

# CURRICULUM VITAE

**NAME:** Gregory A. Bohach

**TITLE:** Professor of Biochemistry and Molecular Biology (College of Ag and Life Sciences)  
Adjunct Professor of Basic Sciences (College of Veterinary Medicine) Mississippi State University

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## **EDUCATION:**

<u>INSTITUTION</u>	<u>DEGREE</u>	<u>YEAR</u>
1. University of Pittsburgh /Johnstown	B.S.	1975
2. Connemaugh Memorial Hospital (Johnstown, PA)	M.T.(ASCP)	1978
3. West Virginia University	M.S.	1982
4. West Virginia University	Ph.D.	1985
5. University of Minnesota	Postdoctoral	1988

## **PROFESSIONAL EXPERIENCE:**

- 1977-1978 Medical Technology Intern; Connemaugh Valley Memorial Hosp., Johnstown, PA.
- 1978-1980 Medical Technologist; Somerset Community Hospital, Somerset, PA.
- 1980-1985 Grad student/teaching asst; West Virginia Univ. Morgantown, WV (I. Snyder, Advisor).
- 1982-1984 Medical Technologist (part-time); WVU Medical Center, Morgantown, WV.
- 1985-1988 Postdoc; U. of MN (Dept. of Microbiology), Minneapolis, MN. (P. Schlievert, Mentor).
- 1988-1994 Assistant Professor; Univ. of Idaho (Dept. Microbiol, Mol Biol & Biochem, and the WWAMI Medical Program).
- 1994-2000 Associate Professor; Univ. of Idaho (Dept. Microbiol, Mol Biol & Biochem, and the WWAMI Medical Program).
- 1998-2004 Department Head and Professor; Dept of Microbiol, Mol Biol, & Biochem, Univ of Idaho & Professor in the WWAMI Medical Program.
- 1992-2009 Affiliate Faculty; Univ of Washington Dept. of Microbiology; Seattle, WA.
- 1992-2001 Research Affiliate; Univ. of Washington Regional Primate Research Center.
- 2000-2009 Director; Idaho Center for Host-Pathogen Interaction Research
- 2000-2009 Associate Director, State of Idaho NIH IDeA programs
- 2004-2009 Associate Dean; College of Agricultural and Life Sciences & Director; Idaho Agricultural Experiment Station
- 2009 Director, State of Idaho NSF EPSCoR and NIH IDeA Programs
- 2009-2019 Vice President: Agriculture, Forestry, and Veterinary Medicine, MS. State Univ.
- 2009- Pres Professor of Biochemistry and Molecular Biology, College of Agriculture and Life Sciences; MS State Univ.
- 2009- Pres Affiliate Professor of Basic Sciences, College of Veterinary Medicine; MS State Univ.

