

## **CURRICULUM VITAE**

**Updated Nov, 2006**

### **Alvin Fox Ph.D.**

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Born 4, April 1952,  
Birth Place: London, England  
US Citizen, 1996

Spouse - Karen Fox Ph.D.,  
Research Associate Prof. of Bacteriology  
& Executive Director, SC Junior Academy  
of Sciences  
Children: Amanda (22) & Nyssa (18)

## **EDUCATION**

B.Sc., 1973  
Ph.D., 1976

Biochemistry, University of Leeds, England.  
Immunology, University of Leeds, England and Medical Research  
Council Rheumatism Unit, Taplow, UK. Mentor: Dr. Leonard E. Glynn

## **EXPERIENCE**

1976 - 1978	Postdoctoral Fellow, Rheumatic Diseases Unit, University of Texas Health Sciences Center, Dallas, TX 75235. Mentor: Dr. Morris Ziff.
1978 – 1980	Postdoctoral Fellow, Department Microbiology & Immunology UNC School of Medicine, Chapel Hill, NC 27514. Mentor: Dr. John Schwab.
1980 – 1984	Assistant Professor, Dept. Microbiol. & Immunol., USC School of Medicine, Columbia, SC 29208.
1984 - 1991	Associate Professor, Dept. Microbiol. & Immunol., USC School of Medicine, Columbia, SC 29208.
1998 – 2002 2004	Director, Biomedical Sciences Ph.D. Program, USC School of Medicine Chair, Biological Countermeasures, SAFETY Act Implementation, Department of Homeland Security, Washington, DC
1991- present	Professor, Dept. Pathol. Microbiol. & Immunol, USC School of Medicine, Columbia, SC 29208.

## **FELLOWSHIPS**

Arthritis and Rheumatism Council Postdoctoral Fellowship, 1976-1977  
Arthritis Foundation Postdoctoral Fellowship, 1978-1981  
Charles E. Culpeper Foundation Fellowship, 1983-1984

## **HONORS**

Editor-in-Chief, Journal of Microbiological Methods (JMM), 1998-present  
Co-Editor-in-Chief, Molecular and Cellular Probes, 2005-present  
Editorial Board, J. Clinical Microbiology, 1998-present  
Councilor, SC Academy of Sciences, 2005-present  
Representative, USC faculty senate, 2005-2007  
Faculty opponent (external examiner), Ph.D. defense, L. Wady, Univ. Lund, Sweden, 2004  
Research Advancement Award, USC School of Medicine, 2004  
External examiner, University of Pune, India, 2002  
The USC Education Foundation Health Sciences Research Award (top researcher of year), 1999  
Research Advancement Award, USC School of Medicine, 1999  
Intellectual Property Award, USC, 1998  
Editor, JMM, 1996-1997  
Intellectual Property Award, USC, 1996  
The Basic Science Research Award, USC School of Medicine, (top researcher of year), 1995  
Faculty opponent (external examiner), Ph.D. defense, A. Sunesson, Univ. Umea, Sweden, 1995

## **SOCIETY MEMBERSHIPS**

American Society for Microbiology (ASM)  
American Society for Mass Spectrometry  
American Chemical Society  
SC Academy of Sciences  
SC Branch ASM

## FINANCIAL SUPPORT

### Recent Research Funding

- G. Stewart (P.I.) and A. Fox (co-P.I.) NIH. R21 AI059436. Function of the *Bacillus anthracis* spore carbohydrate. \$480,408 (direct + indirect costs) direct costs are split equally between the University of Missouri and USC. May 2004- May 2006. In no cost extension.
- K. Fox (P.I.) and A. Fox (co-I.). Department of Health and Environmental Control (DHEC). \$46,000 (direct + indirect costs). Anti-microbial susceptibility testing of pneumococci. Nov 2004 – Nov 2006. **RENEWAL PENDING**

### Current Training Funding

- G. Feigley (P.I.) and D. Richter (co-P.I.). Investigators: T. Chandler, A. Decho, A. Fox, K. Fox, J. Gibson, D. Murday, H. Pastides, A. Sorensen. USC Center for Public Health Preparedness. CDC. Seven million, Oct, 2002- Oct, 2009. **First 3 years approx \$30,000/year, current year \$8,000**
- A. Fox, representative to the Sloan Foundation. Increasing the number of under-represented minorities in the Biomedical Ph.D. Program, USC School of Medicine. 2002- present (ongoing indefinitely).
- B. Ely P.I. and R. Hunt, co-P.I. NIH. Post-baccalaureate research education program (PREP). \$1.5 million. 7/2004-7-2007. One of Co-I.s (PREP students: Clint Saunders 2005-2006; Courtney Callahan 2006-2008), A. Fox mentor).
- B. Ely, P.I., and R. Hunt, co-P.I.; A. Fox, one of the Co-I.s. NIH. South Carolina Initiative for Minority Student Development. \$2 million, Aug 2006- Aug 2011.

### Pending Funding

- A. Fox. Discovery of protein biomarkers for rapid identification and biodetection. White paper accepted, full proposal submitted to ARO/DTRA.
- K. Fox (P.I.) and A. Fox (co-I.). Department of Health and Environmental Control (DHEC). \$23,000 (direct + indirect costs). Anti-microbial susceptibility testing of pneumococci. Jan 2006– Jan 2007. Renewal pending
- A. Fox (P.I.), G. Stewart co-P.I. and K. Fox (co-I.). NIH. Plasmid and chromosomal factors in anthrax-related disease. \$400, 000. Submitted Oct 1 2006.
- G. Stewart (P.I.), A. Fox co-P.I. and K. Fox (co-I.). NIH. The role of collagen-like proteins in the biology of *Bacillus anthracis*. Approx 3 million. Submitted Oct 1 2006.
- A. Fox (P.I.). K. Fox, G. Feigley, J. Rose, H. Valafar. NSF. Occupation effect on metaproteomics. Approx \$500,000. Submitted Oct 9 2006.
- A. Castanha, A. Fox (mentor). The Molecular and Cellular Probes Proteomics Fellowship. Elsevier Foundation.
- A. Fox (P.I.). K. Fox, G. Feigley, J. Rose, H. Valafar and M. Vestal. Protein biomarker sequenced by tandem mass spectrometry, for universal profiling of bacterial species in airborne dust without culture. Sloan Foundation. Pre-proposal submitted.
- G. Feigely and A. Fox. SC Research Authority/Advanced Technology Institute. Pre-proposal submitted. Assaying species-specific protein markers in dust without culture

## Past Funding

L. Waller (A. Fox, Ph.D. Mentor). Minority supplement to NIH R21 AI059436. 4/2005-4/2006. \$27,000 (direct + indirect).

A. Fox USC Centenary Fund. 8/2004- 8/2006. \$54,000 salary support of post-doctoral fellow, M. Stump. Supplement (start-up funds), 7/2005-7/2006. \$18,000 + \$15,000 match.

A. Fox. co-P.I., D. Wunschel, P.I., PNNL. DHS subcontract: Application of carbohydrate analysis by GC-MS to microbial forensics. \$75,000. 1/2005-1/2006.

A. Fox and K. Fox (co-P.I.s). Department of Health and Environmental Control (DHEC). \$23,000 (direct + indirect costs). Anti-microbial susceptibility testing of pneumococci. 11/1/2004 – 11/1/2005.

A. Fox, P.I. SCUREF, WSCRC SC0178. Contract from Savannah River National Laboratory (SRNL). Proteomics and advanced bioanalytical instrumentation for microbial characterization. \$20,000. 4/30/2004-4/30/2005.

W. Muhammad (M.D./Ph.D. student), A. Fox, (mentor). NIH minority pre-doctoral fellowship program. 8/2000-8/2005.

A. Fox and K. Fox (co-P.I.s). Antex Biologics Inc. \$20,000. Utilizing the alditol acetate procedure to evaluate the peptidoglycan content of by quantitation of derivatized muramic acid by GC-MS-MS analysis. 2004

A. Fox, P.I., K. Fox, (co-P.I.s), G. Feigley and L Larsson. Source of chemical markers for bacteria in indoor air. Research Management Group. Total, \$859,627 (total direct and indirect costs). 4/2001-10/2004.

A. Fox. Department of Homeland Security. IPA. Feb-Apr. 2004. \$67,000.

A. Fox P.I. and M. Myrick (co-P.I.) School of Medicine/School of Mathematics and Science Collaborative Incentive Award. \$50,000. Spectroscopic detection of anthrax. 10/2002-/10/2003.

R. Price and A. Fox. Acquisition of an ion trap tandem mass spectrometer for proteomics \$25,000. Marinescu Award. 2003.

K. Fox and G. Feigely (co-P.I.s) Real time monitoring and control of anthrax levels A. Fox (P.I.), School of Medicine/School of Public Health Collaborative Incentive Award. \$40,000. 4/2002-/4/2003.

M. Kozar, A. Fox, (mentor). DOD pre-doctoral fellowship, Aug 1997- Nov 2001.

A. Fox (P.I.), K. Fox (co-P.I.) K. Creek, L. Pirisi-Creek and R. Smith (Co-I.s). PCR-MS/MS fingerprints for sequence polymorphism. NIH Human Genome Project. \$202,643 (direct costs) + \$101,986 (indirect costs). 9/1998- 9/2001.

A. Fox, P.I. and K. Fox, Co.-P.I. Real time biodetection using PCR-MS. \$309,000 (direct costs) + \$141,000 (indirect costs). July 1 1997 - July 1 2000. COMBAT READINESS. Office of Naval Research (R. Sawyer P.I). Total funds 9.3 million dollars with 30 million dollars in matching funds provided by USC.

A. Fox, P.I. and K. Fox, Co-P.I. Chemotaxonomic differentiation of bacteria using sugar/nucleotide markers identified by ESI MS-MS. Army Research Office (ARO). \$291,442 (direct costs) and \$132,606 (indirect costs). May 1995- May 1998.

S. Liu, P.I., A. Fox and G. Feigley. Co-P.Is. Investigation of acute human health effects resulting from airborne peptidoglycan exposure. Center for Indoor Air Research (CIAR). \$130,140 (direct costs) and \$32,535 (indirect costs). Dec 1996-Dec 1997. 4 month extension Jan-Apr 1998 \$43,382 (direct costs) + \$10,846 (indirect costs).

A. Fox and G. Stewart (Co-P.I.s). Role of staphylococcal teichuronic acid in vivo. US Department of Agriculture. \$68,000 (direct costs) + \$12,000 (indirect costs). Sep 1 1994- Sep 1 1997

L. Lowe and A. Fox (Co-P.I.s). Rapid genetic sequence analysis using mass spectrometry Center for Cancer Treatment and Research, Richland Memorial Hospital. \$25,000. Nov 1995- Nov 1996.

A. Fox, P.I. Training program in analytical microbiology and molecular taxonomy. Army Research Office. \$38,924 (direct costs) + \$17,402 (indirect costs). Aug 1993-Aug 1996

A. Fox, P.I. and K. Fox, Co-P.I. Identification of nucleic acid sequences and chemical markers for taxonomic characterization of bacteria. Army Research Office, \$120,000 (direct costs) + \$60,000 (indirect costs) July 1992-July 1995. One year funded extension April 1995 - April 1996. \$34,014 (direct costs) + \$15,986 (indirect costs).

