

CURRICULUM VITAE

Joan E. Durbin

The Research Institute at Nationwide Children's Hospital
Room WA 4014
700 Children's Drive
Columbus, Ohio 43205
Phone: (614) 722-2798
Fax: (614) 722-3680
e-mail: durbinj@ccri.net

Education: BA in Chemistry, University of Detroit, Detroit, MI, 1976.

MA in Microbiology, University of California, Davis, CA, 1981.

PhD in Microbiology, Rutgers University, New Brunswick, NJ. and
UMDNJ-RWJ Medical School, Piscataway, NJ, 1987.

MD from UMDNJ-RWJ Medical School, Piscataway, NJ, 1989.

Postgraduate

Training: Residency training program, Anatomic Pathology, New York University
Medical Center, 1989-1993.

Postdoctoral Fellow in the laboratory of Dr. David Levy, Department of
Pathology, New York University School of Medicine 1991-1996.

Employment:

Assistant Professor of Pediatrics and Pathology
Ohio State University College of Medicine 1996 - 2002

Associate Professor of Pediatrics and Pathology
Ohio State University College of Medicine 2002 - present

Staff Pathologist, Nationwide Children's Hospital, 1996 - present

Awards:

Alpha Omega Alpha
American Cancer Society Postdoctoral Fellowship, 5/93-4/96.
Pediatric Pathology Society Young Investigator Award, 1994
American Society for Investigative Pathology 1996 Experimental
Pathologist-in-Training Award

Professional

Societies: American Association of Immunologists
American Society for Investigative Pathology
American Society for Microbiology
International Cytokine Society

International Society for Interferon and Cytokine Research
Society for Pediatric Pathology
Society for Pediatric Research

- Reviewer:**
- Ad hoc reviewer EVR Study Section, NIH.
 - Permanent Member Virology B Study Section, NIH, 2/2004-6/2006.
 - Pediatric Clinical Research Center Review Team, 11/30/2004.
 - Study Section UO1/ Cooperative Centers for Translational Research on Human Immunology and Biodefense 4/28-29, 2004.
 - Reviewer, Burroughs Wellcome Foundation, UK, 2006.
 - Special Emphasis Panel, Viral and Cellular Responses to Severe Influenza Infection, ZAI1-MPM-M-S1 for NIAID, 5/8/2007.
 - Special Emphasis Panel ZAI1-JSR-I(S1) for NIAID, 5/11/2007
 - K02 and K08 Review Committee for NHLBI, 11/1/2007
 - Ad hoc reviewer for American Journal of Respiratory and Critical Care Medicine, Blood, European Journal of Immunology, Human Pathology, Journal of Biological Chemistry, Journal of Clinical Investigation, Journal of Experimental Medicine, Journal of General Virology, Journal of Infectious Disease, Journal of Immunology, Journal of Interferon and Cytokine Research, Journal of Neurovirology, Journal of Virology, Infection and Immunity, PloS Pathogens, Vaccine, Viral Immunology, Virology.

Editorial

Board: Pediatric and Developmental Pathology from Jan.1, 2006

- Committees** :- Publications Committee for the International Society for Interferon and Cytokine Research (ISICR) 2004-present.
- Meetings Planning Committee for the ISICR 2002 - 2004.
 - Research Committee for the Society for Pediatric Pathology, 2003 - 2005.
 - Radiation Safety Committee, Columbus Children's Research Institute, 2000 - 2004.
 - Operating Committee, Medical Scientist Training Program, The Ohio State University College of Medicine, 2002 - present.
 - Organizer, Child Health Research Center seminar series at CCRI, 2003 - 2006.

Invited

Lectures: Society for Pediatric Pathology, Boston, MA. *The many roles of interferon in response to virus infection.* 3/2/98.

Ohio State University College of Medicine and Department of Pathology Immunology Seminar Series. *The role of interferon in influenza virus tropism.* 5/12/98.

Ohio State University Department of Molecular Virology, Immunology, and Medical Genetics. Departmental Seminar Series. *The many roles of interferon in anti-viral immunity.* 1/27/99.

