

Curriculum Vitae

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ADDRESS: National Institute of Environmental Health Sciences
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PLACE OF BIRTH: USA, U.S. Citizen

EDUCATION: Ph.D. Food Science and Technology, 1984
Area of Study: Developmental Toxicology, Mycotoxicology
Texas A&M University, College Station TX
B.S. Animal Science (*cum laude*), 1975
University of Massachusetts, Amherst, MA

EXPERIENCE: **National Institute of Environmental Health Sciences**
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2013 – present: Toxicologist, NTP Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM)
Directs NICEATM Support Contract activities and, in collaboration with the Director, NICEATM, coordinates resource allocation to ensure attainment of NICEATM goals and objectives. In the absence of the Director, directs NICEATM activities, including direction and supervision of technical and professional staff and oversight of the NICEATM Support Contract. Responsible for the preparation of reports and analyses in accordance with established criteria and frameworks. As Contract Officer's (Technical) Representative for NICEATM Support Contract, performs all aspects of contract acquisition, including pre-solicitation activities; solicitation, evaluation, and award; and post-award administration.

2011 – 2012: Toxicologist, Biomolecular Screening Branch, National Toxicology Program, NIEHS
Assisted in the formulation of approaches to characterize the relationship between chemicals and genes, genes and pathways, and pathways and disease. Responsible for making recommendations for the development of new or revised programs to meet existing needs within the DNTP. Served as a resource of expertise, in the review and evaluation of scientific

and technical literature, evaluation of study results, and assisted in the preparation of technical reports and scientific publications. Responsible for presenting concepts and study results to peer review groups. Interacted with other NTP and NIEHS scientists in a collaborative or advisory capacity.

As a Contract Officer's (Technical) Representative, performed independently all aspects of contract acquisition, including pre-solicitation activities; solicitation, evaluation, and award; and post-award administration.

2003 – 2011: Health Scientist Administrator, Susceptibility and Population Health Branch (SPHB), Division of Extramural Research and Training (DERT), NIEHS

Oversaw a Grant Portfolio that included Environmental Kidney and Bladder Diseases; Cooperative Agreement Portfolio that included Breast Cancer and the Environment Research Program, Comparative Mouse Genomics Centers Consortium, and Countermeasures Against Chemical Threats, and Botanical Centers.

Contract Officer's (Technical) Representative for contracts related to the Breast Cancer and the Environment Research Program and the Environmental Genome Project.

2002 – 2003: Program Analyst, SPHB, DERT, NIEHS

Supported the Breast Cancer and the Environment Research Program, Comparative Mouse Genomics Centers Consortium, and the Environmental Genome Project.

Integrated Laboratory Systems

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2001 – 2002: Senior Technical Writer – Supported a NIEHS contract to prepare draft reports for compounds nominated to the National Toxicology Program for further characterization. The reports highlight existing data on human epidemiology, mammalian toxicity, carcinogenicity, and mutagenicity.

U.S. Air Force Institute for Environment, Safety and Occupational Health Risk Analysis (AFIRA)

Brooks Air Force Base

San Antonio, TX 78235

1994 – 2001: Toxicologist – Provided toxicological support for human health and environmental issues of concern to the Air Force, including review and comment of Air Force-related Public Health Assessments and Consults conducted by the Agency for Toxic Substances and Disease Registry as well as Restoration Advisory Board briefings and training. Worked on several interagency working groups to establish health standards, especially for chemicals of military concern. Named as the Department of Defense point of contact for trichloroethylene-related issues. Acted as Contract Officer's (Technical) Representative for a variety of contracts.

University of Texas Health Science Center

Department of Microbiology
7703 Floyd Curl Drive
San Antonio, TX 78284

1991 – 1994: Postdoctoral Fellow, Molecular Virology. Dr. Charles Gauntt, PhD, Principal Investigator. Research centered on reverse transcription a single stranded RNA genome to create a double stranded cDNA to be used for recombinant DNA synthesis and sequencing. Investigated possible interactions between antibodies to different coxsackie viruse serotypes.

