

CURRICULUM VITAE

BIOGRAPHICAL

Name Peter J. Rice

Birthdate 04 April 1953

Birthplace Bronx, New York

Citizenship U.S.A.

Business Address Department of Pharmacology (423) 439-8774
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EDUCATION AND TRAINING

Undergraduate

1971-1976 College of Pharmacy B.S. Pharmacy
Northeastern University 1976 cum laude
Boston, Massachusetts

Graduate

1978-1983 College of Pharmacy Ph.D. Pharmacy/Pharmacology
Ohio State University 1983 Popat N. Patil, Ph.D.
Columbus, Ohio

DISSERTATION: Molecular Aspects of the Activation of Alpha-Adrenergic Receptors

1994-2000 University of Kentucky College of Pharmacy Pharm.D.
Lexington, Kentucky 2000

Postgraduate

1983-1986 Department of Pharmacology Pharmacology
and Toxicology William W. Fleming, Ph.D.
West Virginia University David A. Taylor, Ph.D.
Morgantown, West Virginia

1985	Marine Biological Laboratory Woods Hole, Massachusetts	Biophysics of Neural Function (course)
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APPOINTMENTS AND POSITIONS

Research

1975-1977	Laboratory of Neuropharmacology Massachusetts General Hospital Boston, Massachusetts	Research Technician Ross J. Baldessarini, M.D.
1977-1978	Department of Pharmacology Harvard Medical School Boston, Massachusetts	Senior Research Assistant Richard E. Zigmond, Ph.D.

Academic

1986-1993	Department of Pharmacology James H. Quillen College of Medicine East Tennessee State University Johnson City, Tennessee	Assistant Professor
1992	Awarded Tenure	
1993-2005	Department of Pharmacology James H. Quillen College of Medicine East Tennessee State University Johnson City, Tennessee	Associate Professor
1996-	Department of Obstetrics & Gynecology James H. Quillen College of Medicine East Tennessee State University	Clinical Faculty
1997-	College of Nursing East Tennessee State University	Adjunct Faculty
2005-	Department of Pharmacology James H. Quillen College of Medicine East Tennessee State University Johnson City, Tennessee	Professor

Non-Academic

1976-1978	Brockton Hospital Brockton, Massachusetts	Pharmacist (part-time)
1979-1980	Lynn Drug Company Columbus, Ohio	Pharmacist (part-time)
1981-1983	Pharmacist Relief Pool of Central Ohio Columbus, Ohio	Relief Pharmacist (part-time)
1984-1986	Monongalia General Hospital Morgantown, West Virginia	Pharmacist (part time)
1987-1998	Revco DS Twinsburg, Ohio	Relief Pharmacist (part time)
1998- 2005	CVS Woonsocket, RI	Relief Pharmacist (part time)
2004-	iPharmTech.com internet Pharmacy Tech Training Course	Course Director

CERTIFICATION AND LICENSURE

1976-	Pharmacist License (16629)	Massachusetts
1986-	Pharmacist License (C6896)	Tennessee

MEMBERSHIP IN PROFESSIONAL AND SCIENTIFIC SOCIETIES

1975	Rho Chi Pharmacy Honor Society
1986-	Southeastern Pharmacology Society
1986-	Appalachian Chapter, Society for Neuroscience
1991-	Appalachian Branch, American Association for Laboratory Animal Science
1992-	Sigma Xi, The Scientific Research Society Southern Appalachian Chapter
1993-	American Society for Pharmacology and Experimental Therapeutics
2001-	American College of Clinical Pharmacy
2001-	American Society of Health-System Pharmacists
2001-	American Society for Microbiology
2003-	American Pharmaceutical Association
2003-	American Association of Colleges of Pharmacy

