

**CURRICULUM VITAE**  
**MARK P. BIRKENBACH, M.D.**

**March 1, 2018**

**PERSONAL INFORMATION**

Business Address: Department of Pathology and Laboratory Medicine  
Rhode Island Hospital  
593 Eddy Street  
Providence, RI 02903

Business Fax: (401) 444-8348

**EDUCATION**

Medical School: Columbia University College of Physicians and Surgeons  
1978-1982 New York, NY 10032  
M.D.

Undergraduate: Harvard University  
1974-1978 Cambridge, MA 02138  
A.B., Biochemical Sciences (*magna cum laude*)

**POST-GRADUATE TRAINING**

Residency: Anatomic Pathology  
1982-1985 University of Minnesota  
Department of Laboratory Medicine and Pathology  
Minneapolis, MN

**POSTDOCTORAL APPOINTMENTS**

Research Associate Harvard Medical School  
1987-1991 Department of Microbiology and Molecular Genetics  
Cambridge, MA

Research Associate (Instructor) University of Chicago  
1986-1987 Department of Pathology  
Chicago, IL

**POST GRADUATE HONORS HONORS AND AWARDS**

James S. McDonnell Program for Molecular Medicine in Cancer Research  
Foundation Scholar University of Chicago, Chicago, IL  
1994

Harold Lee Maierhofer Memorial Columbia College of Physicians and Surgeons  
Prize in Pathology New York, NY  
1982

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**PROFESSIONAL LICENSES AND BOARD CERTIFICATION**

|                      |  |
|----------------------|--|
| Board Certification: | American Board of Pathology, Anatomic Pathology<br>1986                                |
| Licensure:           | State of Rhode Island, Department of Health<br>Medical License, MD#15898, 2017-Present |
|                      | State of Minnesota<br>Medical License, #57175, 2013-Present                            |
|                      | State of Pennsylvania<br>Medical License, #MD429263, 2006-2014                         |
|                      | State of Virginia<br>Medical License, #0101224785, 2000-Present                        |
|                      | State of Illinois<br>Medical License, #036-072747, 1986-1999                           |

**ACADEMIC APPOINTMENTS**

|                                     |  |
|-------------------------------------|--|
| Associate Professor<br>2017-Present | Department of Pathology and Laboratory Medicine<br>Warren Alper Medical School of Brown University<br>Providence, RI |
| Associate Professor<br>2013-2017    | Department of Laboratory Medicine and Pathology<br>University of Minnesota<br>Minneapolis, MN                        |
| Associate Professor<br>2006-2013    | Department of Pathology<br>Temple University School of Medicine<br>Philadelphia, PA                                  |
| Assistant Professor<br>1999-2006    | Department of Pathology<br>Eastern Virginia Medical School<br>Norfolk, VA  |
| Assistant Professor<br>1992-1999    | Department of Pathology and Committee on Virology<br>University of Chicago<br>Chicago, IL                            |
| Instructor<br>1992                  | Department of Pathology<br>Harvard Medical School, Boston, MA  |

**HOSPITAL APPOINTMENTS**

|                                    |   |
|------------------------------------|---|
| Attending Pathologist<br>2013-2017 | University of Minnesota Medical Center, Fairview<br>Minneapolis, MN |
| Associate Medical Director<br>2007 | Bostwick Laboratories<br>Glen Allen, VA                             |

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Attending Pathologist  
2006-2013

