

## Samantha King, Ph.D.

Center for Microbial Pathogenesis  
The Research Institute at Nationwide Children's Hospital  
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### Employment:

- 2005-present **Principal Investigator**, Center for Microbial Pathogenesis, The Research Institute at Nationwide Children's Hospital, Columbus, OH
- 2005-2013 **Member**, The Center for Microbial Interface Biology
- 2005-2013 **Assistant Professor** Department of Pediatrics, College of Medicine, The Ohio State University
- 2005-2013 **Assistant Professor** Department of Pathology, Graduate Faculty, College of Medicine, The Ohio State University
- 2013-present **Associate Professor** Department of Pediatrics, College of Medicine, The Ohio State University
- 2013-present **Associate Professor** Department of Pathology, Graduate Faculty, College of Medicine, The Ohio State University
- 2014-present **Associate Director of Programming**, Center for Microbial Interface Biology, The Ohio State University

### Education:

- 1991-94 B.Sc. (Hons) University of Leicester (Genetics), Leicester, UK
- 1995-99 Ph.D. University of Warwick (Microbiology), Coventry UK

### Postgraduate Training and Fellowship Appointments:

- 1994 Royal Society Summer Scholarship. University of Leicester, Leicester, UK
- 1994-1995 European Social Fund Trainee Molecular Biology, University Of Leicester, Leicester, UK
- 1999-2002 Postdoctoral research assistant, University of Warwick, Coventry, UK
- 2002-2005 Postdoctoral researcher, Department of Microbiology, University of Pennsylvania, Philadelphia, PA

### Awards:

- 2014 FASEB Microbial Glycobiology Travel Award
- 2004 Eastern Pennsylvania Branch, American Society of Microbiology Infection and Immunity Forum poster prize
- 2003 The University of Pennsylvania Biomedical Post-doc Research Symposium third place poster

- 1994 The University of Leicester and SmithKline Beecham essay prize (third place)  
 1994 Royal Society Summer scholarship

**Teaching experience:**

- 2011-Present Co-director of IBGP 740 Advanced Microbial Pathogenesis  
 2007-Present Lectured within IBGP 724 Molecular Biology of Bacterial Pathogens Microbiology  
 2008 Co-taught IBGP 851 Advanced Seminar in Integrated Biomedical Science  
 2000-2002 Microbiological techniques tutorial  
 1996-2002 Teaching assistant for bacterial genetics practical class

**Other relevant qualifications:**

- 2004 Writing for Biomedical Professionals Course  
 2004 Communication and Leadership Program Toastmaster International

**Memberships in Professional and Scientific Societies:**

- 2011- Present American Heart Association  
 2005- Present Center for Microbial Interface Biology, The Ohio State University  
 2001- Present American Society of Microbiology (ASM)

**Editorial Boards:**

- 2010- Present Editorial Review Board, Frontiers in Cellular Microbiology  
 2009- Present Editorial Review Board, Infection and Immunity  
 2014- Present Editorial Board, Frontiers in Veterinary Infectious Diseases

**Ad hoc Reviewer for the Following Journals:**

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|---|--|
| Antimicrobial Agents in Chemotherapy                            | Journal of Clinical Microbiology           |
| Applied and Environmental Microbiology                          | Journal of Infectious Diseases             |
| Biochemistry  | Journal of Innate Immunity                 |
| BMC Microbiology  | Journal of Medical Microbiology            |
| Clinical Vaccine and Immunology                                 | Journal of Pediatrics                      |
| European Journal of Clinical Microbiology & Infectious Diseases | mBio                                       |
| Expert Review of Anti-infective Therapy                         | Microbiology                               |
| FEMS Immunology and Medical Microbiology                        | Microbial Pathogenesis                     |
| FEMS Microbiology Letters                                       | Molecular Microbiology                     |
| Folia Microbiologica  | Molecular Oral Microbiology                |
| Infection and Immunity  | PLoS ONE                                   |
| JARO  | PLoS Pathogens                             |
| Journal of Antimicrobial Chemotherapy                           | Scandinavian Journal of Infectious Disease |
| Journal of Bacteriology   | Structure                                  |
|   | Trends in Microbiology                     |

**Ad hoc Reviewer for the Following Funding Agencies:**

Horizon projects, Netherlands Genomic Initiative  
Estonian Science Foundation  
Medical Research Council, United Kingdom  
USDA – NIFA Animal Health and Production and Animal Products:  
Animal Health and Disease Grant Program  
NIH-ZRG1 IDM-S (02)  
NIH – NIAD Center of Excellence in Translational Research (CETR)

**External Examiner:**

University of Ghana, College of Graduate Studies

**External Promotion and Tenure Examiner:**

University of Ghana, College of Health Sciences

**Academic Committees:**

Medical Student Research Faculty Advisory Council, member  
Child Health Research Center Speaker Series Committee, member  
Bench to Outcomes Seminar Series Committee, member and originator  
Host Pathogen Seminar Series Committee, chair  
Shared Resources Advisory Committee, member  
Vivarium Rodent User Advisory Group, member  
Research Institute Training Association Steering Committee, member  
Nationwide Children's Hospital Research Institute Research Retreat  
Committee, member

**Major Teaching Responsibilities:**

**1) Supervision of Postdoctoral Fellows:**

2010 – Present Anirudh Singh, Ph.D.  
2013 Nationwide Children's Hospital Research Retreat, Academic  
Enrichment Award, Poster Presentation  
2014 Nationwide Children's Hospital Research Retreat,  
Postdoctoral Fellow Award, Poster Presentation  
2015 Nationwide Children's Hospital Research Institute, 2<sup>nd</sup>  
Annual Infectious Disease Consortium, Trainee Grant Award

