BIOGRAPHICAL SKETCH

NAME **Friedhelm Hildebrandt, MD**	POSITION TITLE **Investigator, Howard Hughes Medical Institute Professor of Pediatrics and of Human Genetics**		
INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
Marburg University Medical School	Pre-Clinical	1976 – 78	Preclinical
Heidelberg University Medical School	Clinical	1978 – 81	and Prediploma in Psychology
Marburg University Medical School	Pediatric Internship	1981 – 83	
Middlesex Hospital Med School, London, UK	Rotating Internships	1982	Internal Medicine, Obstetrics
Heidelberg University	MD	1984	
Marburg University Children's Hospital	Pediatric Resident	1983 – 87	General Pediatrics, Pediatric Nephrology
Yale University Medical School (Internal Medicine, Nephrology)	Postdoc Research	1987 – 90	Cloning of a rabbit renal Na/H exchanger

Personal Statement

Dr. Hildebrandt is an Investigator of the *Howard Hughes Medical Institute* and the Warren E. Grupe Professor of Pediatrics at Harvard University. He is the chief of nephrology at Boston Children's Hospital. Dr. Hildebrandt's work is concerned with the identification and functional characterization of recessive single-gene causes of kidney diseases in children. His group has identified over 30 novel kidney disease genes. This work implicated the primary cilium and centrosomes in nephronophthisis, thereby contributing to the identification of "ciliopathies" as a new class of human disease. Gene identification also extends to nephrotic syndrome and congenital malformations of the kidney and urinary tract. His lab studies the function of newly identified disease genes in disease models of mice and zebrafish. We developed efficient methods for gene identification using whole exome resequencing and other highly-parallel sequencing techniques. Recently, we showed that DNA damage repair plays a role in the pathogenesis of ciliopathies (Chaki et al. *Cell* 150:355-48, 2012; Zhou et al., *Nat Genet* 44:910-15, 2012).

Positions and Honors

Academic Appointments

1990 – 1995	Pediatric Registrar (C1), *Venia legendi* in Pediatrics 1995
1995 – 2001	Attending in General Pediatrics and Ped. Nephrology, Freiburg Univ. Children's Hospital
2001 – Present	Professor of Pediatrics, University of Michigan, Ann Arbor, Michigan
2001 – Present	Professor of Human Genetics, University of Michigan, Ann Arbor, Michigan
01/2008 – Present	Investigator, Howard Hughes Medical Institute (HHMI)
07/2012 - Present	Warren E. Groupe Professor of Pediatrics, Harvard Medical School
03/2013 - Present	Chief, Divsion of Nephrology, Boston's Children's Hospital

Honors and Awards

1982 – 1983	Scholarship of the German Academic Exchange Service (DAAD)
1987 – 1989	Personal training grant by the German Research Foundation (DFG)
1989	Fellowship grant by the American Heart Association (AHA), Connecticut Chapter
1997	*Franz Volhard Award* of the German Society of Nephrology
1997	Outstanding Research Award of Freiburg University Hospital
1998 – 2002	*Heisenberg Scholar* of the German Research Foundation (DFG)
2001 – Present	*Frederick G.L. Huetwell Professor for the Cure and Prevention of Birth Defects*
2004	*E. Mead Johnson Award* for Pediatric Research (SPR)
2005	Elected Member of the *Association of American Physicians*
2005 – 2009	*Thrasher Research Fund* Award
2006 – Present	*Doris Duke Distinguished Clinical Scientist* Award
2007	Elected Member of the *German National Academy of Sciences*
01/2008 – Present	Investigator, *Howard Hughes Medical Institute* (HHMI)
2009	*Lillian Jean Kaplan* Award for Polycystic Kidney Disease Research (ISN)
2011 – 2013	*March of Dimes* Research Grant

Memberships and Offices in Professional Societies

Am Soc Nephrol, Internat Soc Nephrol, Internat Ped Nephrol Assoc, Eur Soc Ped Nephrol, Soc Ped Res, Am Soc Hum Genet, Eur Soc Hum Genet, Hum Genome Org, Am Assoc Adv Science, Am Heart Assoc (Member of the Council) **Editorial Boards:** Journal of the American Society of Nephrology (2001-2005); Nephrology, Dialysis and Transplantation (2001-2005); Pediatric Nephrology (2001-2005).

Selected Peer-Reviewed Publications (selected from 210)

