

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed for Form Page 2.
Follow the sample format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE		
Hans D. Ochs, M.D.	Professor		
<i>EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Tubingen Germany	Cand Med	1956-58	Medicine
University of Montpellier, France		1959	Medicine
University of Freiburg, Germany	MD	1960-61	Medicine
University of Freiburg, Germany	Doctor Medicine	1962	

A. Positions and Honors:

1962-63 Rotating Internship, Kreiskrankenhaus Kirchheim and Sulzbach Rosenberg, Germany
 1963-64 Rotating Internship, Flower Hospital, Toledo, Ohio
 1964-65 Pediatric Residency, Children's Hospital, Honolulu, Hawaii
 1966-68 Postdoctoral Research Fellow in Biochemistry, University of Tubingen, Germany
 1968-69 Pediatric Residency, University of Washington School of Medicine, Seattle, WA
 1969-72 Research Fellow, University of Washington School of Medicine, Seattle, WA
 1972-75 Asst Professor, Pediatrics, University of Washington School of Medicine, Seattle, WA
 1975-80 Assoc Professor, Pediatrics, University of Washington School of Medicine, Seattle, WA
 1980- Professor, Pediatrics, University of Washington School of Medicine, Seattle, WA

Honors:

Howard Hughes Medical Institute Investigatorship (1972-80)
 The Jeffrey Modell Foundation Lifetime Achievement Award (1992)
 Immune Deficiency Foundation Achievement Award (1998)
 NIH Merit Award (1999)

B. Publications: (selected from 346 publications)

Aruffo A, Farrington ML, Hollenbaugh D, Li X, Milatovich A, Nonoyama S, Bajorath J, Grosmaire LS, Stenkamp R, Neubauer M, Roberts RL, Noelle RJ, Ledbetter JA, Francke U, Ochs HD: The CD40 ligand, gp39, is defective in activated T cells from patients with X-linked hyper-IgM syndrome. *Cell* 72:291-300, 1993

Derry JM, Ochs HD, Francke U. Isolation of a novel gene mutated in Wiskott-Aldrich syndrome. *Cell* 78:635-644, 1994.

Miki H, Nonoyama S, Zhu Q, Aruffo A, Ochs HD, Takenawa T: Tyrosine kinase signaling regulates Wiskott-Aldrich syndrome protein function, which is essential for megakaryocyte-differentiation. *Cell Growth & Differentiation* 8:195-202, 1997

Zhu Q, Watanabe C, Liu T, Hollenbaugh D, Blaese RM, Kanner SB, Aruffo A, Ochs HD: The Wiskott-Aldrich syndrome/X-Linked thrombocytopenia: WASP mutations, protein expression and phenotype. *Blood*. 90:2680-2689, 1997

Kay MA, Meuse L, Gown AM, Linsley P, Hollenbaugh D, aruffo A, Ochs HD, Wilson CB. Transient immunomodulation with anti-CD40 ligand antibody and CTLA4Ig enhances persistence and secondary adenovirus-mediated gene transfer into mouse liver. *PNAS* 94:4686-4691, 1997

Villa A, Santagata S, Bozzi F, Giliiani S, Frattini A, Imberti L, Benerini L, Ochs HD, Schwarz K, Notarangelo LD, Vezzoni P, Spanopoulou E: Decreased efficiency of Rag-1/Rag-2 stable complex formation leads to Omenn syndrome. *Cell* 93:885-896, 1998

Bauer TR Jr, Schwartz BR, Liles WC, Ochs HD, Hickstein DD: Retroviral-mediated gene transfer of the leukocyte integrin CD18 into peripheral blood CD34+ cells derived from a patient with leukocyte adhesion deficiency type 1. *Blood* 91:1520-1526, 1998

Seyama K, Nonoyama S, Gangsaas I, Hollenbaugh D, Pabst HF, Aruffo A, Ochs HD. Mutations of the CD40 ligand gene and its effect on CD40 ligand expression in patients with X-linked hyper IgM syndrome. *Blood* 92:2421-2434, 1998

Nonoyama S, Tsukada S, Yamadori T, Miyawaki T, Jin YZ, Watanabe C, Morio T, Yata J-I, Ochs HD. Functional analysis of the peripheral blood B Cells in Patients with X-linked agammaglobulinemia. *J Immunol* 161:3925-3929, 1998