A. Fox P.I., L. Larsson, Co-P.I. Chemical markers for bacterial components in indoor air. Center for Indoor Air Research. \$370,325 (direct costs) + \$92,559 (indirect costs) Jan 1 1992 - Jan 1 1995. Funded extension \$180,277 (indirect costs) + \$20,044 (indirect costs). Jan 1 1995- Jan 1996.

A. Fox, P.I. Training program in analytical microbiology and molecular taxonomy. Army Research Office. \$38,924 (direct costs) + \$17,402 (indirect costs) July 1992-July 1995.

A. Fox, P.I. Acquisition of an HPLC for use in conjunction with electrospray MS-MS. National Science Foundation (\$35,000 + \$15,000 matching funds, USC). June 1994-June 1995.

A. Fox, P.I. Acquisition of a modern mass spectrometer for biodetection research. Army Research Office. \$500,000. Sep 1993-Feb 1994

K. Fox (P.I.), A. Fox (co-I). Biochemistry of IgG processing by iridociliary cells. NIH fellowship. \$26,000 (direct) + \$3,000 (indirect) 1/92-1/93

A. Fox and S.L. Morgan (co-P.I.s). Identification of chemical markers for bacteria by pyrolysis GC-MS. Army Research Office. May 1991-May 1992. \$67,000 direct costs + \$33,000 till 1992.

A. Fox and S.L. Morgan (co-P.I.s). Identification of chemical markers for bacteria by pyrolysis GC-MS. Army Research Office. May 1988 - May 1991. \$240,000 direct costs. +\$120,000 indirect costs.

A. Fox, Co-I. (J. Turner P.I.). Carbohydrate profiling and 16s rRNA sequencing for group C streptococci. USC Research and Productive Scholarship, \$2,700, 5/1/91- 5/1/92.

A. Fox (P.I.) K. Fox (Co-I). Amplification and sequencing of borrelial ribosomal rna genes in lyme arthritis. Research and Productive Scholarship, \$2,700, 5/90- 11/91.

A. Fox, P.I. Gas chromatography-mass spectrometry studies on the degradation of bacterial debris. National Science Foundation (International Travel Award), \$13,050, 8/1/86-7/31/91.

J. Baynes, P.I. (with A. Fox and six other principal user groups). Purchase of a liquid chromatograph-mass spectrometer. NIH, \$256,090. 1990

Fox P.I. Inflammatory uveitis: role of bacterial debris. NIH \$160,000 direct costs

+\$80,000 indirect costs. Sept 30 1986-Sept 1 1989.

A. Fox and S.L. Morgan (co-P.I.s). Trace detection and characterization of microorganisms by capillary GC-MS, DOD instrumentation, \$97,000, (\$104,000 matching funds USC) June 1986.

A. Fox P.I.. Interaction of streptococcal cell walls and heart cells. American Heart Association, \$90,000, 8/85-8/88.

A. Fox and S.L. Morgan (co-P.I.s). Chemotaxonomic characterization of microorganisms by capillary gas chromatography-mass spectrometry. Army Research Office, \$173,908, 2/85-2/88.

C-H Yang (P.I) A. Fox (co.-I.). Immunohistochemical studies on inflammatory diseases elicited by systemic administration of streptococcal peptidoglycan-polysaccharide complexes. USC Biomedical Research Support Grant, \$3,500, 5/85-4/86.

A. Fox. Instrument donation (HP 9816 computer, HPLC equipment, centrifuge). Dupont Co., \$40,000, 1985.

A. Brown, P.I. and A. Fox (co-P.I.) Products of virulent legionella which promote survival in macrophages. Veterans Administration Research Service, \$19,000, Oct 1984.

A. Fox, P.I. Equipment grant for purchase of a gas chromatograph-mass spectrometer. National Science Foundation, \$41,000 (additional USC match \$11,000), 1984.

A. Fox, Fellowship. Charles E. Culpeper Foundation, \$25,000, 07/01/83-06/30/84.

A. Fox, P.I. Characterization of affinity purified antibody against group a streptococci. Meridian Diagnostics, \$3,000, 03/01/83-07/31/84.

A. Fox, P.I. Adhesion of streptococcal cell walls to endothelial cells. American Heart Association, \$12,000, 07/83-06/84.

A. Fox, P.I. Inflammatory uveitis: role of bacterial debris. National Institute of Health, \$102,256, Direct Costs + \$37,500 indirect costs, 04/01/83-03/31/86.

A. Fox, P.I. Role of immune complexes in experimental uveitis. USC Biomedical Research Support Grant, \$3,700, 04/01/82-03/31/83.

A. Fox, P.I. Inflammatory uveitis: role of bacterial debris. National Society to Prevent Blindness, \$5,000, 06/01/82-06/01/83.

A. Fox Co-I. with A. Brown and S.L. Morgan. Application of GC-MS to the taxonomic study of the *Legionellaceae*. Veterans Administration, \$8,500, 10/82-10/83.

A. Fox and S.L. Morgan (co-P.Is.). Chemotaxonomic characterization of legionella by GC-MS. USC Biomedical Research Support Grant, \$4,000, 01/01/82-12/31/82.

A. Fox, P.I. Investigation of the component of *Corynebacterium parvum* responsible for tumoricidal activity. American Cancer Society Institutional Award, \$4,000, 12/80-12/81.

A. Fox, P.I. Structure/function relationship of peptidoglycan and lipopolysaccharide. USC Research & Productive Scholarship Award, \$3,000, 12/80-12/81.

A. Fox, Biochemical detection of bacterial cell wall fragments in tissues. Arthritis Foundation, \$15,000, 06/80-06/81

## REFEREED PUBLICATIONS

1. Fox, A. and Glynn L.E. Persistence of antigen in non-arthritic joints. *Ann. Rheum. Dis.* 34:431-437. 1975.
2. Doble, A., Fox A., Glynn L.E. and Kingston D. The non-passage of mycobacteria from Freund's complete adjuvant granuloma depots to arthritic joints. *Brit. J. Exp. Path.* 56:537-543. 1975.
3. Fox A. and Glynn L.E. Is persisting antigen responsible for the chronicity of experimental allergic arthritis? *Ann. Rheum. Dis.* 36:34-48. 1977.
4. Hirschowitz D., Fox A. and Glynn L.E. Effect of excising Freund's adjuvant granuloma and subsequent development of experimental allergic arthritis. *Ann. Rheum. Dis.* 36:381-382. 1977.
5. Fox A., Schwab J.H. and Cochran T. Muramic acid detection in mammalian tissues by gas-liquid chromatography-mass spectrometry. *Infect. Immun.* 29:526-531. 1980.
6. Hudson J.R., Morgan S.L. and Fox A. Quantitative pyrolysis GC-MS studies of bacterial cell walls. *Analyt. Biochem.* 120:59-65. 1982.
7. Fox A., Brown R.R., Anderle S.K., Chetty C., Cromartie W.J., Gooder H. and Schwab J.H. Arthropathic properties related to molecular weight of peptidoglycan polysaccharide polymers of streptococcal cell walls. *Infect. Immun.* 35:1003-1010. 1982.
8. Hudson J.R., Morgan S.L. and Fox A. High-resolution glass capillary columns for the separation of alditol acetates of neutral and amino sugars. *J. High Res. Chromatogr. & Chromatogr. Commun.* 5:285-290. 1982.
9. Eisenberg R., Fox A., Greenblatt J.J., Anderle S.K., Cromartie W.K. and Schwab J.H. Measurement of bacterial cell walls in tissues by solid-phase radioimmunoassay: correlation of distribution and persistence with experimental arthritis in rats. *Infect. Immun.* 38:127-135. 1982.
10. Fox A., Hudson J.R., Morgan S.L., Zhu Z-T. and Lau P.Y. Capillary gas chromatographic analysis of alditol acetates of neutral and amino sugars in bacterial cell walls. *J. Chromatogr.* 256:429-438. 1983.
11. Fox A., Lau P., Morgan S.L., Brown A., Zhu Z-T. and Lema M. Capillary gas chromatographic analysis of carbohydrates of *Legionella pneumophila* and other members of the *Legionellaceae*. *J. Clin. Micro.* 19:326-332. 1984.
12. Walla M., Lau P.Y., Morgan S.L., Fox A., and Brown A. Capillary gas chromatography-mass spectrometry of carbohydrate components of *Legionella* and other bacteria. *J. Chromatogr.* 288:399-413. 1984.
13. Fox A., Hammer M., Lill P., Burch T. and Burrish G. Experimental uveitis elicited by peptidoglycan-polysaccharide complexes, muramyl dipeptide and lipopolysaccharide. *Arch. Ophthalmol.* 102:1063-1067. 1984.
14. Collawn J.F., Lau P.Y., Morgan S.L., Fox A. and Fish W.W. A chemical and physical comparison of ferritin subunit species fractionated by HPLC. *Biochem. Biophys. Acta.* 233:260-266. 1984.
15. Eudy L., Fox A. and Morgan S.L. Gas chromatography-mass spectrometric determination of muramic acid content and pyrolysis profiles for a group of gram-positive and gram-negative bacteria. *Analyst.* 110:381-385. 1985.