**2) Supervision of Graduate Students:**

2011- 1/2013 Hussam Salhi  
Biomedical Sciences Graduate Program  
  
2008 – 6/2012 Carolyn Buckwalter (née Marion)  
Ph.D., Biomedical Sciences Graduate Program  
2009 Selected for oral presentation, American Society for  
Microbiology Ohio Branch Meeting  
2010 Best Graduate Student Poster, Center for Microbial Interface  
Biology Retreat  
2010 Best oral presentation, Ohio Branch ASM meeting  
2010-2012 Awarded GRA spring 2010 Predoctoral Fellowship  
from AHA for \$46,000.00

2011 Travel Award for Poster Presentation, 10<sup>th</sup> Annual OSUMC  
 Trainee Research Day  
 2011 Award for Research Excellence, Ohio Branch ASM Meeting  
 2011 Ray Travel Award  
 2011 Travel Award, Outstanding Graduate Student-Basic  
 Research, The Research Institute at Nationwide Children's  
 Hospital  
 2011 Outstanding Graduate Student- Basic Research  
 2006- 11/2007 Amanda Burnaugh  
 Masters, Department of Pathology  
 2007 Best Graduate Student Poster, CCRI Retreat  
 2007 Travel Award, American Society for Microbiology Annual  
 General Meeting  
 2007 Best Oral Presentation, Center for Microbial Interface  
 Biology Retreat

**3) Rotation Students:**

2011 Sarah Chaney  
 2010-2011 Devyn Gillette, Hussam Salhi  
 2007-2008 Jessica Abrahams, Carolyn Marion  
 2006-2007 Jessica Williams, Laura Frantz

**4) Supervision of Undergraduate Students:**

2014- Present Margaret Grau  
 2014 Research Scholar Award  
 2014 SOLAR Fund Undergraduate Research Award  
 2014- Present Anthony Brushnahan  
 2012- Present Amin Osman  
 2012 David V. Perry and Isabel H. Perry Research  
 Scholarship Fund  
 2012 SOLAR Fund Undergraduate Research Award  
 2012 Jessica Rohr  
 2010-2012 Caroline Linke  
 Recipient of the 2011 ASM Undergraduate Research  
 Fellowship (URF) Program Award  
 2011 Undergraduate Research Scholarship Award from the  
 College of Arts and Sciences, The Ohio State University  
 2012 Honorable Mention in the Ohio State Chapter of  
 Sigma Xi's Grant-in-Aid Research Competition  
 2010-2012 Dustin Meyers  
 2010-2011 Spiridon Verija  
 2009-2010 Mia Tazi  
 Recipient of the Autumn 2009 Dean's Undergraduate  
 Research Fund award  
 2010 Best Undergraduate Poster, Center for Microbial  
 Interface Biology Retreat  
 2010 The Ohio State University Denman Undergraduate  
 Research Forum Prize winner

2008-2009 Lindsey Fuller  
 Ohio State Undergraduate Student Government Academic  
 Enrichment Grant recipient  
 Ohio Branch of the American Society of Microbiology  
 Allan A. Ichida Award for Research Excellence  
 The Ohio State University Denman Undergraduate  
 Research Forum Prize winner

2007-2008 Jacqua Black

2006-2007 Jason Stewart

**5) Supervision of Medical Students:**

2013 Kristin Hines  
 2013 COM Medical Student Research Scholarship

2012 Audrey Lloyd  
 2012 COM Medical Student Research Scholarship  
 2013 Travel Award for Poster Presentation, 12<sup>th</sup> Annual  
 OSUMC Trainee Research Day

2010 Andrew Aten  
 2011 Travel Award for Poster Presentation, 10<sup>th</sup> Annual  
 OSUMC Trainee Research Day  
 Roessler Medical Student Research Fellowship

2009 Matthew Flynn  
 Roessler Medical Student Research Fellowship

2008 Greg Bobulsky  
 2009 Travel Award for Poster Presentation, 9<sup>th</sup> Annual  
 OSUMC Trainee Research Day  
 Roessler Medical Student Research Fellowship