University of Texas, MD Anderson Cancer Center

Science Park-Research Division
PO Box 389
Smithville, TX 78957

1988 – 1990: National Cancer Institute Postdoctoral Fellow. Dr. Pick-Hoong Yuen, PhD, Principal Investigator. Research focused on the interactions between the enhancer and promoter regions of carcinogenic Moloney Murine Leukemia Virus when exposed to several inducing agents (dexamethasone, 12-O-tetradecanoyl phorbol-13-acetate).

**CONTRACT OFFICER'S
(TECHNICAL)
REPRESENTATIVE**

NIEHS, National Toxicology Program Interagency Center for the Evaluation of Alternative Toxicological Methods

Research and Development Support Contract for the National Toxicology Program Interagency Center for the Evaluation of Alternative Toxicological Methods [Contract Nos. HHSN273201400010C, HHSN273201400003C]

Research and Development Support Contract for the National Toxicology Program Interagency Center for the Evaluation of Alternative Toxicological Methods [Contract No. N01-ES-35504]

NIEHS, Division of Extramural Research and Training (2002 – 2012)

Recovery – Key Message Development and Dissemination Research: A Model Using the Breast Cancer and the Environment Research Program [Contract No. HHSN273201000070U]

Research Translation and Dissemination Needs Assessment: Environmental Influences on Breast Cancer Risk [OE Reference No. 09-1018]

Identification of Single Nucleotide Polymorphisms (SNPs) in Disease Susceptibility Genes [Contract Nos. HHSN273200800010C and N01-ES-15478 (2001 – 2011)]

Development of GeneSNPs as a Web-Accessible Highly Annotated Relational Database of Human and Mouse Environmental Response Genes [Contract No: N01-ES-33501]

Air Force Institute for Environment, Safety and Occupational Health Risk Analysis (AFIRA), Brooks Air Force Base, San Antonio, TX (1996 – 2001)

Comparing Cleanup Costs to Risk for Selected USAF Pump and Treat Systems: Remediating Trichloroethylene Contaminated Aquifers
Estimating Differences in the Cost of Ground Water Treatment of Trichloroethylene Based on Different Cleanup Goals
Technical Support: Trichloroethylene and Cardiac Malformation
Simulation Studies Examining Possible Mechanisms of TCE Carcinogenicity
TCE Cancer Risk Assessment
Trichloroacetate Tissue Dosimetry and PPAR alpha-Mediated Liver Cancer Induction by Trichloroethylene and Perchloroethylene
Modes of Action of Trichloroethylene for Kidney Tumorigenesis: A Review to Support the US EPA Health Risk Assessment
Metabolism of Trichloroethylene: A Review to Support the US EPA Health Risk Assessment
Evaluating Noncancer Effects of Trichloroethylene: Dosimetry, Mode of Action and Risk Assessment: A Review to Support the US EPA Health Risk Assessment"

TEACHING EXPERIENCE:

1995 – 2001: Basic toxicology for Bio-Environmental Engineers and Public Health Officers. USAF School of Aerospace Medicine, Brooks Air Force Base, San Antonio, TX
1992 – 1993: Courses in Nutrition and Microbiology. Palo Alto Community College, San Antonio, TX
1993: Courses in Virology (undergraduate) and Cytodifferentiation (graduate). Lecturer, University of Texas, San Antonio, San Antonio, TX

ADJUNCT FACULTY:

1995 – 2001: USAF School of Aerospace Medicine, Brooks Air Force Base, San Antonio, TX
1998 – 2001: The Institute of Environmental and Human Health, Texas Tech University, Lubbock, TX
1992 – 1993: Palo Alto Community College, San Antonio, TX

PROFESSIONAL SOCIETIES:

Society of Toxicology, Full Member (1997 to present)
Society of Risk Analysis (1996 – 1999)

PUBLICATIONS:

Cote I, Andersen ME, Ankley GT, Barone S, Birnbaum LS, Boekelheide K, Bois FY, Burgoon LD, Chiu WA, Crawford-Brown D, Crofton KM, DeVito M, Devlin RB, Edwards SW, Guyton KZ, Hattis D, Judson RS, Knight D, Krewski D, Lambert J, Maul EA, Mendrick D, Paoli GM, Patel CJ, Perkins EJ, Poje G, Portier CJ, Rusyn I, Schulte PA, Simeonov A, Smith MT, Thayer KA, Thomas RS, Thomas R, Tice RR, Vandenberg JJ, Villeneuve DL, Wesselkamper S, Whelan M, Whittaker C, White R, Xia M, Yauk C, Zeise L, Zhao J, DeWoskin RS. 2016. The Next Generation of Risk Assessment Multiyear Study – Highlights of Findings and Future Directions. Accepted. Environ Health Perspect.

