

Curriculum Vitae

The University of Mississippi Medical Center

Name: Christopher A. Friedrich, M.D., Ph.D.

Date of Appointment: November, 2000

Title: Associate Professor of Preventive Medicine (Medical Genetics)
Assistant Professor of Medicine and Pediatrics

Date/Place of Birth: July 26, 1956 – Abington, PA

Language Proficiency: English

Educational Background:

1974 - 78 B.A.	Glassboro State College (Life Sciences) (now called Rowan University)
1980 - 84 M.S.	Center for Demographic and Population Genetics, University of Texas at Houston, TX
1984 -86 Ph.D.	Center for Demographic and Population Genetics, University of Texas at Houston, TX
1984 - 88 M.D.	Rutgers Medical School (now called UMDNJ-Robert Wood Johnson Medical School)

Postgraduate Training and Fellowship Appointments:

1988 - 89 Intern in Medicine, University of Minnesota, Minneapolis
1989 - 91 Resident in Medicine, University of Minnesota, Minneapolis
1991 - 94 Fellowship in Medical Genetics, Johns Hopkins Hospital, Baltimore

Military Service: none

Awards, Honors and Membership in Honorary Societies:

1984	Sigma Xi, The Scientific Research Society
1989	Winner, clinical research poster competition for Associates, American College of Physicians 70th Annual meeting, San Francisco
1990	Finalist, clinical research poster competition for Associates, American College of Physicians 71st Annual meeting, Chicago

Specialty Certification:

1992	American Board of Internal Medicine
1993	American Board of Medical Genetics (Clinical & Biochemical) (renewed through 12-31-05)

Licensure: Mississippi (2001-present)
Pennsylvania (1996 – present)
Maryland (1991-1999)
Minnesota (1990-94)

Memberships in Professional and Scientific Societies:

National Societies:

American College of Physicians
 American Association for the Advancement of Science
 American Society of Human Genetics
 American Federation for Medical Research
 Iron Disorders Institute
 Late-Onset Tay-Sachs Foundation (member, Advisory Board)

Academic (and other official) Appointments:Faculty Appointments:

1994 - 96 Instructor, Dept. of Pediatrics, Lipid Research-Atherosclerosis Unit, Johns Hopkins University School of Medicine, Baltimore
 1996 - 00 Assistant Professor of Medicine and Assistant Professor of Medicine in Pediatrics, Division of Medical Genetics, University of Pennsylvania School of Medicine, Philadelphia, PA
 2000 - Associate Professor of Preventive Medicine (Medical Genetics), Assistant Professor of Medicine and Pediatrics, University of Mississippi School of Medicine, Jackson

Community Service:

2002 - Member, Genetics Advisory Committee, MS State Dept. of Health

Hospital and Administrative Appointments:

1990 - 91 Associate staff, Emergency Department, St. Paul-Ramsey Medical Center, St. Paul, MN
 1994 - 96 Attending physician, Center for Medical Genetics, Johns Hopkins Hospital Department of Medicine
 1994 - 96 Active staff, Internal Medicine Dept., Wyman Park Medical Center, Johns Hopkins Health Systems, Baltimore, MD
 1995 - 96 Associate Staff, Emergency Department, St. Joseph's Medical Center, Towson, MD
 1995 - 96 Associate Staff, Emergency Department, Union Memorial Hospital, Baltimore, MD
 1996 - 96 Associate Staff, Emergency Department, Mercy Medical Center, Baltimore, MD
 1996 - 00 Active Staff, Division of Medical Genetics, Department of Medicine, University of Pennsylvania Health System
 1997 - 98 Active Staff, Division of Metabolism, Children's Hospital of Philadelphia
 2001 - Active Staff, Division of Medical Genetics, University of Mississippi Medical Center

Academic Committees at the University of Pennsylvania:

1996 - 2000 Council for Health Promotion and Disease Prevention
 1998 - 2000 Institutional Review Board

Major Teaching and Clinical Responsibilities for the University of Mississippi:

Medical Genetics Clinic
 Hemochromatosis Clinic
 Neurofibromatosis Clinic
 Lipid Clinic (Jackson Medical Mall)
 Genetic Metabolism Clinic
 Marfan Syndrome Clinic
 Genetics course (spring semester)
 Inpatient consultations
 Internal Medicine Attending Rounds at UMC, one month per year

