# 1999 - 2000
# SUMMARY OF SCHOLARLY ACTIVITIES
# DEPARTMENT OF MICROBIOLOGY AND IMMUNOLOGY

## I. ARTICLES PUBLISHED IN BOOKS AND JOURNALS

### A. Full length published articles.

I. S. Bang, B. H. Kim, J. W. Foster, and Y. K. Park. OmpR Regulates the Stationary Phase Acid Tolerance Response of *Salmonella enterica* Var Typhimurium. J. Bacteriol. 182:2245-2252 (2000).

J. Bustamante, E. Michelette, J. Geibel, D. Dean, J. Hanover, and T. McDonnell. Calcium, ATP, and Nuclear Pore Channel Aging. Pflugers Arch. Eur. J. Physiol. 439:433-444 (2000).

J. Bustamante, E. Michelette, J. Geibel, J. Hanover, T. McDonnell, and D. Dean. Dendrimer-assisted Patch-clamp Sizing of Nuclear pores. Pflugers Arch. Eur. J. Physiol. 439:838-844 (2000).

H. Cheng, H. Staats, N. Van Rooijen, J. E. Oakes, and R. N. Lausch. Role of Macrophages in Restricting Herpes Simplex Virus Type 1 Growth After Ocular Infection. Invest. Ophthalmol. Vis. Sci. 41:1402-1409 (2000).

J. H. Coggin, Jr., A. L. Barsoum, and J. W. Rohrer. 37 Kilodalton Oncofetal Antigen Protein and Immature Laminin Receptor Protein Are Identical, Universal T-cell Inducing Immunogen on Primary Rodent and Human Cancers. Anticancer Res. 19:5535-5542 (1999).

D. A. Dean, B. S. Dean, S. Muller, and L. C. Smith. Sequence Requirements for Plasmid Nuclear Import. Exp. Cell Res. 253:713-722 (1999).

F. C. Fang, M. A. DeGroote, J. W. Foster, A. Baumler, U. Ochsner, T. Testerman, S. Bearson, J-C. Girard, Y. Xu, G. Campbell, and T. Laessig. Virulent *Salmonella typhimurium* Has Two Periplasmic Cu, Zn-Superoxide Dismutase. Proc. Natl. Acad. Sci. 96:7502-7507 (1999).

J. W. Foster. Microbial Responses to Acid Stress. IN: G. Storz and R. Hengge-Aronis (Eds.) Bacterial Stress Responses. ASM Press, Washington, DC, pp. 99-115 (2000).

M. Moreno, J. Audia, C. Webb, S. Bearson, and J. W. Foster. Regulation of Sigma S Degradation in *Salmonella enterica* var Typhimurium: *In Vivo* Interactions Between Sigma S, the Response Regulator MviA/RssB, and ClpX. J. Mol. Microbiol. Biotech. 2:245-254 (2000).

L. I. Rachek, A. Hines, A. M. Tucker, H. H. Winkler, and D. O. Wood. Transformation of *Rickettsia prowazekii* to Erythromycin Resistance Encoded the *Escherichia coli ereB* Gene. J. Bacteriol. 182:3289-3291 (2000).

G. Rajashekara, M. F. Alexeyev, S. Munir, A. Back, D. A. Halvorson, K. V. Nagaraja, and C. L. Wells. Pathogenic Role of SEF14, SEF17, and SEF21 Fimbriae in Salmonella Enterica Serovar Enteritidis Infection of Chickens. Appl. Environ. Microbiol. 66(4):1759-1763 (2000).

J. A. Reddy, D. Dean, M. D. Kennedy, and P. S. Low. Optimization of Folate-conjugated Liposomal Vectors for Folate Receptor-mediated Gene Therapy. J. Phar. Sci. 88:1112-1118 (1999).

M. T. Tran, R. N. Lausch, and J. E. Oakes. Calcitonin Gene-related Peptide Induces Interleukin IL-8 Synthesis in Human Corneal Epithelial Cells. J. Immunol. 164:4307-4312 (2000).

O. Trentmann, C. Decker, H. H. Winkler, and H. E. Neuhaus. Charged Amino-acid Residues in Transmembrane Domains of the Plastidic ATP/ADP Transporter From Arabidopsis Are Important for Transport Efficiency, Substrate Specificity, and Counter Exchange Properties. Eur. J. Biochem. 267:4098-4105 (2000).

Y. Xu, D. A. Kakhniashvili, D. A. Gremse, D. O. Wood, J. A. Mayor, D. E. Walters, and R. S. Kaplan. The Yeast Mitochondrial Citrate Transport Protein. J. Biol. Chem. 275:7117-7124 (2000).

B. Articles in Press.

A. L. Barsoum, J. W. Rohrer, and J. H. Coggin, Jr. 37kDa Oncofetal Antigen Is an Autoimmunogenic Homologue of the 37kDa Laminin Receptor Precursor. Cell. Mol. Biol. Lett. (2000).