## **COMPETITIVE RESEARCH FUNDING:**

- 1986-1988 Postdoctoral Fellowship; **American Heart Association**, Minnesota Affiliate. \$41,500; Molecular analysis of bacterial pyrogenic toxins (PI).
- 1989-1990 **Idaho Research Council** Seed Grant; \$3,700; Identification of an antigenic epitope on staphylococcal enterotoxin C1 by site-directed mutagenesis (PI).
- 1989-1990 **University of Idaho Biomedical Research Grant**; \$6,135; Epitope analysis of staphylococcal type C enterotoxins using monoclonal antibodies (PI).
- 1989-1990 **University of Idaho Travel Grant**; \$600 (PI).
- 1989-1990 **Idaho State Board of Education**; \$35,000; Structure-function analysis of staphylococcal type C enterotoxins (PI).
- 1989-1990 **Idaho State Board of Education**; \$35,000; A molecular approach to staphylococcal enterotoxin vaccine production (PI).
- 1989-1990 **USDA Animal Health Research Grant**; \$6,900; A molecular assessment of pathogenic mechanisms causing bacterial kidney disease in salmonids. G.Bohach and W. Trumble; co-PIs.
- 1989-1990 **American Heart Association of Idaho, Inc.**; \$14,000; Cardiotoxicity of staphylococcal pyrogenic toxins (PI).
- 1989-1994 **National Institutes of Health**; \$343,713 (Direct Costs); Molecular analysis of staphylococcal type C enterotoxins. R29-AI28401 (PI).
- 1990-1996 **USDA Animal Health Research Grant**; \$35,000 Unique staphylococcal enterotoxins and mastitis (PI).
- 1992-1993 **NIH Instrumentation Grant**; \$9,874; AI33626 (PI).
- 1993-1994 **USDA Matching Instrumentation Grant** (\$50,000 for flow cytometer) (J. Cloud and G, Bohach, co-PIs)
- 1993-2000 **United Dairymen of Idaho**; \$105,000; Immunomodulation by staphylococcal enterotoxins and mastitis (PI).
- 1994-1996 **USDA NRICGP** \$120,000 Immunosuppression by host-specific staphylococcal enterotoxins in mastitis (PI).
- 1995-2001 **National Institutes of Health**; \$1,088,549; Molecular analysis of staphylococcal type C enterotoxins. R01-AI28401 (PI).
- 1999-2003 **USDA NRICGP** \$180,000 Immunosuppression by host-specific staphylococcal enterotoxins in mastitis. 99-35201-8581 (PI).
- 1999-2002 **EPA (SEER2)** \$238,548 Detection of pathogens in drinking water. G. Bohach, C. Bohach, P. Hartzell, A. Paszynski, co:PIs, (R. Crawford-Project Director)
- 2000-2005 **National Institutes of Health**; \$9,500,000 Molecular and cellular basis of host-pathogen interactions: P20RR15587 (PI).
- 2002-2004 **USDA**; \$598,631 Increasing the safety and shelf life of agricultural commodities: L. Branen (Project Director), G. Bohach, G. Maki, W. Maki (co-PIs). 2002-34479-12025.
- 2005-2006 **National Institutes of Health** (Idaho INBRE Exploratory Grant); Uptake of nanowires by epithelial cells; co-PIs, G. Bohach and D. McIlroy; \$60,000.
- 2005-2006 **National Institutes of Health** (Idaho INBRE Exploratory Grant); Anticancer activity of staphylococcal enterotoxins; \$60,000 (PI).
- 2003-2008 **National Institutes of Health**: \$1,898,409 to co-PIs on Idaho sub-award (G. Bohach and C. Hovde). Development and assessment of novel biodefense vaccine technologies and development project on *Yersinia pestis* pathogenesis. In WWAMI Regional Center of Excellence in Biodefense and Emerging Infectious Diseases: Total award, ~51,000,000, PI: S. Miller; AI-02-031.
- 2003-2004 **National Institutes of Health**: \$498,384: Enhanced cell separation technology (PI).
- 2003-2004 **M.J. Murdock Charitable Trust**: \$394,000: Microscopy equipment grant (PI).
- 2005-2010 **National Institutes of Health**; \$10,000,000 Molecular and cellular basis of host-pathogen interactions: P20RR15587 (PI).

- 2005-2008 **National Science Foundation:** \$9,000,000: Idaho Grand Challenge RII-Water Resources; (J. Shreeve, PI, G. Bohach and P. Goodwin, co-PIs).
- 2006-2011 **University of Idaho Strategic Investment Grant:** \$1,600,000 Nanomaterials for basic and applied cell biology (co-PI with D. McIlroy, R. Hill, and J. Nagler)
- 2008-2011 **USDA NRI:** \$375,000 Inflammatory and immunoregulatory roles of microbial superantigens in bovine mastitis (2008-00892) (PI).
- 2008-2013 **National Science Foundation:** \$15,000,000: Water Resources in a Changing Environment; (G. Bohach PI; V. Walden, co-PI).

