

CURRICULUM VITAE

NAME: Akhil Bidani, M.D., Ph.D.

DATE: March 10, 2008

PRESENT POSITION

John S. Dunn Professor of Bioengineering
Professor of Chemical & Mechanical Engineering
Cullen College of Engineering
University of Houston
Houston, Texas 77204
713-743-4066

BIOGRAPHICAL:

Date of Birth: October 4, 1947
Place of Birth: Kanpur, India
Citizenship: U.S.A.
Residence: 1710 Shoreline Drive
Missouri City, Texas 77454
(281) 208-8608

EDUCATION:

1965-1969	B.S.	Chemical Engineering Punjab University India
1970-1975	Ph.D.	Chemical Engineering University of Houston Houston, Texas
1975-1977	Post-doc (Physiology)	Postdoctoral Fellowship in Respiratory Physiology University of Pennsylvania School of Medicine Philadelphia, Pennsylvania
1977-1981	M.D.	The University of Texas Medical Branch Galveston, Texas
1981-1982		Internship in Internal Medicine The University of Texas Medical Branch Galveston, Texas
1982-1984		Residency in Internal Medicine The University of Texas Medical Branch Galveston, Texas

EDUCATION:

(continued)

1984-1985 Pulmonary Fellowship
Department of Internal Medicine
The University of Texas Medical Branch

PROFESSIONAL AND TEACHING EXPERIENCE:

1970-1977 Research Assistant
Department of Chemical Engineering
University of Houston
Houston, Texas

1972-1975 Instructor
Department of Chemical Engineering
University of Houston
Houston, Texas

1982-1985 Research Instructor in Medicine
Department of Internal Medicine
The University of Texas Medical Branch
Galveston, Texas

1985-1986 Assistant Professor of Medicine
(Level III)
UCLA School of Medicine
Los Angeles, California

1985-1986 Associate Director
Will Rogers Institute Pulmonary Research Laboratories
UCLA School of Medicine
Los Angeles, California

1986-1992 Associate Professor of Medicine
Chief, Division of Pulmonary Medicine
Department of Internal Medicine
The University of Texas Medical Branch
Galveston, Texas

1986 - 2002 Director, Medical Intensive Care Unit
and Clinical Director, Pulmonary Function Laboratories
The University of Texas Medical Branch
Galveston, Texas

1986 - 2002 Director, Pulmonary Research Laboratories
The University of Texas Medical Branch
Galveston, Texas

1987 - 1998 Director, Pulmonary Fellowship Training Program
The University of Texas Medical Branch
Galveston, Texas

PROFESSIONAL AND TEACHING EXPERIENCE (continued):

1989 - 1992	Associate Professor of Physiology & Biophysics Department of Cellular Physiology & Molecular Biophysics The University of Texas Medical Branch Galveston, Texas
1990 - 2002	Scientific Staff, Shriners Burns Institute The University of Texas Medical Branch Galveston, Texas
1991 - 2002	Graduate School Faculty Department of Human Biological Chemistry and Genetics The University of Texas Medical Branch Galveston, Texas
1992 - 2002	Member of UTMB/NIH Toxicology Training Program The University of Texas Medical Branch Galveston, Texas
1992 - 2002	Professor of Medicine Department of Internal Medicine The University of Texas Medical Branch Galveston, Texas
1992 - 2002	Professor of Physiology & Biophysics Department of Cellular Physiology & Molecular Biophysics The University of Texas Medical Branch Galveston, Texas
1994 - 2002	Senior Scientist Director, Cardiopulmonary Dynamics Program Biomedical Engineering Center The University of Texas Medical Branch Galveston, Texas
1994 -	Adjunct Professor Department of Electrical and Computer Engineering Rice University Houston, Texas
1997 -	Adjunct Professor Department of Biomedical Engineering University of Texas Austin, Texas
1998 - 2002	Professor of Respiratory Care The University of Texas Medical Branch Galveston, Texas
2000 - 2002	Co-Medical Director Department of Pulmonary Care and Anesthesia Support Services

PROFESSIONAL AND TEACHING EXPERIENCE (continued):

	The University of Texas Medical Branch Galveston, Texas
2002 – 2004	Division Director Division of Pulmonary, Critical Care & Sleep Medicine The University of Texas Medical School Houston, Texas
2003 - 2004	Adjunct Professor of Mechanical Engineering and Adjunct Professor of Chemical Engineering Cullen College of Engineering University of Houston Houston, Texas
2002 –	Professor of Medicine Division of Pulmonary, Critical Care & Sleep Medicine The University of Texas Medical School Houston, Texas
2005 -	Professor of Mechanical Engineering and Professor of Chemical Engineering Cullen College of Engineering University of Houston Houston, Texas
2005-	John S. Dunn Professor of Biomedical Engineering Cullen College of Engineering University of Houston Houston, Texas

RESEARCH ACTIVITIES:

A. Areas of Interest

- 1) Mechanisms and kinetics of microvascular gas and ion transport
- 2) Intracellular pH and its regulation in lung cells
- 3) Mechanisms of pulmonary uptake of toxic reactive gases
- 4) Pathophysiology of lung function abnormalities in acute lung injury and ARDS
- 5) Physiology of cardiopulmonary support
- 6) Mathematical modeling of cellular transport processes

B. Grant Support

Previous

- 1) Principal Investigator - "Alveolar Macrophage pH_i Regulation and Cell Function", NIH, 1R01HL51421, \$1,707,030 (direct costs), 1995-2006 (30% effort)