16. Eudy L., Hudson J., Walla M., Morgan S.L. and Fox, A. Gas chromatography-mass spectrometry studies on the occurrence of acetamide, propionamide, and furfuryl alcohol in pyrolysates of bacteria, bacterial fractions, and model compounds. *J. Analyt. Appl. Pyrol.* 7:231-247. 1985.
17. Fox A., Schallinger L. and Kirkland J. Sedimentation field flow fractionation of bacterial cell wall fragments. *J. Microbiol. Meth.* 3:273-281. 1985.
18. Harrison J. and Fox A. Degradation of muramyl dipeptide by mammalian serum. *Infect. Immun.* 50: 320-321. 1985.
19. Whiton R.S., Lau P., Morgan S.L., Gilbert J. and Fox A. Modifications in the alditol acetate procedure for analysis of muramic acid and other neutral and amino sugars by gas chromatography-mass spectrometry with selected ion monitoring. *J. Chromatogr.* 347:109-120. 1985.
20. Wells A., Pararajasegaram G., Baldwin M., Yang C-H., Hammer M. and Fox A. Uveitis and polyarthritis induced by systemic injection of streptococcal cell walls. *Invest. Ophthalmol. Vis. Sci.*, 27:921-925. 1986.
21. Gilbert J., Fox A., Whiton R. and Morgan, S.L. Rhamnose and muramic acid: chemical markers for bacterial cell walls in mammalian tissues. *J. Microbiol. Meth.* 5:271-282. 1986.
22. Smith C.S., Morgan S.L., Parks C.D., Fox, A. and Pritchard, D.G. Chemical marker for differentiation of group A and group B streptococci by pyrolysis gas chromatography-mass spectrometry. *Analyt. Chem.* 59:1410-1413. 1987.
23. Gilbert J., Wells A., Hoe M.H. and Fox, A. Sedimentation field flow fractionation and gas chromatography mass spectrometry for characterization of streptococcal cell wall particles. *J. Chromatogr.* 387:428-433. 1987.
24. Gilbert J. and Fox A. Elimination of group A streptococcal cell walls from mammalian tissues. *Infect. Immun.* 55:1526-1528. 1987.
25. Gilbert J., Fox A. and Morgan S.L. Carbohydrate profiling of bacteria by capillary gas chromatography-mass spectrometry. *Eur. J. Clin. Micro.* 6:715-723. 1987.
26. Gilbert J., Harrison J., Fox A. and Parks C. Analysis of the amino acid and sugar composition of streptococcal cell walls by gas chromatography-mass spectrometry. *J. Chromatogr.* 441:323-333. 1988.
27. Sonesson S., Larsson L., Fox A. and Odham G. Determination of environmental levels of peptidoglycan and lipopolysaccharide using gas chromatography-mass spectrometry utilizing unique bacterial amino acids and hydroxy fatty acids as marker compounds. *J. Chromatogr. Biomed. Appli.* 431:1-15. 1988.
28. Wells A., Hightower J., Parks C., Kufoy E. and Fox A. Systemic injection of group A streptococcal peptidoglycan-polysaccharide complexes elicits persistent neutrophilia and monocytosis associated with polyarthritis in rats. *Infect. Immun.* 57:351-358. 1989.
29. Ueda K., Morgan S.L., Fox A., Gilbert J., Sonesson A., Larsson L. and Odham G. D-alanine as a chemical marker for determination of streptococcal cell wall levels in mammalian tissues by gas chromatography negative ion/ chemical ionization mass spectrometry. *Analyt. Chem.* 61: 265-270. 1989.

30. Christensson B., Gilbert J., Fox A. and Morgan, S.L. Mass spectrometric quantitation of muramic acid, a bacterial cell wall component in septic synovial fluids. *Arth. Rheum.* 32:1268-1272. 1989.
31. Kufof E., Parks C., Wells A., Pakalnis V. and Fox A. Keratoconjunctivitis sicca with secondary uveitis induced by systemic injection of xylazine/ketamine in the rat. *Exp. Eye. Res.* 49:861-871. 1989.
32. Fox A., Rogers J.C., Gilbert J., Morgan S.L., Knight S. and Wyrick P. Muramic acid is not detectable in *Chlamydia psittaci* or *Chlamydia trachomatis* by gas chromatography-mass spectrometry. *Infect. Immun.* 58:835-837. 1990.
33. Fox A. Rogers J.C., Fox K.F., Schnitzer G., Morgan S.L., Brown A. and Aono A. Chemotaxonomic differentiation of legionellae by detection and characterization of aminodideoxyhexoses and other unique sugars using gas chromatography-mass spectrometry. *J. Clin. Microbiol.* 28: 546-552. 1990.
34. Kufof E., Fox K., Fox A., Pakalnis V. and Parks C. Modulation of the blood-aqueous barrier by Gram positive and Gram negative bacterial cell wall components in the rat and rabbit. *Exp. Eye Res.* 50:189-195. 1990.
35. Smith C., Morgan S. L., Parks C. and Fox A. Discrimination and clustering of streptococci by pyrolysis gas chromatography/mass spectrometry and multivariate data analysis. *J. Analyt. and Appl. Pyrol.* 18:97-115. 1990.
36. Fox A. and Fox K. Rapid elimination of synthetic adjuvant peptide after systemic administration and the absence of detectable natural muramyl dipeptides in the circulation at current analytical limits. *Infect. Immun.* 59: 1202-1205. 1991.
37. Fox K., Brown A., Fox A. and Schnitzer G. *Tatlockia*, a genetically and chemically distinct group of bacteria. Proposal to transfer *Legionella maceachernii* (Brenner, et al.) to the genus *Tatlockia*, as *Tatlockia maceachernii* comb nov. *System. Appl. Microbiol.* 14:52-56. 1991.
38. Watt B., Morgan S.L. and Fox A. 2-butenoic acid, a chemical marker for poly- $\beta$  hydroxybutyrate identified by pyrolysis gas chromatography-mass spectrometry in analysis of whole cells. *J. Analyt. and Appl. Pyrol.* 20:237-250. 1991.
39. Xie X., Fox A. and Brown A. Inhibitory effects of *Legionella pneumophila* sonicates on intracellular bacterial killing function of murine peritoneal cells and cytotoxic effects of *Legionella pneumophila* sonicates and filtrates on CHO cells. *Chinese J. Microbiol. Immunol.* 11:25-28. 1991
40. Lawrence A., Fox K., Fox A., Kosnosky W. and Pakalnis V. Polypeptide profiles of normal and inflamed rabbit aqueous humor: identification of catabolic products of IgG in the normal eye. *Exp. Eye Res.* 54:501-507. 1992.
41. Elmroth I, Fox. A. and Larsson L. Determination of bacterial muramic acid by gas chromatography-mass spectrometry with negative ion detection. *J. Chromatogr.* 628:93-102. 1993.
42. Fox K., Turner J. and Fox A. The role of beta hemolytic streptococci in pharyngitis. I Incidence and biochemical characteristics of *S. equisimilis* and *S. anginosus*. *J. Clin Microbiol.* 31: 804-807. 1993.

43. Turner T., Fox A., Fox K., Addy C, Garrison C., Heron H., Brunson C. and Betcher G. The role of beta hemolytic streptococci in pharyngitis. II. Epidemiologic study of clinical features associated with group C streptococci. *J. Clin Microbiol.* 31: 808-811. 1993.
44. Fox A., Black G., Fox K. and Rostovtseva S. Determination of carbohydrate profiles of *Bacillus anthracis* and *Bacillus cereus* including identification of O-methyl methylpentoses using gas chromatography-mass spectrometry. *J. Clin Microbiol.* 31: 887-894. 1993 .
45. Li T., Fox K., Fox A. and Pakalnis V. Recurrent uveitis elicited by multiple systemic injections of muramyl dipeptide. *Exp. Eye Res.* 57: 79-87. 1993.
46. Elmroth I., Fox A., Holst O. and Larsson L. Detection of bacterial contaminants in cultures of eucaryotic cells by gas chromatography-mass spectrometry. *Biotech. & Engineer* 37:421-429. 1993.
47. Fox A., Rosario R. and L. Larsson. Monitoring of bacterial carbohydrate and hydroxy fatty acid makers in dust from air conditioners using gas chromatography-mass spectrometry. *Appl. & Environm. Microbiol.* 59: 4354-4360. 1993.
48. Hunt R., Fox A., Pakalnis V., Sigel M., Kosnosky W., Choudhury P. and E. Black. Cytokines cause cultured retinal pigment epithelial cells to secrete metalloproteinases and to contract collagen gels. *Investig. Ophthalmol. & Vis. Sci.* 34: 3179-3186. 1993.
49. Higgins M., Morgan S.L. and Fox A. Differentiation of alditol hexaacetates of the hexoses by electron impact mass spectrometry. *Analyt. Chem.* 66: 2656-2658. 1994.
50. Black, G., Fox, A., Fox, K., Smith, P. and Snyder, P. Electrospray tandem mass spectrometry for analysis of muramic acid in whole bacterial cell hydrolysates. *Analyt. Chem.* 23: 4171-4176. 1994.
51. Kosnosky W., Li T. H, Fox A. and Hunt R. Interleukin 1 $\beta$  changes the expression of metalloproteinases in the aqueous humor and induces membrane formation in eyes containing pre-retinal holes. *Inv. Investig. Ophthalmol. & Vis. Sci.* 35: 4260-4267. 1994.
52. Fox, A. and Rosario R. Quantitation of muramic acid, a marker for bacterial peptidoglycan, in dust collected from hospital and home air-conditioning filters using gas chromatography-mass spectrometry. *Indoor Air* 4: 239-247. 1994.
53. Wunschel, D., Fox, K., Black, G. and Fox, A. Discrimination among the *B. cereus* group, in comparison to *B. subtilis*, by structural carbohydrate profiles and ribosomal RNA spacer region PCR. *System. Appl. Microbiol.* 17: 625-635. 1994.
54. Fox, A., Wright, L. and Fox, K. Gas chromatography tandem mass spectrometry for trace detection of muramic acid, a peptidoglycan marker in organic dust. *J. Microbiol. Meth.* 22:11-26. 1995.
55. Wunschel D., Fox K., Fox A., Bruce J., Muddiman D. and Smith R. Analysis of double stranded polymerase chain amplification products from the *B.cereus* group by electrospray ionization fourier transform ion cyclotron resonance mass spectrometry. *Rapid Commun. Mass Spectrom.* 10: 29-35. 1996.
56. Fox A., Fox K., Christensson B., Kraemer M. and Harrelson D. Absolute identification of muramic acid at trace levels in human septic fluids *in vivo* and absence in aseptic fluids. *Infect. Immun.* 64: 3911-3955. 1996.

57. Muddiman D.C., Wunschel D., Liu C., Pasa-Tolic L. Fox K., Fox A., Anderson G.A. and Smith R. Characterization of PCR products from bacilli using electrospray ionization FTICR mass spectrometry. *Analyt Chem.* 68:3705-3712. 1996.
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62. Fox K., Wunschel D., Fox A. and Stewart G. Complementarity of GC-MS and LC-MS analyses for determination of carbohydrate profiles of vegetative cells and spores of bacilli. *J. Microbiol. Meth.* 33: 1-12. 1998
63. Fox K., Stewart G. and Fox A. Synthesis of microcapsule by *Staphylococcus aureus* is not responsive to environmental phosphate concentrations. *Infect. Immun.* 66: 4004-4007. 1998
64. Krahmer M., Fox K., Fox A., Saraf A. and Larsson L. Total and viable airborne bacterial load in two different agricultural environments using gas chromatography-tandem mass spectrometry and culture: a prototype study. *Amer. Indust. Hyg. J.* 59: 524-531. 1998.
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66. Fox K., Fox A., Nagpal M., Steinberg P. and Heroux K. Identification of *Brucella* by ribosomal spacer region PCR and differentiation of *B. canis* from other *Brucella* pathogenic for man by carbohydrate profiles. *J. Clin. Microbiol.* 36: 3217-3222. 1998.
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77. Kozar M., Laman D., Fox A. Muramic acid is not generally present in human spleen as determined by gas chromatography-tandem mass spectrometry. *Inf. & Immun.*70:741-748. 2002
78. Shaver Y. J., Nagapl M. L., Rudner R., Nakamura L., Fox K. and A. Fox. Restriction fragment length polymorphism and intergenic spacer sequences for cataloging of *Bacillus subtilis* sub-groups. *J. Microbiol Meth.* 50: 215-223. 2002.
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83. Muhammad W.T, Tabb D.L., Fox, K.F., Fox, A. Automated discrimination of polymerase chain reaction products with closely related sequences by software-based detection of characteristic peaks in product ion spectra. *Rapid Commun. Mass Spectrom.* 17:1-8. 2003.