### **SELECTED PROFESSIONAL ACTIVITIES:**

#### **Invited speaker for:**

- 1983-Annual Meeting of West Virginia State Society for Medical Technology, Charleston, WV
- 1988-Biology Departmental Seminar at the University of Wisconsin, La Crosse, WI
- 1988-Grand Rounds for the Hennepin County Medical Center, Minneapolis, MN
- 1989-Pathogenesis Symposium for the Annual Meeting of the Northwest Branch of ASM, Seattle, WA
- 1990-Biological Sciences Departmental Seminar at Washington State University, Pullman, WA
- 1991-Microbiology Departmental Seminar at the University of Washington, Seattle, WA
- 1991-Invited speaker at the 14th annual Boise VA Medical Center Winter Conference ("Current Trends in Infectious Diseases"), McCall, ID
- 1993-Microbiology Departmental Seminar at the University of Minnesota, Minneapolis
- 1994-Invited plenary speaker for 7th International Symposium. on Toxic Microorganisms in Foods, Peoria, IL
- 1994-Departmental Seminar (Bacteriology and Mycology) at the Pasteur Institute, Paris
- 1995-American Chemical Society International symposium on Natural Toxins; Invited speaker
- 1995-Gordon Conference: Staphylococci and staphylococcal diseases: Invited speaker, Irsee, Germany
- 1995-Cell and Molecular Biology Series invited speaker at West Virginia University Medical Center
- 1996-8th International Symposium on Staphylococci and staphylococcal infections. Aix-Les-Bains, France. Plenary Speaker.
- 1996-Rockefeller University (New York) Department seminar series
- 1996-Seoul National University College of Veterinary Medicine, Department of Microbiology; Seoul, Korea; invited seminar
- 1996-University of Washington Science in Medicine; Seattle, WA; Invited seminar
- 1997-University of Minnesota Department of Microbiology; Minneapolis, MN; Invited seminar
- 1997-University of British Columbia-Canadian Bacterial Disease Network; invited seminar; Vancouver, Canada
- 1998-Seoul National University-Department of Microbiology invited seminar; Seoul, Korea
- 1998-8th World Conference on Animal Production (Seoul, Korea); invited presentation
- 1998-2003: Leadership Idaho Agriculture; invited presentations
- 1999-Polish Academy of Sciences Institute of Biochemistry & Biophysics Invited seminar: Warsaw, Poland
- 2000-9th International Symposium of Staphylococci and staphylococcal infections. Copenhagen; (Copenhagen, Denmark); Invited Oral Presentation
- 2001-Departmental seminar (invited): University of Illinois-Chicago
- 2001-National Institute of Child Health and Human Development Invited Seminar, Bethesda, MD
- 2001-Annual Meeting of the American Society for Microbiology; invited presentation
- 2001-LG Corporation invited research presentation, Seoul Korea
- 2002-University of Missouri (Invited departmental research seminar); Columbia, MO
- 2002-University of Montana (Invited departmental research seminar); Missoula, MT
- 2002-International Symposium on Staphylococci and staphylococcal infections, Invited Speaker, Pathogenesis session, Juntendo University, Japan.
- 2003-NIH Rocky Mountain Laboratories. Invited Seminar; Hamilton, MT
- 2003-Charter member International Nomenclature Committee for Staphylococcal Superantigens

2004-International Symposium on Staphylococci and staphylococcal Infections, Charleston, SC, Invited speaker

2007-8<sup>th</sup> International Veterinary Immunology Symposium, Ouro Preto, Brazil, Invited Speaker.

**Convener or Session Chair:**

1988-"**Molecular Epidemiology and Probes**" 88th Annual Meeting of ASM, Miami Beach, Florida

1989-"**Staphylococcus and Streptococcus: Genetic and Cloning Analysis**" 89th Annual Meeting of ASM, New Orleans, LA

1990-Organizer and Chair for **Pathogenesis Symposium** at the annual meeting of the Northwest Branch of ASM, Moscow, ID

1991-"**Pyrogenic Toxins and Enterotoxins of Staphylococci and Streptococci**" 91th Annual Meeting of ASM, Dallas, TX

1997-"**Pyrogenic Toxins and Other Superantigens**" Staphylococcal Diseases Gordon Conference, Proctor Academy, New Hampshire (Discussion Leader)

1998-"**Food Safety**" Session Chair; 8th World Conference on Animal Production; National Veterinary Research Institute, Seoul, Korea.

2001-"**Bacterial Superantigens**" Co-convener 101th Annual Meeting of the American Society for Microbiology, Orlando, FL.