Lectures by Invitation:

August 25, 2004	“Expanded newborn screening in Mississippi: First year’s results” – Grand Rounds, Pediatrics Department, University of Mississippi Medical Center, Jackson, MS
September 24, 2003	“Newborn Screening in Mississippi” – American Academy of Pediatrics (MS Chapter) Annual Meeting, Choctaw, MS
June 25, 2003	“Expanded newborn screening in Mississippi” – Grand Rounds, Pediatrics Department, University of Mississippi Medical Center, Jackson, MS.
March 26, 2003	“Genetic Testing in High-Risk Cancer Families” – Medicine Department, University of Mississippi Medical Center, Jackson, MS.
February 22, 2003	“Genetic Testing in High-Risk Cancer Families” – Southern Society for Clinical Investigation Annual Meeting, New Orleans, LA.
November 22, 2002	“Genetic Testing in High-Risk Cancer Families” – Jackson Cancer Research Interest Group, Jackson, MS.
November 13, 2002	“Treatment of Lysosomal Storage Diseases” – Grand Rounds, Phoebe Putney Memorial Hospital, Albany, GA
October 4, 2002	“How The New Genetics Will Change Your Management of Diabetic and Heart Disease Patients” – Dept. of Family Medicine, University of Mississippi Medical Center, Jackson
July 10, 2002	“Lipid Disorders in Children” – Grand Rounds, Department of Pediatrics, University of Mississippi Medical Center, Jackson
April 19, 2002	“How Genetics Will Change Your Management of Diabetic and Heart Disease Patients” – Mercer University School of Medicine, Macon, GA
February 6, 2002	“von Hippel-Lindau Disease” – Grand Rounds, Departments of Neurology and Neurosurgery, University of Mississippi Medical Center, Jackson, MS
December 18, 2001	“Genetic Basis for Long QT Syndrome” – Office of Genetics and Disease Prevention, Centers for Disease Control and Prevention, Atlanta, GA
December 1, 2001	“Genetic Basis for Long QT Syndrome” – Southeastern Pediatric Cardiology Society Annual Meeting, Jackson, MS

- October 13, 2001 "Natural Selection, Disease Mutations and Evolution" – American Society of Human Genetics Annual Meeting, San Diego, CA (moderator, Scientific Session)
- September 21, 2001 "Genes causing Long QT Syndrome" – Southeastern Pediatric Cardiology Society Annual Meeting, Jackson, MS
- September 9, 2001 "Iron Overload – The most common genetic condition affecting the Irish" – Celtic Heritage Festival, Jackson, MS
- September 7, 2001 "Genetic Causes of Breast and Colon Cancers" – Grand Rounds, Baptist Hospital, Pensacola, FL
- August 27, 2001 "Review and Update on Hemochromatosis" – Mid-Atlantic Human Genetics Regional Network Annual Meeting, Annapolis, MD
- June 9, 2001 "How The New Genetics Will Change Your Management of Diabetic and Heart Disease Patients" and "How The New Genetics Will Change Your Management of Patients with Breast, Colon and Prostate Cancer" – Genomics 101 course, Chicago, IL
- May 12, 2001 "How The New Genetics Will Change Your Management of Diabetic and Heart Disease Patients" and "How The New Genetics Will Change Your Management of Patients with Breast, Colon and Prostate Cancer" – Genomics 101 course, Alexandria, VA
- May 5, 2001 "Update on Neurofibromatosis" – Neurofibromatosis, Inc. – Mississippi, Annual Meeting, Jackson, MS
- March 5, 2001 "Genetic Testing for Hemochromatosis" – Society of Air Force Physicians/Air Force Chapter of ACP-ASIM Annual Meeting, Biloxi, MS.
- October 17, 2000 "Genetic Conditions Affecting Adults"- Univ. of Pennsylvania School of Nursing, Philadelphia.
- April 13, 2000 "Genetics and Clinical Medicine" – American College of Physicians Annual Meeting, Philadelphia, PA
- April 6, 2000 "Prevention of Coronary Artery Disease: Lipids and Other Risk Factors" - Division of Cardiology, Children's Hospital of Philadelphia, PA.
- February 23, 2000 "Applying Genetic Testing to Adult Disorders" - Presbyterian Medical Center, Philadelphia.
- October 5, 1999 "Genetic Conditions Affecting Adults"- Univ. of Pennsylvania School of Nursing, Philadelphia.
- August 20, 1999 "Low HDL Cholesterol Increases the Risk of Myocardial Infarction" Grand Rounds, St. Elizabeth Hospital, Elizabeth, NJ
- February 12, 1999 "Molecular Diagnosis of Genetic Conditions" - Grand Rounds, Chestnut Hill Hospital, Philadelphia, PA
- November 11, 1998 "Molecular Diagnosis of Genetic Conditions" - Clinical Care Associates Lecture Series, Penn Medicine at Radnor, PA
- October 21, 1998 "Molecular Diagnosis of Genetic Conditions" - Grand Rounds, Holy Redeemer Hospital, Philadelphia, PA
- October 8, 1998 "Molecular Diagnosis of Genetic Conditions" - Texas Club of Internists Scientific Meeting, Philadelphia, PA
- October 3, 1998 "Problems Associated with DNA-Based Diagnosis of Hemochromatosis" - Penn State College of Medicine, Hershey, PA.
- October 1, 1998 "Prevention of Coronary Artery Disease: Lipids and Other Risk Factors" - Division of Cardiology, Children's Hospital of Philadelphia, PA.
- July 1998 "Dilated Cardiomyopathy Genes" - Grand Rounds, Department of Medicine, University of Pennsylvania Health System.