Cleveland Clinic Foundation. Department of Immunology Seminar Series. *The role of Stat1 in anti-viral immunity*. 5/4/99

Cleveland Clinic Foundation. CCF/OSU Scientific Symposium. *The role of Stat1 in anti-viral immunity*. 6/4/99

Society for Pediatric Research Annual Meeting. *The role of interferon in RSV pathogenesis*. 5/13/00

Children's Oncology Group, Biannual Meeting, Phoenix, Arizona. Young Investigators Committee. *The role of the PAX3-FKHR fusion gene in tumorigenesis*. 10/2/00

Brown University. Microbiology and Immunology Seminar Series. *The role of IFN in RSV pathogenesis*. 11/16/00

OSU College of Medicine and Department of Pathology Immunology Seminar Program. *The role of IFN in RSV pathogenesis*. 11/21/00

Children's Research Institute Research Seminar Series. *The role of IFN in RSV pathogenesis*. 12/7/00

OSU College of Medicine Department of Anatomy Seminar Series. *The role of fusion genes in tumorigenesis*. 2/14/01

American Association of Immunologists, New Orleans, LA. Invited speaker. *Differences in the antiviral responses of wild-type, IFN- $\alpha\beta\gamma$ Receptor^{-/-} and STAT1^{-/-} mice*. 4/21/02

OSU Department of Veterinary Biosciences Seminar Series. *The role of interferon in RSV pathogenesis*. 6/4/02

Invited speaker. International Endotoxin Society meeting, Washington DC. *The role of STAT1 in viral sensitization to LPS*. 7/18/02.

OSU College of Medicine and Department of Pathology Seminar Series, *The role of TH2 cytokines in RSV immunopathology*. 1/7/03.

Mount Sinai School of Medicine, NY, NY Dept of Microbiology Seminar Series. *The role of interferon in RSV pathogenesis*. 3/20/03.

RSV Symposium, Stone Mountain, GA. *Chinchilla and murine models of RSV infection of the upper respiratory tract*. 10/10/03.

Brown University, Providence, RI. Department of Microbiology and Immunology Seminar Series. *RSV immunity and immunopathology*. 11/18/04.

Dept of Medical Microbiology and Immunology

Medical University of Ohio, Toledo, OH. Dept of Medical Microbiology and Immunology Seminar Series. *Immunity to RSV*. 4/6/05.

University of Toledo, Toledo, Ohio, Department of Biology Seminar Series. *Immunity to RSV*. 4/8/05.

Mount Sinai School of Medicine, New York, NY. Department of Microbiology Seminar Series. *Rodent models of RSV pathogenesis and immunity*. 8/5/05.

Child Health Research Center Seminar Series at Columbus Children's Research Institute, Columbus, OH. *Immunity to RSV*. 9/29/05

Children's Hospital Of Philadelphia, Department of Pathology Seminar. *Immunity to RSV*. 10/10/05.

New York University School of Medicine, Department of Pathology Seminar Series. *Immunity to RSV*. 11/9/05

Viral Immunity Workshop Chair, Keystone Symposium on Viral Immunity, 3/30/06.

Symposium speaker, RNA Virus Section, American Society for Microbiology Annual Meeting, Miami, FL. *Suppression of innate and adaptive immune responses by RSV*. 5/23/06

UMDNJ-RWJ Medical School, New Brunswick, NJ, Pathology Grand Rounds Speaker, *Immuno-evasion by Respiratory Syncytial Virus*. 12/15/06.

University of Minnesota, Minneapolis, MN. Cancer, Microbiology, and Immunology Seminar Series. *Type I IFN induction by respiratory virus infection*. 2/20/07.

Emory University, Atlanta, GA., Immunology Seminar Series. *Type I IFN induction by respiratory virus infection*. 2/27/07.

Teaching/

Didactic:

- Lecturer, Pediatric Surgery Attending Rounds, Topics in Surgical Pathology, since 1997.
- Lecturer, MS II Immunology Section, Primary Immunodeficiency, 2000 - 2004.
- Lecturer, IBGP 703, Primary Immunodeficiency, since 2002.
- Lecturer (MVIMG/VBS 841), "Viral Pathogenesis and Oncogenesis", Introduction to Viral Pathogenesis, Influenza Pathogenesis, Autumn 2004 and 2006.
- Course co-director (IBGP 851) "Viral Cell Surface Receptors: Virus Entry Into Cells and Activation of Signaling Pathways", Winter 2005.

