

## BIOGRAPHICAL SKETCH

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NAME Jay K. Kolls		POSITION TITLE Professor of Genetics and Pediatrics Chair, Department of Genetics, LSUHSC	
eRA COMMONS USER NAME JKKOLLS			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION		DEGREE <i>(if applicable)</i>	YEAR(s)
Ursinus College, Collegeville, PA		BS	1981
University of Maryland		MD	1985
UT Southwestern Med Ctr. Lab of Bruce Beutler			1992-1993
			Physics Medicine Immunology/Genetics

### A. Professional Positions:

- 1985-1989 Internship and Combined Medicine/Pediatric Residency  
Louisiana State University Medical Center, New Orleans
- 1989-1993 Combined Adult/Pediatric Pulmonary Fellowship  
LSU and Tulane Medical Centers, New Orleans, LA
- 1991-1994 Parker B. Francis Fellow in Pulmonary Research, LSU Medical Center
- 1993-1997 Assistant Professor of Medicine and pediatrics, LSUMC – New Orleans
- 1996-present Division Chief, Division of Pediatric Pulmonary/Critical Care  
LSU Medical Center, New Orleans, LA
- 1997-2000 Associate Professor of Medicine and Pediatrics, Director LSU Gene Therapy Program,  
LSUMC – New Orleans
- 2000-2003 Professor of Medicine and Pediatrics, Director LSU Gene Therapy Program, LSU Health  
Sciences Center, New Orleans
- 2002-2003 Member, Lung Biology Pathology Study Section
- 2003-2006 Member, Lung Cellular and Molecular Immunology Study Section
- 2006-2007 Chair, Lung Cellular and Molecular Immunology Study Section
- 2005-present Section Editor, Journal of Immunology
- 2003-present Professor of Pediatrics, Division Chief Pediatric Pulmonology, Children's Hospital of  
Pittsburgh, Pittsburgh, PA
- 2006-present Consulting Editor, JCI
- 2006-2009 Neils K. Jerne Professor of Pediatrics and Immunology  
Children's Hospital of Pittsburgh, Pittsburgh, PA
- 2009-present Adjunct Professor of Pediatrics and Immunology  
Children's Hospital of Pittsburgh, Pittsburgh, PA
- 2009-present Chair, Department of Genetics, LSUHSC, New Orleans

Awards and Other Professional Activities: (abbreviated – study sections / review boards not included)

### Honors

- 1989 - Winner of the American College of Chest Physicians Clinical Vignette Award
- 1990 - Parker B. Francis Pulmonary Research Fellowship Award
- 1990 - American Lung Association Pediatric Pulmonary Research Fellowship Award - declined
- 1994 - First Place, Merck, Sharp, & Dohme Young Investigator Award
- 2004- Member, American Society of Clinical Investigation