2007 Julie Sladek  
 Roessler Medical Student Research Fellowship

**6) Member Ph.D. Candidate Dissertation Committee:**

**Current:**

Mohini Bhattacharya, Microbiology, Mentor: Dr Wozniak

**Past:**

Sara Johnson, Biomedical Sciences Graduate Program,  
 Mentor: Dr Mason

Tracy Keiser, Microbiology, Mentor: Dr Schlesinger

Lea Murphy, Microbiology, Mentor: Dr Ruiz

Yalong Zang, Chemistry, Mentor: Dr Wang

Lyn Wancket, Veterinary Bioscience, Mentor: Dr Liu

**7) First Year Faculty Advisor:**

2006-2007 Shirley Luong, Biomedical Sciences Graduate Program

**8) Member, Faculty Advisory Committee for First Year Biomedical Sciences  
 Graduate Program Students**

2006-2007 Laura Frantz, Chelsea Bolyard

## **Service at Nationwide Children's Hospital and The Ohio State University:**

- 2015** Judge, Denman Undergraduate Research Forum, The Ohio State University  
Judge, Buckeye Science and Engineering Fair, The Ohio Academy of Science  
Judge, 14<sup>th</sup> Annual Ohio State University College of Medicine Trainee Research Day
- 2014** Reviewer, Office of International Affairs Public Health Preparedness for Infectious Disease Research Seed Grant Track, The Ohio State University  
Judge, Hayes Graduate Research Forum Abstracts  
Judge, Ohio Branch ASM Meeting  
Judge, State Science Day, The Ohio Academy of Science  
Graduate Faculty Representative, Doctoral Exam Committee Cheryl Laird, Politics  
Judge, Ohio State University Medical College Graduate and Postgraduate Research Day  
Judge, Denman Undergraduate Research Forum, Ohio State University  
Judge, The Research Institute at Nationwide Children's Hospital, Annual Research Retreat
- 2013** Judge, Hayes Graduate Research Forum Abstracts  
Graduate Faculty Representative, Doctoral Exam Committee, Kuo-Fang Shen, Molecular, Cellular and Developmental Biology  
Judge, Ohio State University Medical College Graduate and Postgraduate Research Day  
Annual Landacre Honor Society Research Information Fair  
Judge, The Research Institute at Nationwide Children's Hospital Research Day
- 2012** Judge, Hayes Graduate Research Forum Abstracts  
Judge, Denman Undergraduate Research Forum, Ohio State University  
Judge, The Research Institute at Nationwide Children's Hospital Research Day  
Judge, Ohio State University Medical College Graduate and Postgraduate Research Day  
Grant Reviewer, Center for Clinical and Translational Science
- 2011** Judge, Hayes Graduate Research Forum Abstracts  
Judge, Nationwide Children's Hospital Research Retreat  
Judge, Ohio State University Medical College Graduate and Postgraduate Research Day  
Judge, Denman Undergraduate Research Forum, Ohio State University  
Judge, Center for Microbial Interface Biology Retreat

Graduate Faculty Representative, Masters Examination Committee  
Katrina Cook, School of Teaching and Learning

- 2010** Judge, Center for Microbial Interface Biology Retreat  
Judge, Ohio State University Medical College Graduate and Postgraduate Research Day  
Reviewed Medical Students Research Fellowship Applications  
Judge, Denman Undergraduate Research Forum, Ohio State University  
Graduate Faculty Representative, Doctoral Exam Committee Daniel Carlson, Sociology  
Annual Landacre Honor Society Research Information Fair
- 2009** Judge, Hayes Graduate Research Forum Abstracts  
Reviewed Roessler Research Fellowship Applications  
Judge, Ohio State University Medical College Graduate and Postgraduate Research Day  
Judge, Denman Undergraduate Research Forum, Ohio State University  
Graduate Faculty Representative, Doctoral Exam Committee Jason Fowler, Biochemistry  
Annual Landacre Honor Society Research Information Fair
- 2008** IBGP Retreat CV clinic  
Judge, Ohio State University Medical College Graduate and Postgraduate Research Day  
Reviewed Roessler Research Fellowship Applications  
Judge, Denman Undergraduate Research Forum  
Graduate Faculty Representative, Doctoral Exam Committee Angella Singh, Education  
Member of the Short Talk Selection Committee, Center for Microbial Interface Biology Retreat  
Judge, Center for Microbial Interface Biology Retreat  
Annual Landacre Honor Society Research Information Fair
- 2007** Judge, Ohio State University Medical College Graduate and Postgraduate Research Day  
Judge, College of Medicine Future Physician Scientist Award  
Judge, Center for Microbial Interface Biology Retreat  
Interviewed, IBGP applicants  
Annual Landacre Honor Society Research Information Fair  
Panel member “Women in Science” discussion for the Bennett Society
- 2006:** Girls are great! Columbus Children's Hospital  
The Mechanisms of Human Health and Disease Program,  
Columbus Children's Hospital  
Annual Landacre Honor Society Research Information Fair.  
Judge, College of Medicine Future Physician Scientist Award  
Interviewed, IBGP applicants

Graduate Faculty Representative, Doctoral Exam Committee Joseph B. Legutki, Microbiology

### **Local, Regional, National and International Service, Committees and Leadership:**

2013 Co-Organizer, Midwest Microbial Pathogenesis Committee  
2011 Session Moderator, 10<sup>th</sup> International Symposium for Recent Advances in Otitis Media  
2010- Present Judge, Ohio Branch ASM Meeting

### **Bibliography:**

#### **Research Publications:**

Dowson C.G., Barcus V., **King S.J.**, Pickerill P., Whatmore A.M. and Yeo M. (1997) Horizontal gene transfer and the evolution of resistance and virulence determinants of *Streptococcus*. *Journal of Applied Microbiology* **83**, 42S-51S.

Muller-Graf C., Whatmore A., **King S.J.**, Pickerill A.P., Doherty N., Paul J., Griffiths D., Crook D. and Dowson C.G. (1999) Population biology of *Streptococcus pneumoniae* isolated from oropharyngeal carriage and invasive disease. *Microbiology* **145**, 3283-3293.

Whatmore A.M., **King S.J.**, Doherty N. C., Sturgeon D., Chanter N. and Dowson C.G. (1999) Molecular characterization of equine isolates of *Streptococcus pneumoniae*: natural disruption of genes encoding the virulence factors pneumolysin and autolysin. *Infection and Immunity* **67**, 2776-2782.

**King S.J.**, Heath P., Luque I., Tarradas C., Dowson C.G. and Whatmore A.M. (2001) Distribution and genetic diversity of suilysin in *Streptococcus suis* isolated from different diseases of pigs: Characterization of the genetic basis of suilysin absence in isolates frequently associated with pneumonia. *Infection and Immunity* **69**, 7572-7582.

**King S.J.**, Leigh J.A., Heath P.J., Luque I., Tarradas C., Dowson C.G. and Whatmore A.M. (2002) Development of a multilocus sequence typing scheme for the pig pathogen *Streptococcus suis*: Identification of virulent clones and potential capsular serotype exchange. *Journal of Clinical Microbiology* **40**, 3671-3680.

Shakhnovich E.A., **King S.J.** and Weiser J.N. (2002) Neuraminidase expressed by *Streptococcus pneumoniae* desialylates the lipopolysaccharide of *Neisseria meningitidis* and *Haemophilus influenzae*: A paradigm for interbacterial competition among pathogens of the human respiratory tract. *Infection and Immunity* **70**, 7161-7164.