- 2) Co-Investigator – “Measuring the Value of Remote ICU Monitoring”, AHRQ, (1R01 HS15234-01, PI: Eric Thomas), 2004-2006, \$812,930 (direct costs) (8% effort yr 1; 13% yrs 2 & 3)
- 3) Co-Investigator (via-subcontract) - "Surgical Studies of Severe Respiratory Failure", NIH, (P.I.: J.B. Zwischenberger), \$1,250,000 (direct costs), 2005-2006 10% effort
- 4) Co-Investigator (via-subcontract) - "Surgical Studies of Severe Respiratory Failure", NIH, (P.I.: J.B. Zwischenberger), \$1,250,000 (direct costs), 2001-2004 (20% effort)
- 5) Co-Investigator - "Lung Surface Antioxidant Kinetics Mediate Oxidant Injury", NIH, 1R01ES10215, (P.I.: E.P. Postlethwait), \$680,417 (direct costs), 2000-2003
- 6) Co-Investigator - "Surface Lining Layer-Dependent Oxidant Lung Injury", NIH, 1R01HL54696, (P.I.: E.P. Postlethwait), \$577,983 (direct costs), 1996-2000
- 7) Co-Investigator - Multicenter Project: "Safety and Efficacy of Extracorporeal Arteriovenous Carbon Dioxide Removal (AVCO₂ R) in Acute, Severe Respiratory Failure in Children with Burns", (PI: J.B. Zwischenberger) Shriners Hospitals for Crippled Children (\$399,287), 2000-2002
- 8) Principal Investigator - "Evaluation of a New Physiologic Strategy for Management of Patients with Adult Respiratory Distress Syndrome", The Moody Foundation, \$185,274, 1994-1996
- 9) Co-Investigator - "Severe Smoke Inhalation Treated with a New Intravascular Membrane Oxygenator/Carbon Dioxide Removal Device and Continuous Positive Pressure Ventilation (CPPV) with Permissive Hypercapnia" - Shriners Hospital for Crippled Children, (J.B. Zwischenberger), \$294,000, 1994-1996
- 10) Investigative Group Fellowship Award - "Alveolar Epithelium Transport Properties", American Heart Association, Greater Los Angeles Affiliate (E. D. Crandall, Ph.D., M.D., Group Leader), \$30,000, 1985-1986
- 11) Co-Investigator - "Determinants of Lung and Tissue CO₂ Exchange and Transport", NIH, (P.I.: E. D. Crandall, Ph.D., M.D.), \$500,000, 1985-1990
- 12) Principal Investigator - "Mechanisms of Microvascular Gas Exchange and Transport", Clinician Scientist Award, American Heart Association, Greater Los Angeles Affiliate, \$125,000, 1986-1989, awarded but declined
- 13) Co-Investigator - "NO₂ Induced Lung Injury", UTMB Small Grants Program, (P.I.: E. M. Postlethwait, Ph.D.), \$9,932, 1987-1988
- 14) Co-Investigator - "Kinetics of Anion Exchange in Erythrocytes", UTMB Small Grants Program, (P.I.: Thomas Heming, Ph.D.), \$7,229, 1988-1989
- 15) Co-Investigator - "The Effects of Inflammation on Lung Cell Repair", UTMB Small Grants Program (P.I.: S. G. Shami, D.Sc.), \$9,950, 1988-1989
- 16) Co-Investigator - "Determinants of Pulmonary NO₂ Surface Interactions", NIH (P.I.: E.M. Postlethwait, Ph.D.), \$349,975, 1988-1993
- 17) Principal Investigator - "Cellular Mechanisms Regulating Lung Repair Following Acute Lung Injury", The Moody Foundation, \$58,187, 1990-1992
- 18) Co-Principal Investigator - "Pulmonary Reactive Uptake of Inhaled Toxic Contaminants", Center for Indoor Air Research, (P.I.: E.M. Postlethwait, Ph.D.), \$368,425, 1990-1993
- 19) Principal Investigator - "Effects of Smoke Inhalation Injury on Intracellular pH Regulation in Lung Cells", Shriners Hospital for Crippled Children, \$357,836, 01/92-12/94
- 20) Principal Investigator - "Regulation of Lung Cell Functions During and Following Lung Injury", The Moody Foundation, \$67,596, 1992-1994
- 21) Co-Principal Investigator - "Pathophysiology of Smoke Inhalation Treated with an Intracorporeal Membrane Oxygenator/Carbon Dioxide Removal Device and Intratracheal Ventilation", Shriners Hospital for Crippled Children, (P.I.: J.B. Zwischenberger), \$288,444, 1992-1995
- 22) Co-Investigator - "Development and Testing of a New Intravenous Oxygenator", UTMB Subcontract (P.I.: J.B. Zwischenberger). R44HL 49026-02 NIH Small Business Innovation Research Program (P.I.: Frank R. Walters, University of Pittsburgh), \$88,394, 1994-1996
- 23) Principal Investigator - "Regulation of Alveolar Macrophage Function After Thermal Injury",

- Shriners Hospital for Crippled Children, \$310,909, 01/95-12/97
- 24) Co-Investigator - "Severe Respiratory Distress Syndrome Caused by Severe Smoke Inhalation and Cutaneous Burn Injury Treated with Arteriovenous Carbon Dioxide Removal (AVCO₂R) and Low-Pressure Ventilation with Permissive Hypercapnia (LPV-PH)" - Shriners Hospital for Crippled Children, (P.I.: J.B. Zwischenberger), \$459,814, 1997-1999

MEMBERSHIP IN SCIENTIFIC SOCIETIES:

(*indicates elected membership)

- * American Society of Clinical Investigation
- American Academy of Sleep Medicine
- American Association for Bronchology
- American Association for Respiratory Care (# 2361553)
- * Fellow, American College of Chest Physicians (# 22975)
- * Fellow, American College of Critical Care Medicine
- * Fellow, American College of Physicians (# 0060087)
- * Fellow, Association of Clinical Scientists
- American Heart Association (Cardiopulmonary Council)
- American Institute of Biological Sciences
- * American Institute of Chemical Engineering
- American Medical Association
- * American Physiological Society
- * American Society for Artificial Internal Organs
- * American Thoracic Society
- * Biomedical Engineering Society
- European Society of Respiratory Physiology (# 29575)
- Foundation for Critical Care
- Galveston County Medical Association
- Houston Society for Engineering in Medicine and Biology
- New York Academy of Sciences
- Society for Computer Simulation
- * Society for Leukocyte Biology
- * Society of Critical Care Medicine (# 003290)
- * Society of General Physiologists
- * Southern Society for Clinical Investigation
- Texas Medical Association
- * Texas Thoracic Society
- World Association for Bronchology

EDITORIAL BOARD (2004 – 2006)

American Society of Artificial Internal Organs (ASAIO)

BOARD CERTIFICATION:

- 1984 ABIM (Internal Medicine)
- 1988 ABIM (Pulmonary Diseases)
- 1991 ABIM (Critical Care Medicine)
- 2002 ABIM (Re-certification, Critical Care Medicine)

HONORS:

- 1965-1969 Punjab University (INDIA) Merit Scholarship
- 1968-1969 Punjab University (INDIA) Gold Medal