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90. Castanha E., Fox K.F., Fox A. Rapid discrimination of *Bacillus anthracis* from other members of the *B. cereus* group by mass and sequence of intact small acid soluble proteins (SASPs) using mass spectrometry. *J. Microbiol. Meth.* 67:230-240. 2006.
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## BOOK CHAPTERS AND INVITED REVIEWS

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2. Fox A. and Morgan S.L. Chemotaxonomic characterization of microorganisms and chemical detection of infectious diseases. In: Rapid Detection and Identification of Microorganisms. W.H. Nelson (Ed.). Verlag Chemi, Deerfield Beach, Florida. 135-162. 1985.
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5. Fox A., Christensson B., Gilbert J. and Morgan S.L. Analysis of carbohydrates for profiling and detection of microorganisms. In: Proceedings of the Fifth International Symposium on Rapid Methods and Automation in Microbiology and Immunology. Tilton R., Balows A., and Turano A. (Eds.). Brixia Press academic, Brescia, Italy. pp 379-389. 1989.
6. Morgan S.L., Gilbert J. and Fox A. Profiling, structural characterization and detection of chemical markers for bacteria by gas chromatography-mass spectrometry. J. Micro. Meth. 9: 57-69. 1989.
7. Fox. A. Role of bacterial debris in inflammatory diseases of the joint and eye. Acta. Pathol. Microbiol. et Immunol. Scand. 98:957-68. 1990.
8. Fox A., Gilbert J. and Morgan S.L. Analytical Microbiology: a perspective. In: Analytical Microbiology Methods: chromatography and mass spectrometry. Fox A., Larsson L., Morgan S.L., and Odham G. (Eds.). Plenum, NY, NY. p.p. 1-17. 1990.
9. Ueda K., Morgan S.L. and Fox A. Gas chromatography and mass spectrometry for analytical microbiology. In: Analytical Microbiology Methods: chromatography and mass spectrometry. Fox A., Larsson L., Morgan S.L., and Odham G. (Eds.). Plenum, NY, NY. p.p. 19-52. 1990.
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11. Fox A., Ueda K. and Morgan S.L. Analysis of bacterial amino acids. In: Analytical Microbiology Methods: chromatography and mass spectrometry. Fox A., Larsson L., Morgan S.L., and Odham G. (Eds.). Plenum, NY, NY. p.p. 89-99. 1990.

12. Morgan S.L., Watt B., Ueda K. and Fox A. Pyrolysis GC/MS profiling of chemical markers for microorganisms. In: *Analytical Microbiology Methods: chromatography and mass spectrometry*. Fox A., Larsson L., Morgan S.L., and Odham G. (Eds.). Plenum, NY, NY. p.p. 179-200. 1990.
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15. Fox A. and Black G. Identification and detection of bacteria after derivatization and gas chromatography-mass spectrometry. In: *Mass spectrometry for characterization of bacteria*. Fenselau, C. (Ed). American Chemical Society. p.p. 107-131. 1994.
16. Black G. and Fox A. Liquid chromatography-mass spectrometry with electrospray tandem mass spectrometry: profiling carbohydrates in whole bacterial cell hydrolysates. *Biochemical and Biotechnological applications of electrospray ionization mass spectrometry*. P. Snyder (Ed.) American Chemical Society. p.p. 81-105. 1996.
17. Fox A. Monitoring muramic acid, a chemical marker for peptidoglycan, using gas chromatography-tandem mass spectrometry. In: *Field guide for the determination of biological contaminants in environmental samples*. Dillon, H., Heinsohn P. and Miller D. (Eds.) Amer. Indust. Hyg. Assoc. p.p. 139-148. 1996.
18. Black G. and Fox, A. Recent progress in analysis of sugar monomers from complex matrices using chromatography (GC/LC) in conjunction with mass spectrometry (MS, MS-MS) or stand-alone MS-MS. *J. Chromatogr.* 720: 51-60. 1996.
19. Fox A. Invited Review. Carbohydrate profiling of bacteria by gas chromatography-mass spectrometry and their trace detection in complex matrices by gas chromatography-tandem mass spectrometry. *J. Chromatography*, 843: 287-300. 1999.
20. Fox A. Profiling bacterial cellular carbohydrates and trace detection in complex environmental and clinical matrices. In: *Glycomicrobiology*. Ed. Doyle R. Plenum Press. 2000.
21. Fox A., Kozar M. and Steinberg P. Carbohydrates/Gas chromatography and gas chromatography-mass spectrometry. In: *Encyclopedia of Separation Science*. Ed in Chief Ian Wilson, Co-Editors Mike Cooke and Colin Poole, Academic Press Ltd. 2000.
22. Fox A. A perspective on the fourth international symposium on the interface between analytical chemistry and microbiology. *J. Microbiol. Meth.* 95-100. 2002.
23. Fox A., corresponding author, and 17 others. Report of the Bioterrorism workshop, sponsored by the Army Research Office, Duke University, April 2002. *J. Microbiol. Meth.* 247-254. 2002
24. Fox A. Chemical markers for bacteria in extra-terrestrial samples. *The Anatomical Record*, special issue on Astrobiology 268: 180-185. 2002.
25. Fox A. A current perspective on analysis of sugar monomers using GC-MS and GC-MS/MS. In: *Carbohydrate analysis by modern chromatography and electrophoresis*. Ed. Z. El Rassi. Elsevier, Amsterdam, Holland. 2002.

26. Walters, J. Fox K.F and Fox A. Mass spectrometry and tandem mass spectrometry, alone or after liquid chromatography, for analysis of polymerase chain reaction products in the detection of genomic variants. *J. Chromatogr.* 782: 57-66. 2002.
27. Fox A., Stewart G.C, Waller L. N., K. F. Fox, Harley W. M. and Price, R.L. Carbohydrates and glycoproteins of *Bacillus anthracis* and related bacteria. *J. Microbiol. Meth.* 54: 143-152. 2003.
28. Fox A., Fox K.F., Cashanha E. and Muhammad T. Mass spectrometry: polymerase chain reaction products. *Encyclopedia of Analytical Sciences*, Elsevier, Holland. 2004.
29. Fox, A 21<sup>st</sup> century challenge to spectroscopists. *Optics and Photonics News*. May. 26-29. 2005
30. Stump M., Black G., Fox A., Fox K.F., Turrick C. and Matthews M. Identification of marker proteins for *Bacillus anthracis* using MALDI TOF MS and ion trap MS-MS after direct extraction or electrophoretic separation. *J. Separation Science.* 28: 1642-1647, 2005.
31. Fox A. Mass spectrometry: identification and biodetection, lessons learned and future developments. Wilkins C.L., Lay J.O., Winefordner, J.D. (Eds.) *Identification of microorganisms by mass spectrometry.* John Wiley and sons, Hoboken, NJ. 2005.
32. Fox A. Invited review. Mass spectrometry for species or strain identification (after culture) or directly (without culture): past, present and future. *J. Clin. Microbiol.* 44: 2677–2680. 2006.
33. Fox A., Quantitation of markers for Gram negative and Gram positive endotoxins in the work environment and as contaminants in pharmaceutical products using gas chromatography-tandem mass spectrometry: “Pharmaceutical Manufacturing Handbook”, Ed. Gad S. C. Plenum Press (in press) 2006

**MISCELLANEOUS (INCLUDES BOOK REVIEWS, SCIENTIFIC NEWS REPORTS AND NON-PEER REVIEWED PROCEEDINGS).**

1. Fox A., and Sigel M.M. Book Review of "Immune Complexes and Experimental Medicine" by Williams R.C. Harvard University Press, 1980. ASM News 47:184. 1981.
2. Morgan S.L., and Fox, A. Chemotaxonomic characterization of microorganisms and chemical detection of infectious diseases by GC, pyrolysis GC-MS and solid-phase RIA. In ARO Biodetection Workshop (A workshop-symposium sponsored by the US Army Research Office, Research Triangle Park, NC, July 1982). North Carolina State University, 1982.
3. Fox, A. GC/MS Characterization of microorganisms, Proceedings of the CRDC Workshop on Mass Spectrometric Detection of Biological Materials, (18-20 November 1985), 73-93. 1986.
4. Warner M. Associate Editor, Analytical Chemistry editorial review (of research by A. Fox and S. L. Morgan). Identification of microorganisms by GC/MS. Anal. Chem. 58, 1310A-1316A, 1986.
5. Fox A., Gilbert J. and Morgan, S. L. Applications of derivatization GC-MS in the trace detection of chemical markers for microorganisms. Proceedings of the 1986 Army Chemical Research, Development, and Engineering Center Conference on Chemical Defense Research: 735-743. 1987.
6. Morgan S.L., Smith C.S., Fox A., and Gilbert J. Microorganism differentiation by analytical pyrolysis GC-MS with computer- assisted pattern recognition techniques. Proceedings of the 1986 Army Chemical Research, Development, and Engineering Center Conference on Chemical Defense Research, 745-750. 1987.
7. Levy G. and Fox A. Sedimentation field flow fractionation. Biotechn. Lab. 6:14-21, 1988.
8. Morgan S.L., and Fox A. Identification of chemical markers for microorganisms by analytical pyrolysis gas chromatography-mass spectrometry. Proceedings of the Fifth Biodetection-Biotechnology Workshop (April 1988). A workshop sponsored by the US Army Research Office.
9. Fox A., and Morgan S.L. Application of Derivatization GC-MS in the trace detection of chemical markers for microorganisms. Proceedings of the Fifth Biodetection Biotechnology Workshop (April 1988). A workshop sponsored by the US Army Research Office.
10. Morgan S.L., and Fox A. Chromatography problem solving and trouble shooting - Question and Answer. J. Chrom. Science 27:512. 1989.
11. Morgan S.L., Fox A, Watt B., and Fox K. Chemical markers for the differentiation and identification of microorganisms including *Bacillus anthracis* by pyrolysis gas chromatography-mass spectrometry. Proceedings of the 1990 Army Chemical Research, Development, and Engineering Center Conference on Chemical Defense Research.
12. Fox A. Biodetection of bacteria by pyrolysis and mass spectrometry. Proceedings of the 1991 Army Chemical Research, Development, and Engineering Center Conference on Chemical Defense Research.