Temple University Hospital  
Philadelphia, PA

Attending Pathologist  
2000-2006

Sentara Norfolk General Hospital  
Norfolk, VA

Attending Pathologist  
2000-2006

Children's Hospital of the King's Daughters  
Norfolk, VA

Attending Pathologist  
1992-1999

University of Chicago Hospitals  
Chicago, IL

Research Fellow  
1987-1992

Department of Medicine  
Brigham and Women's Hospital  
Boston, MA

**OTHER APPOINTMENTS**

Kidney Pathology  
Working Group Member  
June 2014

Experimental Pathology Laboratories  
Sterling, VA

International Thesis Reviewer  
September 2012

University of Copenhagen  
Copenhagen, Denmark

Director  
2005-2006

Imaging Core Facility  
Eastern Virginia Medical School

Director  
2006-2013

Electron Microscopy Laboratory  
Temple University Hospital

Site Inspector  
April, 2005

College of American Pathologists

Reviewer  
2003

Microbes and Infection Journal

Volunteer Fundraiser  
2001

March of Dimes Foundation

Reviewer  
1998

Gastroenterology Journal

Reviewer  
1997

Journal of Infectious Diseases

Reviewer  
1995-97

Genes Chromosomes and Cancer Journal

Reviewer  
2015-2017

Medicine

**CURRICULUM VITAE**  
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**HOSPITAL COMMITTEES**

Associate Director  
Pathology Residency Program  
1993-1998

University of Chicago Hospitals  
Department of Pathology  
Chicago, IL

**UNIVERSITY COMMITTEES**

Member  
1999-2003

Chemical and Environmental Safety Committee  
Eastern Virginia Medical School

Vice-Chairman  
2001-2006  
Member  
2003-2006

Institutional Biosafety Committee  
Eastern Virginia Medical School  
Occupational Health Committee  
Eastern Virginia Medical School

Faculty Senate Representative  
2001-2006

Department of Pathology and Anatomy  
Eastern Virginia Medical School

**MEMBERSHIPS IN SOCIETIES**

Member  
2013

American Society of Nephrology

Member  
2010

Renal Pathology Society

Member  
2009

Pathology Society of Philadelphia

Member  
2008

International Society for Heart and Lung Transplantation

Fellow  
2001-2006

American Society for Clinical Pathology

Member  
1999-2006

Tidewater Pathology Society

Member  
1995-1997

New York Academy of Science

Member  
1993-2000

American Association for the Advancement of Science

Member  
1992-1998

Epstein-Barr Virus Association

Member  
1991-2000

American Society for Microbiology

**CURRICULUM VITAE**  
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**ORIGINAL PUBLICATIONS IN PEER-REVIEWED JOURNALS**

1. Sample, J., Hummel, M., Braun, D., Birkenbach, M., Kieff, E. Nucleotide sequences of messenger RNAs encoding Epstein-Barr virus nuclear proteins reveals a probable transcriptional initiation site. *Proceedings of the National Academy of Sciences, USA* 1986; 83:5096-5100.
2. Pearson, G., Luka, J., Petti, L., Sample, J., Birkenbach, M., Braun, D., Kieff, E. Identification of an Epstein-Barr virus early gene encoding for a second component of the restricted early antigen complex. *Virology* 1987; 160:151-161.
3. Wang, F., Gregory, C., Rowe, M., Rickinson, A., Wang, D., Birkenbach, M., Kikutani, H., Kishimoto, T., Kieff, E. Epstein-Barr virus nuclear antigen 2 specifically induces expression of the B cell activation antigen CD23. *Proceedings of the National Academy of Sciences, USA* 1987; 84:3452-3456.
4. Hanto, D., Birkenbach, M., Frizzera, G., Gajl-Peczalska, K., Simmons, R., Schubach, W. Confirmation of the heterogeneity of posttransplant Epstein-Barr virus-associated B cell proliferations by immunoglobulin gene rearrangement analyses. *Transplantation* 1989; 47:458-464.
5. Birkenbach, M., Liebowitz, D., Wang, F., Sample, J., Kieff, E. Epstein-Barr virus latent infection membrane protein increases vimentin expression in human B-cell lines. *Journal of Virology* 1989; 63:4079-4084.
6. Alfieri, C., Birkenbach, M., Kieff, E. Early events in Epstein-Barr Virus infection of human B-lymphocytes. 1991; *Virology* 181:595-608.
7. Mannick, J., Cohen, J., Birkenbach, M., Marchini, A., Kieff, E. The Epstein-Barr virus nuclear protein encoded by the leader of the EBNA RNAs (EBNA-LP) is important in B lymphocyte transformation. *Journal of Virology* 1991; 65:6826-6837.
8. Birkenbach, M., Tong, X., Bradbury, L., Tedder, T.F., Kieff, E. Characterization of an Epstein-Barr Virus receptor in human epithelial cells. *Journal of Experimental Medicine* 1992; 176:1405-1414.
9. Li, Q.X., Young, L.S., Niedobitek, G., Dawson, C.W., Birkenbach, M., Wang, F., Rickinson, A.B. Epstein-Barr virus infection and replication in a human epithelial system. *Nature* 1992; 356:347-350.
10. Birkenbach, M., Josefsen, K., Yalamanchili, R., Lenoir, G., Kieff, E. Epstein-Barr virus induced genes: First lymphocyte specific G-protein coupled receptors. *Journal of Virology* 1993; 67:2209-2220.
11. Mosialos, G., Vara, L., Yamashiro-Matsumura, S., Baughman, R., Matsudaira, P., Matsumura, F., Kieff, E., Birkenbach, M. Epstein-Barr virus induces expression of a novel gene encoding an evolutionarily conserved 55 kDa actin-bundling protein. *Journal of Virology*. 1994; 68:7320-7328.
12. Mosialos, G., Birkenbach, M., Yalamanchili, R., VanArsdale, T, Ware, C., Kieff, E. The Epstein-Barr virus transforming protein LMP1 engages signaling proteins for the tumor necrosis factor receptor family. *Cell* 1995; 80:389-399.
13. Devergne, O., Hummel, M., Koeppen, H., Le Beau, M.M. Kieff, E., Birkenbach, M. A novel interleukin-12 p40 related protein induced by latent Epstein-Barr Virus infection in B lymphocytes. *Journal of Virology*. 1996; 70:1143-1153.

