

Alfred Ayala

Aldrich 227

Division of Surgical Research/Shock-Trauma Research Laboratories

Rhode Island Hospital / Brown University School of Medicine

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EDUCATION

B.S.	Bowling Green State University (Applied Microbiology)	1976
M.S.	Cleveland State University (Biology)	1979
Ph.D.	Cleveland State University (Regulatory Biology)	1985

POSTGRADUATE TRAINING

1985-88	Postdoctoral Fellow (Minority Program), Dept. of Microbiology, Michigan State University, East Lansing, MI (Dr. F. Kierszenbaum)
1988-89	Research Associate, Dept. of Surgery, Michigan State University, East Lansing, MI (Dr. I.H. Chaudry)

POSTGRADUATE HONORS AND AWARDS

Joseph Susman Memorial Award (3rd Annual) presented for most significant paper presented for surgical infection at 14th Annual meeting of the Surgical Infection Society, 1994.

M.S.U.-Special Foreign Travel Fund Awards for attendance of 2nd and 3rd International Congresses on Immune Consequences of Trauma, Shock and Sepsis held in Munich, Germany in 1991 and 1994.

MILITARY SERVICE

None

PROFESSIONAL LICENSES AND BOARD CERTIFICATION

None

ACADEMIC APPOINTMENTS

- Graduate Teaching Assistant (Biology), Dept. of Biology, Cleveland State University, Cleveland, OH. 1976-78
- Research Assistant (Biochemistry), Veterans Administration Hospital, Cleveland, OH (Dr. O.P. Malhotra). 1978-80
- Graduate Teaching Assistant (Biology), Dept. of Biology, Cleveland State University, Cleveland, OH. 1980-85
- Postdoctoral Fellow (Minority Program), Dept. of Microbiology, Michigan State University, East Lansing, MI (Dr. F. Kierszenbaum). 1985-88
- Research Associate, Dept. of Surgery, Michigan State University, East Lansing, MI (Dr. I.H. Chaudry). 1988-89
- Assistant Professor, Dept. of Surgery; Adjunct Appointment, Dept. of Microbiology, Michigan State University, East Lansing, MI. 1989-1992
- Associate Professor, Dept. of Surgery; Dept. of Microbiology, Michigan State University, East Lansing, MI. 1993-1995
- Associate Professor, Dept. of Surgery, Brown University School of Medicine/Rhode Island Hospital, Providence, RI. 1996-2000
- Professor, Dept. of Surgery, Brown University School of Medicine/Rhode Island Hospital, Providence, RI. 2000-**present**
- Adjunct Professor, Dept. of Cell & Molecular Biol., University of Rhode Island, Kingston, RI. 2001-**present**

HOSPITAL APPOINTMENTS

- Professor, Dept. of Surgery, Brown University School of Medicine/Rhode Island Hospital, Providence, RI. 2000-**present**

OTHER APPOINTMENTS

Editorial Board (year-papers reviewed)

SHOCK: *Molecular, Cellular, Systemic Pathobiological Aspects and Therapeutic Approaches; 1993-present. (2006-8)*

Journal of Immunology: *Associate Editor; 2003-present. (2006-4; 2007-4)*

Surgical Infections: *2005-2007 (2006)*

Ad Hoc Reviewer (year-papers reviewed)

Current Medicine Chemistry (2007)

Nature Reviews-Immunology (2006)

Nature Biotechnology (2005)

Frontiers in Biosciences (2005)

Biochemica Biophysica ACTA-Mol. Basis Dis. (2004)

International Immunology (2004)

Journal of Endotoxin Research (2004)

Journal of the American Medical Association-JAMA (2004)

FASEB Journal (2002, 2003)

Critical Care Forum (2002, 2006)

Life Sciences (2002)
 Inflammation Research (2002, 2005)
 Surgical Infections (2001-2, 2002-2, 2003, 2005; 2006)
 Journal of Leukocyte Biology (2000-2, 2001-2, 2007)
 Critical Care Medicine (2000-4, 2001-5, 2002-4, 2003-5, 2006-4, 2007-2)
 Acta Anaesthesiologica Scandinavica (2000)
 Gut (1999)
 Infection and Immunity (1999)
 Intensive Care Medicine (1999, 2000-3, 2005)
 Surgery (1999, 2000-2)
 News in Physiological Sciences (1998)
 Nature Medicine (1998)
 Journal of Clinical Investigation (1997, 1998-3, 2003)
 American Journal of Physiology (1996, 1997, 2000-3, 2001-4, 2005-2, 2006-2)
 Journal of Infectious Disease (1997)
 Journal of Surgical Research (1996, 1997-4, 1998-6, 1999, 2000-4, 2001-2)
 American Journal of Pathology (1997, 2000, 2003, 2007)
 Journal of Neuroimmunomodulation (1996)
 American Journal of Respiratory and Critical Care Medicine (2002, 2007)
 American Journal of Respiratory Cell and Molecular Biology (1996)
 Journal of Applied Physiology (1996)
 Journal of Laboratory and Clinical Medicine (1995)
 American Journal of Surgery (1995)(2006)
 Cytokine (1995-2, 1996, 2003)
 Journal of Critical Care (1995)

Study Section Appointments

Grant Application reviewed for the Wellcome Trust Foundation, April 7, 2006
*Studentship application external reviewer for the National Heart & Lung Institute-
 London College, London, United Kingdom, April 1, 2006.*
*National Institute of Health – General Medical Sciences (NIGMS), Special
 Emphasis Panel (ZGM1-PPBC-3-GL): Glue Grant on Inflammatory Response to
 Injury. March 27, 2006*
 Internal Grant Application reviewed for the Lifespan-Rhode Island Hospital/Brown
 University-COBRE CCDC application process.
 Grant Application reviewed for the Brown University-Salomon Award application
 Process.
*Grant Application reviewed for the Sheffield Hospitals Charitable Trust, Sheffield
 Teaching Hospitals, Sheffield, United Kingdom.*
*National Institute of Health – Center for Scientific Review (NCSR) Special
 Emphasis Panel (ZRG1-IMM-A 40 P): P01-Supplemental Funding Request July
 25, 2005.*

External Advisory Board member for NIH-Program Project entitled: "Alcohol and Burn Injury: Neuroimmunoendocrine Interactions", Program Director: Elizabeth J. Kovacs, Loyala Univ. Med. Ctr., Inst. Burn, Trauma and Shock, Maywood, IL, December 13, 2004

*Grant Application reviewed for the Wellcome Trust Foundation, November 12th, 2004
National Institute of Health - National Inst. of Gen. Med. Sci. (NIGMS)
Surgery, Anesthesiology and Trauma Study Section (SAT): R01-review panel, July 1, 2003-June 30, 2007 (Standing member of review panel)**

*Grant Application reviewed for the Israel Science Foundation, April 17th, 2003
National Institute of Health - National Inst. of Gen. Med. Sci. (NIGMS)
Surgery, Anesthesiology and Trauma Study Section (SAT): R01-review panel, February 19-20, 2003 (Ad hoc review panel member)*

*National Institute of Health - National Inst. of Gen. Med. Sci. (NIGMS)
Special Emphasis Panels (ZRG1-SSS-W[04] & ZRG1-SSS-W[03]): R01-reviews form SAT members-February 19, 2003.*

*National Institute of Health - National Inst. of Allergy & Infectious Disease (NIAID)
Special Emphasis Panel (SEP #ZAI1-GLM-l-M2): P01-reviews-teleconference on "The Biodefense & Emerging Infectious Diseases Research Opportunities.", December 13th, 2002.*

*National Institute of Health - National Inst. of Allergy & (NIAID)
Special Emphasis Panel (SEP #ZAI1-GLM-l-M1): P01-review-teleconference on "Innate Immunity in Vertebrates and Insects", December 12th, 2002*

*National Institute of Health - National Center for Research Resources (NCRR)
Special Emphasis Panel (R01): R01-review-teleconference on "Nitrosylation/ Apoptosis", July 27th, 2002*

Combat Casualty Care Panel - CDMRP-Peer Reviewed Medical Research Program for Department of Defense-AIBS, July 18-19, 2002

Grant Application reviewed for Department of Defense-USAMRMC, November 9, 2001

Grant Application reviewed for Austrian Science Fund (FWF), September 25, 2001

*National Institute of Health - National Center for Research Resources (NCRR)
Reverse Site Visit Team: Review of University of Washington Program Project Grant Application: P01GM58270-01, entitled: ACell Death Pathways and Consequences. Washington, DC, March 26-27, 1998*

Veterans Administration/Defense Department Grant Application Review, Washington, D.C., January 22-23, 1998

*National Institute of Health - National Center for Research Resources (NCRR)
Reverse Site Visit Team: Review of University of Florida General Clinical Research Center Application: RR00082-36A1. Rockville, MD, July 31, 1997*

National Institute of Health Study Section for RFA DK96-007: "Hemolytic Uremic Syndrome: Pathophysiology and Treatment". Baltimore, MD, June 1996

Grant application reviewed for Medical Research Council of Canada. May 1996.

HOSPITAL COMMITTEES

at Rhode Island Hospital/Brown University:

Department of Surgery/Brown University - Promotions & Appointments Committee member, 2000-present

Department of Surgery/Brown University - Selection Committee member for the Armand D. Versaci Research Scholar Award/Fellowship, 2000-present

Division of Surgical Research/Rhode Island Hospital - Executive Committee member, 2000-present

UNIVERSITY COMMITTEES

at Brown University:

Brown University School of Medicine: Subcommittee member on Academic Infrastructure for Teaching and Research, 2000-2001.

Curriculum Committee member, Pathobiology Graduate Program, Division of Biology and Medicine, Brown University, 2000-present.

Department of Surgery/Brown University - Promotions Committee member, 2004-present

Retreat Co-Chairman & Committee member, *Pathobiology Graduate Program*, Division of Biology and Medicine, Brown University, 2005.

Retreat Chairman & Committee member, *Pathobiology Graduate Program*, Division of Biology and Medicine, Brown University, 2006.

Department of Surgery/Brown University - Promotions Committee member, 2004-present

Steering Committee Member-NIH/Brown Short Term Training Grant for Minority Students, June, 2006-present.

Admissions Committee Chairman & Committee member, *Pathobiology Graduate Program*, Division of Biology and Medicine, Brown University, 2007-2008.

at Michigan State University:

Advisory Committee, Department of Surgery, Michigan State University, 1993-95

Masters Degree Committee, Department of Surgery, Michigan State University, 1993-95.