HONORS AND AWARDS

1978-1979	University Fellowship, Ohio State University
1979-1980	Research Associateship, Ohio State University
1980-1982	Advanced Predoctoral Fellowship Pharmaceutical Manufacturer's Association Foundation
1982-1983	Research Associateship, Ohio State University
1983-1985	NIH Postdoctoral National Research Service Award
1984-1986	Ad Hoc Reviewer, Journal of Pharmacology and Experimental Therapeutics
1992	Pharmacist of the Year Award, First District Pharmaceutical Association
1994	Dean's Teaching Recognition Award, James H. Quillen College of Medicine, East Tennessee State University
1997	Student's Teaching Recognition Award, James H. Quillen College of Medicine, East Tennessee State University
1999	Pharmacist of the Year Award, First District Pharmaceutical Association
2002-	Marquis Who's Who in America
2003-	Editorial Board, Clinical and Diagnostic Laboratory Immunology

PROFESSIONAL ACTIVITIES

Teaching

Courses

General Principles of Pharmacology	(1988,'91,'93, '96, '02, '05)
Basic Bioelectronics	(1988)
Pharmacy Technician Training Course (School of Continuing Studies) (www.iPharmTech.com)	(1995-2003) (2004-)
Pharmacology and Substance Abuse (College of Education)	(2000)

Lectures

Autonomic Pharmacology	(1990, 1993, 1996)
Cardiovascular Pharmacology	(1991)
Medical Pharmacology	(1987-)
Neuropharmacology	(1988-)
Nursing Pharmacology	(1986)
Lifespan Assessment & Clinical Management of Older Adults (College of Nursing)	(1992-)

Predoctoral Students

S. Thomas Abraham	1987-1993
Yu-Li Liu	1992-1997
Tessa L. Long (with Kenneth E. Ferslew, PhD)	1992-1998

Predoctoral Committee

Anwar Hamdi (Pharmacology, 1989), Li Gong (Pharmacology, 1993),
 Tao Tang (Physiology, 1994), Greg Lindsay (Pharmacology, 1993),
 David L. Saylor (Physiology, 1994), Nuoyu Huang (Pharmacology, 1995),
 David Burrows (Toxicology, 2004), Yiyong (Ben) Liu (Biochemistry)

Research Support

1987-1989	Sodium and Calcium Currents in Rat SinoAtrial Node Cells \$ 15,736	Tennessee Affiliate American Heart Association
1990-1991	Atrial Ectopic Tachycardia in an Animal Model \$ 650	NIH-BRS Grant
1991-1992	Leukocyte β -Adrenoreceptor Activity during Pregnancy \$ 3,000	E.T.S.U. Department of Obstetrics and Gynecology
1991-1993	Minority Predoctoral Fellowship for S. Thomas Abraham \$ 29,707	N.I.G.M.S., N.I.H.
1992-1995	Postsynaptic Supersensitivity in the Rat Vas Deferens \$ 58,416	N.I.N.D.S., N.I.H.
1993-1994	\$ Adrenoreceptor Desensitization in Leukocytes and myometrium \$ 6,000	E.T.S.U. Research Development Committee
1996-1997	Characterization of Adenosine Receptor Interactions in Rabbit Ventricular Membranes \$ 5,000	Cardiovascular Research Institute
1997-1999	Adenosine Receptor Subtypes in Rabbit Myocardium \$ 30,000	American Heart Association Tennessee Affiliate
1998	BIAcore / Biomolecular Interaction Analysis \$ 229,000	NIH S10 Shared Instrumentation (with David L. Williams, Ph.D.)

Research Support (continued)

VA Merit Review, "Cellular and molecular mechanisms of Enhanced early wound healing", PI - William Browder, MD, 10/1/97 to 9/30/01, Total Costs \$284,000 (Co-I: 5%)

"Amelioration of Sepsis by Macrophage Activation" Total Direct Costs: \$1,125,000

Principal Investigator: David L. Williams, Ph.D.

Co-Investigator: Peter J. Rice, Ph.D.

15% effort

Agency: NIH NIGMS

Type: 2 R01 (GM53522-05) Period: 04/01/96 to 01/31/05

The major goals of this project are to: i) characterize the receptor interactions of glucan ligands with TLRs and CR3; ii) establish the role TLR in the anti-sepsis effect of in CLP sepsis and iii) investigate the role of CR3 in the anti-sepsis effect of glucan. The long-term objectives of this research are to understand the basic cellular and molecular mechanisms associated with sepsis syndrome in the critically ill host.