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14. Mosialos, G., Birkenbach, M., Ayehunie, S., Matsumura, F., Pinkus, G., Kieff, E., Langhoff, E. Circulating dendritic cells differentially express high levels of a 55-kD actin binding protein. *American Journal of Pathology* 1996; 148:593-600.
15. Devergne, O., Birkenbach, M., Kieff, E. Epstein-Barr virus induced gene 3 and the p35 subunit of interleukin 12 form a novel heterodimeric hematopoietin. *Proceedings of the National Academy of Sciences*, 1997; USA 94:12041-12046.
16. Josefsen, K., Sorensen, L.R., Buschard, K., Birkenbach, M. Glucose induces early growth response gene (Egr-1) expression in pancreatic beta cells. *Diabetologia* 1998; 42:195-203.
17. Christ, A.D., Stevens, A.C., Koepfen, H., Walsh, S., Omata, F., Devergne, O., Birkenbach, M., Blumberg, R.S. An interleukin 12-related cytokine is up-regulated in ulcerative colitis but not in Crohn's disease. *Gastroenterology* 1998; 115:307-313.
18. Josefsen, K., Buschard, K., Sørensen, L.R., Wøllike, M., Ekman, R., Miyazaki, J.-i., Birkenbach, M. Glucose stimulation of pancreatic beta cell lines induces expression and secretion of dynorphin. *Endocrinology* 1998; 139:4329-4336.
19. Wang, H.L., Birkenbach, M., Hart, J. Expression of Jun family members in human colorectal adenocarcinoma. *Carcinogenesis*. 2000; 21(7):1313-1317.
20. Omata, F., Birkenbach, M., Matsuzaki, S., Christ, A., Blumberg, R. The Expression of IL-12 p40 and its homologue, Epstein-Barr virus-induced gene 3, in inflammatory bowel disease. *Inflammatory Bowel Disease* 2001; 7:215-220.
21. Baron, B.W., Anastasi, J., Thirman, M.J., Furukawa, Y., Fears, S., Kim, D.C., Simone, F., Birkenbach, M. Montag, A., Sadhu, A., Zeleznik-Le, N., McKeithan, T.W. The human programmed cell death 2 (PDCD2) gene is a target of BCL6 repression: Implications for a role of BCL6 in the down-regulation of apoptosis. *Proceedings of the National Academy of Sciences, USA*. 2002; 99:2860-2865.
- \*\*22. Nieuwenhuis, E.E.S., Neurath, M.F., Corazza, N., Iijima, H., Trgovcich, J., Wirtz, S., Glickman, J., Bailey, D., Yoshida, M., Galle, P.R., Kronenberg, M., Birkenbach, M., Blumberg, R.S. Disruption of T helper 2-immune responses in Epstein-Barr virus-induced gene 3-deficient mice. *Proceedings of the National Academy of Sciences, USA*. 2002; 99: 16951-16956.  
  