Research Committee, Department of Surgery, Michigan State University, 1990-95

Water System, Building Representative, Michigan State University, 1990-95

MEMBERSHIP IN SOCIETIES

American Society of Investigative Pathology
American Association for the Advancement of Science
American Association of Immunologists
International Cytokine Society
Michigan Society for Medical Research
Society of Protozoologists
Shock Society

- Laboratory Animal Issue Committee-*Shock Society*, member 1995-1996, Chairman 1995.
- Program Committee member-for joint meeting of the Fourth International Shock Congress and 22nd Annual *Shock Society* Meeting in Philadelphia, PA, June 12- 16th, 1999.
- Program Committee member - 23rd Annual *Shock Society* Meeting in Snowbird, UT, June 3-6th, 2000.
- **Scientific Program Committee Chairman (elected)** - 24th Annual *Shock Society* Meeting in Marco Island, FL, June 10-13th, 2001.
- *Shock Society*-Development Committee, 2001-2005
- *Shock Society*-Finance Committee- 2002-2005, 2006
- *Shock Society*-Nominations Committee- 2006-present (Chairman: 2006)
- *Shock Society*-Internet Committee- 2006-present
- *Shock Society*-International Relations Committee- 2006-present
- *Shock Society*-Mentor Committee- 2007-present
- **Shock Society Treasurer (elected)** - June 2002-2004.
- **Shock Society President-elect** - June 2003-2004
- **Shock Society President** - June 2004-2005
- **Shock Society Council Member as Past-President** - June 2005-present

Surgical Infection Society

- **Recorder/Program Chairman-executive council member**, June 2005-2007
- *Surgical Infection Society*, dissemination of literature, National Association for Biomedical Research (NABR), 1991-1995.
- Local Program Arrangements Chairman for 20th Annual Meeting of the *Surgical Infection Society* in Providence, RI, April 26-29th, 2000.
- *Surgical Infection Society*, appointed to Program Committee, 2002-2005; chairman, 2005-2007.
- *Surgical Infection Society*, appointed to By-Laws Committee, 2007-present.

Society of Critical Care Medicine

Society of Leukocyte Biology

- Local Program Arrangements Committee Member - 34th Annual *Society of Leukocyte Biology* Meeting, Cambridge, MA, Oct. 5-8, 2000.

PUBLICATIONS

1. Weis, D.S., and **Ayala, A.** 1979. Effect of Exposure period and algal concentration on the frequency of infection of aposymbiotic ciliates by symbiotic algae from *Paramecium bursaria*. *J. Protozool.* 26:245-248.
2. **Ayala, A.**, and F. Kierszenbaum. 1987. The effects of p-chloromercuri-phenylsulfonic acid on *Trypanosoma cruzi* infection of mammalian host cells in vitro. *Mol. Biochem. Parasitol.* 23:63-69.
3. **Ayala, A.**, and D.S. Weis. 1987. The effect of protein synthesis inhibitors on the infection of algal-free *Paramecium bursaria* by symbiotic Chlorellae. *J. Protozool.* 34:377-381.
4. Connelly, M.C., **Ayala, A.** and F. Kierszenbaum. 1988. Effects of alpha and beta adrenergic agonists on *Trypanosoma cruzi* interaction with host cells. *J. Parasitol.* 74:379-389.
5. Stephan, R.N., **Ayala, A.**, Harkema, J.M., Dean, R.M., Border, J.R. and I.H. Chaudry. 1989. Mechanism of immunosuppression following hemorrhage: Defective antigen presentation by macrophages. *J. Surg. Res.* 46:553-556.
6. **Ayala, A.**, Perrin, M.M. and I.H. Chaudry. 1989. Increased susceptibility to sepsis following hemorrhage: defective kupffer cell mediated antigen presentation. *Surg. Forum* 40:102-104.
7. **Ayala, A.**, Perrin, M.M., Wagner, M.A. and I.H. Chaudry. 1990. Enhanced susceptibility to sepsis following simple hemorrhage: depression of Fc and C3b receptor-mediated phagocytosis. *Arch. Surg.* 125:70-75.
8. **Ayala, A.** and F. Kierszenbaum. 1990. Regulation of *Trypanosoma cruzi* infectivity by alpha- and beta-adrenergic agonists: desensitization produced by prolonged treatments or increasing agonists concentrations. *Parasitology* 100:429-443.
9. **Ayala, A.**, Perrin, M.M. and I.H. Chaudry. 1990. Defective macrophage antigen presentation following hemorrhage is associated with the loss of MHC class II (Ia) antigens. *Immunology* 70:33-39.
10. Rana, M.W., **Ayala, A.**, Dean, R.E. and I.H. Chaudry. 1990. Decreased Fc receptor expression on macrophages following simple hemorrhage as observed by scanning immunoelectron microscopy. *J. Leukocyte Biol.* 48:512-518.
11. **Ayala, A.**, Perrin, M.M., Meldrum, D.R., Ertel, W. and I.H. Chaudry. 1990. Hemorrhage induces an increase in serum TNF which is not associated with elevated levels of endotoxin. *Cytokine* 2:170-174.

12. **Ayala, A.**, Perrin, M.M., Kisala, J.M., Ertel, W. and I.H. Chaudry. 1990. Sepsis selectively activates peritoneal but not alveolar macrophage to release inflammatory mediators (IL-1, IL-6 and TNF). *Surg. Forum* 41:117-119.
13. Ertel, W., Morrison, M.H., **Ayala, A.**, Perrin, M.H. and I.H. Chaudry. 1990. Passive immunization against cachectin (TNF-alpha) prevents hemorrhage induced suppression of kupffer cell functions. *Surg. Forum* 41:91-93.
14. Ertel, W., Meldrum, D.R., Morrison, M.H., **Ayala, A.** and I.H. Chaudry. 1990. Immunoprotective effect of a calcium channel blocker on macrophage antigen presentation function, major histocompatibility class II antigen expression, and interleukin-1 synthesis after hemorrhage. *Surgery* 108:154-160.
15. Ertel, W., Morrison, M.H., **Ayala, A.**, Perrin, M.M. and I. H. Chaudry. 1991. Blockade of prostaglandin production increases cachectin synthesis and prevents depression of macrophage functions following hemorrhagic shock. *Ann. Surg.* 213:265-271.
16. **Ayala, A.**, Wang, P., Ba, Z.F., Perrin, M.M., Ertel, W. and I.H. Chaudry. 1991. Differential alterations in plasma IL-6 and TNF levels following trauma and hemorrhage. *Amer. J. Physiol.* R167-R171.
17. Wang, P., **Ayala, A.**, Dean, R.E., Ba, Z.F., Chaudry, I.H. 1991. Adequate crystalloid resuscitation restores but fails to maintain the active hepatocellular function following hemorrhagic shock. *J. Trauma* 31:601-608.
18. Ertel, W., Morrison, M., **Ayala, A.**, Chaudry, I.H. 1991. Eicosanoids regulate tumor necrosis factor synthesis following hemorrhage in vitro and in vivo. *J. Trauma* 31:609-616.
19. Meldrum, D.R., **Ayala, A.**, Perrin, M.M. Ertel, W. and I.H. Chaudry. 1991. Diltiazem restores IL-2, IL-3, IL-6 and IFN-gamma synthesis and decrease susceptibility to sepsis following hemorrhage. *J. Surg. Res.* 51:158-164.
20. Ertel, W., Morrison, M.H., Wang, P., Ba, Z.F., **Ayala, A.** and I.H. Chaudry. 1991. The complex pattern of cytokines in sepsis - association between prostaglandins, cachectin and interleukins. *Ann. Surg.* 214:141-148.
21. Meldrum, D.R., **Ayala, A.**, Wang, P., Ertel, W., Chaudry, I.H. 1991. Association between decreased splenic ATP levels and immunodepression: Amelioration with ATP-MgCl₂. *Amer. J. Physiol.* 261:R351-R357.
22. Ertel, W., Morrison, M.H., **Ayala, A.**, Chaudry, I.H. 1991. Chloroquine attenuates hemorrhagic shock induced suppression of Kupffer cell antigen presentation and MHC class II antigen expression through blockade of tumor necrosis factor and prostaglandin release. *Blood* 78:1781-1788.

23. Ertel, W., Morrison, M.H., **Ayala, A.**, Chaudry I.H. 1991. Insights into the mechanism of defective antigen presentation following hemorrhage. *Surgery* 110:440-447.
24. Ertel, W., Morrison, M.H., **Ayala, A.**, Perrin, M.M. and I.H. Chaudry. 1991. Anti-TNF monoclonal antibodies prevent suppression of kupffer cell antigen presentation and MHC class II antigen expression in a murine hemorrhage model. *Immunology* 74:290-297.
25. **Ayala, A.**, Perrin, M.M., Wang, P., Ertel, W., Chaudry, I.H. 1991. Hemorrhage induces enhanced Kupffer cell cytotoxicity, while decreasing peritoneal or splenic macrophage capacity: involvement of cell-associated TNF and reactive nitrogen. *J. Immunol.* 147:4147-4154.
26. **Ayala, A.**, Perrin, M.M. and I.H. Chaudry. 1992. Differential effects of hemorrhage on Kupffer cells: decreased antigen presentation despite increased inflammatory cytokine (IL-1, IL-6 AND TNF) release. *Cytokine* 4:66-75.
27. Ertel, W., Morrison, M.H., **Ayala, A.**, Dean, R.E., Chaudry, I.H. 1992. Interferon-gamma attenuates hemorrhage induced suppression of macrophage and splenocyte functions and decreases susceptibility to sepsis. *Surgery* 111:177-187.
28. **Ayala, A.**, Perrin, M.M., Kisala, J.M., Ertel, W., Chaudry, I.H. 1992. Polymicrobial sepsis selectively activates peritoneal but not alveolar macrophage to release inflammatory mediators (IL-1, IL-6 and TNF). *Circ. Shock* 36:191-199.
29. **Ayala, A.**, Kisala, J.M., Felt, J.A., Perrin, M.M., Chaudry, I.H. 1992. Does endotoxin (ET) tolerance prevent the release of inflammatory monokines (IL-1, IL-6, or TNF) during sepsis? *Arch. Surg.* 127:191-197.
30. Ertel, W., Morrison, M.H., **Ayala, A.**, Chaudry, I.H. 1992. Chloroquine attenuates hemorrhagic shock induced immunosuppression and decreases susceptibility to sepsis. *Arch. Surg.* 127:70-76.
31. Rana, M.W., Singh, G., Wang, P., **Ayala, A.**, Zhou, M., Chaudry, I.H. 1992. Protective effects of pre-heparinization on microvasculature during and following hemorrhagic shock. *J. Trauma* 32:420-426.
32. Wang, P., Zhou, M., Rana, M.W., Singh, G., Ba, Z.F., **Ayala, A.**, Chaudry, I.H. 1992. ATP-MgCl₂ restores renal microcirculation following trauma and severe hemorrhage. *Can. J. Physiol. Pharmacol.* 70:349-357.
33. Wang, P., Ba, Z.F., Morrison, M.H., **Ayala, A.**, Dean, R.E., Chaudry, I.H. 1992. Mechanism of the beneficial effects of ATP-MgCl₂ following trauma-hemorrhage and resuscitation: downregulation of inflammatory cytokine (TNF, IL-6) release. *J. Surg. Res.* 52:364-371.