1. Birkenhäger R, Otto E, Schürmann MJ, Vollmer M, Ruf EM, Maier-Lutz I, Beekmann F, Fekete A, Omran H, Feldmann D, Milford DV, Jeck N, Konrad M, Landau D, Knoers NV, Antignac C, Sudbrak R, Kispert A, **Hildebrandt F**. Bartter syndrome with sensorineural deafness and kidney failure is caused by mutation of a new gene expressed in kidney and during inner ear development. *Nature Genet* 29:310-4, 2001.
2. Estévez R, Boettger T, Stein V, Birkenhäger R, Otto E, **Hildebrandt F**, Jentsch TJ. Barttin is a Cl^--channel β-subunit crucial for renal Cl^--reabsorption and inner ear K^+-secretion. *Nature* 414:558-61, 2001 (Ed. p. 502).
3. Olbrich H, Fliegauf M, Hoefele J, Kispert A, Otto E, Volz A, T Wolf MT, Sasmaz G, Trauer U, Reinhardt R, Sudbrak R, Antignac C, Gretz N, Schermer B, Benzing T, **Hildebrandt F**, Omran H. Mutations of *NPHP3* cause nephronophthisis, tapeto-retinal degeneration and hepatic fibrosis. *Nature Genet* 34:455-9, 2003.
4. Otto EA, Schermer B, Obara T, O'Toole JF, Hiller KS, Mueller AM, Ruf R, Hoefele J, Beekmann F, Landau D, Foreman JW, Goodship JA, Strachan T, Kispert A, Wolf MT, Gagnadoux MF, Nivet H, Antignac C, Walz G, Drummond IA, Benzing T, **Hildebrandt F**. *Inversin* mutations cause NPHP2, linking renal cystic disease to the function of primary cilia and left-right axis determination. *Nature Genet* 34:413-20, 2003 (Edit p. 355).
5. Otto EA, Loeys B, Khanna H, Hellemans J, Sudbrak R, Fan S, et al. & **Hildebrandt F**. A novel ciliary IQ domain protein, NPHP5, is mutated in Senior-Loken syndrome (nephronophthisis with retinitis pigmentosa), and interacts with RPGR and calmodulin. *Nature Genet* 37:282-8, 2005.
6. Sayer JA, Otto EA, O'Toole JF, Nurnberg G, Kennedy MA, Becker C, Hennies HC, Helou J, Attanasio M, Fausett BV, Utsch B, Khanna H, Liu Y, Drummond I, Kawakami I, Kusakabe T, Tsuda M, Ma L, Lee H, Larson RG, Allen SJ, Wilkinson CJ, Nigg EA, Shou C, Lillo C, Williams DS, Hoppe B, Kemper MJ, Neuhaus T, Parisi MA, Glass IA, Petry M, Kispert A, Gloy J, Ganner A, Walz G, Zhu X, Goldman D, Nurnberg P, Swaroop A, Leroux MR, **Hildebrandt F**. A novel centrosomal protein, nephrocystin-6, is mutated in Joubert syndrome and activates transcription factor ATF4. *Nature Genet* 38:674-681, 2006.
7. Hinkes BG, Wiggins RC, Gbadegesin R, Vlangos CN, Seelow D, Nurnberg G, Garg P, Verma R, Chaib H, HoskinsBE , Ashraf S, Becker C, Hennies HC, Goyal M, Wharram BL, Schachter AD, Drummond I, Kerjaschki D, Waldherr R, Dietrich A, Ozaltin F, Bakkaloglu A, Cleper R, Basel-Vanagaite L, Pohl M, Griebel M, Tsygin AN, Soylu A, Muller D, Katan M, Liu J, Attanasio M, O'Toole JF, Hasselbacher K, Mucha B, Otto EA, Airik R, Kispert A, Kelley GG, Smrcka AV, Gudermann T, Holzman LB, Nurnberg P, **Hildebrandt F**. Positional cloning of *PLCE1* mutations as the first cause of a nephrotic syndrome variant which may be reversible. *Nature Genet* 38:1397-1405, 2006 (editorial p. 1390)
8. [1]Attanasio M, [1]Uhlenhaut HN, Sousa V, Dr. O'Toole JF, Otto E, Anlag K, Klugmann C, Treier AC, Sayer JA, Helou H, Seelow D, Nuernberg G, Becker C, Chudley A, Nuernberg P, [1]**Hildebrandt F**, [1]Treier M. Loss of GLIS2, a Kruppel-like zinc finger transcription factor, causes nephronophthisis in humans and mice by increased apoptosis and fibrosis. *Nature Genet* 39:1018-24, 2007 ([1]equal contribution)
9. **Hildebrandt** F. Genetic kidney diseases. *The Lancet* 375:1287, 2010 [PMC2898711]
10. Otto EA, HurdTW, Airik R, Chaki M, Zhou W, & 49 authors and **Hildebrandt** F. Candidate exome capture identifies mutation of *SDCCAG8* as the cause of a retinal-renal ciliopathy. *Nature Genet* 42:840-50, 2010 [PMC2947620]
11. Heeringa SF, Chernin G, and 50 authors, Wiggins RC, Faul C & Friedhelm **Hildebrandt** F. *COQ6* mutations cause nephrotic syndrome with sensorineural deafness in humans, concurrent with increased apoptosis. *J Clin Invest* 121:2013-24, 2011 [PMC2720813]
12. **Hildebrandt** F, Benzing T, Katsanis N. Ciliopathies. *N Engl J Med* 364:1533-1543, 2011 [PMC2898711]
13. Garcia-Gonzalo FR, Corbit KC, Sirerol-Piquer MS, Ramaswami G, Otto EA, Noriega TR, Seol AD, Robinson JF, Bennett CL, Josifova DJ, García-Verdugo JM, Katsanis N, **Hildebrandt** F, Reiter JF. A transition zone complex regulates mammalian ciliogenesis and ciliary membrane composition. *Nature Genet* 43:776-84, 2011 [PMC3145011]
14. *Zhou W, *Otto EA, Cluckey A, Airik R, Hurd TW, Chaki M, Diaz K,and 20 other authors, Smogorzewska A and **Hildebrandt F**. *FAN1* mutations cause karyomegalic interstitial nephritis, linking chronic kidney failure to defective DNA damage repair. (*both authors contributed equally).
Nat Genet 44:910-915, 2012 (editorial p. 836-38) [PMC in process]
15. Chaki M, Airik R, Ghosh A, Giles R, Chen R, Slaats G, Wang H, Hurd T; Zhou W, Cluckey A, Gee HY, and 60 authors, Levy S, Smogorzewska A, Otto EA, **Hildebrandt F**. Exome capture reveals *ZNF423* and *CEP164* mutations, linking renal ciliopathies to DNA damage. *Cell* 150:355-48, 2012 [PMC in process]