**King S.J.**, Allen A.G., Maskell D.J., Dowson C.G. and Whatmore A.M. (2004) Distribution, genetic diversity, and variable expression of the gene encoding hyaluronate lyase within the *Streptococcus suis* population. *Journal of Bacteriology* **186**, 4740-4747.

**King S.J.**, Hippe K.R., Gould J.M., Bae D., Peterson S., Cline R.T., Fasching C., Janoff E. N. and Weiser J.N. (2004) Phase variable desialylation of host proteins that bind to *Streptococcus pneumoniae* *in vivo* and protect the airway. *Molecular Microbiology* **54**, 159-171.

**King S.J.**, Whatmore A.M. and Dowson C.G. (2005) NanA, a neuraminidase from *Streptococcus pneumoniae*, shows high levels of sequence diversity, at least in part through recombination with *Streptococcus oralis*. *Journal of Bacteriology* **187**, 5376-86.



- King S.J.**, Hippe K.R. and Weiser J.N. (2006) Deglycosylation of human glycoconjugates by the sequential activities of exoglycosidases expressed by *Streptococcus pneumoniae*. *Molecular Microbiology* **59**, 961-974.
- Roche A.M., **King S.J.** and Weiser J.N. (2007) Live-attenuated *Streptococcus pneumoniae* induce serotype-independent mucosal and systemic protection in mice. *Infection and Immunity* **75**, 2469-2475.
- Burnaugh A.M., Frantz L.J. and **King S.J.** (2008) Growth of *Streptococcus pneumoniae* on human glycoconjugates is dependent upon the sequential activity of bacterial exoglycosidases. *Journal of Bacteriology* **190**, 221-230.
- Gut H., **King S.J.** and Walsh M.A. (2008) Structural and functional studies of *Streptococcus pneumoniae* neuraminidase B: an intramolecular *trans*sialidase. *FEBS Letters* **582**, 3348-3352.
- Marion C., Limoli D.H., Bobulsky G.S., Abraham J.L., Burnaugh A.M. and **King S.J.** (2009) Identification of a pneumococcal glycosidase that modifies O-linked glycans. *Infection and Immunity* **77**, 1389-1396.
- King S.J.** (2010) Pneumococcal modification of host sugars: a major contributor to colonization of the human airway? *Molecular Oral Microbiology* **25**, 15-24.
- Marion C., Burnaugh A.M., Woodiga S.A., and **King S.J.** (2011) Sialic acid transport contributes to pneumococcal colonization. *Infection and Immunity* **79**:3, 1262-1269.
- Chen G., Chen X., **King S.**, Cavassani K.A., Cheng J., Zheng X., Cao H., Yu H., Qu J., Fang D., Wu W., Bai X., Liu J., Woodiga S., Chen C., Sun L., Hogaboam C.M., Kunkel S.L., Zheng P and Liu Y. (2011) Amelioration of sepsis by inhibiting sialidase-mediated disruption of the CD24-SiglecG interaction. *Nature Biotechnology* **29**, 428-435.
- Limoli D., Sladek J., Fuller L, Singh A. and **King S.J.** (2011) BgaA acts as an adhesin to mediate attachment of some pneumococcal strains to human epithelial cells. *Microbiology* **157**:8, 2369-2381.
- Marion C., Aten A., Woodiga S.A., and **King S.J.** (2011). Identification of an ATPase, MsmK, which energizes multiple carbohydrate ABC transporters in *Streptococcus pneumoniae*. *Infection and Immunity* **79**:10, 4193-4200.
- Marion C., Stewart J., Tazi M.F., Burnaugh A.M., Linke C.M., Woodiga S.A. and **King S.J.** (2012) *Streptococcus pneumoniae* can utilize multiple sources of hyaluronic acid for growth. *Infection and Immunity* **80**:4, 1390-1398.
- Buckwalter C.M. and **King S.J.** (2012) Pneumococcal carbohydrate transport: food for thought. *Trends in Microbiology*. **20**:11, 517-522.
- Linke C.M., Woodiga S.A., Meyers D.J., Buckwalter C.M., Salhi H.E. and **King, S.J.** (2013) The ABC transporter encoded at the pneumococcal fructooligosaccharides utilization locus correlates with the ability to utilize long and short chain fructooligosaccharides. *Journal of Bacteriology*.**195**(5):1031-1041.
- Ouyang K., Woodiga S., Dwivedi V., Marion C., Singh A., Binjawadagi B., Hiremath J., Manickam C., Schleappi R., Mahesh K., Wu J., **King S.**, and Renukaradhya G.J. (2014) Pretreatment of epithelial cells with live *Streptococcus pneumoniae* has no detectable effect on influenza A virus replication *in vitro*. *PLoS One*, **9**(3):e90066.
- Singh A.K., Pluvinaige B., Higgins M.A., Dalia A.B., Woodiga S.A., Flynn M., Lloyd A.R., Weiser J.N., Stubbs K.E., Boraston A.B., and **King S.J.** (2014) Unraveling the multiple functions of the architecturally complex *Streptococcus pneumoniae*  $\beta$ -galactosidase, BgaA. *PLoS Pathogens*, **11**(9):e1004364.
- Kelly, B. Wetzell A., Woodiga, S.A. Newsom, D., Fitch J., Singh A.K., **King S. J.** and White P. HIDE-Seq: A novel application of RNA-Seq to define host-bacterial transcriptomes. *In preparation for Nature Biotechnology*.

Pluvinage B., Singh A.K., Yesilkaya, H., **King S.J.** and Boraston A.B. The utilization of core N-linked glycan by *Streptococcus pneumoniae*. *In preparation for Journal of Biological Chemistry*.