"The Role of Eicosanoids in Shock" Total Direct Costs:\$920,000

Principal Investigator: James A. Cook, Ph.D.

Co-Investigator: Peter J. Rice, Ph.D.

5% effort

Agency: NIH

Type: R01 Period: 07/01/2004 to 06/30/2008

The aims of this grant are: 1) Determine the mechanisms of G1 protein differential regulation of cellular inflammatory signaling to TLR ligands in vivo and in vitro in primary cells and genetically engineered inflammatory cells, and 2) determine the mechanisms responsible for alteration of G1 protein coupled signaling pathways in tolerance and priming responses to endotoxin and Gram positive TLR ligands.

"Innate Immune Response to Candida" Total Direct Costs: \$200,000

Principal Investigator: David L. Williams, Ph.D.

Agency: NIH

Type: R21A145829 Period: 07/01/01 - 06/30/03

The major goal of this proposal is to elucidate the role of TLRs in the recognition of Candida cell wall glucans.

"Dietary Supplementation with Glucan Enhances Immune Function"

Principal Investigator: David L. Williams, Ph.D.

Total Direct Costs: \$250,000

Agency: NIH

Type: R21 A145829 Period: 10/10/01 - 09/30/03

The major goal of this proposal is to examine whether dietary supplementation with glucan will modulate immune functions and resist to infection.

Service

University and Medical School Committees

- 1989 Search Committee for Director of Research and Sponsored Programs, East Tennessee State University
- 1989- Coordinator for Pharmacy Continuing Education Program, James H. Quillen College of Medicine
- 1992-1998 Admissions Committee, James H. Quillen College of Medicine
- 1992-1995 Institutional Review Board, East Tennessee State University
- 1998- Director of ETSU Biomolecular Interaction Analysis Facility
- 2001-2004 ETSU College of Medicine Promotion and Tenure Committee (Chair 2003-2004)
- 2004- ETSU College of Pharmacy Steering Committee

Peer Review

Accreditaion Council for Pharmacy Education Field Reviewer

Journal Reviewer (1994-present)

American Journal of Obstetrics and Gynecology

Antimicrobial Agents and Chemotherapy, Life Sciences, International

Immunopharmacology

Journal of Pharmaceutical Sciences

Life Sciences

Peptides

Extramural Service Activities

- 1988-1993 Member of the Board of Directors, First United Methodist Church Early Learning Center (preschool) President (1990-91), VP (1989-90)
- 1989-1998 Member of the Board of Directors, Washington County Division, American Heart Association; Secretary (1990-91), Program Committee Chair (1993-94), Treasurer (1996-1998)
- 1989-1991 Member of the State Communications Committee, Tennessee Affiliate, American Heart Association
- 1990-1991 President, Volunteer Toastmasters Club
- 1990-1991 Vice-President, First District Pharmaceutical Association
- 1991-1992 President, First District Pharmaceutical Association
- 1991-1992 Area 7 Governor, Toastmasters International District 63
- 1993- Member of the Pharmacy Continuing Education Advisory Committee, University of Tennessee and Tennessee Pharmacists Association.
- 1993-1994 Member of the State Division Relations Committee, Tennessee Affiliate, American Heart Association

- 1994- Member of the Board of Directors, University School Foundation,
Treasurer (1997-)
- 1996-1999 Councilor, Southeastern Pharmacology Society
- 1997- Representative to United States Pharmacopeial Convention
- 2002-2003 President, Southeastern Pharmacology Society
- 2005- United States Pharmacopeia Expert Committee
on Dietary Supplements, Non-botanical
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Presentations