- Kleinstreuer NC, Sullivan K, Allen D, Edwards S, Mendrick DL, Embry M, Matheson J, Rowlands JC, Munn S, Maull E, Casey W. 2016. Adverse Outcome Pathways: From Research to Regulation. Scientific Workshop Report. [published online ahead of print 22 Jan 2016]. *Regul Toxicol Pharmacol* 76:39-50.
- Casey W, Jacobs A, Maull E, Matheson J, Clarke C, Lowit A. 2015. A New Path Forward: The Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) and National Toxicology Program's Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM). *J Am Assoc Lab Anim Sci* 54(2):170-3.
- Navas-Acien A, Maull EA, Thayer KA. 2013. Arsenic and Diabetes: Navas-Acien et al. respond. *Environ Health Perspect* 121(3):a71-2.
- Maull EA, Ahsan H, Edwards J, Longnecker MP, Navas-Acien A, Pi J, et al. 2012. Evaluation of the Association between Arsenic and Diabetes: A National Toxicology Program Workshop Review. *Environ Health Perspect* 120(12): 1658-70.
- Matalon S, Maull EA. 2010. Understanding and treating chlorine-induced lung injury. *Proc Am Thorac Soc* 7(4): 253.
- Clewell HJ, Barton HA, Maull EA, Andersen ME. 2001. Under What Conditions is Trichloroethylene Likely to be a Carcinogen in Humans? Human and Ecological Risk Assessment: An International Journal 7(4): 687-716.
- Maull E, Clewell HJ. 2000. The Evolution of Health Risk Assessment: Trichloroethylene as a Case Study. In: *Toxicology in Risk Assessment*, (Salem H, Olajos E, eds). Philadelphia:Taylor and Francis, 223 - 233.
- Maull EA, Lash LH. 1998. Trichloroethylene: A Current Review of Metabolism, Mode of Action, and Regulatory Considerations. *Toxic Substance Mechanisms* 17(2): 153-170.
- Maull EA, Atchue JA, Buffalo D, Chaloupka KJ. 1998. Cost Avoidance Associated with Alternate Cleanup Levels for Trichloroethylene. In: *First International Conference on Remediation of Chlorinated and Recalcitrant Compounds*, (Wickramanayake GB, Hincee RE, eds).
- Maull EA, Cogliano VJ, Scott CS, Barton HA, Fisher JW, Greenberg M, et al. 1997. Trichloroethylene health risk assessment: a new and improved process. *Drug Chem Toxicol* 20(4): 427-442.
- Lee C, Maull E, Chapman N, Tracy S, Wood J, Gauntt C. 1997a. Generation of an infectious cDNA of a highly cardiovirulent coxsackievirus B3(CVB3m) and comparison to other infectious CVB3 cDNAs. *Virus Res* 50(2): 225-235.
- Lee C, Maull E, Chapman N, Tracy S, Gauntt C. 1997b. Genomic regions of coxsackievirus B3 associated with cardiovirulence. *J Med Virol* 52(3): 341-347.
- Gauntt CJ, Higdon AL, Arizpe HM, Maull EA, Lutton CW, Beck MA, et al. 1993. Specific and nonspecific heart defenses in enteroviral infections. In: *Idiopathic Dilated Cardiomyopathy*, (al. Fe, ed). Berlin, Heidelberg:Springer-Verlag.
- Gauntt C, Higdon A, Bowers D, Maull E, Wood J, Crawley R. 1993. What lessons can be learned from animal model studies in viral heart disease? *Scand J Infect Dis Suppl* 88: 49-65.
- Yuen PH, Khang YH, Kumar A, Szurek PF, Maull EA. 1991. The Moloney murine leukemia virus

enhancer and its flanking sequences collaborate to determine virulence in T-cell lymphomagenesis. *Mol Carcinog* 4(1): 72-80.

Mayura K, Edwards JF, Maull EA, Phillips TD. 1989. The effects of ochratoxin-a on postimplantation rat embryos in culture. *Archives of Environmental Contamination and Toxicology* 18(3): 411-415.