1975	Phi Kappa Phi, University of Houston, Houston, Texas
1977-1981	Merit Scholarship of the State of Texas, The University of Texas Medical Branch, Galveston, Texas
1977-1981	Joseph B. Kass Award for Research, "Excellence in Research on the Prevention of Disease", The University of Texas Medical Branch, Galveston, Texas
1979-1981	William L. Marr Award in Medicine, "Excellence in the Study of Medicine", The University of Texas Medical Branch, Galveston, May 1981
1980	Mu Delta, The University of Texas Medical Branch, Galveston, Texas
1984-1985	Pulmonary Fellow Trainee of the American Lung Association, San Jacinto Area, Texas
1985	UTMB Nominee for the Lucille P. Markey Award
1986	Clinician Scientist Award, American Heart Association, Greater Los Angeles Area Affiliate, California
1986	UCLA School of Medicine Nominee for the Pew Scholar Award in Biomedical Sciences
1987	Sigma XI
1989	Fellow of the American College of Chest Physicians
1991	American Society of Clinical Investigation
1993	Alpha Omega Alpha Honorary Society
1993	Department of Internal Medicine Faculty-Alumni Society Teaching Award, Third Place
2000	Department of Internal Medicine Faculty-Alumni Society Teaching Award, First Place
2005	John S. Dunn Professor of Bioengineering, University of Houston, Tx
2007	Named to Best Doctors in America (Best Doctors, Inc)

BIBLIOGRAPHY:

A. PUBLISHED ORIGINAL PAPERS

1. **Bidani, A.**, Flumerfelt, R.W.: Models of respiratory control. ACS Advances in Chemistry Series 118:268-69, 1973.
2. **Bidani, A.**, Flumerfelt, R.W.: Respiratory response to chemical and metabolic disturbances. Proc. Summer Computer Simulation Conference 21:76-81, 1974.
3. **Bidani, A.**, Flumerfelt, R.W.: Respiratory dynamics - an extended model. Proc. Summer Computer Simulation Conference 22:850-56, 1975.
4. **Bidani, A.**, Flumerfelt, R.W.: Dynamics of the respiratory plant and its subsystems. Proc. Simulation 10:541-548, 1975.
5. Crandall, E.D., **Bidani, A.**, Forster, R.E.: Post capillary changes in blood pH *in vivo* during carbonic anhydrase inhibition. J. Appl. Physiol. 43:582-589, 1977.
6. **Bidani, A.**, Crandall, E.D., Forster, R.E.: Analysis of postcapillary pH changes in blood *in vivo* after gas exchange. J. Appl. Physiol. 44:770-781, 1978.
7. **Bidani, A.**, Crandall, E.D.: Slow postcapillary changes in blood pH *in vivo*: titration with acetazolamide. J. Appl. Physiol. 45:565-573, 1978.
8. **Bidani, A.**, Crandall, E.D.: Analysis of P_{CO2} differences during rebreathing due to slow pH equilibration in blood. J. Appl. Physiol. 45:666-673, 1978.
9. **Bidani, A.**, Crandall, E.D.: Slow post capillary pH changes in anesthetized animals. J. Appl. Physiol. 45:674-680, 1978.
10. **Bidani, A.**, Flumerfelt, R.W., Crandall, E.D.: Analysis of the effects of pulsatile capillary blood flow and volume on gas exchange. Resp. Physiol. 35:27-42, 1978.
11. Crandall, E.D., **Bidani, A.**: Effects of RBC HCO₃⁻/Cl⁻ exchange kinetics lung CO₂ and O₂ exchange: theory. J. Appl. Physiol. 50:265-271, 1981.
12. Crandall, E.D., Mathew, S.J., Fleischer, R.S., Winter, H.I., **Bidani, A.**: Effects of inhibition of RBC