- "Cardiac Pharmacology: Positive Inotropic Agents", Surgery Grand Rounds, VA Medical Center, Mountain Home, TN; 06 January 1987.
- "Drug-Receptor Interactions and Biological Responses", Biological Sciences Seminar, East Tennessee State University, Johnson City, TN; 20 November 1988.
- "Antithrombotic Drugs", Surgery Grand Rounds, James H. Quillen College of Medicine, East Tennessee State University, Johnson City, TN; 27 July 1989.
- "Mechanism of Imidazoline Desensitization in Rat Vas Deferens by Oxymetazoline", Physiology Seminar, James H. Quillen College of Medicine, Johnson City, TN; 15 December 1989.
- "Heart Research and Positive Inotropic Agents", Professional Development Seminar, 912th Mobile Army Surgical Hospital, Johnson City, TN; 11 February 1990.
- "Update on Cholesterol Therapy", First District Pharmaceutical Association, Johnson City, TN; 15 November 1990.
- "Alzheimer's Disease", First District Pharmaceutical Association, Johnson City, TN; 18 April 1991.
- "Pharmacology of Drug Abuse", Here's Looking at You 2000 Teacher Training for Johnson City Schools, Comprehensive Community Services, Johnson City, TN; 21 August 1991.
- "Mechanisms of Sensitivity Change in the Rat Vas Deferens", Ohio State University College of Pharmacy, Columbus, Ohio, 10 February 1992.
- "Uterine Relaxation and β -Adrenergic Receptors", Department of Obstetrics and Gynecology Grand Rounds, Quillen College of Medicine, East Tennessee State University, Johnson City, TN, 31 August 1994.
- "Principles of Pharmacology", Residency Program, Department of Obstetrics and Gynecology, James H. Quillen College of Medicine, Johnson City Medical Center, Johnson City, TN, 19 April 1995.
- "Uterine Contraction and Relaxation", Residency Program, Department of Obstetrics and Gynecology, James H. Quillen College of Medicine, Johnson City Medical Center, Johnson City, Tennessee, 18 October 1995.
- "Diet and Heart Disease: Why Patients Should Be Compliant", Heart Disease and Diet: How to Increase Patient Compliance, Columbia North Side Hospital and VA Medical Center Continuing Education Program, 17 September 1996.
- "Drug Basics for the Press", Medical Reporting Class, East Tennessee State University, Johnson City, Tennessee, 29 January 1997.
- "Drugs and Prostate Cancer", Kingsport Prostate Cancer Support Group, Holston Valley Hospital Medical Center, Kingsport, TN, 12 June 1997.

- "Principles of Pharmacology", Residency Program, Department of Obstetrics and Gynecology, James H. Quillen College of Medicine, Johnson City Medical Center, Johnson City, Tennessee, 23 July 1997.
- "Treatment of Pain", Residency Program, Department of Obstetrics and Gynecology, Quillen James H. Quillen College of Medicine, Johnson City Medical Center, Johnson City, Tennessee, 17 March 1999.
- "Principles of Pharmacology", Residency Program, Department of Obstetrics and Gynecology, James H. Quillen College of Medicine, Johnson City Medical Center, Johnson City, Tennessee, 28 July 1999.
- "Biomolecular Interaction Analysis of Carbohydrate Receptors", BIA Symposium, San Francisco, CA, 10 Nov 1999.
- "Principles of Pharmacology", Southern Association of Forensic Scientists Spring 2000 Training Meeting, Gatlinburg, Tennessee, 28 April 2000.
- "Pharmacotherapy of Nausea and Vomiting", Residency Program, Department of Obstetrics and Gynecology, James H. Quillen College of Medicine, Johnson City Medical Center, Johnson City, Tennessee, 12 July 2000.
- "Principles of Pharmacology", Residency Program, Department of Obstetrics and Gynecology, James H. Quillen College of Medicine, Johnson City Medical Center, Johnson City, Tennessee, 30 January 2002.
- "Biomolecular Interaction Analysis of Human Monocyte Scavenger Receptors as Pattern Recognition Receptors for (1-3)- β -D-Glucans using a Biacore L1 Biosensor Surface with Immobilized AcLDL", BIA Symposium, Chicago, IL, 07 May 2002.
- "Isolated Tissue Pharmacology" in Systems and Integrative Pharmacology Workshop, 23rd Annual Southeastern Pharmacology Society Meeting, Johnson City, TN, 17 October 2002.
- "Pharmacotherapy of Heart Failure", First District Pharmaceutical Association, Johnson City, 20 February 2003
- "Drug Teratogenicity", Residency Program, Department of Obstetrics and Gynecology, James H. Quillen College of Medicine, Johnson City Medical Center, Johnson City, Tennessee, 19 March 2003.
- "Photoprotection", Grand Rounds, Department of Obstetrics and Gynecology, James H. Quillen College of Medicine, Johnson City Medical Center, Johnson City, Tennessee, 12 May 2004.
- "Photoprotection", Cardinal Health Retail Business Conference, Anaheim, California, August 4-6, 2004.