Gallagher GT, Maull EA, Kovacs K, Szabo S. 1988. Neoplasms in rats ingesting acrylonitrile for 2 years. *Journal of the American College of Toxicology* 7(5): 603-615.

Szabo S, Horner HC, Maull E, Schoor J. 1987. Biochemical changes in tissue catecholamines and serotonin in duodenal ulceration caused by cysteamine or propionitrile in the rat. *J Pharmacol Exp Ther* 240: 871-877.

Szabo S, Gallagher GT, Silver EH, Maull EA, Horner HC, Komanicky P, et al. 1984. Subacute and chronic action of acrylonitrile on adrenals and gastrointestinal-tract - biochemical, functional and ultrastructural studies in the rat. *Journal of Applied Toxicology* 4(3): 131-140.

Szabo S, Silver EH, Gallagher GT, Maull EA. 1983a. Potentiation of duodenal ulcerogenic action of acrylonitrile by PCB or phenobarbital in the rat. *Toxicol Appl Pharmacol* 71(3): 451-454.

Szabo S, Maull EA, Pirie J. 1983b. Occupational stress - understanding, recognition and prevention. *Experientia* 39(10): 1057-1063.

Lamont JT, Ventola AS, Maull EA, Szabo S. 1983. Cysteamine and prostaglandin-f 2-beta stimulate rat gastric mucin release. *Gastroenterology* 84(2): 306-313.

Szabo S, Trier JS, Brown A, Maull EA. 1982a. Increased vascular-permeability appears early in ethanol-induced gastric injury and is reduced by prostaglandin or cysteamine. *Gastroenterology* 82(5): 1191-1191.

Szabo S, Sandrock AW, Nafradi J, Maull EA, Gallagher GT, Blyzniuk A. 1982b. Dopamine and dopamine receptors in the gut: their possible role in duodenal ulceration. In: *Advances in the Biosciences*, (Kohsaka Mea, ed). Oxford and New York:Pergamon Press, 165-170.

Szabo S, Gallagher GT, Blyzniuk A, Maull EA, Sandrock AW. 1982c. Duodenal ulcer and dopamine: new elements in pathogenesis and therapy. In: *Advances in Pharmacology and Therapeutics* (Yoshida H, Hagihara Y, Ebashi S, eds). Oxford and New York:Pergamon, 263-268.

Szabo S, Maull EA, Movahedi S. 1981a. Sulfhydryl drugs - a new type of gastric cytoprotective agent. *Gastroenterology* 80(5): 1298-1298.

Szabo S, Horner HC, Maull EA. 1981b. GABA, experimental duodenal ulcer and adrenal necrosis: pharmacologic and biochemical studies. In: *Problems in GABA Research*, (Okada Y, Roberts E, eds). Amsterdam-Oxford-Princeton:Excerpta Medica, 147-155.

Clarke MR, Maull EA, Szabo S. 1981. Effect of 5-fluorouracil on liver structure, non-protein sulfhydryls, and serum enzymes. *Federation Proceedings* 40(3): 764-764.

CORRESPONDENCE:

Navas-A cien A, Maull EA, and Thayer KA. 2013. Arsenic and diabetes: Navas-Acien et al. respond. *Environ Health Perspect* 121:a71-a72. <http://dx.doi.org/10.1289/ehp.1206100R> [Online 1 March 2013]

REPORTS:

Tice R, Carson B, Andrews M, Binder R, Donner M, Falchi J, et al. 2002. Dimethylethanolamine (DMAE) [108-01-0] and Selected Salts and Esters. Contract No. N01-ES-65402. Research Triangle Park.

Haneke K, Carson B, Hardy R, Maull EA, Belue N, Wood M. 2002a. 4-Phenylcyclohexane [CASRN 4994-16-5]. Contract No. N01-ES-65402. Research Triangle Park.

Haneke K, Carson B, Maull EA, Winters J, Gregorio C. 2002. Turpentine (Turpentine Oil, Wood Turpentine, Sulfate Turpentine, Sulfite Turpentine) [8006-64-2]. Contract No. N01-ES-65402. Research Triangle Park.