Woodiga S.A., Osman A., Singh A.K., Mahan J., and **King S.J.** Further defining the role of glycosidases in pneumococcal hemolytic uremic syndrome. *In preparation for J. Med. Micro.*

Singh A.K., Pluvinage B., Woodiga S.A., Boraston A., and **King S.J.** A novel mechanism of adherence of *Streptococcus gordonii* to host cell surface carbohydrates. *In preparation for Infection and Immunity*.

## Book Chapters:

**King, S.J.** Advances in Vaccines for *Streptococcus pneumoniae*, In: *X IAPO Manual of Pediatric Otorhinolaryngology*, eds. Sih, T., Chinski, A., Eavey, R., and Godinno, R. , Brazil, Editora e Gráfica Vida & Consciência, 225-248, 2011.

## Invited presentations:

- October, 2004 “Bacterial deglycosylation of host proteins that protect the human airway” Center for Microbial Pathogenesis, Columbus Children's Research Institute
- January, 2005 “Bacterial deglycosylation of host proteins that protect the human airway” Division of Biological Sciences, Section of Microbiology, University of California Davis
- January, 2005 “Bacterial deglycosylation of host proteins that protect the human airway” Department of Biomedical Sciences, University of Maryland Dental School
- February, 2005 “Bacterial deglycosylation of host proteins that protect the human airway” Department of Microbiology, University of Chicago
- February, 2005 “Bacterial deglycosylation of host proteins that protect the human airway” Department of Cell Biology and Molecular Biology, University of Maryland
- March, 2005 “Bacterial deglycosylation of host proteins that protect the human airway” Department of Biology, University of Texas at San Antonio
- March, 2007 “*Streptococcus pneumoniae* deglycosylation: effects on colonization” Department of Microbiology, King's college London Dental Institute, UK
- October, 2007 “The role of bacterial glycosidases in pneumococcal pathogenesis” The Midwest Carbohydrate Meeting, The Ohio State University
- September, 2008 “The role of bacterial glycosidases in pneumococcal colonization” Department of Infectious Diseases and pathology, University of Florida
- September, 2008 “The contribution of pneumococcal glycosidases to pathogenesis” 15<sup>th</sup> Annual Midwest Microbial Pathogenesis, University of Wisconsin-Madison
- March, 2011 “The role of pneumococcal modification of host glycoconjugates to airway colonization” Department of Microbiology, Miami University
- April, 2011 “The contribution of pneumococcal glycosidases to pathogenesis” The Ohio Branch ASM meeting, Ohio University

- April, 2011 “Pneumococcal mechanisms of carbohydrate utilization” Department of Microbiology, The Ohio State University
- June, 2011 “Pneumococcal vaccines past, present, and future” 10<sup>th</sup> International Symposium on Recent Advances in Otitis Media, New Orleans
- May, 2012 “The multiple contributions of pneumococcal glycosidases to pathogenesis” Ohio Agricultural Research and Development Center, Wooster, Ohio
- September, 2012 “Pneumococcal carbohydrate transporters: food for thought” Department of Laboratory Medicine, Karolinska Institutet, Stockholm, Sweden.
- September, 2012 “Pneumococcal carbohydrate transporters: food for thought” Institute of Microbiology and Infection, University of Birmingham, Birmingham, U.K.
- October, 2012 “Pneumococcal carbohydrate transporters: food for thought” Department of Biochemistry and Microbiology, University of Victoria, Victoria, BC.
- December, 2012 “Pneumococcal carbohydrate transporters: food for thought” Department of Biology, Department of Biology, Bloomington
- May, 2013 “Mechanisms of BgaA mediated pneumococcal adherence” Europneumo, Madrid, Spain
- June, 2014 “Carbohydrate-binding modules within a carbohydrate-active enzyme mediate pneumococcal adherence to host cells” FASEB Microbial Glycobiology Summer Research Conference, Itasca
- June, 2014 “Carbohydrate binding module containing carbohydrate active enzymes: new players in bacterial adherence” 2014 International Symposium on Molecular Medicine and Infectious disease, Drexel University, Philadelphia.
- September, 2014 “Carbohydrate binding modules: new players in bacterial adherence?” Midwest Microbial Pathogenesis Conference, Chicago

## Abstracts:

**King S.J.**, Bae D., Peterson S., Cline R.T., Fasching C., Janoff E.N. and Weiser J.N. (2003) Microarray analysis shows differences in gene expression patterns of phase variants of *Streptococcus pneumoniae*. (Poster presentation at the American Society of Microbiology Annual General Meeting, Washington D.C. 22<sup>nd</sup>-26<sup>th</sup> of May)

**King S.J.**, Leigh J.A., Heath P.J., Dowson C.G. and Whatmore A.M. (2003) Multilocus sequence typing of *Streptococcus suis*: The identification of major clonal groups harbouring distinct combinations of virulence factors. (Poster presentation at IMM6, Les Diabrelets, Switzerland 27<sup>th</sup>-30<sup>th</sup> of August)

**King S.J.**, Hippe K.R., Gould J.M., Bae D., Peterson S., Cline R.T., Fasching C., Janoff E.N. and Weiser J.N. (2004) Phase variable desialylation of host proteins that bind to *Streptococcus pneumoniae in vivo* and protect the airway. (Poster presentation at the American Society of Microbiology Annual General Meeting, New Orleans 23<sup>rd</sup>-27<sup>th</sup> of May)

**King S.J.**, Limoli D.H., Hippe K.R. and Weiser J.N. (2006) *Streptococcus pneumoniae* exoglycosidases sequentially deglycosylate human glycoconjugates. (Poster presentation at the American Society of Microbiology Annual General Meeting, Orlando, Florida 21<sup>st</sup>-25<sup>th</sup> of May)