PUBLICATIONS

Papers

1. Noon JP, Rice PJ and Baldessarini RJ: Calcium Leakage as a Cause of High Resting Tension in Vascular Smooth Muscle from the Spontaneously Hypertensive Rat. *Proc Natl Acad Sci* 1978; 75: 1605-1607.
2. Noon JP, Rice PJ, Baldessarini RJ: Alpha-Adrenergic Receptors in Rat Aortic Smooth Muscle: Evidence for Two Cooperatively Interacting Populations. In Catecholamines: Basic and Clinical Frontiers, ed. by Usdin E et al, pp. 411-413, Pergamon Press, New York (1979).

3. Chalazonitis A, Rice PJ, Zigmond RE: Increased Ganglionic Tyrosine Hydroxylase and Dopamine Beta-Hydroxylase Activities Following Preganglionic Nerve Stimulations: Role of Nicotinic Receptors. *J Pharmacol Exp Ther* 1980; 213: 139-143.
4. Ruffolo RR, Rice PJ, Patil PN, Hamada A, Miller DD: Differences in Applicability of the Easson-Stedman Hypothesis to the Alpha-1 and Alpha-2 Adrenergic Effects of Phenethylamines and Imidazolines. *Eur J Pharmacol* 1983; 86: 471-475.
5. Miller DD, Hamada A, Craig EC, Christoph GG, Galluci JC, Rice PJ, Banning JW, Patil PN: Optically Active Catecholimidazolines: A Study of Steric Interactions at Alpha-Adrenoreceptors. *J Med Chem* 1983; 26: 957-963.
6. Banning JW, Rice PJ, Miller DD, Ruffolo RR, Hamada A, Patil PN: Differences in the Adrenoceptor Activation by Stereoisomeric Catecholimidazolines and Catecholamines. In Neuronal and Extraneuronal Events in Autonomic Pharmacology, Ed. by Fleming, W.W. et al, pp. 167-180, Raven Press, New York (1984).
7. Goto K, Longhurst PA, Cassis LA, Head RJ, Taylor DA, Rice PJ, Fleming WW: Surgical Sympathectomy of the Heart in Rodents and Its Effect on Sensitivity to Agonists. *J Pharmacol Exp Ther* 1985; 234: 280-287.
8. Rice PJ, Taylor DA, Valinski WA, Head RJ, Fleming WW: Norepinephrine Depletion and Sensitivity Changes in Rat Heart Induced by Pretreatment with Reserpine. *J Pharmacol Exp Ther* 1987; 240: 764-771.
9. Rice PJ, Hamada A, Miller DD, Patil PN: Asymmetric Catecholimidazolines and Catecholamidines: Affinity and Efficacy Relationships at the Alpha-Adrenoreceptor in Rat Aorta. *J Pharmacol Exp Ther* 1987; 242 : 121-130.
10. Rice PJ, Taylor DA, Fleming WW: Rapid Sampling of Biological Signals Using a Simple Assembly Language Loop. *Trends in Pharmacol Sci* 1987; 8: 332-333.
11. Longhurst PA, Rice PJ, Taylor DA, Fleming WW: Sensitivity of Caudal Arteries and the Mesenteric Vascular Bed to Norepinephrine in DOCA-Salt Hypertension. *Hypertension* 1988; 12: 133-142.
12. Rice PJ, Miller DD, Sokoloski TD, Patil, PN: Pharmacologic Implications of alpha-Adrenoreceptor Interactive Parameters for Epinephrine Enantiomers in the Rat Vas Deferens. *Chirality* 1989; 1: 14-19.
13. Rice PJ, Miller DD, Patil PN: Epinephrine Enantiomers: Affinity, Efficacy and Potency Relationships in Rat Smooth Muscle Tissues. *J Pharmacol Exp Ther* 1989; 249: 242-248.
14. Rice PJ, Hardin JC, Hamdi A, Abraham ST: Imidazoline Desensitization of Epinephrine Responses in Rat Vas Deferens. *J Pharmacol Exp Ther* 1991; 259: 1182-1187.
15. Abraham ST, Rice PJ: Absence of Denervation Supersensitivity to Neurokinin A in the Rat Vas Deferens. *Gen Pharmacol* 1992; 23: 471-474.
16. Abraham ST, Rice PJ: Protein Kinase C Mediated Contractile Response of the Rat Vas Deferens. *Europ J Pharmacol* 1992; 218: 243-249.
17. Mehta AV, Chidambaram BC, Rice PJ: Pharmacokinetics of Nadolol in Children with Supraventricular Tachycardia. *J Clin Pharmacol* 1992; 32: 1023-1027.
18. Rice PJ: Three-Dimensional Electrocardiography in the Rat. *J Pharmacological and Toxicological Methods* 1992; 27: 217-223.
19. Daigneault EA, Hamdy RC, Ferslew KE, Rice PJ, Singh J, Harvill LM, Kalbfleisch JH: Investigation of the Influence of Acetylsalicylic Acid on the Steady State of Long-Term Therapy With Theophylline in Elderly Male Patients With Normal Renal Function. *J Clin Pharmacol* 1994; 34: 86-90.
20. Nwosu UC, Rice PJ: Beta-Adrenoreceptor Changes in Mononuclear Leukocytes During Pregnancy. *Proc Soc Exp Biol Med* 1995; 209: 157-162.