- HCO₃⁻/Cl⁻ exchange on CO₂ excretion and downstream pH disequilibrium in isolated rat lungs. *J. Clin. Invest.* 68:853-862, 1981.
13. **Bidani, A.**, Flumerfelt, R.W.: Transient response of muscle and nonbrain tissue to adjustments in O₂ and CO₂ balance. *Annals Biomed. Eng.* 9:89-144, 1981.
 14. Crandall, E.D., Winter, H.I., Schaeffer, J.D., **Bidani, A.**: Effects of salicylate on HCO₃⁻/Cl⁻ exchange across the human erythrocyte membrane. *J. Memb. Biol.* 65:139-145, 1982.
 15. **Bidani, A.**, Crandall, E.D.: Analysis of the effects of hematocrit on pulmonary CO₂ transfer. *J. Appl. Physiol.* 53:413-418, 1982.
 16. **Bidani, A.**, Mathew, S.J., Crandall, E.D.: Pulmonary vascular carbonic anhydrase activity. *J. Appl. Physiol.* 55:75-83, 1983.
 17. **Bidani, A.**, Crandall, E.D.: Analysis of pulmonary vascular carbonic anhydrase activity. *AICHE Symp. Ser.* 117:55-61, 1983.
 18. DuBose, T.D., Jr., Caflisch, C.R., **Bidani, A.**: Role of metabolic CO₂ production in the generation of elevated renal cortical P_{CO2}. *Am. J. Physiol.* 246:F592-F599, 1984.
 19. **Bidani, A.**, Crandall, E.D., DuBose, T.D., Jr.: Analysis of the determinants of renal cortical P_{CO2}. *Am. J. Physiol.* 247:F466-F474, 1984.
 20. **Bidani, A.**, Crandall, E.D.: Techniques in mathematical modelling of capillary gas exchange. In: *Techniques in Respiratory Physiology, Part II* (A. B. Otis, Ed.), Excerpta Medica 1-27, 1984.
 21. DuBose, T.D., Jr., **Bidani, A.**: Determinants of CO₂ generation and maintenance in the renal cortex: role of metabolic CO₂ production and diffusive CO₂ transfer. *Mineral Electrolyte Metab.* 11:223-229, 1985.
 22. Geers, C., Heming, T.A., Gros, G., **Bidani, A.**, Crandall, E.D.: Effects of intra- and extra-cellular carbonic anhydrase on CO₂ excretion and intravascular pH equilibrium in the isolated perfused rat lung. *Prog. Resp. Res.* 21:26-29, 1986.
 23. Heming, T.A., Geers, C., Gros, G., **Bidani, A.**, Crandall, E.D.: Effects of dextran-bound inhibitors on carbonic anhydrase activity in isolated rat lungs. *J. Appl. Physiol.* 61:1849-1856, 1986.
 24. **Bidani, A.**, Crandall, E.D.: Disequilibrium phenomena in CO₂ transport and exchange. *ACP* 2:251-262, 1987.
 25. **Bidani, A.**, Crandall, E.D.: Velocity of CO₂ exchanges in the lungs. *Ann. Rev. Physiol.* 50:639-652, 1988.
 26. DuBose, T.D., Jr., **Bidani, A.**: Kinetics of CO₂ exchange in the kidney. *Ann. Rev. Physiol.* 50:653-667, 1988.
 27. Postlethwait, E., **Bidani, A.**: Pulmonary disposition of inhaled NO₂-nitrogen in isolated rat lungs. *Toxicol. and Appl. Pharmacol.* 98:303-312, 1989.
 28. **Bidani, A.**, Brown, S.E.S., Heming, T.A., Gurich, R., DuBose, T.D. Jr.: Cytoplasmic pH in pulmonary macrophages: recovery from acid load is Na⁺ independent and NEM sensitive. *Am. J. Physiol. (Cell Physiol.)* 257:C65-C76, 1989.
 29. Postlethwait, E.M., **Bidani, A.**: Reactive uptake governs the pulmonary air space removal of inhaled nitrogen dioxide. *J. Appl. Physiol.* 68:594-603, 1990.
 30. Heming, T.A., Vanoye, C.G., Brown, S.E.S., **Bidani, A.**: Cytoplasmic pH recovery in acid-loaded haemocytes of squid (*Sepioteuthis Lessoniana*). *J. Exptl. Biol.* 148:385-394, 1990.
 31. Postlethwait, E.M., Langford, S.D., **Bidani, A.**: Reactive absorption of nitrogen dioxide by pulmonary epithelial lining fluid. *J. Appl. Physiol.* 69:523-531, 1990.
 32. **Bidani, A.**, Brown, S.E.S.: ATP-dependent pH_i recovery in lung macrophages: evidence for a plasma membrane H⁺-ATPase. *Am. J. Physiol. (Cell Physiol.)* 259:C586-C598, 1990.
 33. Heming, T.A., Vanoye, C.G., **Bidani, A.**: Dipyridamole inhibition of HCO₃⁻/Cl⁻ exchange in human erythrocytes. *J. Pharmacol. Exp. Therapeut.* 255:631-635, 1990.
 34. Heming, T.A., **Bidani, A.**: *In situ* characterization of carbonic anhydrase activity in isolated rat lungs. *J. Appl. Physiol.* 69:2155-2162, 1990.
 35. Postlethwait, E.M., **Bidani, A.**, Evans, M.J.: The effect of NO₂ exposure on perfusate distribution in isolated rat lungs: pulmonary versus bronchial circulation. *Toxicol. Appl. Pharmacol.* 106:456-461, 1990.

36. **Bidani, A.**: Analysis of abnormalities of capillary CO₂ exchange *in vivo*. *J. Appl. Physiol.* 70:1686-1699, 1991.
37. Postlethwait, E.M., Langford, S.D., **Bidani, A.**: Transfer of NO₂ through pulmonary epithelial lining fluid. *Toxicol. Appl. Pharmacol.* 109:464-471, 1991.
38. **Bidani, A.**, Heming, T.A.: Effects of perfusate buffer capacity on capillary CO₂-HCO₃⁻-H⁺ reactions: theory. *J. Appl. Physiol.* 71:1460-1468, 1991.
39. Postlethwait, E.M., Langford, S.D., **Bidani, A.**: Interfacial transfer kinetics of NO₂ into pulmonary epithelial lining fluid. *J. Appl. Physiol.* 71:1502-1510, 1991.
40. Brown, S.E.S., Heming, T.A., Benedict, C.R., **Bidani, A.**: ATP-sensitive Na⁺/H⁺ antiport in type II alveolar epithelial cells. *Am. J. Physiol. (Cell Physiol.)* 261:C954-C963, 1991.
41. DuBose, T.D., **Bidani, A.**, Caflisch, C.R., Gennari, F.J., Maddox, D.A., Deen, W.M.: Comments on PCO₂ in renal cortex. *Am. J. Physiol. (Renal)* 262:F608-F612, 1991.
42. Heming, T.A., **Bidani, A.**: Influence of proton availability on intracapillary CO₂-HCO₃⁻-H⁺ reactions in isolated rat lungs. *J. Appl. Physiol.* 72:2140-2148, 1992.
43. Keeney, S.E., Cress, S.E., Brown, S.E.S., **Bidani, A.**: The effect of hyperoxic exposure on antioxidant enzyme activities of alveolar type II cells in neonatal and adult rats. *Pediatrics Res.* 31:441-444, 1992.
44. Zwischenberger, J.B., Cox, C.S., Graves, D., **Bidani, A.**: Intravascular membrane oxygenation and carbon dioxide removal - a new application for permissive hypercapnia? *Thorac. Cardiovasc. Surg.* 40:115-120, 1992.
45. **Bidani, A.**, Smith, R., Cardenas, V., Heming, T.: Modelling analysis of pulmonary capillary gas exchange. *Proceedings of the 1992 International Simulation Technology Conference* 395-401, 1992.
46. Niranjana, S.C., Clark, J.W., Jr., San, K.Y., **Bidani, A.**: Simulation of CO₂ transport in a novel blood-gas exchange device. *Proceedings of the 1992 International Simulation Technology Conference* 626-629, 1992.
47. Postlethwait, E.M., Langford, S.D., **Bidani, A.**: Kinetics of NO₂ airspace absorption in isolated rat lungs. *J. Appl. Physiol.* 73:1939-1945, 1992.
48. Cox, C.S., Zwischenberger, J.B., Graves, D., Niranjana, S., **Bidani, A.**: Intracorporeal CO₂ removal and permissive hypercapnia to reduce airway pressure in acute respiratory failure. The theoretical basis for permissive hypercapnia with IVOX. *ASAIO J.* 39:97-102, 1993.
49. Heming, T.A., Vanoye, C.G., Stabenau, E.K., Roush, E.D., Fierke, C.A., **Bidani, A.**: Inhibitor sensitivity of pulmonary vascular carbonic anhydrase. *J. Appl. Physiol.* 75:1642-1649, 1993.
50. Nguyen, T.T., Zwischenberger, J.B., Tao, W., Traber, D.L., Herndon, D.N., Duncan, C.C., Bush, P., **Bidani, A.**: Significant enhancement of carbon dioxide removal by a new prototype IVOX. *ASAIO J.* 39:M719-24, 1993.
51. Postlethwait, E.M., Langford, S.D., **Bidani, A.**: Determinants of inhaled ozone absorption in isolated rat lungs. *Tox. Appl. Pharm.* 125:77-89, 1994.
52. Postlethwait, E.M., **Bidani, A.**: Mechanisms of pulmonary NO₂ absorption. *Toxicology* 89:217-237, 1994.
53. **Bidani, A.**, Brown, S.E.S., Heming, T.A.: pH_i regulation in alveolar macrophages: relative roles of Na⁺/H⁺ antiport and H⁺-ATPase. *Am. J. Physiol. (Lung Cell & Mol. Physiol.)* 266:L681-L688, 1994.
54. Tao, W., Zwischenberger, J.B., Nguyen, T.T., Tzouanakis, A.E., Matheis, E.J., Traber, D.L., **Bidani, A.**: Performance of an intravenous gas exchanger (IVOX) in a venovenous bypass circuit. *Ann. Thorac. Surg.* 57:1484-1491, 1994.
55. Heming, T.A., Stabenau, E.K., Vanoye, C.G., Moghadasi, H., **Bidani, A.**: Roles of intra- and extracellular carbonic anhydrase in alveolar-capillary CO₂ equilibration. *J. Appl. Physiol.* 77:697-705, 1994.
56. **Bidani, A.**, Tzouanakis, A.E., Cardenas, V., Zwischenberger, J.B.: Permissive Hypercapnia in Acute Respiratory Failure. *JAMA* 272:957-962, 1994.
57. Tao, W., Schroeder, T., **Bidani, A.**, Cardenas, V.J.Jr., Nguyen, P-D.J., Bradford, D.W., Traber, D.L., Zwischenberger, J.B.: Improved gas exchange performance of the intravascular oxygenator by active blood mixing. *ASAIO J.* 40:M527-M532, 1994.