\*\*Senior authorship is equally shared between M. Birkenbach and R. Blumberg.
23. Cavanaugh, V.J., Deng, Y., Birkenbach, M., Slater, J.S., Campbell, A.E. Vigorous innate and virus-specific cytotoxic T-lymphocyte responses to murine cytomegalovirus in the submaxillary salivary gland. *Journal of Virology*, 2003; 77: 1703-1717.
24. Maaser, C., Egan, L.J., Birkenbach, M. Eckmann, L., Kagnoff, M.F. Expression of Epstein-Barr virus-induced gene 3 and other interleukin-12-related molecules by human intestinal epithelium. *Immunology*, 2004; 112:437-445.
25. Wirtz, S., Becker, C., Fantini, M., Nieuwenhuis, E. E., Tubbe, I., Galle, P.R., Schild, H.J., Birkenbach, M., Blumberg, R.S., Neurath, M.F. EBV-induced gene 3 transcription is induced by TLR signaling in primary dendritic cells is induced by TLR signaling in primary dendritic cells via NF-kappa B activation. *Journal of Immunology* 2005; 174:2814-2824.
26. Zahn, S., Wirtz, S., Birkenbach, M., Knop, J., Blumberg, R.S., Neurath, M.F., von Stebut, E. Impaired Th1 responses in mice deficient in Epstein-Barr virus-induced gene 3 and mice challenged with physiological doses of *Leishmania major*. *European Journal of Immunology* 2005; 35:1106-1112.

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27. Ciavarra, R.P., Taylor, L., Greene, A.R., Yousefieh, N., Horetha, D., van Rooijen, N., Steel, C., Gregory, B., Birkenbach, M., Sekellick, M. Impact of macrophage and dendritic cell subset elimination on antiviral immunity, viral clearance and production of type 1 interferon. *Virology* 2005; 342:177-189.
28. Wirtz, S., Tubbe, I., Galle, P.R., Schild, H.J., Birkenbach, M., Blumberg, R.S., Neurath, M.F. Protection from lethal septic shock by neutralizing the biological function of Interleukin-27. *Journal of Experimental Medicine* 2006; 203(8):1875-1881.
29. Hausding, M., Karwot, R., Scholtes, P., Lehr, H.A., Wegmann, M., Renz, H., Galle, P.R., Birkenbach, M., Neurath, M.F., Blumberg, R.S., Finotto, S. Lung CD11c(+) cells from mice deficient in Epstein-Barr virus-induced gene 3 (EBI-3) prevent airway hyper-responsiveness in experimental asthma. *European Journal of Immunology*. 2007; 37:1663-1677.
30. Kinoshita, Y., Johnson, E.M., Gordon, R.E., Negri-Bell, H., Evans, M.T., Coolbaugh, J., Rosario-Peralta, Y., Samet, J., Slusser, E., Birkenbach, M.P., Daniel, D.C. Colocalization of MCM8 and MCM7 with proteins involved in distinct aspects of DNA replication. *Microscopy Research and Technique* 2008; 71(4):288-97.
31. Sauer, K.A., Maxeiner, J.H., Karwot, R., Scholtes, P., Lehr, H.A., Birkenbach, M., Blumberg, R.S., Finotto, S. Immunosurveillance of lung melanoma metastasis in EBI-3-deficient mice mediated by CD8(+) T cells. *Journal of Immunology* 2008; 181:6148-6157.
32. Dibra, D., Cutrera J.J., Xia, X., Birkenbach, M.P., Li, S. Expression of WSX1 in tumors sensitizes IL-27 signaling-independent natural killer cell surveillance. *Cancer Research* 2009; 69:5505-5513.
33. Shao, W.H., Zhen, Y., J. Rosenbaum, Eisenberg, R.A., McGaha, T.L., Birkenbach, M., Cohen, P.L. A protective role of Mer receptor tyrosine kinase in nephrotoxic serum-induced nephritis. *Clinical Immunology* 2010; 136: 236-244.
34. Sifontis, N., Kim, R., Birkenbach, M., Lee, I., Constantinescu, S., Karachristos, A., Silva, P., Daller, J. Deceased-Donor Kidney Transplant Following Ethylene Glycol-Induced Brain Death. *Dialysis & Transplantation* 2011; 40:126-128.
35. Singh, N., Birkenbach, M.P., Caza, T.N., Perl, A., Cohen, P.L. Tuberos sclerosis and fulminant lupus in a young woman. *Journal of Clinical Rheumatology* 2013; 19(3):134-137.
36. Chokkalingam Mani, B.C., Mathur, M., Clauss, H., Alvarez, R., Hamad, E., Toyoda, Y., Birkenbach, M., Ahmed, M. Strongyloides stercoralis and organ transplantation. *Case Reports in Transplantation* 2013; 2013:549038.
37. Chung, Y., Yamazaki, T., Kim, B.-S., Zhang, Y., Reynolds, J.M., Martinez, G.J., Chang, S.H., Lim, H.Y., Birkenbach, M., Dong, C. Epstein Barr virus-Induced 3 (EBI3) together with IL-12 negatively regulates T helper 17-mediated immunity to *Listeria monocytogenes* infection. *Public Library of Science Pathogens* 2013; 9(9): e1003628.
38. Le, M., Ravin, K., Hasan, A., Clauss, H., Muchant, D.G., Pasko, J.K., Cipollina, G., Abanyie, F., Montgomery, S.P., Loy, M., Ahmed, M., Mathur, M., Chokkalingam Mani, B., Mehr, J., Kotru, A., Varma, C., Maksimak, M., Schultz, M., Obradovic, G., Alvarez, R., Toyoda, Y., Birkenbach, M., Brunner, E., Nelson, J. Single donor-derived strongyloidiasis in three solid organ transplant recipients: case series and review of the literature. *American Journal of Transplantation*. 2014; 14(5):1199-1206.
39. Norberg, S.M., Oros, M., Birkenbach, M., Bilusic, M. Spontaneous tumor lysis syndrome in renal cell carcinoma: a case report. *Clinical Genitourinary Cancer*. 2014; 12(5):e225-7.
40. Monroy, M.A., Fang, J., Li, S., Ferrer, L., Birkenbach, M.P., Lee, I.J., Wang, H., Yang, X.F., Choi, E.T. Chronic kidney disease alters vascular smooth muscle cell phenotype. *Frontiers in Bioscience (Landmark Ed)*. 2015; 20:784-95.