21. Rice PJ, LeClair IO, Stone WL, Mehta AV: Pharmacokinetics of Moricizine in Children. *J Clin Pharmacol* 1995; 35: 1016-1019.
22. Müller A, Rice PJ, Ensley HE, Coogan PS, Kalbfleisch JH, Kelley JL, Love EJ, Portera CA, Ha T, Browder IW, Williams DL: Receptor Binding and Internalization of a Water Soluble (1-3)- β -D-Glucan Biological Response Modifier in Two Monocyte/Macrophage Cell Lines. *J Immunol* 1996; 156: 3418-3425.
23. Rice PJ, Armstrong SC and Ganote CE: Concentration-response relationships for adenosine agonists during preconditioning of rabbit cardiomyocytes. *J Mol Cell Cardiol* 1996; 28: 1355-1365.
24. Rice PJ, Abraham ST, Huang NY and Doman RJ: Extraneuronal uptake inhibitor U-0521 decreases contractile responses in the rat vas deferens. *Gen Pharmacol* 1997;29:437-439.
25. Battle J, Ha T, Li C, DellaBeffa V, Rice P, Kalbfleisch J, Browder W, Williams D: Ligand binding to the (1-3)- β -D-glucan receptor stimulates Nf κ B activation, but not apoptosis in U937 cells. *Biochem Biophys Res Comm* 1998;249:499-504.
26. Liu YL, Nwosu UC, Rice PJ: Relaxation of isolated human myometrial muscle by β 2 but not β 1 adrenoceptors. *Am J Obstet Gynecol* 1998;179:895-898.
27. Rice PJ, Lindsay GW, Bogan CR, Hancock JC. cAMP and *in vitro* inotropic actions of secretin and VIP in rat papillary muscle. *Peptides* 1999; 519-522.
28. Williams DL, Müller A, Raptis J, Rice PJ, Kalbfleisch JH: Receptor binding of fungal cell wall (1-3)- β -D-glucan to human macrophage and neutrophil cell lines. Proceedings of the Organic Dust Symposium at the 1999 Beltwide Cotton Conferences.
29. Müller A, Raptis J, Rice PJ, Kalbfleisch JH, Stout RD, Ensley HE, Browder IW, Williams DL. The influence of glucan polymer structure, branching frequency and solution conformation on binding to the (1-3)- β -D-glucan receptor in a human monocyte-like cell line. *Glycobiology* 2000; 10(4):339-346.
30. Kougias P, Wei D, Rice PJ, Ensley HE, Kalbfleisch J, Williams DL, Browder IW. Normal human fibroblasts express pattern recognition receptors for fungal (1-3)- β -D-glucans. *Infect Immunity* 2001; 69:3933-3938.
31. Ahren IL, Williams DL, Rice PJ, Forsgren A, Riesbeck K. Importance of a β -glucan receptor in non-opsonic phagocytosis of non-typeable *Haemophilus influenzae* by human monocytic cells. *J Infect Dis* 2001 Jul 15;184(2):150-158.