## B. Peer Reviewed Articles: (out of > 150)

1. **Kolls J**, Peppel K, Silva M, Beutler B. Prolonged and effective blockade of TNF activity through adenovirus-mediated gene transfer. *Proc. Nat. Acad. Sci.* 91:215-219, 1994
2. Schwarzenberger P., LaRussa V., Miller A., Ye P., Huang W., Zieske A., Nelson S., Bagby G., Stoltz D., Mynatt R., Spriggs M., and **Kolls, JK**. Interleukin 17 stimulates granulopoiesis in mice: use of an alternate, novel, gene therapy derived method for in vivo evaluation of cytokines. *J Immunol.* 161(11):6383-9, 1998
3. **Kolls J.K**, Habetz S., Vazquez C., Brown J.A., Lei D., Schwarzenberger P., Ye P., Nelson S., and Shellito J.E. Interferon-gamma and CD8+ T-cells restore host defenses against *P. carinii* in mice lacking CD4+ T-cells. *J. Immunology.* 162:2890-2894, 1999
4. Shellito J.E., Ruan S., Tate C., **Kolls J.K**. Murine CD4+ T-lymphocyte subsets and host defense against *Pneumocystis carinii*. *Journal of Infect. Dis.* 18:2011-7, 2000 .
5. Zhang Z, Oliver P, Lancaster JR, Schwarzenberger PO, Joshi MS, Cork J, **Kolls JK**. Reactive oxygen species mediate tumor necrosis factor alpha-converting, enzyme-dependent ectodomain shedding induced by phorbol myristate acetate. *FASEB J.* 15(2):303-5, 2001.
6. Ye P., Rodriguez F.H., Kanaly S., Stocking K.L., Schurr J., Schwarzenberger P., Oliver P., Huang W., Zhang P., Zhang J., Shellito J.E., Bagby G.J., Nelson S., Charrier K., Peschon J.J., and **Kolls J.K**. Requirement of IL-17 Receptor Signaling for Lung CXC Chemokine and G-CSF Expression, Neutrophil Recruitment, and Host Defense. *J. Exp. Med.*, 2001 Aug 20;194(4):519-28.
7. Zheng M., Shellito J.E., Marrero L., Zhong Q., Julian S., Ye P., Wallace V., Schwarzenberger P., and **Kolls, J.K**. CD4 T-cell independent vaccination against *Pneumocystis carinii* in mice. *J. Clin. Invest.* 108(10):1469-74, 2001
8. Steele C, Zheng M, Young E, Marrero L, Shellito JE, **Kolls JK**. Increased host resistance against *Pneumocystis carinii* pneumonia in gamma/delta T-cell-deficient mice: protective role of gamma interferon and CD8(+) T cells. *Infect Immun.* 2002 Sep;70(9):5208-15
9. Zhao XJ, Marrero L, Song K, Oliver P, Chin SY, Simon H, Schurr JR, Zhang Z, Thoppil D, Lee S, Nelson S, **Kolls JK**. Acute Alcohol Inhibits TNF-alpha Processing in Human Monocytes by Inhibiting TNF/TNF-alpha-Converting Enzyme Interactions in the Cell Membrane. *J Immunol.* 2003 Mar 15;170(6):2923-31.
10. Happel K, Zheng M, Young E, Schurr JR, Shellito J, Bagby G, Nelson S, and **Kolls JK**. Cutting Edge: Role of TLR4 signaling and IL-23 in IL-17 elaboration in response to *Klebsiella pneumoniae* infection. *J. Immunology Cutting Edge*, 170(9):4432-6, 2003
11. Steele C., Marrero L., Swain S., Harmsen A.G., Zheng M., Brown G.D., Gordon S., Shellito JE, and **Kolls J.K**. Alveolar macrophage-mediated killing of *Pneumocystis carinii* involves molecular recognition by the Dectin-1 beta-glucan receptor. *J. Exp. Med.* 198(11):1677-88, 2003.
12. McAllister F., Steele C., Zheng M., Young E., Shellito J.E., Marrero L., and **Kolls JK**. T Cytotoxic-1 CD8+ T Cells Are Effector Cells against *Pneumocystis* in Mice. *J Immunol* 172: 1132-1138, 2004.
13. **Kolls JK**, Linden A. Interleukin-17 family members and inflammation. *Immunity.* 21(4):467-76, 2004
14. Schurr JR, Young E, Byrne P, Steele C, Shellito JE, Kolls JK. Central role of toll-like receptor 4 signaling and host defense in experimental pneumonia caused by gram-negative bacteria. *Infect Immun.* 2005 Jan;73(1):532-45.
15. Mc Allister F, Henry A, Kreindler JL, Dubin PJ, Ulrich L, Steele C, Finder JD, Pilewski JM, Carreno B, Goldman SJ, Pirhonen J, and **Kolls JK**. Role of IL-17A, IL-17F and the IL-17 receptor in regulating Gro-alpha and G-CSF in Bronchial Epithelium: implications for airway inflammation in cystic fibrosis. *J Immunol.* 175(1):404-12, 2005.
16. Happel K, Dubin PJ, Zheng M, Ghilardi N, Lockhart C, Quinton LJ, Odden AR, Shellito JE, Bagby GJ, Nelson S, **Kolls JK**. Divergent roles of IL-23 and IL-12 in Host Defense against *Klebsiella Pneumoniae*. *J. Exp. Med.* 2005 Sep 19;202(6):761-9.
17. Zheng M, Ramsay AJ, Robichaux MB, Norris KA, Kliment C, Crowe C, Rapaka RR, Steele C, McAllister F, Shellito JE, Marrero L, Schwarzenberger P, Zhong Q, **Kolls JK**. CD4+ T cell-independent DNA vaccination against opportunistic infections. *J Clin Invest.* 2005 Dec;115(12):3536-44.
18. Steele C, Rapaka RR, Metz A, Pop SM, Williams DL, Gordon S, **Kolls JK**, Brown GD. The Beta-Glucan Receptor Dectin-1 Recognizes Specific Morphologies of *Aspergillus fumigatus*. *PLoS Pathog.*

1(4), 2005.