- Organizer (IBGP 789) CCRI Immunology Journal Club, 2004-2006.
- Lecturer (IBGP 851) "Host Pathogen Interactions". Virus Host Interactions, Autumn 2006.

Teaching/

- Supervision:**
- Faculty Member, Molecular Cellular and Developmental Biology Graduate Program, OSU, since 1999.
 - Faculty Member, Integrated Biosciences Graduate Program, OSU, since 2001.
 - Faculty Member, Medical Scientist Program, OSU College of Medicine since 2001.
 - Ph.D. supervisor for Negin Gitiban, graduated 2006.
 - M.Sc. supervisor for Faith Skidmore, graduated 2006.
 - Ph.D. supervisor for Troy Cline, since June 2005

Current

Funding: NIH R01 DC06468. RSV UPPER AIRWAY INFECTION AND OTITIS MEDIA. 1/27/04-11/30/10. Annual direct costs \$375,226. PI: Joan Durbin

Past

Funding: NIH RO1 AI47226. THE ROLE OF INTERFERON- α/β IN RSV PATHOGENESIS. 3/1/01-2/28/06. Annual direct costs: \$225,000. PI: Joan Durbin

Human Frontier Science Program. USE OF KNOCK-OUT MICE TO DEFINE THE ROLES OF PKR AND STAT1 IN THE INTERFERON-INDUCED ANTIVIRAL STATE. 9/01/00 – 8/31/03 Annual direct costs: \$40,000, Project PI: Joan Durbin

National Childhood Cancer Foundation. THE ROLE OF THE PAX3-FKHR FUSION GENE IN THE DEVELOPMENT OF ALVEOLAR RHABDOMYOSARCOMA. 10/01/99-9/30/00
Direct costs awarded: \$15,000. PI: Joan Durbin

Ohio Cancer Research Associates
THE ROLE OF THE PAX3-FKHR FUSION GENE IN THE DEVELOPMENT OF RHABDOMYOSARCOMA.
7/1/99-6/30/01. Direct costs awarded: \$22,500. PI: Joan Durbin
Children's Cancer Group. MOUSE MODELS OF ALVEOLAR RHABDOMYOSARCOMA. 1/5/99-11/30/00.
Direct Costs Awarded: \$20,833. PI: Joan Durbin

Pending: NIH R21 AI073597-01. VISUALIZING TYPE I IFN INDUCTION IN VIVO. 12/1/07-11/30/09. Annual direct costs: \$125,000. PI: Joan Durbin

Patent: #6740519. "Immortalized homozygous STAT1-deficient mammalian cell lines and their uses".

Boards: American Board of Pathology Certification in Anatomic Pathology, 1995.

Medical License: Ohio, # 35-07-1850-D

Peer-Reviewed Publications:

1. **Durbin JE** and AM Fallon. 1985. Transient expression of the chloramphenicol acetyltransferase gene in cultured mosquito cells. *Gene* 36:173-178.
2. **Durbin JE**, Swerdel M, and AM Fallon. 1988. Identification of cDNAs corresponding to mosquito ribosomal protein genes. *Biochimica et Biophysica Acta* 950:182-192.
3. Raz R, **Durbin J**, and DE Levy. 1994. Acute phase response factor and additional members of the ISGF3 family integrate signals from cytokines, interferons, and growth factors. *Journal of Biological Chemistry* 269: 24391-24395.
4. **Durbin J**, Thomas P, Langston C, Goswami S, and MA Greco. Gastrin-releasing peptide in hypoplastic lungs. 1996. *Pediatric Pathology and Laboratory Medicine* 16: 927-924.
5. Thomas P, **Durbin J**, Langston C, Ferguson D, Jagidar J, and MA Greco. 1996. Growth fraction determination in pulmonary hypoplasia using Ki-67. *Pediatric Pathology and Laboratory Medicine* 16: 745-753.
6. **Durbin J**, Hackenmiller R, Simon MC, and DE Levy. 1996. Disruption of the mouse Stat1 gene results in compromised innate immunity to viral disease. *Cell* 84:443-450.
7. Miller DM, Rahill BM, Boss JM, Lairmore MD, **Durbin JE**, Waldman WJ, & DE Sedmak. 1998. Human Cytomegalovirus Inhibits MHC Class II expression By Disruption of the Jak/Stat Pathway. *J. of Exp. Med.* 87:675-683.
8. Garcia-Sastre A, Durbin RK, Zheng H, Palese P, Levy DE and **JE Durbin**. 1998. The role of interferon in influenza virus tissue tropism. *J. Virology.* 72:8550-8558.
9. Marie I, **Durbin JE**, and DE Levy. 1998. Differential induction of distinct interferon-alpha genes by virus infection through interferon priming and interferon regulatory factor-7. *EMBO Journal* 17: 6660-6668.
10. Garcia-Sastre A, Egorov A, Matassov D, Brandt S, Levy DE, **Durbin JE**, Palese P, and T Muster. 1998. Influenza A virus lacking the NS1 gene replicates in interferon-deficient systems. *Virology* 252:324-330.
11. Carson W, Yu H, Diersheide J, Pfeffer K, Bouchard P, Clark R, **Durbin J**, Baldwin AS, Peschon J, Johnson P, Ku G, Baumann H, and MA Caligiuri. 1999. A fatal cytokine-induced systemic inflammatory response reveals a critical role for NK cells. *J. Immunol.* 162:4943-4951.
12. Byrnes AP, **Durbin JE** and DE Griffin. 2000. Control of sindbis virus infection by antibody in interferon-deficient mice. *J. Virol.* 74:3905-3908.
13. Carson, WE, Dierksheide, JE, Jabbour, S, Anghelina, M, Bouchard, P, Ku, G, Yu, H, Baumann H, Shah MH, Cooper MA, **Durbin J**, and MA Caligiuri. 2000. Co-administration of Interleukin-18 and Interleukin-12 induces a fatal inflammatory response in mice: critical role of natural killer cell interferon- γ production and STAT-mediated signal transduction. *Blood* 96:1465-1473.
14. **Durbin JE**, Fernandez-Sesma A., Lee C-K, Rao D, Frey AB, Moran TM, Vukmanovic S, Garcia-Sastre A, and DE Levy. 2000. Type I interferon modulates innate and specific antiviral immunity. *J. Immunol.* 164:4220-4228.
15. Fehniger TA, Suzuki K, Ponnappan A, VanDeusen JB, Cooper MA, Florea SM, Freud AG, Robinson ML, **Durbin J**, and MA Caligiuri. 2001. Fatal leukemia in interleukin-15 transgenic mice follows early expansions in NK and memory-phenotype CD8+ T cells. *J Exp Med.* 193:219-232.
16. Nguyen KB, Cousens LP, Doughty LA, Pien GC, **Durbin JE**, and CA Biron. 2000. IFN- α/β -mediated inhibition and promotion of IFN- γ : Stat1 resolves a paradox. *Nature Immunology* 1:70-76.