- June 1998 "von Hippel-Lindau Syndrome: A Pleomorphic Condition" - American Cancer Society's Second National Conference on Cancer Genetics, San Francisco, CA.
- May 1998 "Dilated Cardiomyopathy Genes" - Grand Rounds, Division of Cardiology, University of Pennsylvania Health System.
- April 1998 "Dilated Cardiomyopathy Genes" - Molecular Cardiology Lecture Series, Allegheny University of the Health Sciences, Philadelphia, PA.
- March 1998 "Primer on Genetic Testing" - Philadelphia GI Training Group Annual Session.
- March 1998 "Genetic Conditions Affecting Adults"- Univ. of Pennsylvania School of Nursing, Philadelphia.
- November 1997 "Neurofibromatosis in Adults"-St. Christopher's Hospital for Children, Philadelphia.
- June 1997 "Familial Hypercholesterolemia and Gene Therapy"-Genetic Disorders of Adult Onset, Valley Hospital, Ridgewood, NJ.
- 1997 "Molecular Diagnosis of Presymptomatic Adults with Inherited Conditions"- Grand Rounds, University of Pennsylvania Dept. of Medicine.
- 1997 "Recent Advances in Genetic Conditions Affecting Adults"-Grand Rounds, Dept. of Medicine, UPHS-Presbyterian Medical Center, Philadelphia.
- March 1997 "Genetic Conditions Affecting Adults"- Univ. of Pennsylvania School of Nursing, Philadelphia.
- 1997 "Development of a Hemochromatosis Clinic"-University of Kansas Medical Center, Division of Hematology/Oncology.
- 1996 "Prevention of Coronary Artery Disease"-Riverview Medical Center, Red Bank, NJ.
- 1996 "Primary and Secondary Prevention of MI"-Bristol-Myers Squibb Lipid Education Faculty Program, Newtown, PA.
- June 1996 "Recent Advances in Genetic Conditions Affecting Adults"-Grand Rounds, Dept. of Medicine, VA Medical Center, Philadelphia.
- May 20, 1996 "Evaluating A Dysmorphic Child"-Dept. of Pediatrics, Johns Hopkins Hospital, Baltimore.
- 1996 "Genetic Conditions You May See On The Internal Medicine Boards"- Dept. of Medicine, University of Pennsylvania.
- 1996 "Prevention of Coronary Artery Disease: Lipids and Other Risk Factors"- Dept. of Pediatrics, Franklin Square Hospital, Baltimore.
- 1996 "Genetic Conditions You May See On The Internal Medicine Boards"- Dept. of Medicine, VA Medical Center, Philadelphia.
- 1995 "Prevention of Coronary Artery Disease: Lipids and Other Risk Factors"- Dept. of Pediatrics, Johns Hopkins Medical Services Corp., Baltimore.
- 1995 "Biochemical and Genetic Predictors of Early Atherosclerosis"-Institute for Human Gene Therapy, University of Pennsylvania.
- 1994 "Genetic Conditions You May See On The Internal Medicine Boards" and "Familial Cancer Syndromes"-Medicine house staff lectures, Johns Hopkins Hospital, Baltimore.
- 1994 "Prevention of Coronary Artery Disease: Lipids and Other Risk Factors"- Advances in Pediatric Nutrition, Johns Hopkins University, Baltimore.
- 1994 "Linkage of North Carolina Macular Dystrophy to a GABA receptor gene expressed preferentially in retina"-Dept. of Medicine, University of Pittsburgh.

