course) and supervising students (employed/paid, volunteered and research class participants) in my research lab over the regular university requirement level (12-14 students each semester) (**2008-Present**)
- Setting up SHSU *Summer Toxicology Research Scholarships* (**2014**: James Ross)
- Service for International Office at SHSU:
 - Panel Presentation/discussion on “International Crossing and Cultural Navigations: Teaching to live, integrate, and balance life in the US. (SHSU International week, April, **2009**)
 - Panel Presentation on Adaptation to the US Culture (SHSU International Week, April **2010**)
 - Participation in the International Student Exchange Program: Hosting a Japanese student, Ayaka Tainuchi, from Momoyama Gakuin University, Japan, in my house for a month (April, **2011**)
 - Participating in the International Office’s Transportation Program (Transporting students from and to the IAH Airport; helping them to settle down in Huntsville after arrival (**2008-2012**))
- Community Services at SHSU:
 - Hosting students (their parents), visiting scientists, visiting scholars, Ph.D. student in my house for shorter-longer time (**continuously, as needed**)
 - Helping international students, visiting scholars in the department with setting up household, furniture, car, shopping, transportation (**continuously as needed**)