32. Lowe EP, Rice PJ, Ha T, Kelley J, Ensley HE, Lopez-Perez J, Lowman DW, Margl P, Kalbfleisch J, Browder W and Williams DL. A (1-3)- β -D-linked heptaose is the unit ligand for human monocyte glucan receptors. *Microbes Infection* 2001; 3: 789-97.
33. Rice PJ, Kelley JL, Kogan G, Ensley HE, Kalbfleisch JH, Browder IW, Williams DL. Human monocyte scavenger receptors are pattern recognition receptors for (1-3)- β -D-glucans. *J Leuk Biol* 2002; 72: 140-146.
34. Lowe, E.P., Wei, D., Rice, P.J., Li, C., Kalbfleisch, J.H., Browder, I.W., Williams, D.L. Human Vascular Endothelial Cells Express Pattern Recognition Receptors for Fungal Glucans Which Stimulates Nuclear Factor κ B Activation and Interleukin 8 Production. *American Surgeon* 68:508-517, 2002.
35. Abraham ST, Robinson M, Rice PJ. A role for protein kinase C in the supersensitivity of the rat vas deferens following chronic surgical denervation. *Pharmacology* 67:32-40, 2003
36. Breuel, K.F., Kougias, P., Rice, P.J., Wei, D., DePonti, K., Wang, J., Laffan, J., Li, C., Kalbfleisch, J. and Williams D.L. Anterior pituitary cells express pattern recognition receptors for fungal glucans: Implications for neuroendocrine immune involvement in response to fungal infections. *Neuroimmunomodulation* 11:1-9, 2004.

37. Williams DL, Rice PJ, Herre J, Willment JA, Taylor PR, Gordon S and Brown GD: Recognition of fungal glucans by pattern recognition receptors. *Recent Devel Carbohydrate Res* 1: 49-66 (2003).
38. Gonzalez JA, Digby JD, Rice PJ, Breuel KF, DePonti WK, Kalbfleisch JH, Browder IW, Williams DL: At low serum glucan concentrations there is an inverse correlation between serum glucan and serum cytokine levels in ICU patients with infections. *International Immunopharmacology* 4: 1107-1115, 2004.
39. Rice PJ, Lockhart BE, Barker LA, Adams EL, Ensley HE and Williams DL: Pharmacokinetics of fungal (1-3)- β -D-glucans following intravenous administration in rats. *International Immunopharmacology* 4: 1209-1215, 2004.
40. Rice PJ, Adams EL, Ozment-Skelton T, Gonzales A, Goldman MP, Lockhart BE, Barker LA, Breuel KF, DePonti WK, Kalbfleisch JH, Ensley HE, Brown GD, Gordon S, Williams DL. Oral delivery and gastrointestinal absorption of soluble glucans stimulate increased resistance to infectious challenge. *J. Pharmacol Expt Ther* (accepted for publication)