1994 "Linkage of North Carolina Macular Dystrophy to a GABA receptor gene expressed preferentially in retina"-Dept. of Genetics, Case-Western Reserve University, Cleveland.

Publications:

Research Publications, peer reviewed

Barnett, G.L. and Friedrich, C.A. Recent developments in ovarian cancer genetics. *Curr Opin Obstet Gynecol* 16:79-85, 2004.

Friedrich, C.A. Liddle syndrome. In: *Hypertension Pearls* (D. W. Jones, D. S. King, M. R. Wofford, eds.), Hanley & Belfus (Elsevier), Philadelphia, pp. 161 – 162, 2004.

Friedrich, C.A. Gluco-corticoid remediable aldosteronism. In: *Hypertension Pearls* (D. Jones, D. S. King, M. Wofford, eds.), Hanley & Belfus (Elsevier), Philadelphia, pp. 42 – 44, 2004.

Friedrich, C.A. The role of DNA testing in breast, ovarian, and colon cancers. *Am. J. Med. Sci.* 325:120-124, 2003.

Venditti, C.P., Farmer, J., Russell, K.L., Friedrich, C.A., Alter, C., Canning, D., Whitaker, L., Mennuti, M., Driscoll, D., and Zackai, E.H. Omodysplasia: An Affected Mother and Son. *Am. J. Med. Genet.* 111:169-177, 2002.

Holman, H.E., Hicks, G.S., Low, A.K., Bouldin, M.J., Russell, L.D., Friedrich, C.A., and Brown, C.A. An internist's update on cholesterol management. *Am. J. Med. Sci.* 324:189-195, 2002.

Friedrich, C. A. Genotype/Phenotype correlation in von Hippel-Lindau Syndrome. *Hum. Molec. Genet.* 10:769-767, 2001.

Wolfe, M.L., Vartanian, S.F., Ross, J.L., Bansavich, L-L., Mohler, E.R. III, Meagher, E., Friedrich, C.A. and Rader, D.J. Safety and effectiveness of Niaspan when added sequentially to a statin for treatment of dyslipidemia. *Am. J. Cardiol.* 87:476-479, 2001.

Kleopa K.A., Raizen, D.M., Friedrich, C.A., Brown, M.J., Bird, S.J. Acute axonal neuropathy in maple syrup urine disease. *Muscle & Nerve* 24(2):284-287, 2001.

Friedrich, C.A. von Hippel-Lindau Syndrome: A Pleomorphic Condition. *Cancer* 86:1658-1662, 1999.

Friedrich, C.A. and Rader, D.J. Homocysteine and Vascular Disease. *J. Clin. Outcomes Management.* 6:37-42, 1999.

Friedrich, C.A. and Rader, D.J. Management of lipid disorders. *Rheumatic Disease Clinics of North America* 25:507-520, 1999.

Annunen, S., Körkkö, J., Czarny, M., Warman, M.L., Brunner, H.G., Kääriäinen, H., Mulliken, J.B., Tranebjærg, L., Brooks, D.G., Cox, G.F., Cruysberg, R., Curtis, M.A., Davenport, S.L.H., Friedrich, C.A., Kaitila, I., Krawczynski, M.R., Latos-Bielenska, A., Mukai, S., Olsen, B.R.,

Shinno, N., Somer, M., Vikkula, M., Zlotogora, J., Prockop, D.J. and Ala-Kokko, L. Splicing mutations of 54-bp exons in the COL11A1 gene cause Marshall syndrome, but other mutations cause overlapping Marshall/Stickler phenotypes. *Amer. J. Hum. Genet.* 65:974-983, 1999.