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41. Sheta, M., Riad, S., Deepak, U., Issa, N., Birkenbach, M. Ibrahim, H.N., Kukla, A. Costimulation pathway blockade in kidney transplant recipients with de-novo rheumatoid arthritis. *Clinical Nephrology – Case Studies* 2017; 5:16-19.
42. Wasko, J.A., Ustun, C., Birkenbach, M., Faizer, R., Green, J.S. The challenges of treating aspergillus abdominal aneurysm after hematopoietic cell transplant: Rapid voriconazole metabolizer. *J Oncol Pharm Pract.* 2018 (In press).

**BOOKS, MONOGRAPHS, CHAPTERS**

1. Kieff, E., Wang, F., Birkenbach, M., Cohen, J., Sample, J., Tomkinson, B., Swaminathan, S., Longnecker, R., Marchini, A., Mannick, J., Tsang, S., Kurilla, M. Molecular biology of lymphocyte transformation by Epstein-Barr virus. In: Brugge J, Curran T, Harlow E, McCormick F, ed. *Origins of Human Cancer: A Comprehensive Review*. Cold Spring Harbor: Cold Spring Harbor Laboratories, 1991. (Cold Spring Harbor Monograph Series).
2. Kieff, E., Wang, F., Birkenbach, M., Cohen, J., Sample, J., Tomkinson, B., Swaminathan, S., Longnecker, R., Marchini, A., Mannick, J., Tsang, S.-f., Sample, C., Kaye, K., Kurilla, M. Cell growth transformation by Epstein-Barr virus. In: Rhim J, Dritschilo A, ed. *Neoplastic Transformation in Human Cell Culture*. Totowa, NJ: Humana Press Inc., (1991) pp.191-201
3. Lee, I., Constantinescu, S., Gillespie, A., Swami, A., Birkenbach, M., Leech, S., Silva, P., Karachristos, A., Daller, J.A., Sifontis, N.M. Bortezomib as therapy for mixed humoral and cellular rejection: Should it be first line? *Clinical Transplants* 2009 pp. 425-429.
4. Lee, I., Constantinescu, S., Gillespie, A., Swati, R., Silva, P., Birkenbach, M., Leech, S., Karachristos, A., Daller, J.A., Sifontis, N.M. Targeting Alloantibody Production with Bortezomib: Does It Make More Sense? *Clinical Transplants* 2010 pp. 397-403.
5. Mammen, P.P.A., Cornwell, W.K., Birkenbach, M., Garry, D.J. "Acute Heart Failure" in Garry, D., Wilson, R., Vlodaver, Z. (Eds.) Congestive Heart Failure and Cardiac Transplantation: Clinical, Pathology, Imaging and Molecular Profiles. 2017 (ISBN 978-3-319-44577-9) pp. 105-117.
6. Rheault, M.N., Birkenbach, M. "Other Genetic Disorders" in Lerma, E.V., Trachtman, H., Hogan, J. and Herlitz, L. (Eds.) Glomerulonephritis, 2018 (In press, Springer, ISBN978-3-319-49379-4).