34. Meldrum, D.R., **Ayala, A.**, Chaudry, I.H. 1992. Energetics of defective macrophage antigen presentation following hemorrhage as determined by ultra resolution ³¹P nuclear magnetic resonance spectrometry: restoration with ATP-MgCl₂. *Surgery* 112:150-158.
35. Wang, P., Ba, Z.F., Morrison, M.H., **Ayala, A.**, Chaudry, I.H. 1992. Mechanism of the beneficial effect of pentoxifylline on hepatocellular function following trauma-hemorrhage and resuscitation. *Surgery* 112:451-458.
36. Ertel, W., Morrison, M.H., Meldrum, D.R., **Ayala, A.**, Chaudry, I.H. 1992. Ibuprofen restores cellular immunity and decreases susceptibility to sepsis following hemorrhage. *J. Surg. Res.* 53:55-61.
37. Wang, P., Ba, Z.F., **Ayala, A.**, Chaudry, I.H. 1992. Hepatocellular dysfunction persists during early sepsis despite increased volume of crystalloid resuscitation. *J. Trauma.* 32:389-397.
38. **Ayala, A.**, Perrin, M.M., Wang, P., Chaudry, I.H. 1992. Sepsis induces an early increased spontaneous release of the hepatocellular stimulatory factor (IL-6) by Kupffer cells in both endotoxin tolerant or intolerant mice. *J. Surg. Res.* 52:635-641.
39. Ertel, W., Morrison, M.H., **Ayala, A.**, Chaudry, I.H. 1992. Mechanisms responsible for the increase of interleukin-6 synthesis. *Surg. Forum* 43:88-90.
40. Lindsey, H.J., Kisala, J.M., **Ayala, A.**, Chaudry, I.H. 1992. Alveolar macrophages exposed to hyperoxia demonstrate early enhanced cytokine productive capacity. *Surg. Forum* 43:66-68.
41. **Ayala, A.**, Knotts, J.B., Ertel, W., Perrin, M.M., Morrison, M.H., Chaudry, I.H. 1993. The role of interleukin-6 and transforming growth factor-beta in the induction of depressed splenocyte responses following sepsis. *Arch. Surg.* 128:89-95.
42. Ertel, W., Morrison, M.H., **Ayala, A.**, Chaudry, I.H. 1993. Modulation of macrophage membrane phospholipids by n-3 polyunsaturated fatty acids increases interleukin-1 release and prevents suppression of cellular immunity following hemorrhagic shock. *Arch. Surg.* 128:15-21.
43. Ertel, W., Singh, G., Morrison, M.H., **Ayala, A.**, Chaudry, I.H. 1993. Chemically induced hypotension increases PGE₂ release and depresses macrophage antigen presentation function. *Amer. J. Physiol.* 264:R655-R660.
44. Kisala, J.M., **Ayala, A.**, Stephan, R.N., Chaudry, I.H. 1993. A model of pulmonary atelectasis in rats: Activation of alveolar macrophage and cytokine release. *Amer. J. Physiol.* 264:R610-R614.
45. **Ayala, A.**, Meldrum, D., Perrin, M.M., Chaudry, I.H. 1993. The release of transforming growth factor-beta (TGF-beta) following hemorrhage: Its role as a mediator of host immunosuppression. *Immunology* 79:479-484.

46. Meldrum, D.R., **Ayala, A.**, Chaudry, I.H. 1993. Mechanism of diltiazem's immunomodulatory effects following hemorrhage and resuscitation. *Amer. J. Physiol.* 265:C412-C421.
47. Wang, P., **Ayala, A.**, Ba, Z.F., Zhou, M., Perrin, M.M., Chaudry, I.H. 1993. Tumor necrosis factor-alpha produces hepatocellular dysfunction despite normal cardiac output and hepatic microcirculation. *Amer. J. Physiol.* 265:G126-G132.
48. **Ayala, A.**, Lehman, D.L., Chaudry, I.H. 1993. Insights into the cellular source of soluble forms of tumor necrosis factor (TNF) and interleukin-6 (IL-6) receptors during peritonitis. *Surg. Forum* 44:117-119.
49. **Ayala, A.**, Chaudry, I.H. 1993. Insights into the mechanism by which interferon-gamma improves macrophage function following hemorrhage and resuscitation. *J. Surg. Res.* 54:322-327.
50. Zhu, X.L., Ertel, W., **Ayala, A.**, Morrison, M.H., Perrin, M.M., Chaudry, I.H. 1994. Chloroquine inhibits TNF-alpha mRNA transcription. *Immunology* 180:122-126.
51. Deitch, E.A., Xu, D., Franko, L., **Ayala, A.**, Chaudry, I.H. 1993. Evidence favoring the role of the gut as a cytokine-generating organ in rats subjected to hemorrhagic shock. *Shock* 1:141-145.
52. **Ayala, A.**, Chaudry, I.H. 1994. Hemorrhage induces a reduction in the capacity of macrophages to mobilize intracellular calcium secondary to formyl-methionyl-leucyl-phenylalanine (FMLP) stimulation: Association with alterations in cell surface Fc receptor expression and increased prostaglandin release. *Shock* 1:228-235.
53. O'Neill, P.J., **Ayala, A.**, Wang, P., Ba, Z.F., Morrison, M.H., Schultze, A.E., Reich, S.S., Chaudry, I.H. 1994. Role of kupffer cells in interleukin-6 release following trauma-hemorrhage and resuscitation. *Shock* 1:43-47.
54. Wang, P., Ba, Z.F., Lu, M-C, **Ayala, A.**, Harkema, J.M., Chaudry, I.H. 1994. Measurement of circulating blood volume *in vivo* after trauma and hemorrhage. *Amer. J. Physiol.* 266:R368-374.
55. Ertel, W., Morrison, M.H., **Ayala, A.**, Chaudry, I.H. 1994. Biological significance of elevated TNF levels: In vivo administration of monoclonal antibody against TNF following hemorrhagic shock increases the capacity of macrophages to release TNF while restoring immunoresponsiveness. *Cytokine* 6:624-632.
56. O'Neill, P.J., Cobb, L.M., **Ayala, A.**, Morrison, M.H., Chaudry, I.H. 1994. Aggressive fluid resuscitation following intestinal ischemia/reperfusion in immature rats prevents metabolic derangements and downregulates interleukin-6 release. *Shock* 1:381-387.

57. **Ayala, A.**, Deol, Z.K., Lehman, D.L., Herdon, C.D., Chaudry, I.H. 1994. Polymicrobial sepsis but not low dose endotoxin infusion causes decreased splenocyte IL-2/IFN-gamma release while increasing IL-4/IL-10 production. *J. Surg. Res.* 56:579-585
58. Lindsey, H.J., Kisala, J.M., **Ayala, A.**, Lehman, D., Herdon, C.D., Chaudry, I.H. 1994. Pentoxifylline attenuates oxygen-induced lung injury. *J. Surg. Res.* 56:543-548
59. Meldrum, D.R., **Ayala, A.**, Chaudry, I.H. 1994. Energetics of lymphocyte "burn out" in late sepsis: adjuvant treatment with ATP-MgCl₂ improves energetics and decreases lethality. *J. Surg. Res.* 56:537-542.
60. Schmand, J.F., **Ayala, A.**, Chaudry, I.H. 1994. Effects of trauma, duration of hypotension, and resuscitation regimen on cellular immunity following hemorrhagic shock. *Crit. Care Med.* 22:1076-1083.
61. **Ayala, A.**, Lehman, D.L., Herdon, C.D., Chaudry, I.H. 1994. Accelerated thymic apoptosis during polymicrobial sepsis is driven by corticosteroids but not tumor necrosis factor (TNF). *Surg. Forum* 45:112-114.
62. **Ayala, A.**, Lehman, D.L., Herdon, C.D., Chaudry, I.H. 1994. Mechanism of enhanced susceptibility to sepsis following hemorrhage: Interleukin (IL)-10 Suppression of T-cell response is mediated by eicosanoid induced IL-4 release. *Arch. Surg.* 129:1172-1178.
63. Schmand, J.F., **Ayala, A.**, Morrison, M.H., Chaudry, I.H. 1994. Dextran 70 administration following trauma and hemorrhagic shock does not impair cellular immune functions. *J. Crit. Care* 9:244-256.
64. Zhu, X-L., **Ayala, A.**, Zellweger, R., Morrison, M.H., Chaudry, I.H. 1994. Peritoneal macrophages show increased cytokine gene expression following haemorrhagic shock. *Immunology* 83:378-383.
65. Zhu, X-L., Zellweger, R., Zhu, X-H., **Ayala, A.**, Chaudry, I.H. 1995. Cytokine gene expression in splenic macrophages and kupffer cells following hemorrhage. *Cytokine* 7:8-14.
66. **Ayala, A.**, Herdon, C.D., Lehman, D.L., DeMaso, C.M., Ayala, C.A., Chaudry, I.H. 1995. The induction of accelerated thymic programmed cell death during polymicrobial sepsis: control by corticosteroids but not tumor necrosis factor (TNF). *Shock* 3:259-267.
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225. Huang, X., Chung, C.S., Chen, Y., **Ayala, A.** 2007. Antigen presenting cells contribute to impaired Th1 response through upregulating PD-1/B7-H1 expression. *Shock 27*: (in press)
226. Chung, C.S., Horner, B., Chen, Y.P., **Ayala, A.** 2007. Role of NKT cells in the immune dysfunction and injury in sepsis. *Shock 27*: (in press)

INVITED PRESENTATIONS

Symposia/Workshop Presentations

1. Speaker, mini-symposia entitled: "Trauma/ischemia induced alterations in cellular signaling." Talk entitled: 'Hemorrhage (HEM) induced alterations in macrophage signal transduction.', 3rd International Congress on the Immune Consequences of Trauma, Shock and Sepsis: Mechanisms and Therapeutic Approaches. Munich, Germany, March 3, 1994.
2. Panelist, workshop entitled: "The Making of an Investigator." 17th Annual Conference on Shock. Big Sky, MT, June 5, 1994.
3. Speaker, symposium entitled: "Humoral and Cellular Immunity After Trauma and Sepsis", talk entitled: 'Expression and Presentation of Major Histocompatibility Complex in Leukocytes.' 18th Annual Conference on Shock. Grove Park, NC, June 14, 1995.
4. Speaker, symposium entitled: "Toxins and Mediators in Sepsis", talk entitled: 'Sepsis induced immune dysfunction'. Conference on 'Sepsis and Septic Complications', Toronto, Canada, October, 12-13, 1995.
5. Speaker, mini-symposia entitled: "Apoptosis: the role of programmed cell death in acute inflammatory response", talk entitled: 'Apoptosis in the immune system during sepsis: different findings in different cell types.', 4th International Congress on the Immune Consequences of Trauma, Shock and Sepsis: Mechanisms and Therapeutic Approaches. Munich, Germany, March 6, 1997.
6. Speaker, mini-symposia entitled: "TH1/TH2 type response in trauma and infection", talk entitled: 'The anti-inflammatory mediator response: the murine TH2 response following shock and sepsis.', 4th International Congress on the Immune Consequences of Trauma, Shock and Sepsis: Mechanisms and Therapeutic Approaches. Munich, Germany, March 7, 1997.