17. Doughty LA, Nguyen KB, **Durbin JE**, and CA Biron. 2001. A Role for IFN-alpha/beta in virus infection-induced sensitization to endotoxin. *J Immunol* 166:2658-2644.
18. Xie B, Zhao J, Kitagawa M, **Durbin J**, Madri JA, Guan J-L. and X-Y Fu. 2001. Focal adhesion kinase activates Stat1 in integrin-mediated cell migration and adhesion. *J Biol Chem.* 276:19512-19523.
19. Wong AH, **Durbin JE**, Li S, Dever TE, Decker T, and AE Koromilas. 2001. Enhanced antiviral and anti-proliferative properties of a STAT1 mutant unable to interact with protein kinase PKR. *J Biol Chem.* 276:13727-13737.
20. He B, Lin GY, **Durbin JE**, Durbin RK, and RA Lamb. 2001. The SH intergral membrane protein of the paramyxovirus simian virus 5 is required to block apoptosis in MDBK cells. *J Virol.* 75:4068.
21. Durbin RK, Mertz SE, Koromilas AE, and **JE Durbin**. 2002. PKR protection against intranasal vesicular stomatitis infection is mouse strain dependent. *Viral Immunology* 15: 41-51.
22. **Durbin JE**, Johnson TR, Durbin RK, Mertz SE, Morotti RA, Peebles RS, and BS Graham. 2002. The role of interferons in RSV pathogenesis. *J Immunol.* 168:2944-2952.
23. Guo Y, Tang T, Liu X, Lu S, Wen J, **Durbin JE**, Liu Y, and P Zheng. 2002. Cis elements for transporter associated with antigen-processing-2 transcription: two new promoters and an essential role of the IFN response factor binding element in IFN-gamma-mediated activation of the transcription initiator. *Int Immunol.* 14:189-200.
24. Nguyen KB, Salazar-Mather TP, Dalod MY, Van Deusen JB, Wei XQ, Liew FY, Caligiuri MA, **Durbin JE**, and CA Biron. 2002. Coordinated and distinct roles for IFN-alpha beta, IL-12, and IL-15 regulation of NK cell responses to viral infection. *J Immunol* 169:4279-4287.
25. He B, Paterson RG, Stock N, **Durbin JE**, Durbin RK, Goodbourn S, Randall RE, and RA Lamb. 2002. Recovery of paramyxovirus simian virus 5 with a V protein lacking the conserved cysteine-rich domain: the multifunctional protein blocks both interferon-beta induction and interferon signaling. *Virology* 303:15-32.
26. Frissora F, Chen HC, **Durbin J**, Bondada S, and N Muthusamy. 2003. IFN-gamma-mediated inhibition of antigen receptor-induced B cell proliferation and CREB-1 binding activity requires STAT-1 transcription factor. *Eur J Immunol* 33:907-912.
27. Gao JX, Liu X, Wen J, Zhang H, **Durbin J**, Liu Y, and P Zheng. 2003. Differentiation of monocytic cell clones into CD8alpha(+) dendritic cells suggests that monocytes can be direct precursors for both CD8alpha(+) and CD8 alpha(-) dendritic cells in the mouse. *J Immunol* 170:5927-5935.
28. Rosas LE, Keiser T, Pyles R, **Durbin J**, and AR Satoskar. 2003. Development of protective immunity against cutaneous leishmaniasis is dependent on STAT1-mediated IFN signaling pathway. *Eur J Immunol* 33:1799-1805.
29. Jurcisek JA, **Durbin JE**, Kusewitt DF, and LO Bakaletz. 2003. Anatomy of the nasal cavity in the chinchilla. *Cells Tissues Organs* 174:136-152.
30. **Durbin J**, Doughty L, Nguyen K, Caligiuri M, Van Deusen J, and C Biron. 2003. The role of STAT1 in viral sensitization to LPS. *J Endotox Res* 9:313-316.
31. Chen HC, Frissora R, **Durbin JE**, Muthusamy N. 2003. Activation induced differential regulation of stem cell antigen (LY-6A/E) expression in murine B cells. *Cell Immunol* 225:42-52.
32. Stojdl DF, Lichty BD, tenOever BR, Paterson JM, Power AT, Knowles S, Marius R, Reynard J, Poliquin L, Atkins H, Brown EG, Durbin RK, **Durbin JE**, Hiscott J, Bell JC. 2003. VSV strains with defects in their ability to shutdown innate immunity are potent systemic anti-cancer agents. *Cancer Cell*:263-275.
33. Lesinski GB, Anghelina M, Zimmerer J, Bakalakos T, Badgwell B, Parihar P, Becknell B, Abood G, Chaudhury AR, Magro C, **Durbin J**, Carson WE. 2003. The antitumor effects of IFN-alpha are abrogated in a STAT1-deficient mouse. *J Clin Invest* 112:170-180.
34. Gitiban N, Harris R, Jurcisek JA, Durbin RK, Mertz SE, Bakaletz LO, and **JE Durbin**. 2005. Chinchilla and murine models of upper respiratory tract infection by respiratory syncytial virus. *J Virol* 79:6035-6042.