**INVITED PRESENTATIONS**

1. Epstein-Barr Virus and Associated Diseases meeting, Annecy, France .  
**Characterization of an EBV receptor on human epithelial cells. September 18, 1992**
2. Epstein-Barr Virus and Associated Diseases meeting, Cold Spring Harbor, NY  
**Identification of a novel cytokine receptor induced by latent EBV infection of B lymphocytes. September 9, 1994.**
3. Epstein-Barr Virus Department of Microbiology, Northwestern University  
**Identification of genes induced by B lymphocyte transformation by 1995.**
4. University of Pittsburgh Medical Center.  
**Characterization of the Novel EBV-Induced Cytokine Receptor, EB13 1997.**
5. Sentara Norfolk General Hospital  
**Immunological mechanisms of glomerular Injury, Department of Medicine Resident Forum, October 24, 2001.**



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6. Department of Surgery Grand Rounds, Eastern Virginia Medical School  
**Post-transplant lymphoproliferative disorders, October 12, 2001.**
7. Center for Microbial Interface Biology, Ohio State University.  
**Evaluation of immune function in mice deficient for the EB13 component of IL-27, April 8, 2003.**
8. Department of Pathology, Amgen, Inc., Thousand Oaks, CA  
**Evaluation of IL-27 function in *ebi3*-deficient mice, February 13, 2004.**

**SUBMITTED MANUSCRIPTS**

1. Vakil, V., Birkenbach, M., Woerner, Bu, L., Tubulitis In A Patient Treated With Nivolumab: Case Report And Literature Review (Submitted to American Journal of Kidney Disease).

**GRANT SUPPORT**

1. Minnesota Medical Foundation Research Grant, 1984
2. American Cancer Society Institutional Grant (University of Minnesota), 1984
3. Cellular Genes Expressed After Immortalization by EBV  
National Institute of Allergy and Infectious Diseases, U.S. P.H.S., Individual NRSA  
F32 AI07495  
1986-1987, Total award, direct costs: approx \$45,000 (salary)
4. University of Chicago Cancer Research Foundation  
Principal Investigator  
1986-1987, Total award, direct costs: \$40,000
5. Growth Transformation of B Lymphocytes by EBV Infection  
National Cancer Institute, U.S. P.H.S.; Physician Scientist Award  
Principal Investigator  
K11 CA01341  
1987-1992, Total award, direct costs: \$323,049
6. Characterization of Cellular Genes Induced by Epstein-Barr Virus  
The University of Chicago, Gould Foundation Faculty Scholarship  
Principal Investigator  
1992-1993, Total award, direct costs: \$15,000
7. Analysis of Novel Cytokine Receptor, EB13  
Leukemia Research Foundation; Research Grant  
Principal Investigator  
1993-1994, Total award, direct costs: \$35,000
8. Characterization of the EBV-Induced Cytokine Receptor, EB1 3  
American Cancer Society; Junior Faculty Research Award  
Principal Investigator  
JFRA-497  
1994-1996, Total award, direct costs: \$79,500