7. Speaker, symposium entitled: "Apoptosis (Heat Shock Protein)", talk entitled: 'Immune Cell Apoptosis in Trauma/Shock/Sepsis.' 20th Annual Conference on Shock. Indian Wells, CA, June 18, 1997.
8. Speaker, workshop entitled: "Changes in the Immune System in Trauma and Sepsis", talk entitled: 'The Th1/Th2 Immune Response Following Shock and Sepsis.' At the International Workshop on Surgery and Critical Care: Cellular and Molecular Mechanisms. Bonn, Germany, March 6, 1998.
9. Speaker, Panel 3: "Animal Models of Hemorrhagic Shock", presentation entitled: "Rates of Hemorrhage and Outcome in Animal Models", as part of: Conference on Resuscitation Fluid Design and Resuscitation Protocols for Combat Casualties by the *Institute of Medicine of the National Academy of Sciences*, Washington, D.C., September 17, 1998.
10. Speaker, Education & Scientific symposium entitled: "Hemorrhagic Shock: Clinical Experimental Updates." Presentation entitled: "Non-specific Immune Response to Hemorrhagic Shock." 28th Annual Society of Critical Care Medicine Meeting. San Francisco, CA, January 27, 1999.
11. Speaker, Session 2: "Cellular Effectors of the Immune Response", presentation entitled: "Lymphocytes, Anergy, Apoptosis and Cell Activation." as a part of the Round Table Conference on, The Immune Response in the Critically Ill. Brussels, Belgium. March 13-15, 1999.
12. Speaker, mini-symposia entitled: "The Physiology and Cellular Biology of Acute Illness", presentation entitled: "Apoptosis". 5th International Congress on the Immune Consequences of Trauma, Shock and Sepsis, Munich, Germany, February 29-March 5, 2000.
13. Speaker, mini-symposia entitled: "Apoptosis in Shock Inflammation and Sepsis: Cellular Mechanisms, Part I", presentation entitled: "Regulation of lymphoid apoptosis in sepsis and shock." 5th International Congress on the Immune Consequences of Trauma, Shock and Sepsis, Munich, Germany, February 29-March 5, 2000.
14. Speaker, mini-symposia entitled: "TH1, TH2 Cell Response Under Stressful Conditions", presentation entitled: "The anti-inflammatory mediator response in polymicrobial sepsis." 5th International Congress on the Immune Consequences of Trauma, Shock and Sepsis, Munich, Germany, February 29-March 5, 2000.
15. Speaker, mini-symposia entitled: "Apoptosis and Inflammatory Morbidities: A Link?", presentation entitled: "Apoptosis in polymicrobial sepsis.", 5th International Congress on the Immune Consequences of Trauma, Shock and Sepsis, Munich, Germany, February 29-March 5, 2000.

16. Speaker, Nobel Symposia No. 124, entitled: "Septicemia and Shock: Pathogenesis and Novel Therapeutic Strategies", presentation entitled: "Fas-Ligand Mediated Apoptosis in Sepsis.", Stockholm, Sweden, May 15-17, 2003.
17. Speaker, mini-symposia entitled: "Apoptosis with Traumatic Stress and Sepsis", presentation entitled: "Extrinsic events in the apoptotic response to sepsis/shock." 6th International Congress on the Immune Consequences of Trauma, Shock and Sepsis, Munich, Germany, March 2-6, 2004.
18. Speaker, mini-symposia entitled: "Dendritic Cells in the Innate Response to Infection", presentation entitled: "Divergent Effects of Sepsis on Dendritic Cell Function" 6th International Congress on the Immune Consequences of Trauma, Shock and Sepsis, Munich, Germany, March 2-6, 2004.
19. Speaker, mini-symposia entitled: "Simple Models of Infection, Inflammation and Injury", presentation entitled: "Shock and hemorrhage" as a part of the conjoined Shock Society/International Sepsis Forum Symposium examining 'The Translational Biology of Acute Illness: Pre-Clinical Models of Shock, Trauma and Sepsis' at the Oak island Conv. Ctr., Western Shore, Nova Scotia, Canada, June 2-4, 2004.
20. Presidential Keynote Address: "Adequate Resuscitation?". 27th Annual Conference on Shock, Shock Society, Halifax, Canada, June 5-8, 2004.
21. Speaker in Symposium VII: 'Pathogenesis of Sepsis and Shock', presentation entitled: "Leukocyte Apoptosis and Its' Significance During Sepsis". Society for Leukocyte Biology 37th Annual Meeting, Toronto, Canada, October 23, 2004.
22. Speaker in Symposium on: 'Basic and Clinical Concepts in Innate Immunity', presentation entitled: "The Role and Regulation of Apoptosis in Sepsis". 8th Biennial Meeting of the Endotoxin Society, Kyoto, Japan, November 15-18, 2004.
23. Speaker in Symposium: 'Apoptosis in Critical Illness', presentation entitled: "Fas Ligand and Pathways of Sepsis-induced Cell Death". 34th Critical Care Congress, Phoenix, AZ, January 16, 2005.
24. Speaker in Symposium (Session C74): 'Mechanisms of Organ Dysfunction During Severe Sepsis', presentation entitled: "'Apoptosis and Organ Failure During Sepsis'". American Thoracic Society 2005 (100th) annual meeting, San Diego, CA, May 24, 2005.
25. Speaker in workshop 4: 'Blood Transfusion and Immunologic Consequences', presentation entitled: "Immunological Consequences of Hemorrhage", 10th International Symposium on Blood Substitutes, Providence, RI, June 14, 2005.

26. Speaker in Symposium: 'New Innovations in Sepsis Research: The Future of Translational Research in Sepsis', presentation entitled: "Small inhibitory RNAs". 35th Critical Care Congress, San Francisco, CA, January 8, 2006.
27. Speaker in Symposium: 'Innate Immunity – Inflammation Biology in the SICU', presentation entitled: "Apoptosis". 35th Critical Care Congress, San Francisco, CA, January 10, 2006.
28. Speaker in Symposia II: Presentation entitled: 'The Problem is Immunesuppression/ Impaired Adaptive Immunity'. Presentation entitled: "Blockade of Apoptosis is a Rational Therapeutic Approach". Novartis (formerly Ciba) Foundation Symposia #280: Sepsis-New Insights, New Therapies. London, United Kingdom, February 14, 2006.
29. Keynote address entitled: "Gene Silencing using silencing RNAs in vivo". 12th meeting of the European Shock Society, Ulm, Germany, September 14-16, 2006.
30. Speaker in Symposium: 'What Cell is the "Motor" of the Immune Response to Sepsis', presentation entitled: "Polymorphonuclear Cells and Neutrophils". 36th Critical Care Congress, Orlando, FL, February 16-20, 2007.
31. Speaker, mini-symposia entitled: "T-Regulatory Cell Populations Under Stressful Conditions", presentation entitled: "Changes in murine regulatory T-cell subsets and markers". 7th International Congress on the Immune Consequences of Trauma, Shock and Sepsis, Munich, Germany, March 13-17, 2007.
32. Speaker, mini-symposia entitled: "Manipulating Apoptosis for Therapeutic Gain – Translating Science into Therapy.", presentation entitled: "Novel Therapeutic approach III: siRNA." 7th International Congress on the Immune Consequences of Trauma, Shock and Sepsis, Munich, Germany, March 13-17, 2007.
33. Speaker, mini-symposia entitled: "Mucosal Immunity in Critical Illness.", presentation entitled: "Humoral and cellular immune responses in critical illness." 7th International Congress on the Immune Consequences of Trauma, Shock and Sepsis, Munich, Germany, March 13-17, 2007.

National/International:

1. **Ayala, A.** 1997. Immune Dysfunction in Hemorrhagic Shock. Cornell University Medical Center, Department of Surgery, Research Seminar Series, New York Hospital, New York, NY, April 28th.
2. **Ayala, A.** 1999. Mediators of Lymphocyte Anergy and Apoptosis in Polymicrobial Sepsis. Harvard Medical School, Department of Surgery, Clinical and Research Conference on Nutrition and Metabolism, Brigham and Women's Hospital, Boston, MA,

March 23rd.

3. **Ayala, A.** 1999. Lymphocyte Activation, Anergy and Apoptosis in Polymicrobial Sepsis. Cornell University Medical Center, Department of Surgery, Research Seminar Series, New York Hospital, New York, NY, September 8th.
4. **Ayala, A.** 2000. Immune Cell Anergy and Apoptosis in Sepsis. BASF BioResearch Corporation, Worcester, MA, May 11th.
5. **Ayala, A.** 2000. Immune dysfunction in sepsis and shock: from anergy to apoptosis. IDUN Pharmaceuticals, La Jolla. CA, October 30th.
6. **Ayala, A.** 2001. Pathological aspects of the apoptotic response of immune cells to sepsis and shock. Washington University, Department of Surgery, St. Louis, MO, May 16th.
7. **Ayala, A.** 2001. Pathological aspects of the apoptotic response of immune cells to sepsis and shock. Northshore-Long Island Jewish Hospitals, Department of Surgery, Manhasset, NY, June 26th.
8. **Ayala, A.** 2001. Pathological aspects of the immune response to sepsis and shock. University of Rhode Island, Department of Biochemistry, Molecular Biology and Microbiology, Kingston, RI, November 26th.
9. **Ayala, A.** 2002. Pathological aspects of apoptosis in severe sepsis and shock. University of Alabama at Birmingham, College of Medicine, Center for Surgical Research. Department of Surgery, Birmingham, AL, April 22nd.
10. **Ayala, A.** 2004. Shock Induced Priming for Acute Lung Injury: Discerning the Contribution of Apoptosis. - Visiting Lecturer-UMDNJ-Newark, Department of Surgery, Newark, NJ, September 16th.
11. **Ayala, A.** 2004. The Role and Regulation of Apoptosis in Sepsis - Surgical Grand Rounds-Visiting Lecturer-UMDNJ-Newark, Department of Surgery, Newark, NJ, September 17th.
12. **Ayala, A.** 2004. Divergent Mechanisms Contributing to Immune Dysfunction Associated with Sepsis - Visiting Lecturer-Loyola School of Medicine, Brun, Shock & Trauma Institute, Maywood, IL, December 8th.
13. **Ayala, A.** 2004. Shock Induced Priming for Acute Lung Injury in Mice: Discerning the Role of Apoptosis - Visiting Lecturer-LIJ-NorthShore Research Institute, Manhasset, NY, December 14th.

14. **Ayala, A.** 2005. Discerning the Contribution of Apoptosis to Shock Induced Priming for Acute Lung Injury – Research Presentation, Department of Pulmonary Medicine, LSU Medical Center, New Orleans, LA, February 22nd.
15. **Ayala, A.** 2005. Cell Deaths and its Significance during Sepsis and Shock. The Infection and Immunology Visiting Lecturer Series, Department of Microbiology, Immunology and Parasitology, LSU Medical Center, New Orleans, LA, February 22nd.
16. **Ayala, A.** 2006. Blockade of apoptosis as a rational therapeutic strategy for the treatment of sepsis and shock.. Children’s Memorial Hospital Research Institute/Northwestern University School of Medicine, Chicago, IL, May 22nd.
17. **Ayala, A.** 2006. Apoptotic Processes in the Development of Acute Lung Injury Pursuant to Shock. Universitat Ulm. Ulm, Germany, September 18th.
18. **Ayala, A.** 2007. Apoptosis and its’ Significance to Immune/Organ Dysfunction During Sepsis and Shock. Ludwig Boltzman Institute for Experimental and Clinical Traumatology/Austrian Cluster of Tissue Regeneration. Vienna, Austria, March 12th.

at Michigan State University:

1. **Ayala, A.** The effects of hemorrhage on macrophage mediated antigen presentation. Department of Surgery Research Seminar Series, St. Lawrence Hospital, Lansing, MI, December, 1988.
2. **Ayala, A.** Lymphokines in immune function. St. Mary's Hospital, Saginaw, MI, February, 1989.
3. **Ayala, A.** Hemorrhage induced changes in macrophage function. Department of Surgery Research Seminar Series, St. Lawrence Hospital, Lansing, MI, November 1989.
4. **Ayala, A.** 1990. Alterations in macrophage function during polymicrobial sepsis. Department of Surgery Research Seminar Series, Michigan State University-St. Lawrence Clinic, December 13.
5. **Ayala, A.** 1991. Cytokines and Immunity, and as Immuno Modulators. Michigan State University Cancer Treatment Consortium, Midland, MI, April 12.
6. **Ayala, A.** 1991. Enhanced Kupffer cell cytotoxic activity following hemorrhage: a potential cause of hepatocellular injury. Department of Surgery Research Seminar Series, Michigan State University-St. Lawrence Clinic, November 14.