19. McAllister F, Ruan S, Steele C, Zheng M, McKinley L, Ulrich L, Marrero L, Shellito JE, **Kolls JK**. CXCR3 and IFN Protein-10 in Pneumocystis Pneumonia. *J Immunol*. 2006 Aug 1;177(3):1846-1854.
20. McKinley L, Logar AJ, McAllister F, Zheng M, Steele C, and **Kolls JK**. Regulatory T Cells Dampen Pulmonary Inflammation and Lung Injury in an Animal Model of Pneumocystis Pneumonia. *J. Immunol*. 177(9):6215-6226, 2006.
21. Dubin PJ, and **Kolls JK**. IL-23 mediates inflammatory responses to mucoid *Pseudomonas aeruginosa* lung infection in mice. *AJP: Lung and Cellular Molecular Biology*, 292(2):L519-28, 2007.
22. Rapaka RR, Goetzman ES, Zheng M, Vockley J, McKinley L, **Kolls JK**, Steele C. Enhanced defense against *Pneumocystis carinii* mediated by a novel dectin-1 receptor Fc fusion protein. *J Immunol*. 15;178:3702-12, 2007.
23. Kryczek I, Wei S, Zou L, Altuwaijri S, Szeliga W, **Kolls J**, Chang A, Zou W. Cutting edge: Th17 and regulatory T cell dynamics and the regulation by IL-2 in the tumor microenvironment. *J Immunol*. 2007
24. Kuestner RE, Taft DW, Haran A, Brandt CS, Brender T, Lum K, Harder B, Okada S, Ostrander CD, Kreindler JL, Aujla SJ, Reardon B, Moore M, Shea P, Schreckhise R, Bukowski TR, Presnell S, Guerra-Lewis P, Parrish-Novak J, Ellsworth JL, Jaspers S, Lewis KE, Appleby M, **Kolls JK**, Rixon M, West JW, Gao Z, Levin SD. Identification of the IL-17 receptor related molecule IL-17RC as the receptor for IL-17F. *J Immunol*. 2007 Oct 15;179(8):5462-73.
25. Hsu HC, Yang P, Wang J, Wu Q, Myers R, Chen J, Yi J, Guentert T, Tousson A, Stanus AL, Le TV, Lorenz RG, Xu H, **Kolls JK**, Carter RH, Chaplin DD, Williams RW, Mountz JD. Interleukin 17-producing T helper cells and interleukin 17 orchestrate autoreactive germinal center development in autoimmune BXD2 mice. *1: Nat Immunol*. 2008 Feb;9(2):166-75.
26. Aujla S, Chan YC, Zheng M, Fei M, Askew DJ, Pociask DA, Reinhart TA, McAllister F, Edeal J, Gaus K, Husain S, Kreindler JL, Dubin PJ, Pilewski JM, Myerburg MM, Mason CA, Iwakura Y, and **Kolls JK**. IL-22 mediates mucosal host defense against gram negative bacterial pneumonia. *Nat Med*. 2008 Mar;14(3):275-81.
27. Raffatellu M, Santos RL, Verhoeven DE, George MD, Wilson RP, Winter SE, Godinez I, Sankaran S, Paixao TA, Gordon MA, **Kolls JK**, Dandekar S, Bäuml AJ. Simian immunodeficiency virus-induced mucosal interleukin-17 deficiency promotes *Salmonella* dissemination from the gut. *Nat Med*. 2008 Mar 23;
28. Ouyang W, **Kolls JK**, Zheng Y. The biological functions of T helper 17 cell effector cytokines in inflammation. *Immunity*. 2008 Apr;28(4):454-67.
36. McKinley L, Alcorn JF, Peterson A, DuPont RB, Kapadia S, Logar A, Henry A, Irvin CG, Piganelli JD, Ray A, and **Kolls JK**. TH17 Cells Mediate Steroid-Resistant Airway Inflammation and Airway Hyperresponsiveness in Mice *J Immunol*. 2008 Sep 15;181(6):4089-97.
29. **Kolls JK**, McCray PB Jr, Chan YR. Cytokine-mediated regulation of antimicrobial proteins. *Nat Rev Immunol*. 2008 Nov;8(11):829-35
30. Kreindler JL, Bertrand CA, Lee RJ, Karasic T, Aujla S, Pilewski JM, Frizzell RA, **Kolls JK**. Interleukin-17A induces bicarbonate secretion in normal human bronchial epithelial cells. *Am J Physiol Lung Cell Mol Physiol*. 2009 Feb;296(2):L257-66
31. Chan YR, Liu JS, Pociask DA, Zheng M, Mietzner TA, Berger T, Mak TW, Clifton MC, Strong RK, Ray P, **Kolls JK** Lipocalin 2 is required for pulmonary host defense against *Klebsiella* infection. *J Immunol*. 2009 Apr 15;182(8):4947-56.
32. Newcomb DC, Zhou W, Moore ML, Goleniewska K, Hershey GK, **Kolls JK**, Peebles RS Jr. A functional IL-13 receptor is expressed on polarized murine CD4+ Th17 cells and IL-13 signaling attenuates Th17 cytokine production. *J Immunol*. 2009 May 1;182(9):5317-21
33. O'Connor W Jr, Kamanaka M, Booth CJ, Town T, Nakae S, Iwakura Y, **Kolls JK**, Flavell RA. A protective function for interleukin 17A in T cell-mediated intestinal inflammation. *Nat Immunol*. 2009 Jun;10(6):603-9.
34. Crowe CR, Chen K, Pociask DA, Alcorn JF, Krivich C, Enelow RI, Ross TM, Witztum JL, **Kolls JK**. Critical role of IL-17RA in immunopathology of influenza infection. *J Immunol*. 2009 Oct 15;183(8):5301-10.
35. Lin Y, Ritchea S, Logar A, Slight S, Messmer M, Rangel-Moreno J, Guglani L, Alcorn JF, Strawbridge H, Park SM, Onishi R, Nyugen N, Walter MJ, Pociask D, Randall TD, Gaffen SL, Iwakura Y, **Kolls JK**, Khader SA. Interleukin-17 Is Required for T Helper 1 Cell Immunity and Host Resistance to the Intracellular Pathogen *Francisella tularensis*. *Immunity*. 2009 Oct 21.