2002-"**Animal Staphylococcal Infections**" Session co-organizer and co-convener at the 10<sup>th</sup> International Symposium on Staphylococci and Staphylococcal Infections, Juntendo University, Japan.

**Editorial Service:**

Editorial Board: 1990-2010: Infection and Immunity

**Peer Review Research Committees:**

1990-1994: American Heart Association Mountain West Peer Review Committee; Salt Lake City and Reno

1995: American Heart Association National Study Section Group F (Microbiology and Immunology) Dallas

1995: NIH Bacteriology and Mycology BM-1 Study Section-Bethesda

1996: NIH Bacteriology and Mycology BM-1 Ad Hoc reviewer

1998: NIH NIAID Special Emphasis Panel for study section RFP "Network on Antimicrobial Resistance to *Staphylococcus aureus* (NARSA)"

2000: USDA Panel on Sustaining Animal Health and Well-Being-Washington DC

2001: American Heart Association Panel B; Chicago, IL

2001: USDA Panel on Sustaining Animal Health and Well-Being-Washington DC

2001: NIH Special Emphasis Study Section (ZRG1 F08), Washington DC

2002: USDA Panel on Sustaining Animal Health and Well-Being-Washington DC

2003: NIH/NIAID MIDC Study section, Washington DC

2003: Canadian Foundation for Innovation: Infectious Disease Expert Committee, Montreal, Canada.

2004-2005: NIH/MIDC Study section (ad hoc), Washington DC

2005: NIH/NIAID AIDS Study section (ad hoc), Washington DC

2005-2010 NIH LRP Study section

2006-2009: NIH MID-B (Microbiology and Infectious Diseases-B-charter member), Washington DC

2009: USDA NRI Animal Health panel, Washington, DC

2009-2010 Chair: Southern Regional Aquaculture Center

**Professional Organization Offices/National and Regional Service:**

1990-1996: Research Committee (1991 and 1992, Chair); American Heart Association (Idaho and ID/MT Affiliates).

1990-1999: Board of Directors and President (1994&1997) of the American Heart Association (Idaho and ID/MT Affiliates).

1990-2003: Secretary/Treasurer of the Northwest Branch of the American Society for Microbiology  
1998-2001: Board of Governors and Research Committee; American Heart Association; Northwest Affiliate.  
2005-2010: Member (Chair-2007-2009) ESCOP Science and Technology Committee; National Association of State Universities and Land Grant Universities and Colleges.  
2007-2008: Chair (prior Secretary) Western Association of Agricultural Experiment Station Directors  
2004-2009: Administrative Advisor-WERA-089 Potato Virus Regional Project.  
2007-2009: Administrative Advisor- W-1150-Genetic Improvement of Bean (*Phaseolus vulgaris* L.) for Yield, Disease Resistance, and Food Value Regional Project.  
2007-2009: Pacific Northwest Potato Variety Development Committee  
2007-2009: Administrative Advisor-WERA-027-Potato Variety Development Regional Project  
2008-2009: Administrative Advisor-W-1010 Integrated Approach to Enhance Efficiency of Feed Utilization in Beef Production Systems  
2008-2009: National Association of NIH IDeA Principal Investigators (Western Region Elected Representative)  
2008-2009: NIH Task Force; EPSCoR Coalition  
2014-Pres: Chair-Committee on Legislation and Policy-Association of Public and Land Grant Universities  
2014-2018: Budget and Advocacy Committee-Association of Public and Land Grant Universities  
2014-2019: Administrative Heads Section Executive Committee and Policy Board of Directors, Association of Public and Land Grant Universities  
2014-2016: Chair-APLU Board on Agriculture Assembly Southern Administrative Heads  
2012-2019: AGREE Advisory Board  
2013-2019: Riley Memorial Foundation, Board of Directors (Executive Committee 2018-2019)