58. Conrad, S.A., Brown, E.G., Heming, T.A., **Bidani, A.**: A mathematical model for simulation of arteriovenous extracorporeal carbon dioxide removal. Proceedings of the International Federation of Automatic Control (IFAC) Symposium: *Modeling and Control in Biomedical Systems*, 206-207, 1994.
59. Liu, C.H., Niranjana, S.C., Clark, J.W., Jr., San, K.Y., Zwischenberger, J.B., **Bidani, A.**: Analysis of airway mechanics in a ventilated lumped alveolar model coupled with pulmonary gas exchange. Proceedings of the International Federation of Automatic Control (IFAC) Symposium: *Modeling and Control in Biomedical Systems*, 527-530, 1994.
60. Niranjana, S.C., Clark, J.W., Jr., San, K.Y., Zwischenberger, J.B., **Bidani, A.**: Simulation of gas transport in an intravenacaval blood-gas exchange device (IVOX). Proceedings of the International Federation of Automatic Control (IFAC) Symposium: *Modeling and Control in Biomedical Systems*, 198-201, 1994.
61. Chung, D.C., Clark, J.W., Jr., Vinten-Johansen, J., **Bidani, A.**, Zwischenberger, J.B., Johnston, W.E., Traber, D.L.: A mathematical model of the canine circulation. Proceedings of the International Federation of Automatic Control (IFAC) Symposium: *Modeling and Control in Biomedical Systems*, 109-112, 1994.
62. Niranjana, S.C., Clark, J.W., San, K.Y., Zwischenberger, J.B., **Bidani, A.**: Analysis of factors affecting gas exchange in an intravascular blood gas exchanger. *J. Appl. Physiol.* 77:1716-1730, 1994.
63. Zwischenberger, J.B., Nguyen, T.T., Tao, W., Bush, P.E., Cox, C.S., Traber, D.L., Herndon, D.N., **Bidani, A.**: IVOX with gradual permissive hypercapnia: a new management technique for respiratory failure. *J. Surg. Res.* 57: 99-105, 1994.
64. Conrad, S.A., Zwischenberger, J.B., Eggerstedt, J.M., **Bidani, A.**: In Vivo gas transfer performance of the intravascular oxygenator in acute respiratory failure. *Artificial Organs* 18:840-845, 1994.
65. Zwischenberger, J.B., Cardenas, V.J., Tao, W., Niranjana, S.C., Clark, J.W., **Bidani, A.**: Intravascular membrane oxygenation and carbon dioxide removal with IVOX: Can improved design and permissive hypercapnia achieve adequate respiratory support during severe respiratory failure? *Artificial Organs* 18:833-839, 1994.
66. **Bidani, A.**, Heming, T.A.: Effects of bafilomycin A₁ on functional capabilities of LPS-activated alveolar macrophages. *J. Leukoc. Biol.* 57:275-281, 1995.
67. Heming, T.A., **Bidani, A.**: Effects of myristate phorbol ester on V-ATPase activity and Na⁺-H⁺ exchange in alveolar macrophages. *J. Leukoc. Biol.* 57:600-608, 1995.
68. Heming, T.A., **Bidani, A.**: Na⁺-H⁺ exchange in resident alveolar macrophages: activation by osmotic cell shrinkage. *J. Leukoc. Biol.* 57:609-616, 1995.
69. Langford, S.D., **Bidani, A.**, Postlethwait, E.M.: Ozone-reactive absorption by pulmonary epithelial lining fluid constituents. *Toxicol. Appl. Pharmacol.* 132:122-130, 1995.
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B. OTHER