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9. Characterization of the EBV-Induced Hematopoietin Receptor, EBI 3  
McDonnell Research Foundation, Molecular Medicine in Cancer Research Award  
JMSF 93-41  
Principal Investigator  
1994-1996, Total award, direct costs: \$375,000
10. Analysis of the Epstein-Barr Virus-Induced Cytokine Receptor, EBI 3  
University of Chicago Cancer Research Foundation Auxiliary Board  
Principal Investigator  
1994-1999, Total award, direct costs: \$90,000
11. Characterization of Novel EBV-Induced Cytokine Receptor  
National Cancer Institute, U.S. P.H.S.; FIRST Award  
R29 CA62375  
Principal Investigator  
1994-2000, Total award, direct costs: \$274,902
12. The Role of EGR-1 in Beta-Cell Responses to Glucose  
University of Chicago Diabetes Research and Training Center, Pilot and Feasibility Grant  
Principal Investigator  
1996-1998, Total award, direct costs: \$35,000
13. Role of the Secreted Cytokine Receptor, EB13, in Immune Regulation  
Eastern Virginia Medical School, Institutional Grant  
Principal Investigator  
2000, Total award, direct costs: \$14,149
14. Characterization of Interleukin-27 Function in Immune Response to Murine Cytomegalovirus.  
Thomas F. and Kate Miller Jeffress Memorial Trust Research Grant  
Principal Investigator  
2003-06  
Total award, direct costs: \$20,000

**PATENTS**

1. US Patent Number 5,744,301, April 28, 1998  
Inventors: Mark P. Birkenbach, Elliott D. Kieff  
Methods of Detection of Epstein-Barr Virus Induced Genes Expressed in the Placenta
2. US Patent Number 6,043,351, March 28, 2000  
Inventors: Mark P. Birkenbach, Elliott D. Kieff  
Epstein-Barr Virus Induced Genes
3. US Patent Number 6,500,926, December 31, 2002  
Inventors: Mark P. Birkenbach, Elliott D. Kieff  
Epstein-Barr Virus Induced Genes
4. US Patent 6,669,971 March 2, 2004  
Inventors: Mark P. Birkenbach, Elliott D. Kieff  
Antibodies that Bind Epstein Barr Virus Induced Proteins

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**UNIVERSITY TEACHING ROLES**

|  |   |
|--|---|
| Laboratory Instructor<br>1982-1985     | University of Minnesota<br>General and Systemic Pathology   |
| Laboratory Instructor<br>1987-1992     | Harvard University<br>Microbiology 328<br>(Molecular Biology of Epstein-Barr Virus)   |
| Discussion Section Leader<br>1992-1997 | University of Chicago<br>Pathology 301<br><b>(8 hrs teaching time per year)</b>   |
| Assistant Course Director<br>1993-1994 | University of Chicago<br>Biological Sciences 115 (Fundamentals of Cell Biology)<br><b>(15 hrs lecture time per year)</b>                              |
| Lecturer<br>1993-1999                  | University of Chicago<br>Molecular Genetics and Cell Biology 346<br>(Molecular Biology of Eukaryotic Viruses)<br><b>(3 hrs lecture time per year)</b> |
| Lecturer<br>1994-1995                  | University of Chicago<br>Biological Sciences 185<br>(Biological Basis of Health and Disease)<br><b>(15 hrs lecture time per year)</b>                 |
| Lecturer<br>1995-1996                  | University of Chicago<br>Biological Sciences 186<br>(Biological Basis of Health and Disease)<br><b>(15 hrs lecture time per year)</b>                 |
| Lecturer<br>1996-1997                  | University of Chicago<br>Biological Sciences 104<br>(Origins of Cancer)<br><b>(15 hrs lecture time per year)</b>                                      |
| Lecturer<br>1996-1998                  | University of Chicago<br>Pathology 308<br>(Defense Mechanisms)<br><b>(3 hrs lecture time per year)</b>  |
| Resident Didactics<br>1992-1999        | University of Chicago<br>Molecular Pathology  |
| Lecturer<br>1999-2006                  | Eastern Virginia Medical School<br>Medical Pathology  |
| Lecturer<br>1999-2005                  | Eastern Virginia Medical School<br>Medical Microbiology,<br>Graduate Program in Medical Sciences (Virology)   |
| Resident Didactics<br>1999-2006        | Eastern Virginia Medical School<br><b>(20 hrs/year formal didactic in Surgical Pathology)</b><br><b>(Renal Pathology teaching 1 month per year)</b>   |
| Lecturer                               | Temple University School of Medicine  |