Haneke K, Carson B, Maull EA, Gregorio C, Belue N. 2002b. Chloramine-T [127-65-1] and Metabolite p-Toluenesulfonamide [70-55-3]. Contract No. N01-ES-65402. Research Triangle Park.

Haneke K, Carson B, Gregorio C, Maull EA. 2001. Infrasound - Brief Review of the Toxicological Literature. Research Triangle Park.

Caravello V, Long GC, Maull EA, Porter RC, Christensen D. 1999. Non-carcinogenic Effects of Lead in Drinking Water for Adult Populations. IERA-RS-CL-1999-0013. San Antonio.

Maull E. 1997. Evaluation of Medical Histories for the Reconsideration of Denial of Claim of the Bankston Family. AL/OE-CL-1997-0186. San Antonio.

Wireman JR, Maull EA. 1995. Relative Risk Comparison - Use of Stoddard Solvents and Its Replacements. AL/OE-CL-1995-0277. San Antonio.

Maull EA, Wireman JR, Long GC. 1995. Human Health Risk Associated with Contact with Contaminated Soils. AL/OE-CL-1995-0302. San Antonio.

Maull EA, Wireman JR. 1995. Consumption of Fruits and Vegetables Grown on Pesticide Contaminated Soil. AL/OE-CL-1995-0277. San Antonio.

Maull EA, Jacobsen JM. 1995. Hepatotoxic Substances Commonly Used at Air Force Bases. AL/OE-SR-1995-0024.

Long GC, Maull EA. 1995. Exposure to Dieldrin and Bromacil in Drinking Water. AL/OE-CL-1995-0184. San Antonio.

ABSTRACTS AND PRESENTATIONS

Maull, E.A., Atchue, J.A., Buffalo, D., and Chaloupka, K.J.: Cost Avoidance Associated with Alternate Cleanup Levels for Trichloroethylene. First International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, 1998.

Maull, E.A.: The Evolution of Health Risk Assessment: Trichloroethylene as a Case Study. Texas Tech University Seminar Series, Lubbock, TX, 1998

Maull, E.A., Evolution of the TCE Risk Assessment: Science, Policy, and Communication. Focus on Environmental Communication Workshop, X – Change '97, Miami, Florida, 1997.

Gauntt, C.J., Wood, H.J., Lee, C.H., Reyna, S.M., Maull, E.A., Tracy, S.T., Chapman, N.M., and Cunningham, M.W. A Role for Molecular Mimicry in Coxsackievirus-Induced Myocarditis. Immunologic Aspects of Cardiovascular Disease, Keystone, Colorado, 1997.

Maull, E.A.: The Department of Defense Trichloroethylene Working Group: An Update. Dense Non-Aqueous Phase Liquid Integrated Project Team Meeting, 5-6 June 1996.

Maull, E.A.: The Environmental Sciences Branch at Armstrong Laboratory. Veterinary Conference

Laboratory Course, Ft Sam Houston, 13-14 May 1996.

Maull, E.A.: Trichloroethylene: What are the Appropriate Standards? Conference on Advances in Toxicology and Applications to Risk Assessment. 23-25 Apr 1996.

Maull, E.: Economic Impact to the Department of Defense of Trichloroethylene Remediation of Contaminated Groundwater. Participant in "Issues Session - Trichloroethylene: Do the Animal Data Predict Human Cancer Risk". Society of Toxicology Annual Meeting, 1996.

Maull, E.A.: The Department of Defense. AFIRM '96: New Challenges, Hard Choices. 31 Jan - 2 Feb 1996.

Lee, C., Maull, E., Tracy, S., Chapman, N., Tu, Z., and Gauntt, C. Use of Molecular Constructs of Chimeric Viruses from Infectious cDNAs for Myocarditic and Amyocarditic Coxsackievirus B3 Viruses to Identify Genomic Regions Associated with Induction of Myocarditis in Mice. American Society for Virology, 1995.

Lee, C., Maull, E., Tracy, S., Chapman, N., Tu, Z., and Gauntt, C: Use of molecular constructs of chimeric viruses from infectious cDNAs of myocarditic and amyocarditic coxsackievirus B3 virusee to identify genomic regions associated with myocarditis. American Society for Virology Annual Meeting, 1992.