PUBLISHED CHAPTERS

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228. Chuan, L., Clark, J.W., Heming, T.A., **Bidani, A.**: Mathematical Analysis of Alveolar Macrophage pH Regulation. IEEE & Exp. Med. Biol. Soc., 2002.
229. **Bidani, A.**, Heming, T.A.: V-ATPase and Sodium/Proton Exchange Interact to Regulate the Intracellular pH of Human Monocytes. Annual Conf. Biomed. Engineer. Res., Houston, Texas, 2003.
230. Luo, C., Clark, J.W., Heming, T.A., **Bidani, A.**: Mathematical Analysis of Alveolar Macrophage pH Regulation. Annual Conf. Biomed. Engineer. Res., Houston, Texas, 2003.
231. Heming, T.A., **Bidani, A.**: Calcium Channel Blockers Inhibit V-ATPase in Resident Alveolar Macrophages. Annual Conf. Biomed. Engineer. Res., Houston, Texas, 2003.
232. **Bidani, A.**, Heming, T.A.: Plasma Membrane H⁺ Transporters in Human Monocyte Cell Lines. Am. J. Respir. Crit. Care Med. 2003.
233. Heming, T.A., Henninger, E.D., Marshall, G.D., **Bidani, A.**: Effects of monocyte-to-macrophage differentiation on cell pH and volume regulation", Am. J. Respir. Crit. Care Med. 2003
234. Heming, T.A., Barriga, Jc., Ng, A., Clark, J.W, **Bidani, A.** "Continuous monitoring of pulmonary mechanics during acute lung injury in rabbits, Chest, 2003.
235. **Bidani, A.**, Ng, A., Patel, B., Heming, T.A.: Calcium Channel Blockers alter regulation of intracellular pH in Resident Alveolar Macrophages., Chest, 2003.
236. Conrad, S.A., Scott, L.K., **Bidani, A.**: Finite Element Mathematical Model of Solute Transport in Hemofilter Membranes. Blood Purif, 21:198, 2003.
237. Chakraborty, S., **A. Bidani** and V. Balakotaiah, "Mathematical Modeling of Oxygen Transport and Acid-base Regulation in Normal Tissues and Tumors" AIChE Annual Meeting, San Francisco, (paper # 478c), 2003.
238. Ha, R., JunHui, Q., Clark, J.W., Wang, D., Zwischenberger, J.B, **Bidani, A.**: PAL Device Modeling and Testing using Ovine Circulatory Model. Annual Conf. Biomed. Engineer. Res., Houston, , 2004.
239. Luo, C., Clark, J.W., Heming, T.A., **Bidani, A.**: Capacitative Entry and Ca Homeostasis in the Alveolar Macrophage. Annual Conf. Biomed. Engineer. Res., Houston, Texas, 2004.
240. S. Chakraborty, V. Balakotaiah and **A. Bidani**, "Theoretical Analysis of the Components of Pulmonary Oxygen Diffusing Capacity", (paper # 3561). 100th International Conference of American Thoracic Conference, Orlando, 2004.
241. Chakraborty, S., V. Balakotaiah and **A. Bidani** "Determinants of Pulmonary Oxygen Uptake: A Novel Multi-scale Engineering Approach", 18th International Symposium on Chemical Reaction Engineering (ISCRE 18), (poster # 38), Chicago, 2004 ,
242. S. Chakraborty, V. Balakotaiah and **A. Bidani**: "Oxygen Uptake Abnormalities in Patients with Heptapulmonary Sysndrome",. HSEMB Annual Meeting, Houston, 2004,
243. **Bidani, A.**, Ng, A., Heming, T.A. " Effects of Calcium channel blockade on Plasma Membrane V-ATPase activity in Alveolar Macrophages", Am Rev Resp & Crit Care Med.2004
244. Chakraborty, S., **A. Bidani**.: Diffusing Capacity Reexamined: relative roles of diffusion and chemical reaction in red cell uptake of O₂, CO, CO₂ and NO. 22nd HSEMB, 246, 2005.
245. Chakraborty, S., V. Balakotaiah and **A. Bidani**.: Kinetic Analysis of Superoxide Production during Respiratory Burst in Alevolar Macrophages, 22nd HSEMB, 27, 2005.
246. Luo, C., R. Ha, **A. Bidani**, J.B. Zwischenberger, J.W. Clark: Modeling Human Congestive Heart Failure, 22nd HSEMB, 202, 2005.
247. Yue, Y., F. Qiao, M.M. Croitoru, **A. Bidani**, J.W. ZWischenberger, J.W. Clark: A novel Ultrasonic Speckle Suppression Method using Wavelet Diffusion, 22nd HSEMB, 242, 2005.
248. Ha, R., J. Qian, D. Wang, J.B. Zwischenberger, **A. Bidani**, J.W. Clark: Simulation of changes in pulmonary driving impedance due to series insertion of a Paracoporeal Artificial Lung. 22nd HSEMB, 249, 2005.

III. TEACHING INFORMATION

DIDACTIC COURSE PARTICIPATION AT UT-HOUSTON

1. Fundamental of Clinical Medicine – 2002-2004. 2 lectures/year – Acid Base-I, Pulmonary Function.
2. Problem-Based Learning – 2nd year medical students, 2002-2205
3. Medical Ethics – 1st year medical students, 2005

DIDACTIC COURSE PARTICIPATION AT UTMB

- 1, Minicourse in Department of Physiology - Intracellular pH Regulation, 1995-1996
2. Intergrated Medical Curriculum – Acid-base Regulation, Renal, 1999-2001
3. Intergrated Medical Curriculum – Pulmonary Function Tests & Arterial Blood Gas Interpretation, Cardiopulmonary, 1999-2001
4. Intergrated Medical Curriculum – Acid-base Balance, Molecules, Cells & Tissues, 1999-2001

DIDACTIC COURSE PARTICIPATION AT UH (University of Houston)

1. **Cellualr Transport Phenoimena** – BIOE 6397 (Fall 2005, Fall 2006, Fall 2007))
2. **Physiological Transport Phenomena** BIOE 6397/CHEE 6397 (Spring 2007, Spring 2008)
3. Cell and whole Organ Mathematical Modeling – Biomedical Engineering Program, UH (Mathew Franchek, Instructor), 2003.

DIDACTIC COURSE PARTICIPATION AT RICE

- 1) Mathematical modeling of cardiopulmonary dynamics; Mathematical modeling of pulmonary function tests; Mathematical modeling of Ventilator Mechanics, Biomedical Engineering Program - Rice University, 1997-2004.
- 2) Mathematical Modeling in Physiology, Biomedical Engineering Program – Rice University, 2004

NON-DIDACTIC TEACHING

- 1) House-staff Education in Medical Intensive Care Unit, UTMB, 1986-2002.