7. **Ayala, A.** 1992. Overview of Shock and Trauma Research at Michigan State University. Michigan Association of Medical Transcriptionists, Frankenmuth, MI, September 19.
8. **Ayala, A.** 1993. Insights into the mechanism by which interferon-g improves macrophage function following hemorrhage. Department of Surgery Research Seminar Series, Michigan State University-St. Lawrence Clinic, February 11.
9. **Ayala, A.** 1993. IL-6: An Overview. Department of Hematology/Oncology, Michigan State University, March 12.
10. **Ayala, A.** 1994. Sepsis induced programmed cell death. Department of Surgery Research Seminar Series, Michigan State University-St. Lawrence Clinic, September 15.

at Brown University/Rhode Island Hospital:

1. **Ayala, A.** 1996. Immune dysfunction in murine polymicrobial sepsis: mediators, macrophages and lymphocytes. Division of Surgical Research-Rhode Island Hospital Seminar Series, March 12.
2. **Ayala, A.** 1996. Trauma induced suppression of antigen presentation. Presented as a part of Molecular Microbiology and Immunology Seminar Series. Brown University School of Medicine. September 26th.
3. **Ayala, A.** 1997. Apoptosis in the immune system during sepsis: different findings in different cell types. Rhode Island Hospital Research Journal Club. February 4th.
4. **Ayala, A.** 1998. Apoptosis. Basic Cell Biology Conference for Division of Renal Disease at Rhode Island Hospital, April 15.
5. **Ayala, A.** 2000. Immune Cell Anergy and Apoptosis in Sepsis. Pulmonary Research Conference. Brown University School of Medicine, May 24.
6. **Ayala, A.** 2000. Is there a pathologic role for apoptosis in septic liver injury? Liver Seminar Series - Liver Research Center at Rhode Island Hospital, December 7.
7. **Ayala, A.** 2003. Fas-Ligand Mediated Apoptosis in Sepsis. Liver Seminar Series - Liver Research Center at Rhode Island Hospital, June 5.
8. **Ayala, A.** 2004. Extrinsic Events in the Apoptotic Response to Sepsis. Invited Res. Lecture - part of Ninth Annual Henry Randall Distinguished Lectureship in Surgical Sciences, February 24.
9. **Ayala, A.** 2004. Shock Induced Priming for Acute Lung Injury in Mice: Discerning the Role of Apoptosis. Division of Surgical Research Seminar Series, December 21.

10. **Ayala, A.** 2005. Discerning the contribution of apoptotic signaling in shock induced priming for acute lung injury. Department of Molecular, Microbiology & Immunology Seminar Series-Brown University School of Medicine. September 22.
11. **Ayala, A.** 2005. Discerning the contribution of apoptotic signaling in shock induced priming for acute lung injury. Pulmonary Research Conference-Brown University School of Medicine. November 7.

GRANTS

Active Grant Support:

2003-2007

NIH- Research Grant: "Differential Effects of Sepsis on Macrophage Function."
Grant No. 3 R01 GM46354-11

Principal Investigator: Alfred Ayala

Total Support = \$1,562,905 in direct and indirect cost (for 2003-2007).

2004-2008

NIH Research Grant: "Programmed Cell Death: Role in Septic Immune Suppression."
Grant No. 3 RO1 GM53209-10

Principal Investigator: Alfred Ayala

Total Support = \$1,106,943 in direct and indirect cost (for 2004-2008).

2003-2007

NIH- Research Grant: "Regulatory Mechanisms of Acute Lung Injury: Phagocyte Apoptosis."
Grant No. HL63898-01

Principal Investigator: Alfred Ayala

Total Support = \$1,413,967 in direct and indirect cost (for 2003-2007).

2004-2007

Elli Lilly & Co.: "The Role of Activated Protein C in the Compensatory Anti-inflammatory Response."

Grant No. Clinical Res.

Program Director: Nicholas Ward

Co-Investigator: Alfred Ayala

Total Support Requested = \$125,369 direct cost.

2004-2008

NIH-NIGMS: "Trauma-inflammation Research Training."

Grant No. T32-GM08768

Program Director: Jorge E. Albina

Co-Director/Executive Committee/Faculty: Alfred Ayala

Total Support Requested = \$1,201,764 in direct and indirect cost.

2005-2009

NIH-Research Grant: "Neutrophil-Kupffer Cell Interaction during Infection."

Grant No.: R01-DK 61511

Principle Investigator: Stephen H. Gregory

Collaborator: Alfred Ayala

Total Support Requested = ~\$1,250,000 in direct and indirect cost (2005-2009).

2003-2006

NIH- Research Grant: "Francisella Tularensis: Innate Resistance to Inhalation."

Grant No.: R21-AI 55657-01

Principle Investigator: Stephen H. Gregory

Collaborator: Alfred Ayala

Total Support: \$616,000 in direct and indirect costs (for 2003-2005)

2001-2006

NIH-NIHLBI: "Short-term Training for Minority Students."

Grant No. HL-00-019

Principal Investigator: Sharon I.S. Rounds

Faculty Trainer: Alfred Ayala

Total Support = \$229,900 in direct and indirect cost.

(No financial support [salary, supplies, personnel, etc.] obtain from projects listed below):

2003-2007

NIH Research Grant: "Characterization of the Beta-Glucan Receptor."

Grant No. 2 RO1 GM51493-06

Principal Investigator: Jonathan S. Reichner

Collaborator: Alfred Ayala

Total Support = \$1,813,750 direct and indirect cost (for 2003-2007).

2002-2006

NIH Research Grant: "A Mechanism of Liver Repair after Biliary Reconstruction."

Grant No. R01 DK46831-06

Principal Investigator: Thomas F. Tracey, Jr.

Collaborator: Alfred Ayala

Total Support = \$1,564,869 direct and indirect cost (for 2002-2006).

2005-2007

Shock Society/Novo Nordisk Fellowship in Hemostasis and Shock: "Immune hyporesponsiveness in Shock: Role of SOCS-1 and SOCS-3 Proteins."

Grant No.: Jr. Faculty Fellowship

Principal Investigator: Chun-Shiang Chung

Mentor: Alfred Ayala

Total Support = \$120,000 (for 2005-2007).

2006-2007

NIH-NCRR Shared Inst. Grant: "BD FACSAria Flow Cytometer."

Grant No. S10 RR-021-051
Principal Investigator: Laurent Brossay
Major User/Collaborator: Alfred Ayala
Total Support = \$449,100.

2006-2007
NIH-NCRR Shared Inst. Grant: "Nikon C1si Confocal Microscope."
Grant No. S10 RR22512
Principal Investigator: Paul McMillian
Major User/Collaborator: Alfred Ayala
Total Support Requested = \$333,248.

2004-2009 (*PI & Project moved Univ. Cinn. Med. Ctr. In 2005*)
NIH-NIGMS Mentored Clinician Scientist Award: "Viral Modulation of the Immune Response."
Grant No.: K08-GM71568
Principal Investigator: Lesley A. Doughty
Mentor: Alfred Ayala
Total Support Requested = \$475,000

2005-2007
Shock Society/Novo Nordisk Fellowship in Hemostasis and Shock: "Immune yporesponsiveness in Shock: Role of SOCS-1 and SOCS-3 Proteins."
Grant No.: Jr. Faculty Fellowship
Principal Investigator: Chun-Shiang Chung
Mentor: Alfred Ayala
Total Support = \$120,000

Submitted/Pending Grant Proposals:

2007-2012
NIH- Research Grant: "Regulatory Mechanisms of Acute Lung Injury: Phagocyte Apoptosis."
Grant No. HL63898-01
Principal Investigator: Alfred Ayala
Total Support = \$1,862,500 in direct and indirect cost (for 2007-20012).

2007-2012
NIH- Research Grant: "Differential Effects of Sepsis on Macrophage Function."
Grant No. 3 R01 GM46354-11
Principal Investigator: Alfred Ayala
Total Support = \$1,983,381 in direct and indirect cost (for 2007-20012).

2007-2012
NIH-Research Grant: "Mechanisms of Immune Hyporesponsiveness in Shock: Role of SOCS-1 and SOCS-3 Proteins."
Grant No.: R01-AI64393
Principal Investigator: Chun-Shiang Chung

Collaborator: Alfred Ayala
Total support requested: \$1,000,000

Past Grant Support:

1991-1992

NIH James A. Shannon Director's Award: "Differential Effects of Sepsis on Macrophage Function."

Grant No. R55 GM46354

Principal Investigator: Alfred Ayala

Total Support = \$100,000 in direct and indirect cost.

1991-1995

NIH Research Grant: "Maintenance of Organ Function Following Injury."

Grant No. 2 RO1 GM39519

Principal Investigator: Irshad H. Chaudry

Co-Investigator: Alfred Ayala

Total Support = \$879,595 in direct and indirect cost.

1991-1995

NIH Research Grant: "Immunological Aspects of Hemorrhage."

Grant No. 2 RO1 GM37127

Principal Investigator: Irshad H. Chaudry

Co-Investigator: Alfred Ayala

Total Support = \$948,162 in direct and indirect cost.

1992-1998

NIH First Award: "Differential Effects of Sepsis on Macrophage Function."

Grant No. R29 GM46354

Principal Investigator: Alfred Ayala

Total Support = \$506,063 in direct and indirect cost.

1995-1999

NIH Research Grant: "Programmed Cell Death: Role in Septic Immune Suppression."

Grant No. 1 RO1 GM53209

Principal Investigator: Alfred Ayala

Total Support = \$1,265,111 in direct and indirect cost.

1997-1998

NIH-NCRR Shared Inst. Grant: "Laser Scanning Confocal Imaging System."

Grant No. S10 PA-96-017

Principal Investigator: Paul N. McMillian

Major User/Collaborator: Alfred Ayala

Total Support Requested = \$295,454.

1995-1999

NIH Research Grant: "Immunological Aspects of Hemorrhage."

Grant No. 3 RO1 GM37127

Principal Investigator: Irshad H. Chaudry

Co-Investigator: Alfred Ayala

Total Support = \$1,851,064 in direct and indirect cost.

1999-2000

NIH Research Grant: "Maintenance of Organ Function Following Injury."

Grant No. 4 RO1 GM39519

Principal Investigator: Irshad H. Chaudry

Collaborator: Alfred Ayala

Total Support = \$1,721,880 in direct and indirect cost.

1999-2000

NIH Research Grant: "Immunological Aspects of Hemorrhage."

Grant No. 4 RO1 GM37127

Principal Investigator: Irshad H. Chaudry

Collaborator: Alfred Ayala

Total Support = \$2,059,443 in direct and indirect cost.