Friedrich, C.A. More on primary biliary cirrhosis in twins (letter). *New England J. Med.* 332:336, 1995

Friedrich, C.A. Blood donation by patients with hemochromatosis (letter). *J. Amer. Med. Assoc* 270:2928-2929, 1993

Eichner, J.E., Friedrich, C.A., Cauley, J.A., Kamboh, M.I., Gutai, J.P., Kuller, L.H. and Ferrell, R.E. Phenotypic effects of alpha-2-HS glycoprotein on quantitative hormone and bone measures in postmenopausal women. *Calcified Tissue International* 47:345-349, 1990

Friedrich, C.A., Francis, K.A. and Kim, H.C. Familial exudative vitreoretinopathy (FEVR) and platelet dysfunction. *Br. J. Ophthalmol.* 73:477-478, 1989

Friedrich, C.A., Ferrell, R.E., Siciliano, M.J. and Kitto, G.B. Biochemical and genetic identity of alpha-keto acid reductase and cytoplasmic malate dehydrogenase from human erythrocytes. *Annals Hum. Genet.* 52:25-37, 1988

Friedrich, C.A., Morizot, D.C., Siciliano, M.J. and Ferrell, R.E. The reduction of aromatic alpha-keto acids by cytoplasmic malate dehydrogenase. *Biochem. Genet.* 25:657-669, 1987

Friedrich, C.A. and Ferrell, R.E. A population study of alpha-keto acid reductase. *Annals Hum. Genet.* 49:111-114, 1985

Friedrich, C.A., S. Chakravarti and Ferrell, R.E. A general method for visualizing enzymes releasing adenosine or adenosine-5'-monophosphate. *Biochem. Genet.* 22:389-394, 1984

Abstracts:

Friedrich, C.A., Bock, H.G., Barnett, G.L., and Baliga, R. Hemizygoty for *NPH1* (nephrin) mutations associated with congenital nephrosis, (Finnish type). To be presented at the American Society of Human Genetics annual meeting, Toronto, October 2004.

Yu, C.W., Sistrunk, J., Yang, Y., Thompson, C., and Friedrich, C. Mosaic X/XX/XXX male with atypical Klinefelter features. To be presented at the American Society of Human Genetics annual meeting, Toronto, October 2004.

Friedrich, C.A., Gaymes, C. Abnormal mitochondria in arrhythmogenic right ventricle disease (ARVD). (Presented at the American Society of Human Genetics, Los Angeles, CA, November 2003)

Scheuner, M, Friedrich, C.A., Gettig, E, Greendale, A. Potential for prevention of cardiovascular disease in genetically susceptible individuals – implications for public health. (Presented at the First National CDC Prevention Conference on Heart Disease, Atlanta, August 22, 2001)

Venditti, C.P., Farmer, J., Friedrich, C., Mennuti, M., Driscoll, D., Whitaker, L., Zackai, E.H. Autosomal Dominant Omodysplasia: Prenatal Diagnosis. *Amer. J. Hum. Genet.* 67:2398, 2000. (Presented at the American Society of Human Genetics, Philadelphia, 2000)

Venditti, C.P., Farmer, J., Friedrich, C., Mennuti, M., Driscoll, D., Whitaker, L., Zackai, E.H. Omodysplasia: An affected mother and fetus. (Presented at the Society of Craniofacial Genetics 2000 Annual Meeting, Philadelphia)

Habre, W., Friedrich, C., Sleck, M., Clayburne, G., von Feldt, J., Hoffman, E., Wang, G.F., Schumacher, H.R. Synovial xanthomatosis: What are the mechanisms for this rare syndrome? *Arthritis & Rheumatism* 42 (Suppl): S322, 1999.

KA Kleopa, DM Raizen, CA Friedrich, MJ Brown and SJ Byrd. Acute axonal neuropathy in Maple Syrup Urine Disease (MSUD). American Association of Electrodiagnostic Medicine, 2000, Phila.