D. A. Dean. Peptide Nucleic Acid-based Gene Therapy. Adv. Drug Delivery Rev. (Invited Review) (2000).

D. A. Dean and R. A. Perkins. GeneTherapy: If at First You Don't Succeed... Am. Fam. Physician (2000).

J. J. Martin, J. L. Young, J. N. Benoit, and D. A. Dean. Gene Transfer to Intact Mesenteric Arteries by Electroporation. J. Vasc. (2000).

D. O. Wood and A. F. Azad. Genetic Manipulation of Rickettsiae: A Preview. Infect. Immun. (2000).

## II. PUBLISHED ABSTRACTS.

M. F. Alexeyev and H. H. Winkler. Survey of Positively Charged Residues in *Rickettsia prowazekii* ATP/ADP Translocase. Abstr., Am. Soc. Microbiol. Gen. Mtg., K-43 (2000).

J. Audia, M. S. Moreno, and J. W. Foster. Mechanism of RpoS Turnover in *Salmonella typhimurium*: Bacterial Two Hybrid Analysis of MviA, RpoS and ClpX Interactions. Abstr., Am. Soc. Microbiol. Gen. Mtg., Poster K-10, p. 419 (2000).

I. S. Bang, Y. K. Park, and J. W. Foster. OmpR as a Major Regulator for the Stationary Phase Acid Tolerance Response of *Salmonella typhimurium*. Abst., Am. Soc. Microbiol. Gen. Mtg., Poster K-12, p. 419 (2000)

D. A. Dean, K. Blair-Parks, X. Yan, R. N. Lausch, and B. C. Weston. Gene Delivery to the Cornea by Plasmid Injection and Electroporation. Invest. Ophthalmol. Vis. Sci. 41:S264 (2000).

R. N. Lausch, R. R. Fenton, S. W. Heinzerling, and J. E. Oakes. Importance of IL-6 in Herpesvirus-induced Corneal Inflammation. Invest. Ophthalmol. Vis. Sci. 41:B289 (2000).

W. D. McSween, G. L. Wilson, H. H. Winkler, and D. O. Wood. Repair of Alkylation DNA Damage in *Rickettsia prowazekii*. Abst., Gen. Mtg., Am. Soc. Rickettsiol. D-71 (2000).

F. M. Munkonge, D. A. Hillery, D. A. Dean, and E. W. F. Walton. Affinity Capture of Putative Plasmid DNA Shuttle Proteins From the Mammalian Cell Cytosol. Mol. Biol. Cell 10S:441a (1999).

N. Norwood, D. A. Dean, T. Moore, J. Creighton, P. Babal, and T. Stevens. Inhibition of Myosin Light Chain Kinase Stimulates Calcium Release in Pulmonary Artery Endothelial Cells. FASEB J. 13:A502 (1999).

M. Ritchie, R. N. Lausch, and J. E. Oakes. The Role of NF-KB in the Differential Induction of IL-8 and MCP-1 in IL-1α Stimulated Human Corneal Cells. FASEB J. 14:108.9 (2000).

S. Shin, J. W. Foster, and J. B. Kaper. Activator of Glutamate Decarboxylase Gene, *gadA,* Negatively Regulates Expression of Enteropathogenic *E. coli* Virulence Genes Through the Repression of *per* Expression. Abstr., Am. Soc. Microbiol. Gen. Mtg., Poster B-197, p. 86 (2000).

J. L. Young, J. N. Byrd, Jr., C. R. Wyatt, and D. A. Dean. Endothelial Cell-specific Plasmid Nuclear Import. Mol. Biol. Cell 10S:443a (1999).

## III. BOOKS PUBLISHED.

None.

## IV. PRESENTATIONS.

M. F. Alexeyev. Survey of Positively Charged Residues in *Rickettsia prowazekii* ATP/ADP Translocase. ASM Gen. Mtg, Los Angeles, CA (2000).

D. A. Dean. Endothelial Cell-specific Plasmid Nuclear Import. Annu. Mtg., Am. Soc. Cell Biol., Washington, D.C. (1999).

D. A. Dean. Overcoming Cellular Barriers for Nonviral Gene Delivery. (1) Northwestern University School of Medicine, Chicago, IL; and (2) University of Southern California School of Pharmacy, Los Angeles, CA (2000).

D. A. Dean. Gene Delivery to the Cornea by Plasmid Injection and Electroporation. Annu. ARVO Mtg., Ft. Lauderdale, FL (2000).

D. A. Dean. Development of a DNA Vaccine for Human Parvovirus B19. Annu. Natl. Sickle Cell Prog. Mtg., Philadelphia, PA (2000).

D. A. Dean. Nonviral Cell-specific Targeting. Keystone Symposium on Gene Therapy, Keystone, CO (2000).

D. A. Dean. Gene Transfer to Intact Vasculature by Electroporation. Keystone Symp., Mol. Biol., Cardiovasc. System, Snowbird, UT (2000).