1996-2000

NIH Research Grant: "Hypoxemia/reoxygenation and cytokine - PMN interactions."

Grant No. 1 RO1 GM53114

Principal Investigator: H. Hank Simms

Collaborator: Alfred Ayala

Total Support = \$1,851,064 in direct and indirect cost.

2000-2001

NIH-NCRR Shared Inst. Grant: "High Performance Flow Cytometry - Cell Sorting System."

Grant No. S10 PAR-99-031

Principal Investigator: Paul N. McMillian

Major User/Collaborator: Alfred Ayala

Total Support Requested = \$456,254.

1999-2003 NIH Research Grant: "Differential Effects of Sepsis on Macrophage Function."

Grant No. R01 GM46354

Principal Investigator: Alfred Ayala

Total Support = \$1,068,306 in direct and indirect cost.

2001-2003

Charles H. Hood Foundation-Child's Health Research Grants: "Viral Modulation of the Immune Response."

Grant No.
Principal Investigator: Lesley A. Doughty
Collaborator: Alfred Ayala
Total Support Requested = \$100,000

2002-2004
NIH-NIGMS Large-Scale Collaborative Project Award: "Inflammation and the Host Response."
Grant No. RFA: GM-99-007
Project Coordinator: Ronald G. Tompkins
Collaborator: Alfred Ayala
Total Support Requested = \$5,000,000

2004-2005
NIH-NCCR Shared Inst. Grant: "Digitized Transmission Electron Microscope."
Grant No. S10 RR-03-002
Principal Investigator: Paul N. McMillian
Major User/Collaborator: Alfred Ayala
Total Support = \$271,375.

Serving/Served as Unpaid Consultant/Collaborator on Grant Proposals:

1995-2000 NIH First Award: "Modulation of Hepatocellular Function in Early Sepsis."
Grant No. R29 GM53008
Principal Investigator: Ping Wang

1998-2006 NIH Research Grant: "Sepsis: Mediators of Cardiovascular Responses."
Grant No. R01 GM57468
Principal Investigator: Ping Wang

1998-2000 NIH Research Grant: "HGF Receptor Gene Regulation and Renal Growth."
Grant No. R01 DK54922
Principal Investigator: Youhua Liu

1998-2003 NIH Program Project: "Trauma Primes Cells - Project VII" by Alden H. Harken
Grant No. 2 P50 GM49222
Principal Investigator: Alden H. Harken

1999-2004 NIH Research Grant: "Thermal Injury Induced Alterations in Immune Cells."
Grant No. R01 GM58242
Principal Investigator: Martin G. Schwacha

2000-2001 Lifespan Research Grant: "Immunomodulation during Viral Infection -
In Children."
Lifespan/Dept. Pediatrics/Hasbro-R.I. Hospital Supported Project.

IRB:
Principal Investigator: Lesley A. Doughty

2005-2010 NIH-NIGMS Mentored Clinician Scientist Award: "Immunomodulation of Sepsis in Biliary Obstruction."
Grant No.: K08-GM74678
University of Michigan, Dept. Surgery
Principal Investigator: Rebecca Minter

UNIVERSITY TEACHING ROLES

at Cleveland State University:

Microbiology (Bio 417):

- Spring Qtr. 1984 (30% of lectures)

Graduate Laboratory Instructor for Micro. Labs. (Bio. 417,314); Intro-Majors Bio. 1976-78 and 1980-1985.

at Michigan State University:

Graduate Immunology (MPH 851):

- Fall 1993 (10% of lectures)
- Spring 1995 (20% of lectures)

Preceptor Block II (year II med. students) - Problem Based Learning (HM 511, 512, 525, 526):

- Fall 1993, 1994, 1995 (September)
- Spring 1994 (January)

Undergraduate/Medical Student Independent Study (PHY 980; PSL 480; MPH 490) (see "Students Advised")

at Brown University/Rhode Island Hospital:

Lecturer: Biology 285 "Introduction to Pathobiology Research"

- Nov 1999, Sept. 2000

Advisor: Biology 195/196 "Independent Study"

- Rebecca Rhee, Fall 2001
- Sarah Bray, Fall 2002

Faculty: Biology 284 "Topics in Pathobiology: Immunopathology"

- Jan.-May 2000 (responsible one-third of course content/lectures)

- Jan.-May 2002 (responsible one-third of course content/lectures)

Medical Student Independent Study (Medicine 710)
(see "Students Advised")

Honors *Primary Reader*: Honors thesis project for B.S. degree.

Rebecca J. Rhee, Honors thesis project entitled: The contribution of NK-T-cells to immune suppression seen in sepsis. May 2002

Sarah Bray (Newton), Honors thesis project entitled: Changes induced in macrophage co-stimulatory molecule expression and/or function after polymicrobial sepsis: CD86 expression and macrophage function. May 2003

Nickolas Winoski, Honors thesis project entitled: The Contribution of CD4+CD25+ T regulatory Cells to Immune Suppression in Sepsis. May 2005

Benjamin Galen, Honors thesis project entitled: Scavenger Receptor Expression During Systemic Inflammation. May 2005

Caroline Hu, Honors thesis project entitled: Role of liver NK-T-cells in the development of immune/hepatic dysfunction and injury in septic mice. (Proposed completion by May 2006).

Honors *Second Reader*: Honors thesis project for B.S. degree.

Philomena Salvemini: Honors thesis project entitled. Inter-a-inhibitor and its beneficial effects during polymicrobial sepsis. May 2000.

David Ornan: Honors thesis project entitled. Alterations in adrenomedullin receptors during polymicrobial sepsis. May 2000.

Nicole Lockhart: Honors thesis project entitled: Cytochrome P450 and lidocaine clearance during sepsis. July 1999-May 2000.

Paul Frake: Honors thesis project entitled: Prestorage leukoreduction prevents accumulation of matrix metalloproteinases during blood storage. May 2004.

Educational Activities:

at Michigan State University:

Organizer of Shock and Trauma Research Laboratories Journal Club, 1991-94

Contributing member, Department of Microbiology, Immunology Journal Club. 1989-95

at Rhode Island Hospital/ Brown University School of Medicine

Organizer of R.I. Hospital - Division of Surgical Research Journal Club, Spring 2001-Fall 2001

Organizer of A Surgical Research Seminar Series on: Topics in Inflammation and Injury in Critical Illness.@ at R.I. Hospital - Division of Surgical Research/Dept. Surgery/ Brown Univ. School of Medicine, Spring 2001-present

Organizer of R.I. Hospital - Division of Surgical Research - Joint laboratory meetings, Spring 2002-present.

Students and Residents Advised/Trained:

at Michigan State University:

Julie A. Felt, B.S.: Senior Medical Student. Project: The role of endotoxin in sepsis. April-June, 1989. (Cooperatively advised with Dr. J.M. Kisala)

Daniel R. Meldrum, B.S.: Medical Student. Projects in Michigan State University-Biomedical Student Research Program.

- Project I title: A study of the effects of a calcium channel blocker on splenocyte function following hemorrhage. Supported by NIH Training Grant. June-September, 1989. (cooperatively advised with Dr. I.H. Chaudry)
- Project II title: A study of the effects of hemorrhage on lymphocyte ATP levels utilizing ³¹P-NMR. Supported by NIH Training Grant. June-August, 1990. (Cooperatively advised with Dr. I.H. Chaudry)
- Project III title: A study of the effects of ATP-MgCl₂ treatment on macrophage ATP levels, antigen presentation function, and IL-1, IL-6 and TNF synthesis following hemorrhage. (Supported by Edward L. Morehead II Research Award) August-September, 1991. (Cooperatively advised with Dr. I.H. Chaudry)
- Project IV: A study of the mechanisms of the immunoprotective effects of diltiazem following hemorrhage (a portion of this work was presented at the Shock Society's Young Investigator Award Competition, 1992)

Jennifer Knotts, M.D.: Resident Research Program: Project concerned assessing changes in splenocyte total cellular calcium concentration and lymphokine production during polymicrobial sepsis. October, 1990-May, 1991.

Hugh Lindsey, M.D.: Project for M.S. in Surgery, (Thesis Committee Member): Proposed studies are directed at elucidating the role of cytokines in the production of hyperoxic lung injury. July, 1991-December, 1993.

Pragnesh Patel: Undergraduate independent research project (MPH 499): An investigation of the role of calcium induced mechanisms of cellular (i.e. lymphocyte) injury. June-December, 1991. (Cooperatively advised with Dr. I.H. Chaudry).

Patrick J. O'Neill, B.S.: Graduate student. Advised on studies concerning the association of IL-6 with ischemia/reperfusion injury of the bowel. January, 1990-June, 1993. (unofficial capacity).

Chris R. Pierson: Undergraduate independent research project (MPH 499): An investigation of the role of interferon- γ in hemorrhagic shock and sepsis. January-June, 1992. (Advisor).

Aaron Mayberry, M.D.: Project for M.S. in Surgery (Thesis Committee member)- proposed studies are directed at elucidating the metabolic (pH, phagocytic, lysosomal, etc.) alterations which take place in macrophages following hemorrhage. July, 1992-Dec, 1995.

Samuel Wurster, M.D.: Project for M.S. in Surgery (Thesis Committee member)- proposed studies are directed at assessing the changes induced in vascular reactivity during sepsis and what causes these changes. July, 1992-July, 1995.

Zoe K. Deol, B.S.: Senior Medical Student Research Elective. Project: The role of endotoxin in multiple organ failure during polymicrobial sepsis. March, 1993-January, 1994.

Ann D. Hampton: Undergraduate independent study (PSL 480). Project: Investigation of the capacity of IL-1ra to reverse the immunosuppressive effects of hemorrhage on immune function. June-August, 1993.

Robert G. Molnar, M.D.: Project for M.S. in Surgery (Thesis Committee member)- proposed study directed at assessing the role of neutrophils in the induction of hepatocellular dysfunction observed during sepsis. July, 1993-December, 1995.

Yvette Vargaz: Undergraduated Independent Study (PSL 480). Project: Establish primary hepatocellular clones and hepatoma cell line for study of kupffer cells effects on hepatocytes during sepsis. September-December, 1993

Heather Childers: Undergraduate Independent Study (PSL 480). Project: Assess the role of programmed cell death (apoptosis) in the dysfunction in lymphocytic response seen following sepsis. September, 1993-January, 1994.

David M. Kam, M.D.: Project for M.S. in Surgery (Thesis Committee member) – proposed study entitled: Seventy kilodalton stress protein (hsp70) gene expression in the mouse: the effect of sepsis and hemorrhage. July, 1993-December, 1995.

JoAnn Palma, B.S.: Project for Ph.D. in Biology (Thesis Committee member) - proposal for thesis entitled: Mechanism(s) of action of the anti-cancer drugs cisplatin and carboplatin. October, 1993-January, 1995.

Albert M. Morrison, M.D.: Project for M.S. in Surgery (Thesis Committee member) - proposed study directed at comparing the capacity of heparin as opposed to chemical modified heparin to restore endothelial cell nitric oxide function during sepsis. July, 1994-December, 1995.

John Kepros, M.D.: Project for M.S. in Surgery (thesis Committee member) - proposed study directed at determining if the salutary effects of chemically modified heparin and heparin are mediated through inhibition of TNF. July, 1994-December, 1995

Shariff K. Bishai: Undergraduate Independent Study (PSL 480). Project: To assess the role of programmed cell death in the dysfunction induced in hepatocytes during exposure to cytokines (TNF). September-December, 1994.