DIDACTIC LECTURES

- 1) Texas Club of Internists 1997 Annual In-State Meeting & Scientific Program, Galveston, Texas, March 6B8, 1997
- 2) The Third Houston Pulmonary and Critical Care Medicine Review and Update, Houston, Texas (M.D. Anderson), September 24-26, 1998
- 3) The Fourth Houston Pulmonary and Critical Care Medicine Review & Update. M.D. Anderson, Houston, Texas, September 22-23, 2000
- 4) Pulmonary Pathophysiology Conference, Department of Internal Medicine, UTMB
- 5) Research Conference, Department of Internal Medicine, UTMB
- 6) Medical Physiology - First-Year Medical Students, 1990-2002, UTMB
- 7) Medical Ethics - Second & Third-Year Medical Students, 1990-2002, UTMB
- 8) PFT & ABG Interpretation - Third-Year Medical Students, 3/yr; 1991-2002, UTMB
- 9) Interpretation of Pulmonary Functions – IM House-staff, 1995-2002, UTMB.
- 10) Interpretation of Hypoxemia & Acid Base- IM House-staff, 1995-2001, UTMB
- 11) Cellular and Acid Base Regulation, School of Nursing, UT-Houston, 2003.
- 12) Diffusing Capacity. Internal Medicine Grand Rounds, UTHSC, Houston & BCM (2005, 2006)

CLINICAL FELLOW TRAINING

Donald Doyle, 1986-1987, Fairfield, California; Dale Villeponteaux, 1986-1988, Winston-Salem, North Carolina; Marque A. Hunter, 1987-1989, Tomball, Texas; Richard A. Day, 1987-1989, Wichita Falls,

Texas; Victor J. Cardenas, Jr., 1987-1990, UTMB-Galveston, Texas; John R. Griffin, 1988-1990, Conroe, Texas; Thomas M. Weber, 1989-1991, Bryan, Texas; John D. Updegrove, 1989-1991, Corsicana, Texas; Michael P. McCarthy, 1990-1992, Monroe, Louisiana; Calvin D. Alexander, 1990-1992, Shreveport, Louisiana; Alexander Tzouanakis, 1991-1993, Lexington, Kentucky; Edward J. Matheis, 1991-1993, Greeley, Colorado; Kathleen M. Gately, 1991-1993, Houston, Texas; Tyrus Schroeder, 1992-1994, New Braunfels, Texas; Phuong-Dung Julie Nguyen, 1992-1994, Houston, Texas; Philip L. Pirtle, 1993-1995, Houston, Texas; Paul W. English, 1993-1995, UTMB-Galveston, Texas; James M. Dy, 1993-1995, Des Moines, Iowa; Robin E. Adams, 1994-1996, Victoria, Texas; Rayman Lee, 1994-1997, UTMB-Galveston, Texas; Anita C. Mercado, 1994-1996, UTMB-Galveston, Texas; Rick J. Lohstroh, 1995-1997, UTMB-Galveston, Texas; Salah F. AlBAndary, 1995-1997, St. Petersburg, Florida; Philip L. Pirtle, 1996-1997, Houston, Texas; Jamal Mubarak, 1997-1998, Gainesville, Texas; Liliana Diaz, 1997-1998, Houston, Texas; Gilbert Jenouri, 1997-2000, Dominican Republic; Kerim Razack, 1997-2000, Fort Worth, Texas; Divina Tuazon, 1997-2000, Kingsford, Michigan; Madhavan Nampoothiri, 1998-2001, Anderson, Indiana; William Beary, 1999-2002, UTMB-Galveston, Texas; Shahid Husain, 1999-2002, UTMB-Galveston, Texas; Sivakumar Padmanabhan, 2000-2001, Corpus Christi, Texas; Judy Kang, 2000-2003, UTMB-Galveston, Texas; Lucinda Miller, 2000-2003, UTMB-Galveston, Texas; Jason Smith, 2001-2004, UTMB-Galveston, Texas; Jerrod Taylor, 2001-2004, UTMB-Galveston, Texas. Juan Carlos Barriga, 2002-2003, UT-H, Imrana Malik, 2002-2003, UT-H, Chris Cortez, 2002-2003, UT-H, Amelia Ng, 2002-2003, UT-H, Dana Smith 2002-2004, UT-H.

RESEARCH FELLOW TRAINING:

Victor J. Cardenas, Jr., 1987-1990, UTMB; Alexander Tzouanakis, 1991-1993, UTMB; Edward Matheis, 1991-1993, UTMB; Julie Nguyen 1992-1994, UTMB; Tyrus Schroder 1992-94, UTMB; Jim Dy, 1993-1995, UTMB; Philip Pirtle, 1993-1995, UTMB, 1996-1997, UTMB; Divina Tuazon, 1997-2000, UTMB; Madhavan Nampoothiri, 1998-2001, UTMB. Amelia Ng, 2003-2004. Victor Salloum, 2004-

GRADUATE STUDENT Ph.D. COMMITTEES:

Bruns Watts, 1991, UTMB; Dennis Kim, 1992, UTMB; Lee Anna Robinson, 1993, UTMB; Erich Stabenau, 1993, UTMB; Irina Buhimschi, 1994, UTMB ; Catalin Buhimschi, 1994, UTMB; David Chinkes, 1994, UTMB; Amalia Gastaldelli, 1994, UTMB; Ernest Hymel, 1995, UTMB; Kristi Schrode, 1997, UTMB; Christina Liu, 2001, Rice; Lydia Jacobson, 2000, UTMB. Saikat Chakraborty, 2003, UH. Bill Amini, 2004, UT-Houston

IV. MEDICAL AND SERVICE INFORMATION

PATIENT CARE RESPONSIBILITIES:

- 1) Medical Intensive Care Unit, 2-3 months/year, 2002-2005, UT-Houston (LBJ & Hermann)
- 2) Medical Intensive Care Unit - 3-4 months/year, 1986-2001, UTMB
- 3) All Pulmonary Function Interpretations, 1990-2001, UTMB
- 4) General Internal Medicine - 1 month/year, 1986-1996, UTMB
- 5) Pulmonary Consult Service - 1 month/year, 1990-1995, UTMB

COMMITTEE & OTHER RESPONSIBILITIES:

A. NATIONAL & REGIONAL

- 1) Ad-hoc reviewer for Veterans Administration Merit Review Board for Respiration
- 2) Co-Chair: "Gas Exchange", American Thoracic Society, May 1986
- 3) Ad-hoc site reviewer for NIH program project grant (P.I.: Dr. Suk Ki Hong, State University of New York at Buffalo, Buffalo, New York), January 1987
- 4) Chair: "Capillary Solute and Gas Exchange", World Congress on Medical Physics and Biomedical Engineering, San Antonio, Texas, August 6-12, 1988
- 5) Editorial Board: Journal of Applied Physiology, 1989-
- 6) Chair: "Pulmonary Systems", 8th Annual Conference on Biomedical Engineering, Houston, Texas,

- February, 1990
- 7) Chair: "Basic Mechanisms in Gas Exchange", American Thoracic Society, May 20-24, 1990
 - 8) Ad-hoc site reviewer for NIH program project grant (P.I.: Dr. Aron Fisher, University of Pennsylvania School of Medicine, Philadelphia, PA) November, 1990
 - 9) Chair: "Pulmonary Systems I & II", 9th Annual Conference on Biomedical Engineering, Houston, Texas, February, 1991
 - 10) Ad-hoc site reviewer for NIH program project grant ("Pathophysiology of the Pulmonary Circulation," P.I.: Dr. Robert Klocke, University of New York at Buffalo) May, 1991
 - 11) Chair: "Pulmonary Systems I", 10th Annual Conference on Biomedical Engineering, Houston, Texas, March, 1992
 - 12) Chair: "Pulmonary Systems I & II", 11th Annual Conference on Biomedical Engineering, Houston, Texas, March, 1993
 - 13) Chair: "Pulmonary Systems I, II & III", 12th Annual Conference on Biomedical Engineering, Houston, Texas, February, 1994
 - 14) Chair: "Pulmonary Systems II & III", 13th Annual Conference on Biomedical Engineering, Houston, Texas, February, 1995
 - 15) Chair: "Pulmonary Systems II", 14th Annual Conference on Biomedical Engineering, Houston, Texas, February, 1996
 - 16) Chair: "Pulmonary Systems III", 15th Annual Conference on Biomedical Engineering, Houston, Texas, February, 1997
 - 17) Chair: "Pulmonary Systems", 16th Annual Conference on Biomedical Engineering, Houston, Texas, April, 1998
 - 18) Chair: "Pulmonary Systems", 17th Annual Conference on Biomedical Engineering, Houston, Texas, February, 1999
 - 19) Chair: "Critical Care Medicine", 18th Annual Conference on Biomedical Engineering, Houston, Texas, February, 2000
 - 20) Chair: "Critical Care Medicine", "Cardio-Pulmonary Systems", & "Cardio-Pulmonary Assist Devices", 19th Annual Conference on Biomedical Engineering, Houston, Texas, February, 2001
 - 21) Co-Chair: American Heart Association, Western Review Consortium, Phoenix, Arizona, April, 2003.
 - 22) Co-Chair: American Heart Association, Western Review Consortium, 2004.
 - 23) Chair: "Respiratory Systems", 22th Annual Conference on Biomedical Engineering, Houston, Texas, February, 2005
 - 24) Chair: American Heart Association (Western, Committee 3), 2005
 - 25) **Chair: American Heart Association (Western, Committee 3), 2006**
 - 26) **Chair: American Heart Association (Western, Committee 3), 2007**

B. UTMB

- 1) Medical Student Advisor, 1986-2001
- 2) NIH Student Research Forum, UTMB, 1987-2001
- 3) Member, Review Panel, Shriners Burns Research Grants, 1987-89
- 4) Reviewer, Intramural Grants, 1987-2001
- 5) Academic Computing Advisory Committee, 1987-2001
- 6) Member of review panel for academic review of UTMB Department of Pediatrics, April 1988
- 7) Stjepceovich Scholarship Committee, 1988-2001
- 8) Master of Medical Science Program, 1989-2001
- 9) Search Committee, Center for Molecular Cardiology, 1989
- 10) M.D.-Ph.D. Combined Degree Program, 1990-2001
- 11) Search Committee, Telecommunication Services Director, 1990
- 12) Task Force, Liaison Committee on Medical Education, 1990-2001
- 13) Hospital Resuscitation Committee, 1991-2001

- 14) Member of review panel for academic review of UTMB Department of Surgery, September, 1991
- 15) Executive Committee of the Faculty of Medicine, 1992-1993
- 16) Faculty Advisory Council, 1992-1993
- 17) John Sealy Memorial Endowment Fund Committee, 1992-1995
- 18) Employee/Patient Exposure to Airborne Pathogens and Contaminants Committee, 1992-
- 19) Chair, John Sealy Memorial Endowment Fund Committee, 1993-1995
- 20) Institutional Ethics Committee, 1994-2001
- 21) Hospital Intensive Care Advisory Committee, 1995-2001
- 22) Search Committee, Chair of Pharmacology & Toxicology, 1996-1997
- 23) UT-MED Managed Care Committee, 1996-2001
- 24) Executive Committee of the Faculty of Medicine, 1997-1998
- 25) Executive Committee of the Medical Staff, 1999-2000
- 26) Palliative Care Service Committee, 2000-2001
- 27) Clinical Leadership Briefing Committee, 2000-2001
- 28) Molecules/Cells/Tissues Course Committee, 2000-2001
- 29) Cardiovascular/Pulmonary Course Committee, 2000-2001
- 30) Academic Planning & Policy Committee, 2000-2001

C. UTMB - DEPARTMENTAL

- 1) Member, Search Committee for Chief of Endocrinology, 1986
- 2) Curriculum Committee, Department of Medicine, 1987-1989
- 3) Editorial Board, Department of Medicine Newsletter, 1988-1990
- 4) Housestaff Advisor
- 5) Chair, Search Committee for Chief of Nephrology, 1991

D. UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER – HOUSTON

- 1) Member, Search Committee for Chief of Cardiology, 2003
- 2) Member, Scientific Advisory Committee, 2002-2004
- 3) Chair, Quarterly Pulmonary Service Meeting, 2003-2004
- 4) Member, Faculty Senate, 2003-2005
- 5) Member, Search Committee for Chief of Anesthesiology, 2004

E. UNIVERSITY OF HOUSTON

- 1) SEARCH COMMITTEE FOR BME SEARCH FOR CHAIR (2008)

LICENSURE:

Texas	F9201	Expiration Date: February 28, 2009
California	C41973	Expiration Date: October 31, 2009