13. Black G., Rostovtseva, S., Rosario R., Fox K. and Fox A. Muramic acid and other chemical markers for identification and detection of bacteria. Proceedings of the 1992 Army Chemical Research, Development, and Engineering Center Conference on Chemical Defense Research.
14. Fox A. Chemical markers for bacterial components in indoor air. CIAR Currents. The newsletter of the Center for Indoor Air Research. Volume 3: March 1994.
15. A. Fox. Identification and detection of bacteria: electrospray MS-MS and derivatization with GC-MS/GC-MS-MS. Proceedings of the 1994 Army Chemical Research, Development, and Engineering Center Conference on Chemical Defense Research.
16. Editorial on the work of A. Fox and R. Smith. ESI-FT-ICRMS gets *cereus*. *Analyt. Chem. News and features*. Apr 1996.
17. A. Fox. Biodetection: where are we now and what is to be done. Proceedings of the 1995 Army Chemical Research, Development, and Engineering Center Conference on Chemical Defense Research.
18. A. Fox. Markers for identification/detection of biological agents assessed using mass spectrometry. Proceedings, Joint services Workshop on Biological Mass Spectrometry, DoD, Baltimore, Maryland (July 1997). pp 57-60. 1998.
19. News Report in *Analytical Chemistry* 69: 651A. "Sugar switching bacteria" on our article D. S. Wunschel, K. F. Fox, A. Fox, M. L. Nagpal, K. K. Kim, G. C. Stewart Quantitative analysis of neutral and acidic sugars in whole bacterial cell hydrolysates using high performance anion exchange liquid chromatography electrospray ionization tandem mass spectrometry. *J. Chromatogr.* 776: 205-219. 1997.
21. A. Fox. Book review of *ATopley and Wilson's Microbiology and Microbial Infections (Ninth Edition)*. Eds. Collier, L., Balows, A. and Sussman, M. Oxford University Press Inc., New York. *J. Microbiological Methods*.35: 93-94. 1999.
22. A. Fox, quoted in comments on developments in phage amplification by Kent Vorhees. *Current Topics. ASM News*, 71: 6-8. 2005.
23. A. Fox. Book review of "Microbial contamination in the pharmaceutical industry". Jiminez, L. (Ed.) Marcel Decker, New York, 2004. *J. Microbiological Methods*. 60: 423. 2005.
24. A. Fox, L. Larsson, G. Allmeier, D. Wunschel, K. Wahl. Preface, 5th International symposium on the interface between analytical chemistry and microbiology - April 19th to 21st, 2004. Hosted at Pacific Northwest National Laboratory. *J. Microbiol. Meth.* 62: 257-258. 2005
25. A. Fox Methods and markers for biodetection. Proceedings of the Defense and Security Symposium, the International Society for Optical Engineering. 2006

## **TEACHING ACTIVITIES**

Medical Microbiology (MBIM 650/720). University of South Carolina School of Medicine (1980-Present). Bacterial physiology and pathogenesis. A team-taught 7 credit course for medical and graduate students.

Medical Bacteriology (MBIM 739). University of South Carolina School of Medicine (1983-Present). Graduate course in bacterial physiology, taxonomy, biochemistry and pathogenesis. 3 credits. Course organizer and 1 of three major lecturers.

Integrated Biomedical Systems (BMSC 705). University of South Carolina School of Medicine, established course, 2001.

Interdisciplinary Laboratory (MBIM 700) University of South Carolina School of Medicine (1987-2001). 3 credit course for graduate students. Lecture on chromatography and mass spectrometry.

Medical Cell Biology (BMSC 702). University of South Carolina School of Medicine (2001-present). Lectures: The bacterial cell; chromatography and mass spectrometry.

Medical Biochemistry (BMSC 754). University of South Carolina School of Medicine (1989-1991). 4 credit course for graduate and medical students. Lecture on carbohydrate analysis.

Microbiology (Biol 330) University of South Carolina, Beaufort Branch (1985 & 1987). Bacteriology Section, 3 credit course for nursing students.

Seminars in Microbiology and Immunology (MBIM 801). University of South Carolina School of Medicine (1982-1983). Student presentations.

Bacterial Pathogenesis. Clemson University, Clemson, South Carolina (1981). Organizer and lecturer in this graduate level course.

## **RESEARCH GROUP**

### Post-doctoral fellows, visiting scholars and research faculty:

X. Xie., Visiting Scientist, Nov, 1983-1985.  
J. Gilbert, Ph.D., Post-doctoral Fellow/Assist. Prof, Ph.D., 1985-89.  
B. Christensson, M.D., Ph.D., Post-doctoral Fellow, 1987-1988.  
E. Kufoy M.D., Post-doctoral Fellow, 1987-1989.  
T. Li, M.D., Post-doctoral Fellow, 1991-1994.  
M. Krahmer, Ph.D., Post-doctoral Fellow/Research Assistant Prof., 1998-2000 and 2004-2005  
M. Nagpal, Ph.D, Research Assoc. Prof., 1994-2001.  
M. Stump, Ph.D. Post-doctoral Fellow, 2004-2005.  
K. Fox, Ph.D., currently Research Assoc. Prof., 1989-present.  
W. Harley, Ph.D., Research Associate, 2000-2006.

### Ph.D. Students directed

#### *Department of Micro. and Immunol., USC School of Medicine (A. Fox, major professor):*

G. Pararajasegaram, Ph.D., 1987.  
J. L. Harrison, Ph.D., 1987.  
A. Wells, Ph.D., 1988.  
A. Lawrence, Ph.D., 1992.  
G. Black, Ph.D., 1995.  
D. Wunschel, Ph.D., 1997.  
M. Krahmer, Ph.D., 1998.  
Y. Johnson, Ph.D., 2001.  
M. Kozar, Ph.D., 2001.  
J. Walters, Ph.D., 2001.  
W. Muhammad, MD/Ph.D. (Ph.D. 2003, M.D. 2005)  
L. Waller, Ph.D., 2006.  
E. Castanha 2006

#### *Dept. Chemistry, USC (S.L. Morgan, major professor):*

J. R. Hudson, Ph.D. 1982.  
L. Eudy, Ph.D. 1983.  
P. Lau, Ph.D. 1984.  
R. Whiton, Ph.D. 1985.  
C. Smith, Ph.D. 1986.  
K. Ueda, Ph.D. 1989.  
J. Rogers, Ph.D. 1990.  
B. Watt, Ph.D. 1991.

## **ADVISORY EXAMINATION COMMITTEES**

### *1. Dept. Micro. & Immunol., USC School of Medicine*

N. Shams, Ph.D, 1989.  
J. Davis, Ph.D, 1989.  
M. Hoe, Ph.D., 1990.  
F. Azmi, Ph.D., 1991.  
A. Davis, Ph.D., 1994  
R. Choudhury, Ph.D., 1994  
P. Choudhury, Ph.D., 1995.  
J. Cha, Ph.D., 1996  
S. Haley, Ph.D. 1999  
J. Yockman, Ph.D. 2001  
A. Ruhland, Ph.D. 2005  
T. Nesbitt, 2005 - present  
S. Adams, 2006 - present  
A. McKelvy, 2006 – present  
C. Bell, 2006 - present

### *2. Department of Chemistry, USC*

J. Strobel, Ph.D., 1984.  
A. Morris, M.S., 1984.  
J. Stewart, Ph.D., 1986.  
C. Fisher, Ph.D, 1985.  
C. Hull, Ph.D, 1987.  
D. Price, Ph.D., 1998  
S. Yang, Ph.D., 1999

### *3. Dept. Chemical Engineering*

J. Zhang, 2006

## **ADMINISTRATIVE ACTIVITIES**

1980-1998	Graduate Director, Dept. Microbiology and Immunology
1998-2002	Academic Director, Biomedical Science Ph.D. Program.
2002-2005	Homeland Security group: reported to VP for Research, USC
2004	Chair, Biological Countermeasures, SAFETY Act Implementation, Department of Homeland Security, Washington, D.C.
1998-present	Editor-in-Chief, Journal of Microbiological Methods
2006-present	Joint Editor-in-Chief, Molecular and Cellular probes
2006 - present	Chair, Biodefense and Infectious Disease Search Committee, USC School of Medicine, Department of Pathology, Microbiology and Immunology

## **EDITORIAL ACTIVITIES**

### **Journal of Microbiological Methods**

Editor-in-Chief, 1998-present

One of 5 Editors, 1996-1997

Associate Editor, 1984-1995

Editorial Board. 1983

### **Molecular and Cellular Probes,**

Joint-Editor-in-Chief, 2005-present

### **J. Clinical Microbiology**

Editorial board, 1998-present

## **GRANT REVIEW including:**

National Research Foundation Board of Singapore. Environmental and water Technologies. Technical Expert Panel. 2006 –present.

NIH, NCCR, Shared instrumentation committee (S10, mass spectrometry systems), July 2005 & 2006

NIH, NIAD, Special emphasis review panel, ZA1BLG-M (M2), program project (PO1) trypanosome proteome, Feb, 2004

NIH, NIAD, Special emphasis review panel ZA11 AWA-M (M1), program project PO1, molecular biology and discovery of vaccines for Chagas Disease, Jan, 2004

NIH, NIAD, Special emphasis review panel, PA-03-080, instrument for automated simultaneous detection of bioterrorism agents, April, 2003

Sloan Foundation. Reviewer, 2003

Army Research Office. Bioterrorism Workshop, 2-4 Apr 2002. Duke University. Objective: To prepare a summary of unexplored or unexploited research.

Research Management Group (formerly Center for Indoor Air Research). Review Board. 2001-present.

State of Louisiana, DOD EPSCoR program, external reviewer, 1994.

EPA, Reviewer, Cooperative agreement regarding ambient and indoor air risk assessment, research and technology transfer, 1993.

## **MISCELLANEOUS**

Meridian Diagnostics, Developed procedure for preparation of affinity purified antibody to group A streptococcal polysaccharide, 1984.

Dupont, On-site testing of prototype sedimentation field flow fractionator, 1984-86.

Teledyne CME, Scientific advisory board for biodetection/mass spectrometer program, 1986-87.

ERDEC, Consultant, Workshop on the preparation and purification of biological agents for pyrolysis mass spectrometry, 1993.

Atlas Services Inc., Seminars on indoor air quality, 1993.

Invited to Taiwan to negotiate extension of USC School of Medicine, Ph.D Program in Biomedical Science 1998.

Consultant to NASA, Workshop on Quarantine requirements and costs, Jet Propulsion

Laboratory (NASA), Pasadena, Fl, Feb 16/17 1999.  
Highenergy Microdevices Inc., Consultant on large scale fermentation, 2001.  
Introducing minorities into Ph.D. programs. Sloan Foundation (Puerto Rica, 2003, NC, 2004)  
Editors meeting, Elsevier. CA, 2003.  
Region IV Regional Center for Excellence for Biodefense and Emerging Infections. NIH. (45 million) A. Fox, SC representative 2003-present  
Virgin Instruments, consultant, 7/2006 -7/2007

### **PATENTS AND INTELLECTUAL PROPERTY**

1. Automated evaporator for chemical analysis. A. Fox. Patent number 5514336. Issued May 1996
2. Automated derivatization instrument for GC-MS analysis (intellectual property award)
3. Anthrax spore vaccine (patent pending)

### **MEETING ACTIVITIES**

1. President's Award Committee for Best Student Presentation. Annual Meeting of the South Carolina Branch, American Society for Microbiology, Columbia, SC. 1981.
2. President's Award Committee for Best Student Presentation. Joint Meeting of the Southeast and South Carolina Branches, American Society for Microbiology, Jekyll Island, GA. September 30-October 1, 1982.
3. Convener, Symposium "Major Medical Problems 1983" in honor of opening of Basic Science Facilities for the University of South Carolina School of Medicine, Veterans Administration Campus. October, 1983.
4. Symposium/Workshop Coordinator, Joint Meeting of North and South Carolina Branches of the American Society for Microbiology, Myrtle Beach, SC. October, 1983.
5. Co-Organizer, Medical College of Georgia/ University of Georgia/University of South Carolina Immunology Colloquium. (Biannual Meeting). 1983-1986.
6. Co-chairman, First International Symposium on the Interface between Analytical Chemistry and Microbiology, Columbia, S.C. June 3-5, 1987.
7. Chairman of Chromatography Oral Session, Fifth International Symposium on Rapid Methods and Automation in Microbiology and Immunology, Florence Italy. 1987. Plenary Speaker at the Minnesota Chromatography Forum. May, 1988.
8. Session chairman at the symposium "Recent Advances in Microbiological Research", Turku, Finland. Apr, 1990.
9. Organizing committee and a session chairman, Second International Symposium on the Interface between Analytical Chemistry and Microbiology, Lund, Sweden. June, 1991.
10. Organizing committee and a session chairman, Third International Symposium on the Interface between Analytical Chemistry and Microbiology, Knoxville, TN. Mar, 1995.
11. Co-Chair (with David Briles) of the Bacterial Pathogenesis session at the Southeastern & South Carolina Branches of the American Society for Microbiology, October 28-30, 1999.
12. Organizing committee, Fourth International Symposium on the Interface between

Analytical Chemistry and Microbiology, Brest, France. June, 2000.