#### **HONORS AND AWARDS:**

1973 Undergraduate Senatorial Scholarship Recipient  
1982 Honor Society of Phi Kappa Phi  
1984 First Place Student Research Presentation; Annual Mtg. of the Allegheny Branch of ASM.  
1984 Second Place; Van Liere Student Research Competition; West Virginia Univ. Med. Center.  
1984 Third Place; Sigma Xi Research Award; West Virginia University.  
1985 First Place; Eastern Student Research Forum; Miami, Florida.  
1991 Nominated R.M. Wade Outstanding Teacher  
1991 Nominated R.M. Wade Outstanding Academic Advisor  
1992 Nominated R.M. Wade Outstanding Academic Advisor  
1993 Nominated R.M. Wade Outstanding Teacher  
1994 Nominated R.M. Wade Outstanding Academic Advisor  
1995 Nominated College of Agriculture Outstanding Teacher  
2001 R.M. Wade College of Agriculture Outstanding Academic Advisor Recipient  
2001 Research and Creativity Award, University of Idaho  
2002 Induction as Fellow into the American Academy for Microbiology  
2013 Honorary Professor, Jiangsu Academy of Agricultural Sciences, Nanjing, China

#### **PROFESSIONAL/HONOR SOCIETIES:**

American Society for Microbiology  
Sigma Xi  
Phi Kappa Phi  
Gamma Sigma Delta (former President of Idaho Chapter in 2000-2001)  
American Academy of Microbiology

#### **TEACHING EXPERIENCE:**

1980-1985: West Virginia University

Teaching Assistant for the following courses:

Medical Student Microbiology

Medical Technology Microbiology

Pharmacy School Microbiology

Dental School Microbiology

Parasitology

Guest lecturer on genetics and pathogenesis for the Medical Technology Microbiology Course

1985-1988: University of Minnesota

Course Coordinator for Basic Microbiology Course (1988)

Guest lecturer in two courses

Medical School Microbiology (5-10 lectures/year in 1987 and 1988) and

Medical Microbiology for Undergraduates (3 lectures/year)

1988-2004: University of Idaho and the WWAMI Medical Program

MedSci 521: Coordinator of Natural History of Infectious Diseases Course taught yearly to the WWAMI Medical students (since 1989)

MMBB 412/413 (Formerly Bact 304/305): Pathogenic Microbiology Course Coordinator 991-94

MMBB 561 Advanced Microbial Pathogenesis Course Coordinator (Graduate level)

FST416 Food Microbiology (annual guest lectures)

1988 -2004: External guest lectures

University of Washington Graduate Microbial Pathogenesis Course; U. of Washington

Washington State Univ. pathogenesis course (volunteered to teach entire course in 1999)

2004-2009: University of Idaho and the WWAMI Medical Program

Guest lectures in the WWAMI Medical Program (MedSci 521)

FST416 –Food Microbiology guest lectures

### **GRADUATE STUDENTS TRAINED:**

1. Terence N. Turner	M.S. student	1989-1991
2. Kimberly K. Crum	M.S. student	1990-1992
3. Marcy L. Hoffmann	Ph.D. student	1989-1995
4. Linda Liou	M.S. student	1989-1995
5. James C. Marr	M.S. student	1991-1994
6. Julie Lyon	M.S. student	1991-1993
7. James Deringer	Ph.D. student	1992-1996
8. Scott Callantine	M.S. student	1993-1997
9. Sang-un Lee	Ph.D. student	1998-2004
10. Keun Seok Seo	Ph.D. student	2001-2007
11. Sheila Karst	M.S. Student	2001-2002
12. Michelle Norgard	M.S. Student	2002-2006
13. Xianglu Li	Ph.D. Student	2003-2008
14. Anna Kolodziejek	Ph.D. Student	2004-2010

### **SCIENTIFIC PUBLICATIONS (Refereed journal articles, book chapters, and review articles):**

1. Bohach, GA and IS Snyder. 1983. Cyanobacterial stimulation of growth and oxygen uptake by *Legionella pneumophila*. Appl. Environ. Microbiol. 46:528-531.
2. Bohach, GA and IS Snyder. 1983. Characterization of surfaces involved in adherence of *Legionella pneumophila* to *Fischerella* surfaces. Infect. Immun. 42:318-325.
3. Cavalieri, SJ, GA Bohach, and IS Snyder. 1984. *Escherichia coli* alpha-hemolysin: Characteristics and probable role in pathogenicity. Microbiol. Rev. 48:326-343.