Stacey Uebele: Undergraduate Independent Study (MPH 499). Project: To assess the effects of kupffer cell depletion (using the agent gadolinium chloride) on the systemic inflammatory cytokine response and host immunity during polymicrobial sepsis. January-April, 1995.

Marcy A. Urbanich: Undergraduate Independent Study (MPH 499): Project: To determine if polymicrobial sepsis induces apoptosis in macrophage and neutrophils. January-April, 1995.

David S. Suri: Undergraduate Independent Study (PSL 480): Project: To compare the effects of low-dose endotoxin infusion to polymicrobial sepsis on the transcription of the inflammatory cytokine (TNF- α , IL-1 β , IL-6, TGF- β) genes in mouse macrophage. January-April, 1995.

Amy E. Mueller: Undergraduate Independent Study (MPH 499): Project: To determine whether or not evidence of programmed cell death is present in hepatocytes isolated from the liver of septic mice. May-August, 1995.

Dianne E. Sonefeld: Undergraduate Independent Study (MPH 499): Project: To determine whether or not evidence of altered IgA secretion is evident in B-cells isolated from the Peyer's Patches of septic mice. September-December, 1995.

at Brown University:

Amit R.T. Joshi, B.A.: Summer Medical Student Research Assistantship Award (Summer 1998): Project: The role of NF- κ B in the onset of immune cell apoptosis subsequent to polymicrobial

sepsis. February, 1998-present. Medical Student Independent Study Elective (Medicine 710)- NF-kB activation has tissue specific effects on immune cell apoptosis during polymicrobial sepsis. September 2000-January 2001.

Grace Y. Song, B.A.: Research Assistant/Medical Student:

- Project I: The role of IL-10 and altered signal transduction events in the induction of immune suppression in polymicrobial sepsis. January, 1998- May, 2002.
- Project II: Medical Student Independent Study Elective (Medicine 710)- Role of p38 MAPK in the immune dysfunction seen in polymicrobial sepsis. September, 2000-January, 2001.
- Project III for Master of Medical Science - Pathobiology Program (*Major Advisor* - thesis committee member) - title of Proposed Project: "Intracellular signaling pathways involved in the suppression of cell-mediated immunity seen in the septic host: the role of p38 MAPK". September, May, 2002.

Lara Watkins: Undergraduate from Providence College/Laboratory Aide:

- Project I title: The role of MAPK in macrophage dysfunction observed following the onset of polymicrobial sepsis. March, 1997- August 1998.
- Project II title: Assessment of 3-aminopropanal effect on splenocyte apoptosis and/or function? September, 1998-May, 2000.
- Project III title: Determination of the contribution of CD8 and/or gamma/delta-T-cells in the induction of immune dysfunction seen septic mice. June, 2000-August, 2001.

Rory A. Priester, B.A.: Project Tech./Medical Student: The role PKC in the regulation of increased activation induced apoptosis encounter in sepsis. June-August, 1999.

Samantha R. Mekrut: Undergraduate from Fairfield College/Laboratory Aide: SOCS protein expression in sepsis. June-August, 2000.

Crystal Lane: Summer undergraduate student in the *NIH Short Term Training for Minority Students Program/ Leadership Alliance*: The contribution of CD1d regulatory T-cells to immune suppression seen in sepsis. June- August, 2000.

Rebecca Rhee: Undergraduate from Brown University/Laboratory Aide: (*Mentor*- independent study/undergrad thesis). The contribution of NK-T-cells to immune suppression seen in sepsis. (Independent study/undergrad thesis) January, 2001- May 2002.

Gil Freitas: Summer undergraduate student in the *NIH Short Term Training for Minority Students Program/ Leadership Alliance*: Project: Does the immune response to tissue injury produce comparable changes in cell-signaling to that seen in sepsis. June-August, 2001.

Shayla M Toombs: Summer undergraduate student in the *NIH Short Term Training for Minority Students Program/ Leadership Alliance*: Project: Assessment of the Mode of Action of FasL mediated Septic Mortality. June-August, 2002.

Sara M. Bray: Summer-Undergraduate Teaching & Research Assistantship (*Mentor-independent study/undergraduate thesis*). Project: Do alterations in co-stimulant receptors take place in septic mice and does it enhance or suppress survival of septic challenge. June, 2002-June, 2003

Shaun Murphy, B.S: Project for Ph.D. in Pathobiology (thesis Committee member)- project entitled: "Physiological association between IL-10 deficiency, inflammation and uterine NK cells in pregnancy outcome." June 2002-May 2006.

Leslie Jones: Summer undergraduate student in the *NIH Short Term Training for Minority Students Program/ Leadership Alliance*:

- Project 1: "Intracellular Localization of Specific Pro-/Anti-apoptotic Bcl-family Proteins (e.g., BID) in Response Death Receptor (FasL) Driven Apoptosis seen in Polymicrobial Sepsis." June-August, 2003.
- Project 2: "Assessment of BID gene deficiency and/or gene silencing (BID siRNA) capacity to suppress apoptosis and improve survival seen following polymicrobial sepsis". June-August, 2004

Johnna Wesley, B.S: Project for Ph.D. in Pathobiology (thesis Committee member)- project entitled: "Mechanisms of $V\alpha 14t$ -NK-T-Cell Activation of NK Cells". May 2003-**present**.

Doreen E. Wesche-Soldato, B.S.: Project for ***Ph.D. in Graduate Pathobiology Program (Major Advisor*** –thesis committee member) - project entitled: "Assessment of the capacity of anti-Fas and/or anti-FasL siRNA to reverse liver and GI morbidity and mortality seen with polymicrobial sepsis." June, 2003-May 2007

Megan Garber, B.S.: Project for ***Ph.D. in Pathobiology Pathobiology (Major Advisor*** - thesis committee member) - project entitled: "The role of IL-16 in the development of immune dysfunction and apoptotic changes seen in sepsis." September, 2003-**present**

Antonio Funches: Summer undergraduate student in the *NIH Short Term Training for Minority Students Program/ Leadership Alliance*: Project: "Determination of the extent $\gamma\delta$ T-cells residing in the intra-epithelial lymphoid cell compartment of the gut induced to undergo apoptosis during sepsis and the degree to this is death receptor (Fas-FasL) mediated" June-August, 2005.

Caroline Hu: Summer student-res. assist. (*Mentor*-independent study/undergraduate thesis).
Project: "Role of liver NK-T-cells in the development of immune/hepatic dysfunction and injury in septic mice." June 2005-August 2006.

Yvonne Wang: Summer student-res. assist. (*Mentor*-independent study/undergraduate thesis).
Project: " Role of CD1d+ Antigen Presenting Cells in the Development of Immune/Hepatic Dysfunction in Septic Mice." January 2006-**present**.

Leia L. Foster: Summer undergraduate student in the *NIH Short Term Training for Minority Students Program/ Leadership Alliance*: Project: "TBA" June-August, 2006.

Sam McNeal, B.S.: Project for *Ph.D. in Graduate Pathobiology Program (Major Advisor – thesis committee member)* - project entitled: "The role of Bid in hepatocyte induced apoptotic/non-apoptotic cell cytotoxicity seen in sepsis." September, 2006-**present**

Earl Campell, III: Summer undergraduate student in the *NIH Short Term Training for Minority Students Program/ Leadership Alliance*: Project: "Assessment of the effect of caspase 12 gene silencing on septic morbidity" June-August, 2007.

at University of Rhode Island/Rhode Island Hospital:

Joanne A. Lomas-Neira, M.S.: Project for *Ph.D. in Cell & Molecular Biology (Major Advisor - thesis committee member)* - proposal for thesis entitled: "The role of chemokines in the regulation of acute lung injury in response to hemorrhagic shock and sepsis". September, 2000-May, 2006.

Post-Doctoral Fellows/Research Associates Trained:

at Brown University/Rhode Island Hospital:

Todd E. Williams, M.D.: Resident Research fellow, Project: Regulation of inducible cell death (apoptosis) in septic mouse macrophage. February, 1996-July, 1996.

Elena V. Cahoone, M.D.: Post-doctoral Fellow: Attached to NIH GM-46354, project entitled: Differential Effects of Sepsis on Macrophage Function. January, 2000-February, 2001.

Chun-Shiang Chung, Ph.D.: Post-doctoral Fellow: Attached to NIH GM-53209, project entitled: Programmed Cell Death -- Role in Septic Immune Suppression. January, 1997-June, 2002.

Patricia S. Grutkoski, Ph.D.: Post-Doctoral Fellow: Co-advised with Dr. H. Hank Simms and attached to NIH R01-GM 53114, project entitled: Hypoxemia/reoxygenation and cytokine - PMN interactions. October, 2000-June, 2002.

Yanli Ding, D.D.S., Ph.D.: Post-Doctoral Fellow: Attached to NIH GM-46354, project entitled: Differential effects of sepsis on macrophage function. February, 2002-April, 2003.

Mario Perl, M.D.: Post-Doctoral Fellow: Attached to NIH HL63898-01, project entitled: regulatory mechanisms of Acute Lung Injury: Phagocyte Apoptosis." April, 2004-June, 2006.

Xin Huang, M.D., Ph.D.: Post-Doctoral Fellow: Attached to NIH GM-46354, project entitled: Differential effects of sepsis on macrophage function. September, 2004- **present**.

Ryan Swan, M.D., Resident-N.I.H. Training Grant Fellow: Attached to NIH GM-53209, project entitled: Programmed Cell Death -- Role in Septic Immune Suppression. June, 2005-**present**.

Joanne A. Lomas-Neira, M.S., Ph.D.: Post-Doctoral Fellow: Attached to NIH HL63898-01, project entitled: Regulatory Mechanisms of Acute Lung Injury: Phagocyte Apoptosis." May, 2006-**present**.

Brian Horner, D.O.: Resident (Pulmonary) Training Fellow (co-directed/supervised with Nicholas Ward, M.D.): Attached to Lilly-Activated Protein C Project & NIH GM-46354, project entitled: "Differential effects of sepsis on macrophage function." July, 2006-**present**.

Fabienne Venet, PharmD., M.S., Ph.D.: Post-Doctoral Fellow: Attached to NIH HL63898, project entitled: "Regulatory Mechanisms of Acute Lung Injury: Phagocyte Apoptosis." & NIH GM-46354, project entitled: "Differential effects of sepsis on macrophage function." July, 2006-**present**.

Faculty Mentor (K08 awards):

Lesley A, Doughty, M.D., Assistant Professor - Department of Pediatrics and Division of Surgical Res./Department of Surgery, R.I. Hospital/Brown University School of Medicine, Providence, RI, June 2004-2005

Trainees Who Have Advanced to Faculty Positions:

Chun-Shiang Chung, Ph.D.: Instructor- Department of Surgery, Division of Surg. Res., R.I. Hospital/Brown University School of Medicine, Providence, RI, June 2002-2004.

Chun-Shiang Chung, Ph.D.: Assistant Professor- Department of Surgery, Division of Surg. Res., R.I. Hospital/Brown University School of Medicine, Providence, RI, June 2004-**present**.