13. Organizing committee, Fifth International Symposium on the Interface between Analytical Chemistry and Microbiology, Pacific Northwest National Laboratory. Apr, 2004.

## ORAL PRESENTATIONS

1. Chemical detection of infection. Clemson University, Clemson, SC. Oct, 1980.
2. Pathogenesis of experimental arthritis: relevance to human disease. Duke University Medical Center, Durham, NC. Jan, 1980.
3. Role of bacterial debris in inflammatory uveitis and related disorders. National Eye Institute, Bethesda, MD. Jun, 1982.
4. Universal detection of bacterial infections employing antisera against common immunodeterminants. Litton-Bionetics, Inc., Charleston, SC. Sept, 1982.
5. Application of Capillary GC and GC-MS to Characterization of Microorganisms. Dupont Company, Wilmington, Delaware. Feb, 1984.
6. Characterization of *Legionella* and other bacteria by capillary gas chromatography-mass spectrometry. Clinical Research Center, London, England. May, 1984.
7. Chemical and immunochemical markers for bacterial constituents: application to studies of infectious and inflammatory diseases. South Carolina State, Orangeburg, SC. Apr, 1984.
8. Chemical and immunochemical markers: application to bacterial differentiation and studies on inflammatory diseases. University of Lund, Sweden. Jun, 1984.
9. Application of chemical and immunochemical markers to the study of infections and inflammatory diseases. Inter-Campus Basic Science Seminar Program. Medical University of South Carolina, Charleston, SC. Sept, 1984.
10. Chemical markers for streptococci: role in studies of inflammatory diseases and chemotaxonomy. University of Lund, Sweden. Jun, 1986.
11. Chemical markers for streptococci: role in studies of inflammatory diseases and chemotaxonomy. University of Newcastle, England. Jul, 1986.
12. Immunochemical and mass spectrometric markers: use in chemotaxonomy and studies of inflammatory diseases. Medical University of South Carolina, Charleston, SC. Sept, 1986.
13. Chemical markers for streptococci: role in studies of inflammatory diseases and chemotaxonomy. Pembroke State, N.C. Feb, 1987.
14. Chemical markers for streptococci: role in studies of inflammatory diseases and chemotaxonomy. Statens Institut for Folkhelse, Oslo, Norway. Mar, 1987.
15. Analysis of carbohydrates for profiling and detection of microorganisms. Chromatography Seminar Session, Fifth International Symposium on Rapid Methods and Automation in Microbiology and Immunology Florence, Italy. Nov, 1987.
16. Analysis of carbohydrates for profiling and detection of microorganisms. South Carolina Branch of the American Society for Microbiology, Columbia, SC, Nov 1987.
17. Immunochemical and chemical markers: use in studies of inflammatory diseases and chemotaxonomy. Boston University Medical School. Dec, 1987.
18. Chromatography and mass spectrometry: application to microbiology. Plenary Speaker at the Minnesota Chromatography Forum. May, 1988.
19. Mass spectrometric markers and infectious diseases. University of Lund, Sweden. Sept, 1988.

20. Chemical markers and pyrolysis/derivatization gas chromatography-mass spectrometry in microbiological research. One of the three primary invited speakers at the symposium "Recent Advances in Microbiological Research", Turku, Finland. Mar 1990.
21. Role of bacterial debris in inflammatory diseases of eye and joint. University of Turku, Finland. Apr, 1990.
22. Detection of chemical markers for peptidoglycan in mammalian tissues and body fluids. Chromatography and Mass Spectrometry in Microbiology: Second International Symposium on the Interface between Analytical Chemistry and Microbiology. Lund, Sweden. June 1991.
23. Identification of molecular sequences and chemical markers for taxonomic characterization of bacteria. Pyrolysis mass spectrometry and biosensor workshop. Setubal, Portugal. Sept 16-20, 1991.
24. Identification and detection of bacteria by GC-MS. American Chemical Society Annual Meeting, Washington, D.C. Symposium on "Identification of microorganisms by mass spectrometry. Aug, 1992.
25. Mass spectrometric identification and detection of bacteria. Suncoast Biotech Conference, Tampa, Fl, Oct 1992.
26. Interaction of bacteria and the immune system. Texas College of Osteopathic Medicine, Fort Worth Tx. Feb 1993.
27. State of the art in biodetection. Midwest Research Institute, Kansas City, MO. Dec, 1993
28. Monitoring of chemical markers for bacterial peptidoglycan and lipopolysaccharide Roundtable "Sampling and analysis for non-viable bioaerosols". American Industrial Hygiene Conference, Anaheim, CA, May 1994.
29. Recent progress in carbohydrate analysis of bacteria - comparison of GC-MS, GC-MS-MS and electrospray MS-MS. Third International Symposium on the Interface between Analytical Chemistry and Microbiology, Knoxville, TN. Mar, 1995.
30. Liquid chromatography-mass spectrometry (MS-MS) and gas chromatography-mass spectrometry for identification of bacterial carbohydrates. American Chemical Society, Apr 5.
31. Chemotaxonomic characterization of bacteria and their trace detection using carbohydrate/nucleic acid markers and mass spectrometry. Naval Research Laboratories, Washington, Apr 1995.
32. Identification and detection of bacteria. Federation of Analytical Chemists and Spectroscopy Societies, Cincinnati, OH, Oct 1995.
33. Carbohydrate and nucleic acid markers for bacteria assessed using mass spectrometry. Oak Ridge National Laboratory, TN, Oct 1995.
34. Trace analysis of muramic acid using tandem mass spectrometry. 36th ORNL-DOE Conference on analytical chemistry in energy technology. Gatlinburg, TN, Oct, 1995.
35. Mass spectrometric identification and detection of bacteria. University of Umeå, Sweden. Oct 1995.
36. Identification and trace detection of bacteria using carbohydrate markers analyzed by gas chromatography/liquid chromatography combined with mass spectrometry or tandem mass spectrometry. Chromatography discussion group, Research Triangle Park, NC. Feb 1996.

37. Monitoring of bacterial load using gas chromatography-tandem mass spectrometry for muramic acid analysis and culture techniques. American Industrial Hygiene Conference, Anaheim, CA, May 1996.
38. Rapid characterization of PCR products by MS/MS (collaborator). NIH site visit concerning establishment of mass spectrometry core facility, DOE, Washington State. Mar, 1997.
39. Rapid biodetection using PCR-MS/MS. Biosciences Workshop, Army Research Office, Cashiers, NC. May 1997.
40. Detection of biological entities in Martian rock and soil. Sample quarantine workshop, NASA, Ames Research Center Moffet Field, CA, June 1997.
41. Real time bacterial speciation using PCR and MS. Naval Research Laboratories, Washington, DC, June 1997.
42. State-of-the-art methods and markers for identification and detection of bacteria. Morehouse School of Medicine, Atlanta, GA, July 1997.
43. Markers for identification/detection of biological agents assessed using mass spectrometry. Joint Services Workshop on Biological Mass Spectrometry, DoD, Baltimore, Maryland. July 1997
44. Rapid biodetection using PCR-MS/MS. Federation of Analytical Chemists (FACSS), Providence, RI, Oct 1997.
45. PCR-MS/MS. SCIEX, Toronto, Canada, Nov 1997.
46. State-of-the-art methods for bacterial identification/detection. School of Medicine, Louisville, Kentucky, Nov 1997.
47. Anthrax: the number one biological warfare agent. Auburn University, AL, Feb 1998
48. Chemical and molecular markers for bacteria: advances in analyses. Symposium in recent advances in mass spectrometry coupled with separations. Regional American Chemical Society Meeting, Raleigh, NC, Nov 1998.
49. Muramic acid a marker for bacteria. Workshop on Planetary Protection, Jet Propulsion Laboratory (NASA), Pasedena, Fl. Dec 9-11, 1998.
50. Sugar and DNA markers identified using mass spectrometry. Mass spectrometry in clinical diagnosis of disease. The 11<sup>th</sup> Sanibel Cpnference on Mass Spectrometry. Sponsored by the American Society for Mass Spectrometry. Jan 23-26, 1999.
51. Chemical markers for bacteria in lunar, martian and terrestrial dust. Mars Quarantine Workshop, Pasedena, CA. Feb 1999.
52. Preparedness research in SC: anthrax. AAAS Research Competitive Program. Research in Domestic Preparedness, Stillwater, Oklahoma, Mar 1999.
53. Y. Johnson (A. Fox, mentor). Analysis of structurally similar PCR products of the 16S-23S rRNA interspace region of bacilli by electrospray quadrupole . Applications in microbiology symposium. American Society for Mass Spectrometry. 1999. June 1999.
54. From bacterial pathogenesis to the human genome: structural analysis using state-of-the-art mass spectrometry. Florida Atlantic University, Aug 1999
55. When are poorly biodegradable bacterial cell wall remnants present in health and disease: update on a long-lasting controversy?. Bacterial Pathogenesis session. Southeastern & South Carolina Branches of the American Society for Microbiology, October 28-30, 1999.