**King S.J.**, Limoli D.H., Hippe K.R. and Weiser J.N. (2006) *Streptococcus pneumoniae* exoglycosidases sequentially deglycosylate human glycoconjugates. (Poster presentation at the 7<sup>th</sup> Conference on Streptococcal Genetics, St Malo, France 18<sup>th</sup>-21<sup>st</sup> of June)

Beighton D., Do T., Sheehy E., **King S.J.**, Gilbert S., Clark D. and Wade G.N. (2006) Sialidase-producing streptococci in and sequence variation in *Streptococcus oralis/mitis nanH*. (Poster presentation at the International Association of Dental Research, Brisbane, Australia 28<sup>th</sup> of June-1<sup>st</sup> of July)

Burnaugh A.M., Frantz L.J. and **King S.J.** (2006) Pneumococcal sialic acid transport occurs primarily through an ABC transporter. (Poster presentation at the 13<sup>th</sup> Midwest Microbial Pathogenesis Conference, Cincinnati, Ohio 20<sup>th</sup>-22<sup>nd</sup> of October)

Limoli D. and **King S.J.** (2006) A role for multiple *Streptococcus pneumoniae* exoglycosidases in adherence. (Poster presentation at the 13<sup>th</sup> Midwest Microbial Pathogenesis Conference, Cincinnati, Ohio 20<sup>th</sup>-22<sup>nd</sup> of October)

Burnaugh A.M., Frantz L.J., Sladek J., Limoli D. and **King S.J.** (2007) Mechanisms of pneumococcal growth on human glycoproteins. (Poster presentation at 8<sup>th</sup> European Meeting of the Molecular Biology of the Pneumococcus, Oeiras, Portugal 14<sup>th</sup>-17<sup>th</sup> of April)

Burnaugh A.M., Frantz L.J., Sladek J., Limoli D.H. and **King S.J.** (2007) A role for multiple neuraminidases in growth of *Streptococcus pneumoniae* on human glycoconjugates. (Poster presentation at the American Society of Microbiology Annual General Meeting, Toronto, Canada 21<sup>st</sup>-25<sup>th</sup> of May)

Limoli D.H., Burnaugh A.M. and **King S.J.** (2007) BgaA, a beta-galactosidase expressed *Streptococcus pneumoniae* functions as an adhesin. (Poster presentation at the American Society of Microbiology Annual General Meeting, Toronto, Canada 21<sup>st</sup>-25<sup>th</sup> of May)

Roche A.M., **King S.J.** and Weiser J.N. (2007) Live-attenuated *Streptococcus pneumoniae* induce serotype-independent mucosal and systemic protection in mice. (Poster presentation at the American Society of Microbiology Annual General Meeting, Toronto, Canada 21<sup>st</sup>-25<sup>th</sup> of May)

Limoli D., Sladek J. and **King S.J.** (2007) *Streptococcus pneumoniae*  $\beta$ -galactosidase, BgaA is an adhesin. (Poster presentation at the 14<sup>th</sup> Midwest Microbial Pathogenesis Conference, Chicago, Illinois 28<sup>th</sup>-30<sup>th</sup> of September)

Limoli D., Sladek J. and **King S.J.** (2007) *Streptococcus pneumoniae*  $\beta$ -galactosidase, BgaA is an adhesin. (Poster presentation at the 3<sup>rd</sup> Midwest Carbohydrate Meeting, The Ohio State University, Columbus, Ohio)

Burnaugh A.M. and **King S.J.** (2008) Transport of glycoconjugate-derived monosaccharides by *Streptococcus pneumoniae*. (Poster presentation at the American Society of Microbiology Annual General Meeting, Boston, Massachusetts 1<sup>st</sup>-5<sup>th</sup> of June)

Limoli D.H., Marion C., Abraham J L., Burnaugh A.M. and **King S.J.** (2008) A cell associated pneumococcal glycosidase modifies O-linked glycoconjugates. (Poster presentation at the American Society of Microbiology Annual General Meeting, Boston, Massachusetts 1<sup>st</sup>-5<sup>th</sup> of June)

Marion C., Limoli D.H., Bobulsky G.H., Abraham J.L., Burnaugh A.M. and **King S.J.** (2008) Identification of a pneumococcal glycosidases that modified O-Linked glycans. (Poster presentation at the Midwest Microbial Pathogenesis Meeting, Madison, Wisconsin 26<sup>th</sup>-28<sup>th</sup> of September)

Fuller L.A., Limoli D.H. and **King S.J.** (2009) Characterization of pneumococcal beta-galactosidase, BgaA, in adherence. (Poster presentation at the Ohio Branch American Society for Microbiology Meeting, Granville, Ohio 3<sup>rd</sup>-4<sup>th</sup> of April)

Marion C., Limoli D.H., Bobulsky G.S. and **King S.J.** (2009) Identification of a pneumococcal glycosidase that modifies O-Linked glycans. (Podium presentation at the Ohio Branch ASM Meeting, Granville, Ohio 3<sup>rd</sup>-4<sup>th</sup> of April)

Stewart J., Burnaugh A.M. and **King S.J.** (2009) Hyaluronic acid can support growth of *Streptococcus pneumoniae*. (Poster presentation at the Ohio Branch American Society for Microbiology Meeting, Granville, Ohio 3<sup>rd</sup>-4<sup>th</sup> of April)

Marion C., Limoli D.H., Bobulsky G.S., Abraham J.L., Burnaugh A.M. and **King S.J.** (2009) The pneumococcal O-glycosidase contributes to bacterial colonization. (Poster presentation at the American Society of Microbiology Annual General Meeting, Philadelphia, Pennsylvania 17<sup>th</sup>-21<sup>st</sup> of May)