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| 2006-2013<br><b>Block Director</b><br><b>Pathology Director</b> | Medical Pathology<br><b>Cardiovascular &amp; Pulmonary Medicine block</b><br><b>Nephrology and Endocrinology block</b><br><b>(15 hrs lecture, 14 hrs small group session per year)</b> |
| Lecturer<br>2011  | Temple University School of Medicine<br>Graduate Program in Biomedical Sciences (Pathology)<br><b>(6 hrs lecture per year)</b>   |
| Lecturer<br>2006-2013   | Temple University School of Podiatric Medicine<br>Medical Pathology<br><b>(10 hrs lecture per year)</b>  |
| Lecturer<br>2012  | Temple University Maurice H. Kornberg School of Dentistry<br>Pathology<br><b>(9 hrs lecture per year)</b>  |
| Resident Didactics<br>2006-2013                                 | Temple University School of Medicine<br>Department of Pathology<br>Department of Medicine<br>Autopsy, Renal, Cardiovascular Pathology  |
| Fellowship Didactics<br>2006-2013                               | Temple University School of Medicine<br>Department of Medicine,<br>Division of Nephrology<br>Division of Rheumatology<br>Renal and Cardiovascular Pathology                            |
| Laboratory Small Group<br>Session Instructor<br>2014-2017       | University of Minnesota Medical School<br>Human Disease: Pathology   |
| Resident Didactics<br>2014-2017                                 | University of Minnesota Medical School<br>Department of Pathology<br>Department of Medicine<br>Renal, Cardiovascular Pathology   |
| Fellowship Didactics<br>2014-2017                               | University of Minnesota Medical School<br>Department of Medicine<br>Division of Renal Diseases and Hypertension Cardiovascular<br>Division<br>Renal, Cardiovascular Pathology          |

**UNIVERSITY OF CHICAGO POST-DOCTORAL FELLOWS AND OTHER SCIENTIST SUPERVISED**

|           |                              |
|-----------|------------------------------|
| 1994-1998 | Hartmut Koeppen, M.D., Ph.D. |
| 1996-1998 | Poornima Kamath, Ph.D.       |
| 1997-1999 | Joanne Trogvich, Ph.D.       |

**CURRICULUM VITAE**  
**MARK P. BIRKENBACH, M.D.**

**GRADUATE STUDENTS SUPERVISED**

|           |   |
|-----------|---|
| 1997-1998 | University of Chicago<br>Wendy Keir, MS |
|-----------|---|

**PH.D. THESIS COMMITTEES**

|      |  |
|------|--|
| 2001 | Eastern Virginia Medical School<br>Zaruhi Karabekian, Ph.D.<br>Thesis: "Interactions Among Murine Cytomegalovirus US22 Family Gene Products That Influence Viral Pathogenesis" |
| 2006 | Eastern Virginia Medical School<br>Yu Jing, Ph.D.<br>Thesis: "Age-related Changes in Human Natural Killer Cell Activation to Influenza"  |

**CLINICAL LABORATORY TEACHING**

|   |  |
|---|--|
| Co-Director<br>2000-2006  | Eastern Virginia Medical School<br>Renal Pathology Laboratory                |
| Director<br>2003-2006   | Eastern Virginia Medical School<br>Diagnostic Electron Microscopy            |
| Scientific Director<br>2002-2004                                    | Eastern Virginia Medical School<br>Molecular Pathology Laboratory            |
| Assistant Medical Director<br>2004-2006                             | Eastern Virginia Medical School<br>Diagnostic Molecular Pathology Laboratory |
| Director of Renal Pathology<br>2006-2013                            | Temple University Hospital   |
| Attending Renal Pathologist<br>& Electron Microscopist<br>2006-2013 | Temple University Hospital   |
| Director of Cardiovascular Pathology<br>2006-2013                   | Temple University Hospital   |
| Attending Autopsy Pathologist:<br>2006-2013                         | Temple University Hospital<br><b>(12 months/yr; 4 hrs/day)</b>               |
| Associate Medical Director<br>2007                                  | Nephrocor, Inc.<br><b>(6 months/yr; 11 hrs/day; 4 days/week (avg))</b>       |
| Director, Renal Pathology<br>2013- 2017                             | University of Minnesota Medical Center<br>Minneapolis, MN                    |
| Director, Immunofluorescence Laboratory<br>2014- 2017               | University of Minnesota Medical Center                                       |
| Director, Electron Microscopy Laboratory<br>2016- 2017              | University of Minnesota Medical Center                                       |