56. Environmental monitoring of markers using state-of-the-art mass spectrometry methodology. Savannah River Plant, Dec 1999.
57. Chemical markers for terrestrial bacteria: studies on lunar dust. NASA, Johnson Space Center, Houston, TX. April 2000.
58. Precise molecular weight determination of PCR products of the 16S/23S interspace region using electrospray quadrupole mass spectrometry. Fourth International Symposium on the interface between analytical chemistry and microbiology: Mass spectrometry in Biotechnology and Clinical/environmental microbiology, Tregastel, France, June, 2000
59. Biodetection by identification of PCR products using electrospray ionization mass spectrometry. First Joint Point Conference on Point Detection, Williamsburg, Virginia. Oct 2000.
60. Identification of bacteria on Mars. First South Carolina Symposium on Astrobiology. MUSC. Aug 2001.
61. Genotyping using mass spectrometry. MUSC, Cancer Center, Jan 2002.
62. Biodetection: terrestrial samples, including anthrax, and lunar dust. Auburn Univ., AL, Mar, 2002.
63. Bioterrorism workshop, one of 17 participants, sponsored by the Army Research Office, Duke University, April 2002.
64. Characterization of genes and the carbohydrate exosporium of *B. anthracis*. Home Defense Symposium. Amer. Soc. Mass Spectrom., June 2002.
65. Bioterrorism from a biomedical perspective. Task force on Countering Terrorism, American Physical Society, University of Maryland, College Park, Sept, 2002.
66. Overview of mainstream and state-of-the-art methods for bidetection of bioterrorism agents. American Physical Society, National Meeting, Austin, TX. Workshop on bioterrorism, Feb 2003.
67. PCR and PCR-MS-MS for biodetection. Mass spectrometry and homeland Security, Oak Ridge National Laboratory, TN Sept. 2003.
68. Real-time PCR and PCR-tandem mass spectrometry for biodetection. Joint Services Chemical Biological Defense Conference, North Towson, Maryland. Nov 2003
69. PCR and protein markers for mass-spectrometry-based biodetection. 4th detections technologies conference. Virginia, Dec, 2003.
70. PCR and protein markers for anthrax. Regional Homeland Security Meeting, Savannah River Technology Center, Aiken SC, Jan, 2004.
71. PCR and protein markers for anthrax, University of Lund, Sweden, Mar 2004.
72. PCR and protein markers for mass spectrometry-based biodetection. Pacific Northwest National Laboratory, April, 2004.
73. State-of-the-art technology and markers for biodetection. Seventh Force Health Protection Conference, Albuquerque, NM, Aug 2004.
74. Homeland Security presentation, as part of "USC delegation" meeting with "congressional representatives", University Day, SRNL, Oct 2004
75. Anthrax: biodetection and forensics: Midwest Research Institute, Palm Bay, FL, Jan 2005.
76. Anthrax: biodetection and forensics, Stopping the bad guys, Homeland Security Symposium, AAAS Annual Meeting, Washington, DC, Feb 2005.

77. Anthrax: vaccination, biodetection and forensics. Complex Carbohydrate Center, University of Georgia (Athens) Mar 2005.
78. Anthrax: vaccination, biodetection and forensics. SC Branch, American Society for Microbiology. Apr, 2005.
79. The SC Center for Biodefense and Biosecurity, Presentation to External Review Board appointed by SC Commission on Higher Education (CHE), May 2005.
80. Anthrax: vaccination, biodetection and forensics, FBI, Quantico, MD, Nov, 2005
81. Identification, Detection and Bioforensics: Carbohydrates using GC-MS/GC-MS-MS (& LC-MS-MS). American Society for Mass Spectrometry, Fall Workshop, San Diego, CA. Characterization of microorganisms by mass spectrometry. Dec 2005.
82. *Bacillus anthracis*: biodetection, identification and growth characteristics. Emerging techniques in detection and differentiation of pathogenic agents, American Chemical Society, Annual Meeting, Mar, 2006
83. Markers and methods for biodetection. Defense and Security Symposium, the International Society for Optical Engineering, Orlando, Florida, April, 2006
84. Carbohydrate and protein markers for forensics, Workshop on Microbial Forensics, State of the art and critical needs. American Society for Microbiology, Annual Meeting, May 2006

## POSTERS

1. Fox, A., Brown, R., and Schwab, J.H. Influence of particle size on arthropathogenicity of bacterial cell wall fragments. IXth Eur. Cong. Rheumatol., Weisbaden, Germany. Mar, 1979.
2. Cochran, T.W., Fox, A., Schwab, J.H., Harvan, by D. J., Parker, C.E. and Hass, J.R. Comparison of the quantitation of muramic acid selected ion monitoring and single reaction monitoring. 28th Annual Conference of the American Society of Mass Spectrometry and Allied Topics, New York, NY. 1980.
3. Fox, A. Chemical detection of infection. Joint Medical College of Georgia/University of Georgia/University of South Carolina Colloquium, Columbia, SC. Oct, 1980.
4. Morgan, S.L., Hudson, J.R. and Fox, A. Rapid detection of bacterial infections using analytical pyrolysis and GC-MS. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Atlantic City, NJ. Mar, 1981.
5. Eisenberg, R.A., Schwab, J.H., Greenblatt, J.J., Fox, A. and Anderle, S.K. Detection of persistent bacterial cell walls in rat and human tissues by solid-phase radioimmunoassay. 15th International Congress on Rheumatology, Paris. Jun, 1981.
6. Hudson, J.R., Morgan, S.L., Fox, A. and Walla, M. Pyrolysis GC-MS studies of bacterial peptidoglycan. 3rd Atlanta Chromatography Symposium. May, 1981.
7. Fox, A. Application of pyrolysis gas chromatography-mass spectrometry to the identification of microorganisms. Joint Medical College of Georgia/University of Georgia/University of South Carolina Immunology Conference, Athens, GA. Nov, 1981
8. Hudson, J.R., Morgan, S.L. and Fox, A. Application of pyrolysis gas chromatography-mass spectrometry to the identification of microorganisms. Annual Meeting, SC Branch American Society for Microbiology, Columbia, SC. Nov, 1981.
9. Morgan, S.L., Hudson, J.R. and Fox, A. Improvements in the gas chromatography of neutral and amino sugars, 33rd Ann. Southeastern Reg. Meeting, American Chemical Society, Lexington, KY. Nov, 1981.
10. Morgan, S.L., Hudson, J.R. and Fox, A. The separation of aldonitrile acetates of neutral and amino sugars by capillary GC-MS. Pittsburgh Conference on Analytical Chemistry, Atlantic City, NJ. Mar, 1982.
11. Morgan, S.L., Lau, P.Y., Fox, A. and Lema, M. Capillary GC applied to the chemotaxonomic characterization of the Legionellaceae. Spring Meeting, Southeast Section, American Association of Clinical Chemists, Savannah, GA. Mar, 1982.
12. Burrish, G.F., Fox, A., Hammer, M.E. and Lill, P.H. Experimental uveitis induced by bacterial cell wall fragments. Annual Meeting, Association for Research in Vision and Ophthalmology, Sarasota, FL, May 1982. Invest. Ophthal. & Visual Sci. (suppl.) 22:213. 1982.
13. Fox, A. and Morgan, S.L. Chemotaxonomic characterization of microorganisms and chemical detection of infectious diseases by GC, pyrolysis GC-MS and solid-phase RIA. 2nd U.S. Army Workshop on Biodetection, Research Triangle Park, NC. Jul, 1982.
14. Lau, P.Y., Zhu, Z-T., Fox, A., Morgan, S.L., Brown, A. and Lema, M. Carbohydrate profiling of the Legionellaceae by gas chromatography. Joint Meeting of the Southeast and South Carolina Branches, American Society for Microbiology, Jekyll Island, GA. Oct, 1982.

15. Fox, A., Hammer, M.E. and Lill, P.H. Inflammatory uveitis: Role of bacterial debris. Joint Meeting of the Southeast and South Carolina Branches, American Society for Microbiology, Jekyll Island, GA. Oct, 1982.
16. Eudy, L.W., Morgan, S.L. and Fox, A. A simplified assay for the trace detection of muramic acid by single ion monitoring GC-MS. 34th Annual Southeastern Regional Meeting, American Chemical Society, Birmingham, AL. Nov, 1982.
17. Eudy, L.W., Walla, M.D., Morgan, S.L. and Fox, A. Correlation of bacterial structure with model compounds by pyrolysis GC-MS. Pittsburgh Conference, Atlantic City, NJ. Mar, 1983.
18. Fox, A., Hammer, M., Burch, T. and Lill, P.H. Inflammatory uveitis induced by bacterial cell walls. Annual Meeting, Assoc. Research Vis. Ophthalmol., Sarasota, FL, May 1983, Invest. Ophthalm. 24:195. 1983 (Suppl.).
19. Fox, A., Lau, P.Y., Zhu, Z-T., Morgan, S.L., Brown, A. and Lema, M. Carbohydrate profiling of the *Legionellaceae* by capillary gas chromatography-mass spectrometry. Second International Symposium on *Legionella*, Atlanta, GA. Jun, 1983.
20. Fox, A., Morgan, S.L., Lau, P.Y., Eudy, L., Walla, M., Lema, M. and Brown, A. Carbohydrate and pyrolysis profiling of Legionellae by capillary gas chromatography and gas chromatography-mass spectrometry. Joint Meeting of the North and South Carolina Branches of the American Society for Microbiology, Myrtle Beach, SC. Sep, 1983.
21. Pararajasegaram, G., Fox, A., Hammer, M. and Lill, P.H. Comparison of uveal inflammation elicited by bacterial cell envelope components. Joint Meeting of the NC and SC Branch of the American Society for Microbiology, Myrtle Beach, SC. Sep, 1983.
22. Fox, A., Morgan, S.L., Walla, M. and Brown, A. Fused silica capillary gas chromatography-mass spectrometry of carbohydrate components of Legionella and other bacteria. American Society for Microbiology Annual Meeting, St. Louis, MO. Mar, 1984.
23. Fox, A., Lau, P.Y., Morgan, S.L., Walla, M. and Brown, A. Rapid characterization of carbohydrates of *Legionellae* and other bacteria by fused silica capillary GC and GC-MS. Fourth International Symposium on Rapid Methods and Automation in Microbiology and Immunology, Berlin, Germany. Jun, 1984.
24. Pararajasegaram, G. and Fox, A. An enzyme linked immunoassay for detection of streptococcal cell wall antigens in tissues and body fluids. South Carolina Branch of the American Society for Microbiology, Columbia, SC. Oct, 1984.
25. Xie, X., Fox, A., Sigel, M.M. and Brown, A. The effects of *Legionella pneumophila* sonicate on bacterial killing by murine peritoneal cells. South Carolina Branch of the American Society for Microbiology, Columbia, SC. Oct, 1984.
26. Harrison, J., Hammer, M., Lill, P. and Fox, A. Inflammatory uveitis elicited by N-acetyl muramyl L-ala-Disogln -- a rat model. South Carolina Branch of the American Society for Microbiology, Columbia, SC. Oct, 1984.
27. Pararajasegaram, G., Harrison, J., Wells, A., Hammer, M., Lill, P. and Fox, A. An enzyme linked immunoassay for the detection of streptococcal cell wall fragments in experimental uveitis. Ocular Microbiol. Immunol. Group Meeting, Atlanta, GA. Nov, 1984.