Stewart J., Burnaugh A.M. and **King S.J.** (2009) Hyaluronic acid can support growth of *Streptococcus pneumoniae*. (Poster presentation at the American Society of Microbiology Annual General Meeting, Philadelphia, Pennsylvania 17<sup>th</sup>-21<sup>st</sup> of May)

Bobulsky G.S., Limoli D.H., Marion C. and **King S.J.** (2009) Investigating *Streptococcus pneumoniae* O-glycosidase. (Poster presentation at the Midwest Microbial Pathogenesis Conference, Purdue University, West Lafayette, Indiana 9<sup>th</sup>-11<sup>th</sup> of October)

Marion C., Burnaugh A.M. and **King S.J.** (2009) O-linked glycans as a carbon source for pneumococcal growth. (Poster presentation at the Midwest Microbial Pathogenesis Conference, West Lafayette, Indiana 9<sup>th</sup>-11<sup>th</sup> of October)

Tazi M.F., Stewart J., Marion C., Burnaugh A.M. and **King S.J.** (2009) *Streptococcus pneumoniae* can utilize hyaluronic acid as carbon source. (Poster presentation at the Midwest Microbial Pathogenesis Conference, West Lafayette, Indiana 9<sup>th</sup>-11<sup>th</sup> of October)

Marion C., Burnaugh A.M. and **King S.J.** (2010) Pneumococcal transport of sialic acid for growth and colonization. (Podium presentation at the Ohio Branch American Society for Microbiology Spring Meeting, Mason, Ohio 16<sup>th</sup>-17<sup>th</sup> of April)

Tazi M.F., Woodiga S.A., Stewart J., Marion C., Burnaugh A.M., Callam C. and **King S.J.** (2010) Transport and utilization of hyaluronic acid for pneumococcal growth. (Poster presentation at the Ohio Branch American Society for Microbiology Spring Meeting, Mason, Ohio 16<sup>th</sup>-17<sup>th</sup> of April)

Woodiga S.A., Tazi M.F., Stewart J., Marion C., Burnaugh A.M. and **King S.J.** (2010) Identifying the novel role of hyaluronate lyase in *Streptococcus pneumoniae*. (Poster presentation at the Ohio Branch American Society for Microbiology Spring Meeting, Mason, Ohio 16<sup>th</sup>-17<sup>th</sup> of April)

Marion C., Aten A.E., and **King S.J.** (2010) An ATPase with specificity for multiple *Streptococcus pneumoniae* carbohydrate ABC transporters. (Poster presentation at the Midwest Microbial Pathogenesis Conference, St Louis, Missouri 10<sup>th</sup>-12<sup>th</sup> of September)

Woodiga S.A. and **King S.J.** (2011) RegR negatively regulates hyaluronic acid metabolism genes in *Streptococcus pneumoniae*. (Poster presentation at the Ohio Branch of the American Society for Microbiology, Athens, Ohio 8<sup>th</sup> of April).

Marion C., Aten A.E. and **King S.J.** (2011) An ATPase with specificity for multiple *Streptococcus pneumoniae* carbohydrate ABC transporters. (Poster presentation at the Ohio Branch of the American Society for Microbiology, Athens, Ohio 8<sup>th</sup> of April).

Marion C., Stewart J.M., Tazi M.F., Burnaugh A.M., Linke C.M., Woodiga S.A. and **King S.J.** (2011) *Streptococcus pneumoniae* can utilize multiple sources of hyaluronic acid for growth. (Poster presentation at the Europneumo Conference, Amsterdam, The Netherlands 23<sup>rd</sup> - 26<sup>th</sup> of June).