### **C. Research Projects Ongoing**

R01 HL062052 (NHLBI) Kolls (PI) 09/30/98 – 08/31/10  
CD8 T-Cells and Host Defense Against P. Carinii  
The aims of this project are to understand mechanisms by which Tc1 CD8+ T-cells and IL-15 generates effector cells in P. carinii pneumonia.

Role: PI

R01 HL61271 (NHLBI) Kolls (PI) 01/01/99-12/31/13  
Non-CD4 Host Defense Against P. carinii Pneumonia  
The long-term goal is to assess the role of B-cells in host resistance to PCP.

Role: PI

R01 HL079142 (NHLBI) Kolls (PI) 12/13/04-12/31/14  
Th17 Cytokines and Lung Immunity  
The Aims of this project are to understand the role of Th17 cytokines in mucosal immunity against K. pneumoniae and S. aureus in the lung.

Role: PI

P50 HL084932 (NHLBI) Vyas(PI) 09/11/06-07/31/11  
Host Factors in Fungal Allergy and Fibrosis  
Type: P50 (HL084932, 9/11/06-7/31/11). The main aims of this study are to improve our understanding of allergic and fibrotic lung diseases and to design interventions to prevent or ameliorate the pathogenic processes.

Role: Project Leader (Project 1)

R01 AA016688 (NIAAA) Kolls (PI) 09/30/06-08/31/11  
Alcohol, ROS, and Macrophage Epigenetics  
The specific aims of this project are (1) predict chronic ethanol results in a redox-dependent increase in AP-1 and IRF-3 binding to the human TNF promoter resulting in increased transcription of the TNF gene; (2) loss of repression by Smad 3 and 4 contributes to increased TNF production by chronic ethanol; (3) investigate the contributions of AP-1, Trif/IRF-3 and Smad 3 and 4 in regulating increased mononuclear cell TNF production in a mouse model of chronic ethanol.

Role: PI

5 P60 AA009803 (NIAAA) Nelson (PI) 12/1/03-11/30/14  
Alcohol, HIV Infection and Host Defense  
The long-term objective of this project is to investigate the impact and mechanisms of excessive alcohol consumption on host defense against infections with an emphasis on HIV disease. Research Component 3 studies the affect of SIV on lung Th17 cells.

Role: Project Leader

P01-HL076100 (NIH/NHLBI) Shellito (PI) 2/20/04 – 1/31/11  
Host Defense against HIV-related pulmonary infections  
The purpose of this grant is to develop and use gene delivery strategies that alter the course and severity of pulmonary infections that are common in HIV infected patients.

Role: Project Leader, Project 2, "CD4-Independent Vaccination for Pulmonary Infections"

No overlap.

R01-AI070672 (NIH/NIAID)                      Peebles (PI), Kolls (consultant)                      8/1/2007-7/31/12  
The Role of IL-17 in RSV-induced Mucus and Airway Responsiveness  
The Specific Aims of this project are to provide scientific expertise and critical reagents that are outlined in the experimental design.  
No overlap.

**Research Projects Pending:**

R01 (NIH)    Kolls/Shellito (PI)    07/01/10-06/30/15  
Vaccines Against Pneumoxystis  
This project to further develop vaccine candidates for PCP.  
Role: Co-Principal Investigator.

R21 (NIH)    Kolls (PI)    07/01/10-06/30/12  
Novel Macrolide Th17 Inhibitors  
This project is to test novel macrolide derivatives for their ability to inhibit Th17 differentiation and effector cytokine production.  
Role: PI.