Patricia S. Grutkoski, Ph.D.: Instructor- Department of Surgery, Division of Surg. Res., R.I. Hospital/Brown University School of Medicine, Providence, RI, June 2002-2003.

Lesley A. Doughty, M.D., Associate Professor - Department of Pediatrics and Division of Surgical Res., Children's Hospital at the University of Cincinnati, Cincinnati, OH, February 2005-present.

Trainees Who Have Gone on to Industry:

Patricia S. Grutkoski, Ph.D.:

- Research Scientist; Repro-Medics, Cambridge, MA, July 2003-2005.
- Technical Service Manager of the Toxicology Division, Toxikon, Inc., Bedford, MA, January 2006-present.

Trainees Who Received Awards:

at Michigan State University:

Daniel R. Meldrum, B.S. (Medical Student): Awarded First Place at the Sixth Annual Michigan State University Biomedical Student Research Program. Title of presentation, "Diltiazem restores lymphokine synthesis and decreases susceptibility to sepsis following hemorrhage."

Daniel R. Meldrum, B.S., (Medical Student): *Association for Academic Surgery Student Research Award*, October 1991.

Daniel R. Meldrum, M.D.: *Finalist in the Young Investigator Award Competition*, 15th Annual *Shock Society Meeting*, Mobile, AL, June 7-10, 1992.

Patrick J. O'Neill, B.S. (Graduate Student): Awarded First Place in Graduate Student Competition at the Eighth Annual Department of Surgery Research Day Forum, Michigan State University, March 12, 1992.

Patrick J. O'Neill, B.S.: (Graduate Student) Recipient of Graduate Student *Travel Award* to present paper at 15th Annual *Shock Society Meeting*, Mobile, AL, June 7-10, 1992.

Hugh Lindsey, M.D.: Awarded First Place in Resident Basic Science Competition at the Eighth Annual Department of Surgery Research Day Forum, Michigan State University, March 12, 1992.

Patrick J. O'Neill, B.S. (Graduate Student): Awarded First Place in Graduate Student Competition at the Ninth Annual Department of Surgery Research Day Forum, Michigan State University, March 11, 1993.

Hugh Lindsey, M.D.: Awarded First Place in Resident Basic Science Competition at the Ninth Annual Department of Surgery Research Day Forum, Michigan State University, March 11, 1993.

Patrick J. O'Neill, Ph.D.: *1st Place Honors of Young Investigator Award Competition*, 16th Annual *Shock Society* Meeting, Santa Fe, NM, June 13-16, 1993.

Aaron J. Mayberry, M.D.: Winner of *Travel Fellowship* for presentation at 7th Annual Meeting of the Association for Academic Minority Physicians, Washington, D.C., October 22-24, 1993.

Robert G. Molnar, M.D.: Awarded First Place in Resident Basic Science Competition at the Tenth Annual Department of Surgery Research Day Forum, Michigan State University, March 17, 1994.

Robert G. Molnar, M.D.: Winner of *Travel Award* for presentation at 17th Annual *Shock Society* Meeting, Big Sky, MT, June 5-8, 1994.

Robert G. Molnar, M.D.: Awarded First Place in Resident Basic Science Competition at the Eleventh Annual Department of Surgery Research Day Forum, Michigan State University, March 31, 1995.

at Brown University/Rhode Island Hospital:

Martin K. Angele, M.D.: Winner of *Travel Award* for presentation at 20th Annual *Shock Society* Meeting, Indian Wells, CA, June 15-18, 1997.

Martin K. Angele, M.D.: Finalist in young investigator award competition at 5th Annual Research Celebration at Rhode Island Hospital, November 11, 1997.

Volker Kahlke (Medical Student): Finalist in young investigator award competition at 5th Annual Research Celebration at Rhode Island Hospital, November 12, 1997.

Robert A. Catania, M.D.: Winner of *Travel Award* for presentation at 21th Annual *Shock Society* Meeting, San Antonio, TX, June 14-17, 1998.:

Chun-Shiang Chung, Ph.D.: Winner of *Travel Award* for presentation at 21th Annual *Shock Society* Meeting, San Antonio, TX, June 14-17, 1998.

Marcus W. Knöfrel, M.D.: Finalist in young investigator award competition at 6th Annual Research Celebration at Rhode Island Hospital, November 17, 1998.

Grace Y. Song, B.A. (Graduate/Medical Student): Finalist in the *Young Investigator Award Competition* and a *Travel Award* for a presentation at the 4th International Shock Congress (22nd Annual *Shock Society Meeting*), Philadelphia, PA, June 12-16, 1999.

Chun-Shiang Chung, Ph.D.: Winner of *Travel Award* for presentation at the 4th International Shock Congress (22nd Annual *Shock Society Meeting*), Philadelphia, PA, June 12-16, 1999.

Florian, Fitzal, B.S.: Winner of *Travel Award* for presentation at the 4th International Shock Congress (22nd Annual *Shock Society Meeting*), Philadelphia, PA, June 12-16, 1999.

Marcus W. Knöfrel, M.D.: Winner of *Travel Award* for presentation at the 23rd Annual *Shock Society Meeting*, Snowbird, UT, June 3-7, 2000.

Grace Y. Song, B.A. (Graduate/Medical Student): Recipient of *Alpha Omega Alpha Student Research Fellowship* for proposal entitled: Intracellular signaling pathways involved in the suppression of cell-mediated immunity seen in the septic host: the role of p38 MAPK. April-December 31, 2001.

Grace Y. Song, B.A. (Graduate/Medical Student): Winner of *Travel Award* for a presentation at the 24th Annual *Shock Society Meeting*, Marco Island, FL, June 9-13, 2001.

Joanne L. Lomas, M.S. (Graduate Student): *Finalist in the SLB Presidential Students Awards Competition* (includes *Travel Award*) at the conjoined 9th International Cytokine Society Meeting and the 35th Annual Society of Leukocyte Biology Meeting, Maui, HI, November 8-11, 2001.

Patricia S. Grutkoski, Ph.D.: Winner of *Travel Award* for presentation at the conjoined 9th International Cytokine Society Meeting and the 35th Annual Society of Leukocyte Biology Meeting, Maui, HI, November 8-11, 2001.

Sara Bray (Brown Univ. undergraduate): Winner of K.T. Romer-Undergraduate Teaching & Research Assistantship (UTRA) award. June-August, 2002.

Rebecca J. Rhee: Recipient of "Honors in Biology" designation/prize along with Bachelor of Arts degree from Brown University, May 2002

Joanne L. Lomas, M.S. (Graduate Student): *Finalist in the Young Investigator Competition* (includes *Travel Award*) at the 25th Annual *Shock Society Meeting*, Big Sky, MT, June 8-11, 2002.

Joanne L. Lomas, M.S. (Graduate Student): *American Society for Investigative Pathology-Trainee Travel Award* for 2003 Experimental Biology Meeting, San Diego, CA, April 11-15, 2003.

Sara M. Bray: Recipient of "Honors in Biology" designation/prize along with Bachelor of Arts degree from Brown University, May 2003.

Joanne L. Lomas, M.S. (Graduate Student): *Travel Awardee* at the 26th Annual *Shock Society Meeting*, Phoenix, AZ, June 7-10, 2003.

Joanne L. Lomas, M.S. (Graduate Student): *Travel Awardee* at the 36th Annual Society of Leukocyte Biology Meeting, Philadelphia, PA, October 2-5, 2003.

Doreen E. Wesche, B.S. (Graduate Student): *American Society for Investigative Pathology-Trainee Travel Award Trainee Travel Award* for Experimental Biology conference in Washington, D.C., April 2004

Joanne L. Lomas, M.S. (Graduate Student): 27th Annual *Shock Society Meeting*, Halifax, Nova Scotia, CANADA, June 5-8, 2004

Doreen E. Wesche, B.S. (Graduate Student): *1st Place Honors (winner) of the New Investigator Competition* (includes *Travel Award*) at the 27th Annual *Shock Society Meeting*, Halifax, Nova Scotia, CANADA, June 5-8, 2004.

Joanne L. Lomas, M.S. (Graduate Student): *Travel Awardee* at the 37th Annual Society of Leukocyte Biology Meeting, Toronto, Ontario, CANADA, October 21-23, 2004.

Mario Perl, M.D. (Post-Fellow/Res. Assoc.): *Travel Awardee* at the 37th Annual Society of Leukocyte Biology Meeting, Toronto, Ontario, CANADA, October 21-23, 2004.

Joanne L. Lomas-Neira, M.S. (Graduate Student): *Finalist in the Young Investigator Award Competition* at the 12th Annual Research Celebration at Rhode Island Hospital, October 28, 2004.

Benjamin Galen, Recipient of "Biology Prize" designation/prize along with Honors- Bachelor of Science degree from Brown University, May 2005.

Doreen E. Wesche, B.S. (Graduate Student): *Travel Awardee* at the 28th Annual *Shock Society Meeting*, Marco Island, FL, June 4-7, 2005.

Mario Perl, M.D. (Post-Fellow/Res. Assoc.): *Finalist in the Young Investigator Competition* (includes *Travel Award*) at the 28th Annual *Shock Society Meeting*, Marco Island, FL, June 4-7, 2005.

Mario Perl, M.D. (Post-Fellow/Res. Assoc.): *Finalist in the American College of Surgeon's/ New England Regional Resident Paper Competition* at the 10th Annual *New England Regional Trauma Conference*, Burlington, MA, Novemebr 10, 2005.

Doreen E. Wesche-Saldato, B.S. (Graduate Student): Selected for presentation as a part of

“ASIP-Highlights: Graduate Student Posters in Pathology” at the Experimental Biology conference in San Francisco, CA, April 1, 2006.

Doreen E. Wesche-Saldato, B.S. (Graduate Student): Selected for presentation as a part of “ASIP-Predoctoral-Merit Award” at the Experimental Biology conference in San Francisco, CA, April 3, 2006.

Caroline Hu: Recipient of "Honors in Biology" designation/prize along with Bachelor of Arts degree from Brown University, May 2005

Mario Perl, M.D. (Post-Fellow/Res. Assoc.): *Travel Awardee* at the 29th Annual *Shock Society*, Broomfield, CO, June 3-6, 2006.

Doreen E. Wesche-Soldato, B.S. (Graduate Student): *Finalist in the New Investigator Competition* (includes *Travel Award*) at the 29th Annual *Shock Society* Meeting, Broomfield, CO, June 3-6, 2006.

Mario Perl, M.D. (Post-Fellow/Res. Assoc.): *Finalist in the New Investigator Competition* at the 29th Annual *European Shock Society* Meeting, Ulm, Germany, Septemeber 14-16, 2006. (*Winner of competition*).

Doreen E. Wesche, B.S. (Graduate Student): *Student/Postdoctoral Fellow travel award* to the 2006 joint 39th Society of Leukocyte Biology (SLB)/ 8th Biennial Meeting of the International Endotoxin & Innate Immunity Society (INIIS) meeting, to be held in San Antonio, TX, November 9-11, 2006

Mario Perl, M.D. (Post-Fellow/Res. Assoc.): *Travel Awardee* at the 30th Annual *Shock Society*, Baltimore, MD, June 9-12, 2007.

HOSPITAL TEACHING ROLES

Preceptor for Surgical Residents Basic Science Conference (R.I. Hospital):
Oct 1996, Aug 1997, Sept 1998, Dec 2000