- Marion C., Aten A.E., Woodiga S.A. and **King S.J.** (2011) A shared ATPase involved in carbohydrate transport in *Streptococcus pneumoniae*. (Poster presentation at the Midwest Microbial Pathogenesis Conference, Ann Arbor, Michigan 21<sup>st</sup> -23<sup>rd</sup> of October).
- Singh A.K. and **King S.J.** (2011) The C-terminal region of pneumococcal BgaA is essential for its adhesin. (Poster presentation at the Midwest Microbial Pathogenesis Conference, Ann Arbor, Michigan 21<sup>st</sup> - 23<sup>rd</sup> of October).
- Woodiga S.A., Singh A.K. and **King S.A.** (2011) Pneumococcal hyaluronic acid metabolism is regulated by LacI family protein Reg. (Poster presentation at the Midwest Microbial Pathogenesis Conference, Ann Arbor, Michigan 21<sup>st</sup>- 23<sup>rd</sup> of October).
- Singh A.K., Flynn M.J. and **King S.J.** (2012) Identification of region(s) of pneumococcal glycosidase BgaA mediating bacterial adherence to epithelial cells. (Poster presentation at The Ohio Branch of the American Society of Microbiology, Mason, Ohio 20<sup>th</sup>-21<sup>st</sup> of April).
- Linke C.M., Woodiga S.A., Marion C. and **King S.J.** (2012) Fructooligosaccharide utilization by *Streptococcus pneumoniae*. (Poster presentation at The Ohio Branch of the American Society of Microbiology, Mason, Ohio 20<sup>th</sup>-21<sup>st</sup> of April).
- Salhi H.E. and **King S.J.** (2012) A role for EndoD in pneumococcal growth. (Poster presentation at The Ohio Branch of the American Society of Microbiology, Mason, Ohio 20<sup>th</sup>-21<sup>st</sup> of April).
- Marion C., Ouyang K., Dwivedi V., Gourapura R. and **King S.J.** (2012) *Streptococcus pneumoniae* factors may promote influenza A infection. (Poster presentation at The Ohio Branch of the American Society for Microbiology, Mason, Ohio 20<sup>th</sup> -21<sup>st</sup> of April).
- Linke C.M., Meyers D.J., Marion C., Salhi H.E., Verija S.V. and **King S.J.** (2012) Fructooligosaccharide utilization by *Streptococcus pneumoniae*. (Poster presentation at the American Society for Microbiology Annual General Meeting, San Francisco, California 16<sup>th</sup> - 19<sup>th</sup> of June),
- Woodiga S.A., Rohr J.D., Buckwalter C.M., Mahan J.D. and **King S.J.** (2012) Identifying differences between pneumococcal strains that may contribute to development of hemolytic uremic syndrome. (Poster presentation at the Midwest Society for Pediatric Research, Annual Meeting, Columbus, Ohio, 4<sup>th</sup> - 5<sup>th</sup> of October).
- Singh A.K., Pluvinaige B., Flynn M.J., Lloyd A.R., Boraston A., and **King S.J.** (2013) Mechanism of BgaA-Mediated pneumococcal adherence. (Poster presentation at the Ohio Branch of the American Society for Microbiology, Ashland, Ohio 12<sup>th</sup>-13<sup>th</sup> of April).
- Singh A.K., Pluvinaige B., Flynn M.J., Lloyd A.R., Boraston A., and **King S.J.** (2013) Mechanism of BgaA-Mediated pneumococcal adherence. (Poster presentation at the Microbial Pathogenesis & Host Response Meeting, Cold Spring Harbor, New York, 17<sup>th</sup>-21<sup>st</sup> of September).
- King S.J.**, Wetzel A.N., Woodiga S.A., Kelly B.J., Fitch J.R., Singh A.K. and White P. (2013) Novel methodologies to simultaneously define host and bacterial transcriptomes from a single sample. (Poster presentation at the Microbial Pathogenesis & Host Response Meeting, Cold Spring Harbor, New York, 17<sup>th</sup> - 21<sup>st</sup> of September).
- Singh A.K., Pluvinaige B., Flynn M.J., Lloyd A.R., Boraston A., and **King S.J.** (2013) Carbohydrate binding module containing carbohydrate active enzymes: New players in bacterial adherence? (Oral presentation at the 9<sup>th</sup> Annual Midwest Carbohydrate and Glycobiology Symposium, Toledo, Ohio, 11<sup>th</sup>- 12<sup>th</sup> of October).
- Singh A.K., Woodiga S.A., and **King S.J.** (2014) *Streptococcus oralis* utilizes  $\beta$ -1,4 linked galactose as a receptor for adherence to human endothelial cells. (Poster presentation at the 21<sup>st</sup> Annual Midwest Microbial Pathogenesis Conference, Chicago, Illinois, 12<sup>th</sup> - 14<sup>th</sup> of September).

Singh A.K., Woodiga S.A., and **King S.J.** (2014) *Streptococcus oralis* utilizes  $\beta$ -1,4 linked galactose as a receptor for adherence to human endothelial cells. (Poster presentation at the 2014 Annual Research Retreat, The Research Institute at Nationwide Children's Hospital, Columbus, Ohio 17<sup>th</sup> of September).

Singh A.K., Woodiga S.A., and **King S.J.** (2014) *Streptococcus oralis* utilizes  $\beta$ -1,4 linked galactose as a receptor for adherence to human endothelial cells. (Poster presentation at the 2014 Center for Microbial Interface Biology Symposium, The Ohio State University, Columbus, Ohio, 9<sup>th</sup> of October).

Woodiga S.A., Singh A.K., and **King S.S.** (2014) Neuraminidase exposes a novel receptor for *Streptococcus gordini* adherence. (Poster presentation at the 2014 Center for Microbial Interface Biology Symposium, The Ohio State University, Columbus, Ohio, 9<sup>th</sup> of October).

## Grants and Research Support:

### Current Research Support

Funding Agency: National Institute of Allergy and Infectious Disease  
R01: Pneumococcal Mechanisms of Adherence  
Period of funding: August 1, 2009-July 31, 2015  
Role: Principal Investigator

Funding Agency: The Research Institute at Nationwide Children's Hospital Infectious Disease Consortium  
Pneumococcal nasopharyngeal colonization among hospitalized children in Columbus, Ohio  
Period of funding: January 1, 2015-December 31, 2015  
Role: Principal Investigator

### Completed Research Support

Funding Agency: National Kidney Foundation of Ohio  
Period of funding: July 1, 2008-June 30, 2009  
Role: Principal Investigator

Funding Agency: American Heart Association  
GRA Spring 2010 Predoctoral Fellowship: *Streptococcus pneumoniae* transport of sialic acid for growth and colonization  
Period of funding: July 1, 2010-June 30, 2012  
Role: Advisor

Funding Agency: The Research Institute at Nationwide Children's Hospital  
Evaluation of increased influenza titers during bacterial co-infection  
Period of funding: December 1, 2011-November 30, 2012  
Role: Principal Investigator

Funding Agency: The Ohio State University  
Evaluation of nanoparticle entrapped pneumococcal surface proteins candidate vaccine in a pig challenge model (OSU SEED Project)  
Period of funding: June 1, 2012- May 31, 2013  
Role: Principal Investigator

Funding Agency: The Research Institute at Nationwide Children's Hospital  
Identification of pneumococcal sequence variants that correlate with development of HUS  
Period of funding: January 1, 2012-December 31, 2014  
Role: Principal Investigator

Funding Agency: The Research Institute at Nationwide Children's Hospital

Respiratory Syncytial Virus (RSV) and Nasopharyngeal Bacterial Colonization in Infants with Acute Respiratory Infection

Period of funding: January 1, 2014-December 31, 2014

Role: Co-Principal Investigator