Maull, E.A.: Influence of heterologous Coxsackievirus antibodies on infectivity and expression of myocarditis. Invited speaker to the Texas Branch of the American Society for Micorbiology, 1992.

Maull, E.A., Gauntt, C.J., Higdon, A.L., Arizpe, H.M., Lutton, C.W., Beck, M.A., Chapman, N.M., McManus, B.M., Mullican, J.C., and Tracy, S.M.: Binding of neutralizing anti-Coxsackievirus B3m monoclonal antibodies to Coxsackievirus B2 results in increased infectivity in HeLa cells. American Society for Virology Annual Meeting, 1992.

Yuen, P.H., Case, R., Kumar, A., and Maull, E. Oncogenicity of Moloney murine leukemia virus is not affected by a reduction in binding of a 42Kd protein to mutated CORE elements. American Society for Virology Annual Meeting, 1989.

Yuen, P.H., Kumar, A., Case, R., Szurek, P., and Maull, E. Sequence extending from 3' side of the MoMuLV enhancer which affects the replication of the virus has no effect on T cell lymphomagenesis. American Society for Virology Annual Meeting, 1988.

Maull, E.A., Smith, E.E., Clement, B.A., Phillips, T.D.: Experimental assessment of the developmental hazard of aflatoxins In Vitro. Fall meeting of Gulf Coast Chapter of the Society of Toxicology, 1987.

Mayura, K., Edwards, J.F., Maull, E.A., Phillips, T.D.: Developmental toxicity of ochratoxin A in extra-corporeally maintained, postimplantation rat embryos. Society of Toxicology, National Meeting, 1988.

Smith, E.E., Maull, E.A., Taylor, M.A., Clement, B.A., Phillips, T.D.: The Hydra assay as a prescreen for teratogenic mycotoxins. Society of Toxicology, National Meeting, 1988.

Maull, E.A., Clement, B.A., Heidelbaugh, N.D., Phillips, T.D.: Effects of aflatoxins B1 and G1 on postimplantation rat embryos. Toxicologist, 7, 1987, 175.

Maull, E.A., Geerling, S., Phillips, T.D.: Experimental assessments of the developmental toxicity of Aflatoxins in the rat. Toxicologist, 6, 1986, 89.

Maull, E.A.: Effects of Aflatoxins B1, B2, G1and G2 on fetal development in the rat. From the session

entitled "Mycotoxin Research Update at the Texas Agricultural Experiment Station Annual Staff Conference.

Szabo, S., Trier, J. S., Brown, A., Maull, E. A.: Increased vascular permeability appears early in ethanol-induced gastric injury and is reduced by prostaglandin or cysteamine. *Gastroenterol.*, 82, 1982, 1191.

Clarke, M.R., Maull, E.A., Szabo, S.: Effect of 5-fluorouracil on liver structure, nonprotein sulfhydryls, and serum enzymes. *Fed. Proc.*, 40, 3, 1981.

Ourieff, S., Gallagher, G.T., Maull, E.A., Usadel, K.H., Szabo, S.: The effect of somatostatin on propionitrile-induced gastric and pancreatic secretion in experimental duodenal ulceration. 2nd Int. Symp. on Somatostatin, Athens, 1981, 124.

Szabo, S., Gallagher, G.T., Blyzniuk, A., Maull, E.A., Sandrock, A.W.: Duodenal ulcer and dopamine: new elements in pathogenesis and therapy. *Proc. 8th Int. Congr. Pharmacol.*, Tokyo, 1981, 228.

Szabo, S., Maull, E.A., Movahedi, S.: Sulfhydryl drugs: a new type of gastric cytoprotective agent. *Gastroenterol.*, 80, 1981, 1298.

Szabo, S., Movahedi, S., Maull, E.A.: Sulfhydryls: Endogenous modulators of gastric cytoprotection and exogenous, novel cytoprotective drugs. *Proc. 8th Int. Congr. Pharmacol.*, Tokyo, 1981, 698.

Szabo, S., Sandrock, A.W., Nafradi, J, Maull, E.A., Gallagher, G.T., Blyzniuk, A.: Dopamine and dopamine receptors in the gut: their possible role in duodenal ulceration. *Proc. 8th Int. Congr. Pharmacol.*, Tokyo: Satellite Symp.: Dopamine, Okayama, 1981, 21.