4. Bohach, GA and IS Snyder. 1985. Chemical and immunological analysis of the complex structure of *Escherichia coli*. J. Bacteriol. 164:1071-1080.
5. Bohach, GA and IS Snyder. 1986. Composition of affinity-purified alpha-hemolysin of *Escherichia coli*. Infect. Immun. 53:435-437.
6. Bohach, GA and PM Schlievert. 1987. Expression of staphylococcal enterotoxin in *Escherichia coli*. Infect. Immun. 55:428-432.
7. Bohach, GA and PM Schlievert. 1987. Nucleotide sequence of the staphylococcal enterotoxin C1 gene and relatedness to other pyrogenic toxins. Mol. Gen. Genet. 209:15-20.
8. Bohach, GA, CJ Hovde, JP Handley, and PM Schlievert. 1988. Cross-neutralization of staphylococcal and streptococcal pyrogenic toxins by monoclonal and polyclonal antibodies. Infect. Immun. 56:400-404.
9. Goshorn, SC, GA Bohach, and PM Schlievert. 1988. Cloning and characterization of the gene, speC, for streptococcal pyrogenic exotoxin type C from *Strep. pyogenes*. Mol. Gen. Genet. 212:66-70.
10. Bohach, GA, AR Hauser, and PM Schlievert. 1988. Cloning of the gene speB for streptococcal pyrogenic exotoxin type B in *Escherichia coli*. Infect. Immun. 56:1665-1667.
11. Bohach, GA, SJ Cavalieri, and IS Snyder. 1988. Methods for purification of *Escherichia coli* alpha-hemolysin. Meth. Enzymol. 165:137-146.
12. Bohach, GA and PM Schlievert. 1988. Detection of endotoxin using toxic-shock syndrome toxin-1 (TSST-1). Meth. Enzymol. 165:302-306.
13. Bohach, GA, BN Kreiswirth, RP Novick, and PM Schlievert. 1989. Analysis of toxic shock syndrome isolates producing staphylococcal enterotoxins B and C1 using southern hybridization and immunological assays. Rev. Infect. Dis. 11 (Suppl.):75-80.
14. Bohach, GA, JP Handley, and PM Schlievert. 1989. Biological and immunological properties of the carboxyl terminus of staphylococcal enterotoxin C1. Infect. Immun. 57:23-28.
15. Bohach, GA and PM Schlievert. 1989. Conservation of biologically active portions of staphylococcal enterotoxins C1 and C2. Infect. Immun. 57:2249-2252.
16. Hovde, CJ, SP Hackett, and GA Bohach. 1990. Nucleotide sequence of the staphylococcal enterotoxin C3 gene: sequence comparison of all three type C staphylococcal enterotoxins. Mol. Gen. Genet. 220:329-333.
17. Bohach, GA, DJ Fast, RD Nelson, and PM Schlievert. 1990. Staphylococcal and streptococcal toxins involved in toxic shock syndrome. CRC Crit. Rev. Microbiol. 17:251-272.
18. Schlievert, PM, GA Bohach, CJ Hovde, BN Kreiswirth, and RP Novick. 1990. Molecular analysis of staphylococcal toxins involved in toxic shock syndrome. In: Novick, RP, ed. Molecular biology of staphylococci. New York, pp. 313-326.
19. Betley, MJ, PM Schlievert, MS Bergdoll, GA Bohach, JJ Iandolo, SA Khan, PP Pattee, and RR Reiser. 1990. Staphylococcal gene nomenclature. ASM News. 156:182.
20. Bohach, GA, Y-I Chi, and CV Stauffacher. 1991. Crystallization and preliminary X-ray diffraction analysis of staphylococcal enterotoxin type C. Proteins. 13:152-157.
21. Turner, TN, CL Smith, and GA Bohach. 1992. Residues, 20, 22, and 26 determine subtype specificity of staphylococcal enterotoxins C1 and C2. Infect. Immun. 60:694-697.
22. Marr, JC., JD Lyon, JR Roberson, M Luper, WC Davis, and GA Bohach. 1993. Characterization of novel type C enterotoxins: biological and evolutionary implications. Infect. Immun. 61:4254-4262.
23. Van Den Bussche, RA, JD Lyon, and GA Bohach. 1993. Molecular evolution of the staphylococcal and streptococcal pyrogenic toxin gene family. Mol. Phylogenet. Evol. 2:281-292.
24. Hovde, CJ, JC Marr, ML Hoffmann, SP Hackett, Y-I Chi, KK Crum, DL Stevens, CV Stauffacher and GA Bohach. 1994. Investigation of the role of the disulfide bond in activity and structure of staphylococcal enterotoxin C1. Molec. Microbiol. 13:897-909.
25. Hoffmann, ML, LM Jablonski, KK Crum, SP Hackett, Y-I Chi, CV Stauffacher, DL Stevens, and GA Bohach. 1994. Predictions on locations of T cell receptor and major histocompatibility complex binding sites on staphylococcal enterotoxin C1. Infect. Immun. 62:3396-3407.
26. Austin, PR, PM Jablonski, GA Bohach, K Dunker, and CJ Hovde. 1994. Evidence that the A<sub>2</sub> fragment