D. A. Dean. Vascular Gene Therapy: the ins and outs of Gene Delivery. Cedars-Sinai Medical Center, Los Angeles, CA (2000).

D. A. Dean. Overcoming Intracellular and Extracellular Barriers for Nonviral Gene Delivery. University of Washington School of Pharmacy, Seattle, WA (2000).

D. A. Dean. Overcoming Cellular Barriers for Nonviral Gene Delivery. Blood Res. Institute, Milwaukee, WI (2000)

J. W. Foster. The Art of Survival: Genetics of Acid Tolerance and *Salmonella* pathogenesis. Texas A&M University, College Station, TX (2000).

J. W. Foster. The Art of Survival: Acid Stress Responses of *Salmonella* and *E. coli*. Plenary Lecture, Microbiol. 2000, Munich, Germany (2000).

J. W. Foster. Microbial Stress Responses to Preservative Agents and Conditions in Food Environments. Soc. Industrial Microbiol., Arlington, VA (2000).

J. W. Foster. Acid Stress Responses in Enteric Microorganisms. University of Maryland Center for Vaccine Development, Baltimore, MD (2000).

J. W. Foster. Targeting Microbial Stress Responses for Antimicrobial Drug Design. Center for Macromolecular Crystallography, University of Alabama, Birmingham, AL (2000).

J. W. Foster. When Protons Attack: The Genetics of *Salmonella* and *E. coli* Acid Stress Responses. University of Wisconsin, Madison, WI (2000).

R. N. Lausch. Evidence That Macrophages Participate in the Generation of Acquired Immunity Following HSV-1 Infection of the Murine Cornea. Mini-symposium on Antigen Presentation in the Eye, ARVO. Fort Lauderdale, FL (2000).

R. N. Lausch. Importance of IL-6 in Herpesvirus-induced Corneal Inflammation. Invest. Ophthalmol. Vis. Sci., Fort Lauderdale, FL (2000).

D. O. Wood. Transformation of *Rickettsia prowazekii* to Erythromycin Resistance: An Update. Am. Soc. Rickettsiol., Captiva Island, FL (2000).

## V. NATIONAL PROFESSIONAL RECOGNITION.

This past year, Dr. David A. Dean served as special reviewer for NIH SBIR/STTR Study Section and also, as ad hoc reviewer for Förderung der wissenschaftlichen Forschung (Austrian equivalent of NIH). He also served as reviewer for *Biotechniques, Quarterly Review of Biology, Cellular and Molecular Life Sciences.*

Dr. John W. Foster continues to review for a number of scientific journals including: *Journal of Bacteriology, Molecular Microbiology, Infection and Immunity, Electrophoresis*, and *Food Microbiology.*

Dr. Robert N. Lausch served as Special Reviewer for Visual Science A Study Section, National Eye Institute. He also served on the Member Panel of Primary Reviewers for the *Journal of Immunology*, and still serves as a Reviewer for *Investigative Ophthalmology and Visual Science*, as well as *American Journal of Pathology.*

This year, Dr. John E. Oakes became an Ad Hoc Member of Visual Science A Study Section for the National Eye Institute and continues on the Member Panel of Primary Reviewers for the *Journal of Immunology.*

Dr. Herbert H. Winkler continued to serve on the Editorial Board of Infection and Immunity, and the Council Policy Committee of the American Society for Microbiology.

Dr. David O. Wood was honored by receiving the prestigious NIH MERIT Award. He also served as Reviewer for the *American Journal of Tropical Medicine and Hygiene.*

## VI. BRIEF SUMMARY OF DEPARTMENT ACTIVITIES AND PROGRESS.

The Department of Microbiology and Immunology is pleased to welcome Hope Richard to our graduate program.

Dr. David A. Dean hosted two medical students in his lab this past summer as part of the Summer Medical Student Research Program -- James Byrd and Jason Martin (both between years 1 and 2). Jason won the Clyde Huggins award for Best oral presentation from USA COM and went to Galveston in March of 2000 to participate in the National Student Research Forum, with students from medical schools around the country. He gave an oral presentation entitled, "Gene Transfer to Intact Mesenteric Arteries by Electroporation," and won the "Award for Overall Excellence of Research." Roughly 200 other presentations were competing for this award.

In September, Dr. Herbert H. Winkler visited Kaiserslautern, Germany, to visit with Dr. Ekkehard Neuhaus. The collaboration between Dr. Winkler and Dr. Neuhaus has resulted in making a connection between plants and intracellular bacteria.

Dr. David A. Dean has accepted a faculty position at Northwestern University and will be leaving us at the end of September. We wish him well and will miss him. Dr. Dean's graduate student, Jennifer Young, is also transferring to Northwestern to continue her graduate studies in his new lab.