35. Johnson TR, Mertz SE, Durbin RK, Gitiban N, Hammond S, LeGallo R, and **JE Durbin**. 2005. Role for innate IFNs in determining respiratory syncytial virus immunopathology. *J Immunol* 174:7234-41.
36. Hashimoto K, **Durbin J**, Zhou W, Collins RD, Ho SB, Sheller JR, Goleniewska K, O'Neal JF, Olson SJ, Mitchell D, Graham BS, and RS Peebles. 2005. Respiratory Syncytial Virus infection in the absence of STAT1 results in airway dysfunction, induction of airway mucus, and augmented IL-17 production. *J Allergy Clin Immunol* 116:550-557.
37. Andrade RM, Wessendarp M, Portillo J-AC, Yang J-Q, Gomez FJ, **Durbin JE**, Bishop GA and CS Subauste. 2005. TRAF6-dependent CD40 signaling primes macrophages to acquire anti-microbial activity in response to TNF- α . *J Immunol* 175:6014-6021.
38. Martinez-Sobrido L, Gitiban N, Fernandez-Sesma A, Mertz SE, Jewell N, Durbin RK, Garcia-Sastre A, and **JE Durbin**. 2006. Recombinant Newcastle Disease Virus as a Vaccine Vector for Respiratory Syncytial Virus. *J Virol* 80:1130-1139.
39. Rosas LE, Barbi J, Snider H, Satoskar AA, Keiser T, Pappenfuss T, **Durbin JE**, Radzioch D, Glimcher LH, and AR Satoskar. 2006. STAT1 and T-bet play opposite roles in determining the outcome of visceral leishmaniasis caused by *L. donovani*. Cutting Edge article in *J Immunol* 177:22-25.
40. VanDeusen JB, Shah MH, Becknell B, Blaser BW, Ferketich AK, Nuovo GJ, Ahmer BMM, **Durbin J** and MA Caligiuri. 2006. STAT-1-mediated repression of monocyte IL-10 gene expression in vivo. *Eur J Immunol* 36:623-630.
41. Zhou W, Hashimoto K, Moore ML, Elias, JA, Zhu Z, **Durbin J**, Colasurdo G, Rutigliano JA, Chiappetta CL, Goleniewska K, O'Neal JF, Graham BS, and Peebles RS Jr. 2006. IL-13 is associated with reduced illness and replication in primary respiratory infection in the mouse. *Microbes Infect.* 8:2880-2889.
42. Tompkins SM, Lin Y, Leser GP, Kramer KA, Haas DL, Howerth EW, Xu J, Kennett MJ, Durbin RK, **Durbin JE**, Tripp R, Lamb RA, and He B. 2007. Recombinant parainfluenza virus 5 (PIV5) expressing the influenza A virus hemagglutinin provides immunity in mice to influenza A challenge. *Virology.* 362:139-150.
43. Hattori H, Rosas LE, Okano M, **Durbin JE**, Nishizaki K, Satoskar AR. 2007. STAT1 is involved in the pathogenesis of murine allergic rhinitis. *Am J Rhinol* 21:241-247.
44. Jewell N, Vaghefi N, Mertz SE, Akter P, Peebles RS, Bakaletz LO, Durbin RK, Flano E, and **JE Durbin**. 2007. Differential type I interferon induction by respiratory syncytial virus and influenza A virus in vivo. *J. Virol.* 81:9790.
45. Weslow-Schmidt J, Jewell NA, Mertz SE, Simas JP, **Durbin JE**, and E Flano. 2007. Type I IFN inhibition and dendritic cell activation during respiratory gamma-herpesvirus infection. *J Virol.* 81:9778.

Invited Reviews:

1. Levy DE, Raz R, **Durbin JE**, Bluysen H, Muzaffar R, Pisharody S. 1995. Cytoplasmic transcription factors: mediators of cytokine signaling. *Agents & Actions-Supplements.* 47:79-85.
2. Bluysen H, **Durbin J**, and DE Levy. Functional role of ISGF3 γ p48 in IFN signaling. 1996. *Cytokine and Growth Factor Reviews.* 7:11-17.
3. Biron CA, Salomon R, and **JE Durbin**. (2003) in *Signal Transducers and Activators of Transcription (STATs): Activation and Biology* (PB Seghal, DE Levy, T Hirano, ed). Kluwer Academic Publishers, The Netherlands.
4. **Durbin JE**, and RK Durbin. 2004. Respiratory syncytial virus - induced immunoprotection and immunopathology. *Viral Immunol* 17:370-380.
5. **Durbin JE**. Interfering with type I interferons. 2006. Commentary in *Blood* 107:847-848.
6. Hammond S, Chenever E, and **JE Durbin**. 2007 Respiratory virus infections in infants and children. *Pediatric and Developmental Pathology.* 10:172-180.