Brooks, D.G., Kurtz, M.M., Farmer, J., Harper Mozley, L., Liu, G., Gur, R.C. and Friedrich, C.A. Split cognitive function in an intelligent adult with Joubert syndrome with dramatically hypometabolic cerebellum. *Amer. J. Hum. Genet.* 65:A144, 1999. (Presented at the American Society of Human Genetics, San Francisco, 1999)

Friedrich, C.A., Kolansky, D.M., Paridon, S.M., Clark, B.J., Brown-Parr, E.S.C., Wilson, J.M., Rader, D.J. Aortic root calcification precedes obstructive coronary artery disease in children with homozygous familial hypercholesterolemia. *Amer. J. Hum. Genet.* 65:A236, 1999. (Presented at the American Society of Human Genetics, San Francisco, 1999)

Friedrich, C.A. and J.M. Farmer. Presymptomatic molecular diagnosis of hemochromatosis in children. *Amer. J. Hum. Genet.* 63:A266, 1998. (Presented at the American Society of Human Genetics, Denver, 1998)

Farmer, J.M. and Friedrich, C.A. Clinical profile of five individuals homozygous for the H63D mutation in the HFE gene. *Amer. J. Hum. Genet.* 63:A266, 1998. (Presented at the American Society of Human Genetics, Denver, 1998)

Körkkö, J., Annunen, S., Warman, M.L., Brunner, H.G., Kääriäinen, H., Mulliken, J.B., Cox, J., Curtis, M.A., Davenport, S., Friedrich, C., Kaitila, I., Mukai, S., Olsen, B.R., Shinno, N., Somer, M., Tranebjærg, L., Vikkula, M., Zlotogora, J., Prockop, D.J. and Ala-Kokko, L. Twenty novel *COL2A1* and *COL11A1* mutations in Stickler and Marshall syndromes. *Amer. J. Hum. Genet.* 63:A369, 1998. (Presented at the American Society of Human Genetics, Denver, 1998)

Brooks, D., Friedrich C. and Stambolian D. A novel mutation of the "bulge cysteine" in the human L ferritin iron responsive element causes Hereditary Hyperferritinemia and Cataract Syndrome. *Amer. J. Hum. Genet.* 63:A353, 1998. (Presented at the American Society of Human Genetics, Denver, 1998)

Farmer, J.M., Leonard D.G.B., van Deerlin V.M.D., Brooks D.G. and Friedrich, C.A. Clinical experience and dilemmas in genetic counseling and testing for hemochromatosis. *J. Genetic Counseling* (in the press, 1998) (Presented at the National Society of Genetic Counselors, Denver, 1998)

Editorials, Reviews, Chapters

Friedrich, C.A. Why you must know the medical history of your family. Bottom Line Health 17 (3):5–7, 2003.

Friedrich, C.A. Meeting report - Genomics 101: What the Practicing Physician Needs to Know About the Genetics Revolution. Expert Review of Molecular Diagnostics 1:135-6, 2001

Friedrich, C.A. and Maher, J.F. The role of triglyceride and HDL cholesterol modification in the revised National Cholesterol Education Program treatment guidelines. Newsletter of Coronary Artery Disease (2001, in the press). C.V. Mosby, Philadelphia

Friedrich, C.A. Iron does not cause coronary artery disease. Newsletter of Coronary Artery Disease Debates and Reviews (2000, in the press). C.V. Mosby, Philadelphia

Friedrich, C.A. Recent advances in cardiology. Newsletter of Coronary Artery Disease Debates and Reviews (2000, in the press). C.V. Mosby, Philadelphia

Friedrich, C.A. Recent Advances in the Genetics of Atherosclerosis (review article). Newsletter of Coronary Artery Disease Debates and Reviews 6:10-13, 1998. C.V. Mosby, Philadelphia

Books: none

Current Research:

“Aortic Valve Operative Outcomes in Marfan Patients” – P.I.: Joseph Coselli, M.D., Baylor College of Medicine, Houston, TX.

“Iron Overload in African-Americans Participating in the Jackson Heart Study” – P.I.: James G. Wilson, M.D., VA Medical Center, Jackson, MS.

Proposed Research (submitted)

“Lipid Disorders in African-Americans Participating in the Jackson Heart Study” – P.I.s: Honey East, M.D.; Herman Taylor, M.D., Univ. of Mississippi Medical Center, Jackson.

“Delta States Center for Genomics and Public Health: A Four State Partnership” (to CDC June 1, 2004). PI: Donna Arnett, PhD, U. Alabama – Birmingham School of Public Health

Other Activities & Appointments:

Speakers Bureau, Genzyme Therapeutics

Speakers Bureau, Andrx Laboratories

Date: September 2004