- of Shiga-like toxin type 1 is required for holotoxin integrity. *Infect. Immun.* 62:1168-1175.
27. Darby, NW, JC Mosley, BM Davitt, and GA Bohach. 1995. Dietary effects on ungulate excretion of *Enterococcus* spp., *S. bovis*, and *S. equinus* in feces. *J. Env. Qual.* 24:719-724.
  28. Yan, S, GA Bohach and DL Stevens. 1995. Persistent acylation of high molecular weight penicillin-binding proteins by penicillin induces the post-antibiotic effect in *Streptococcus pyogenes*. *J. Infect. Dis.* 170:609-614.
  29. Schlievert, PM, GA Bohach, DH Ohlendorf, CV Stauffacher, DYM Leung, DL Murray, SP Prasad, CA Earhart, LM Jablonski, ML Hoffmann, and Y-I Chi. 1995. Molecular structure of *Staphylococcus* and *Streptococcus* superantigens. *J. Clin. Immunol.* 15:4S-10S.
  30. Bohach GA, LM Jablonski, CF Deobald, Y-I Chi, and CV Stauffacher. 1995. Functional domains of staphylococcal enterotoxins. *In* M Ecklund, J L Richard, K Mise (eds), *Molecular Approaches to Food Safety; Issues Involving Toxic Microorganisms*. Alaken Inc, Fort Collins, CO. p. 339-356.
  31. Price JS, AF Tencer, DM Arm, and GA Bohach. 1996. Controlled release of antibiotics from coated orthopedic implants. *J Biomed Mater Res.* 30:281-6.
  32. Bohach GA, CV Stauffacher, DH Ohlendorf, Y-I Chi, GM Vath, and PM Schlievert. 1995. The staphylococcal and streptococcal pyrogenic toxin family. *In* BR Singh and AT Tu (eds), *Natural Toxins II*. Plenum Publishing Corporation, New York. p. 131-154.
  33. Jablonski LM, and GA Bohach. 1996. *Staphylococcus aureus*. *In*: L Beuchat, M Doyle, and T Montville (eds), *Fundamentals of Food Microbiology* (2<sup>nd</sup> ed.). ASM Press. Washington, D.C. pages 353-375.
  34. Bohach GA, MM Dinges, DT Mitchell, DH Ohlendorf, and PM Schlievert. 1997. Staphylococcal exotoxins *In*: G Archer and K Crosby (eds.). *Staphylococci and staphylococcal diseases*. Churchill Livingstone, New York. p83-111.
  35. Davis WC, J Nathans, WC Braun, JA Ellis, MJ Hamilton, GH Cantor, JIR Barbosa, W Ferens and GA Bohach. 1996. Analysis of monoclonal antibodies reactive with molecules upregulated or expressed only on activated lymphocytes. *Vet. Immunol. Immunopath.* 32:301-311.
  36. Bohach GA. 1997. Staphylococcal enterotoxins B and C: structure and function. *In*: Leung, D.Y.M., B. Huber, and P.M. Schlievert. *Superantigens: relevance to human disease and basic biology*. Marcel Dekker, inc., New York. p. 167-198.
  37. Deringer JR, RJ Ely, CV Stauffacher and GA Bohach. 1996. Subtype-specific interactions of type C staphylococcal enterotoxins with the T cell receptor. *Mol. Microbiol.* 22:523-534.
  38. Dziewanowska K, VM Edwards, JR Deringer, GA Bohach, and DJ Guerra. 1996. Comparison of the beta-toxins from *Staphylococcus aureus* and *Staphylococcus intermedius*. *Arch. Biochem. Biophys.* 335:102-108.
  39. Gaskin DK, GA Bohach, PM Schlievert, and CJ Hovde. 1997. Purification of *Staphylococcus aureus*  $\beta$ -toxin: comparison of three isoelectric focusing methods. *Protein Expression and Purification.* 9:76-82.
  40. Bohach GA, WC Davis, W Ferens, CV Stauffacher, CF Deobald, MJ Hamilton, and Y-H Park. 1996. Interaction of staphylococcal enterotoxin superantigens with immune cells and their role in animal disease. *Korean J. Vet Public Health.* 20:337-348.
  41. Davis, WC, W Ferens, WH Park, MJ Hamilton, and GA Bohach. 1996. Role of staphylococcal enterotoxin C in the pathogenesis of mastitis. *Korean J. Vet. Public Health.* 20:299-310.
  42. Vath, GM, CA Earhart, JV Rago, MH Kim, GA Bohach, PM Schlievert, and DH Ohlendorf. 1997. The structure of the superantigen exfoliative toxin A suggests a novel regulation as a serine protease. *Biochemistry.* 36:1559-1566.
  43. Edwards, VM, JR Deringer, SD Callantine, CF Deobald, PH Berger, V Kapur, CV Stauffacher, and GA Bohach. 1997. Characterization of the canine type C enterotoxin (SEC-canine) produced by *Staphylococcus intermedius* pyoderma isolates. *Infect. Immun.* 65:2346-2352.
  44. Li H, OS Fedorova, AN Grachev, YY Markushin, WR Trumble, G Bohach, TR Fletcher, and L Czuchajowski. 1997. The series of meso-5, 10, 15-tris (N-methyl-4-pyridiniumyl)--20-(4-amino-benzene) porphyrins: synthesis, interaction with DNA and bactericidal activity. *Biochem. Biophys. Acta.* 1354:225-260.