28. Harrison, J., Lill, P., Hammer, M. and Fox, A. Inflammatory uveitis elicited by muramyl dipeptide -- a rat model. Ocular Microbiology and Immunology Group Annual Meeting, Atlanta, GA. Nov, 1984.
29. Harrison, J. and Fox, A. Degradation of muramyl dipeptide by normal mammalian serum. Annual Meeting American Society of Microbiology, Las Vegas. Mar, 1985.
30. Xie, X., Fox, A., Sigel, M.M. and Brown, A. The effects of *Legionella pneumophila* sonicates on bacterial killing by murine peritoneal cells. Annual Meeting of the American Society of Microbiology, Las Vegas. Mar, 1985.
31. Harrison, J. and Fox, A. Department of Microbiology, USC School of Medicine. Degradation of muramyl dipeptide by normal mammalian serum. USC, Univ. Georgia, Medical University of Augusta, Immunology Colloquium. Jan, 1985.
32. Xie, X., Fox, A., Sigel, M.M. and Brown, A. Department of Microbiology and Immunology, USC School of Medicine and VA Research Service. The effects of *Legionella pneumophila* sonicates on bacterial killing by murine peritoneal cells. University of South Carolina, University of Georgia, Medical University of Augusta Immunology Colloquium. Jan, 1985.
33. Fox, A., Harrison, J., Pararajasegaram, G., Gilbert, J., Wells, A., Whiton, R.S. and Morgan, S.L. Chemical and immunochemical studies on the *in vivo* and *in vitro* degradation of peptidoglycan and its subunits. Second International Workshop on the Biological Properties of Peptidoglycan. Munich, Germany. May, 1985.
34. Fox, A. and Gilbert, A. Chemical detection of persisting bacterial cell wall debris in mammalian tissue. Medical College of Georgia/ University of Georgia/University of S.C. Colloquium, Augusta, Georgia. Nov, 1985.
35. Wells, A. and Fox, A. Uveitis and polyarthritis elicited by systemic injection of streptococcal cell wall fragments. Medical College of Georgia/University of Georgia/University of S.C. Colloquium, August, Georgia. November, 1985.
36. Pararajasegaram, G., Yang, C-H and Fox, A. Correlation between immunochemical and immunohistochemical studies on inflamed tissues from animals post systemic injection of streptococcal cell wall fragments. Annual Meeting of Southeastern Branch, American Society of Microbiology, Savannah, Georgia. Oct, 1985.
37. Wells, A., Fox, A., Hammer, M. and Yang, C-H. Uveitis and arthritis induced by systemic injection of streptococcal cell walls. Annual Meeting of Southeastern Branch, American Society of Microbiology, Savannah, Georgia. Oct, 1985.
38. Harrison, J., Ishikawa, Y. and Fox, A. Muramyl dipeptide amidase and peptidase activity in serum. Annual Meeting of Southeastern Branch, American Society of Microbiology, Savannah, Georgia. Oct, 1985.
39. Gilbert, J., Fox, A., Whiton, R., and Morgan, S. L. Persistence of peptidoglycan-polysaccharide complexes in mammalian tissues as determined by selected ion monitoring gas chromatography-mass spectrometry. Annual Meeting of Southeastern Branch, American Society of Microbiology, Savannah, Georgia. Oct, 1985.

40. Fox, A. GC/MS Characterization of microorganisms, CRDC Workshop on Mass Spectrometric Detection of Biological Materials, Aberdeen Proving Ground, MD. 18 - 20 Nov, 1985.
41. Pararajasegaram G., Wells A., Hammer M., C-H Yang and Fox A. Differential Distribution of Streptococcal Cell Wall Complexes: Correlation with Induction of Uveitis and Polyarthrititis. 1986 ASM Annual Meeting, Washington, D.C. Mar, 1986.
42. Gilbert J. and Fox A. Persistence and Slow Degradation of Peptidoglycan-Polysaccharide Complexes in Mammalian Tissues as Determined by Single Ion Monitoring Gas Chromatography-Mass Spectrometry. 1986 ASM Annual Meeting, Washington, D.C. Mar 1986
43. Pararajasegaram G., Wells A., Hammer M., C-H Yang and Fox A. Dissemination of Streptococcal Cell Wall Complexes to the Eye in Experimental Uveitis. Association for Research in Vision and Ophthalmology, Sarasota, Florida. May, 1986.
44. Fox A. and Morgan S.L. Identification and Biodetection of Bacteria. Fourth Army Research Office Biodetection Workshop, Cashiers North, Carolina. April, 1986.
45. Gilbert J., Parks C., Fox A. and Morgan S.L. Differentiation of group A and group B streptococci by pyrolysis gas chromatography-mass spectrometry. Joint Meeting of the Kentucky/Tennessee, North and South Carolina Branches of the American Society for Microbiology. Nov, 1986.
46. Gilbert J. and Fox A. Elimination of streptococcal cell peptidoglycan-polysaccharide complexes from mammalian tissues. Joint Meeting of the Kentucky/Tennessee, North and South Carolina Branches of the American Society for Microbiology. Nov, 1986.
47. Fox A., Gilbert J. and S.L. Morgan. Applications of derivatization GC-MS in the trace detection of chemical markers for microorganisms. 1986 Army Chemical research, development, and engineering center conference on chemical defense research.
48. Morgan S. L., Smith C., Fox A. and J. Gilbert. Microorganism differentiation by analytical pyrolysis GC-MS with computer- assisted pattern recognition techniques. 1986 Army Chemical research, development, and engineering center conference on chemical defense research.
49. Gilbert J., Parks C., Fox A. and S. L. Morgan. Rapid differentiation of B streptococci by a unique chemical marker & pyrolysis gas chromatography -mass spectrometry identification of a glucitol-derived chemical marker. ASM Annual Meeting, Atlanta G.A. Mar, 1987.
50. Fox A. Experimental uveitis induced by streptococcal cell walls. American Uveitis Meeting, Sarasota, Florida. May, 1987.
51. Morgan S. L. and Fox A. Strategies for automated identification of microorganism by analytical pyrolysis GC-MS. Army Chemical research, development, and engineering center conference on chemical defense research. Nov 1987.
52. Fox A. Chemotaxonomic characterization of microorganisms by gas chromatography-mass spectrometry. Biodetection/ Biotechnology Workshop organized by the Army Research Office. May 1988.

53. Udea K., Gilbert J., Christensson B., Fox A. and Morgan S.L. D-amino acids: chemical markers for detection of streptococcal cell walls in mammalian tissues. ASM Annual Meeting. May, 1988
54. Morgan S.L. and Fox A. Identification of chemical markers for bacteria by pyrolysis gas chromatography-mass spectrometry (seminar). Army chemical research, development, and engineering center conference on chemical defense research. Nov, 1988.
55. Kufoya E., Pakalnis A., and Fox A. Secondary uveitis associated with keratoconjunctivitis sicca induced by xylazine/ketamine anesthesia (seminar), American Uveitis Society. May, 1989.
56. Christensson B., Gilbert J. and Fox A. Mass spectrometric quantitation of muramic acid, a bacterial cell wall component in septic synovial fluids (Poster). ASM Annual Meeting. May, 1989.
57. Fox A., Rogers J, Fox K., Schnitzer G., Morgan S. and Brown A. Characterization of legionellae by identification of their structural carbohydrates using gas chromatography-mass spectrometry (oral presentation). ASM Annual Meeting. May, 1990.
58. Fox A. and Morgan S.L. Chemical markers for the differentiation and identification of microorganisms, including *Bacillus anthracis*, by pyrolysis-gas chromatography-mass spectrometry. Army Chemical Research, Development, and Engineering Center Conference on Chemical Defense Research. Nov, 1990.
59. Fox A. and Morgan S.L. Chemical markers for *Bacillus anthracis*. ARO Biodetection Workshop on Spectroscopy and spectrometry, Cashiers, NC. May, 1991.
60. Lawrence A., K. Fox, Fox A., Kosnosky B. and Pakalnis V. Polypeptide profiles of normal and inflamed rabbit aqueous humor. Association for Research in Vision and Ophthalmology, May 1991. Sarasota, Florida.
61. Kosnosky B., K. Fox, Pakalnis V., Fox A. and Lawrence A. Polypeptide profiles of vitreous proteins after injection of interleukin 1 $\beta$ . Assoc. Res. Vis. & Ophthalmol. May, 1991, Sarasota, Florida.
62. Fox K., Brown A., Fox A, Rogers J. and Morgan S.L. Profiling of legionellae by gas chromatography-mass spectrometry and 16S ribosomal rRNA sequencing: *Tatlockia (Legionella) maceachernii* -taxonomic evaluation (poster). Chromatography and Mass Spectrometry in Microbiology: Second International Symposium on the Interface between Analytical Chemistry and Microbiology. June, 1991.
63. Fox A. Biodetection of bacteria by pyrolysis and mass spectrometry. Army Chemical Research, Development, and Engineering Center Conference on Chemical Defense Research. Nov, 1991.
64. Lawrence A., Fox K. and Fox A. Characterization and purification of the 19 kD fragment found in normal rabbit aqueous humor. Assoc. Res. Vis. & Ophthalmol. May, 1992.
65. Fox A., Lawrence A. and Fox A. Serum derived-IgG in normal rabbit aqueous humor: In vivo studies. Assoc. Res. Vis. & Ophthalmol. May, 1992.
66. Kosnosky W., Pakalnis V., Fox A. and Hunt R. A. Matrix metalloproteinases in normal rabbit vitreous and changes elicited after intra-ocular injection of interleukin 1. Assoc.

Res. Vis. & Ophthalmol. May, 1992.

67. Black G., Rostovtseva, S., Rosario R., Fox K. and Fox A. Muramic acid and other chemical markers for identification and detection of bacteria. Army Chemical Research, Development, and Engineering Center Conference on Chemical Defense Research. Nov, 1992.
68. Black G., Fox A., Rostovtseva S., and Fox K. Carbohydrate profiles of sugars specific for sporulating cultures of *B. anthracis* and *Bacillus cereus*. American Society for Microbiology Annual Meeting. May, 1993.
69. Fox A., L. Larsson and R. Rosario. Use of muramic acid and 3-hydroxy myristic acid in monitoring bacterial levels in airborne dust. American Society for Microbiology Annual Meeting. May, 1993.
70. Li T., Fox K., Fox A., and Pakalnis V. Recurrent uveitis induced by multiple systemic injections of muramyl dipeptide. Assoc. Res. Vis. & Ophthalmol. May, 1993.
71. Kosnosky W., Hunt R., Fox A. and Pakalnis V. Histopathology of interleukin 1 beta induced membrane changes in the rabbit. Assoc. Res. Vis. & Ophthalmol. May, 1993.
72. Fox A. and Rosario R. Quantitation of muramic acid, a marker for bacteria in dust from hospital and home air conditioners using gas chromatography-mass spectrometry Indoor Air 93, Helsinki, Finland. July 1993.
73. Black G. & Fox A. Rapid identification of muramic acid, a bacterial chemical marker using electrospray tandem mass spectrometry. Amer. Society for Microbiol. May, 1994.
74. D. Wunschel, K. Fox, G. Black and A. Fox. Characterization of ribosomal operon spacer regions and spore carbohydrate profiles for differentiation of *Bacillus* species. American Society for Microbiology Annual Meeting. May, 1994.
75. A. Fox. Identification and detection of bacteria: electrospray MS-MS and derivatization with GC-MS/GC-MS-MS. Army Chemical Research, Development, and Engineering Center Conference on Chemical Defense Research. Nov, 1994.
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