45. Deringer JR, RJ Ely, S Monday, CV Stauffacher, and GA Bohach. 1997. V $\beta$  dependent stimulation of bovine and human T cells by host-specific staphylococcal enterotoxins. *Infect. Immun.* 65:4048-4054.
46. Bayles, KW, CA Wesson, LE Liou, LK Fox, GA Bohach, and WR Trumble. 1998. Intracellular *Staphylococcus aureus* escapes the endosome and induces apoptosis in epithelial cells. *Infect. Immun.* 66:336-342.
47. Lamphear, JG, GA Bohach, and RR Rich. 1998. Identification of a structural motif in staphylococcal enterotoxin C1 that enables MHC Class II-independent activation of T lymphocytes. *J. Immunol.* 160:2107-2114.
48. Bohach GA. 1997. Staphylococcal enterotoxins B and C. *Prep. Biochem. Biotech.* 27:79-110.
49. Ferens, WF, WC Davis, MJ Hamilton, CF Deobald, L Fox, and GA Bohach. 1998. Activation of bovine lymphocyte populations by staphylococcal enterotoxins. *Infect. Immun.* 66:573-580.
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#### **EDUCATION PUBLICATIONS:**

1. Lindley, J and GA Bohach. 1997. Teaching introductory microbiology using the National Teacher Training Institute's Methodology. J. Idaho Acad. Sci. 33:29.

#### **PATENTS/INVENTION DISCLOSURES:**

- US Patent # 6,872,394: Non-toxic immune stimulating enterotoxin compositions. Issued 2005.
- US Patent # 7,148,065: Non-toxic immune stimulating enterotoxin compositions. Issued 2006.
- Disclosure: University of Idaho OTT#08-013 Bovine Monoclonal Antibodies (FOX9A, FOX5A, FOX20A) 2008.