- Kumaki S, Ochs, Kuropatwinski KK, Konno T, Timour MS, Cosman D, Baumann H. A novel mutant α c chain from a patient with typical phenotype of X-linked severe combined immunodeficiency (SCID) has partial signaling function for mediating IL-2- and IL-4-receptor action. *Clin Exp Immunol* 115:356-361, 1999
- Baba Y, Nonoyama S, Matsushita M, Yamadori T, Hashimoto S, Imai K, Aria S, Kunikata T, Kurimoto M, Oka Y, Sugiyama H, Kurosaki T, Ochs HD, Yata J-I, Kishimoto T, Tsukada S. Involvement of Wiskott-Aldrich syndrome protein in B cell cytoplasmic tyrosine Kinase pathway. *Blood* 93:2003-20012, 1999
- Imai K, Nonoyama S, Miki H, Morio T, Fukami K, Zhu Q, Aruffo A, Ochs HD, Yata J, Takenawa T: The pleckstrin homology domain of the Wiskott-Aldrich syndrome protein is involved in the organization of actin cytoskeleton. *Clin Immunol* 92:128-137, 1999
- Kajiwara M, Nonoyama S, Eguchi M, Morio T, Imai K, Okawa H, Kaneko M, Sako M, Ohga S, Maeda M, Hibi S, Hashimoto H, Shibuya A, Ochs HD, Nakahata T, Yata J. WASP is involved in proliferation and differentiation of human haemopoietic progenitors in vitro. *British J Haematology* 107:254-262, Nov 1999
- Barry SC, Seppen J, Ramesh N, Foster JL, Seyama K, Ochs HD, Garcia JV, Osborne WR. Lentiviral and murine retroviral transduction of T cells for expression of human CD40 ligand. *Hum Gene Ther* 11:323-32, 2000
- Oda A, Ikeda Y, Ochs HD, Druker BJ, Ozaki K, Handa M, Ariga T, Sakiyama Y, Witte ON, Wahl MI. Rapid Tyrosine Phosphorylation and Activation of Btk/Tec kinases in Platelets Induced by Collagen Binding or CD32 crosslinking. *Blood* 95:1663-70, 2000
- Rengan R, Ochs HD, Sweet LI, Keil ML, Gunning WT, Lachant NA, Boxer LA, Omann GM. Actin cytoskeletal function is pared but apoptosis is increased, in WAS patient hematopoietic cells. *Blood* 95:1283-92, 2000
- Parolini S, Bottino C, Falco M, Augugliaro R, Giliani S, Franceschini R, Ochs HD, Wolf H, Bonnefoy JY, Biassoni R, Moretta L, Notarangelo LD, Moretta A. X-linked lymphoproliferative disease 2B4 molecules displaying inhibitory rather than activating function are responsible for the inability of NK cell to kill EBV-infected cells. *J Exp Med* 192:337-346, 2000
- Oda A, Ochs HD. Wiskott Aldrich syndrome protein and platelets. *Immunol Reviews* 178:111-117, 2000
- Bennett C, Christie J, Ramsdell F, Brunkow ME, Ferguson PJ, Whitesell L, Thaddeus KE, Saulsbury FT, Chance PF, Ochs HD. Immunodeficiency, polyendocrinopathy, enteropathy, X-linked (IPEX) is caused by a mutation of the human scurfy gene. *Nature Genetics* 27:20-21, 2001
- Villa A, Vezzoni P, Sobacci C, Notarangelo L, Bozzi F, Abinin M, Abrahamsen TG, Aekwright PD, Bainiyash M, Brooks EG, Conley ME, Cortes P, Duse M, Fath A, Filipovich AM, Infante AJ, Jones A, Mazzolari E, Muller SM, Pasic S, Rechavi G, Sacco MG, Santagata S, Schroeder ML, Seger R, Strina D, Ugazio A, Valiaho J, Vihinen M, Volger LB, Ochs HD, Vezzoni P, Friedrich W, and Schwarz K. V(D)J recombination defects in lymphocytes: a severe immunodeficiency with a spectrum of clinical presentations due to Rag mutations. *Blood* 97:81-8, 2001
- Duplantier JE, Seyama K, Day NK, Hitchcock R, Nelson RP, Ochs HD, Haraguchi S, Klemperer MR, Good RA. Immunologic reconstitution following bone marrow transplantation for X-linked hyper IgM syndrome. *Clin Immunol* 98:313-18, 2001
- Oda A, Ochs HD, Lasky LA, Spencer S, Ozaki K, Fujihara M, Handa M, Ikebuchi K, Ikeda M. Crkl is an adapter for Wiskott-Aldrich syndrome protein and Syk. *Blood* 97:2633-39, 2001
- Futatani T, Watanabe C, Tsugata S, Baba Y, Ochs HD> Bruton's tyrosine kinase is present in normal platelets and its absence identifies patients with X-linked agammaglobulinemia and carrier females. *Br J Haematol* 114:141-149, 2001
- Lewis J, Eiben LJ, Nelson DL, Cohen JI, Nichols KE, Ochs HD, Notarangelo LD, Duckett CS. Distinct interactions fo the X-linked lymphoproliferative syndrome gene product sap with cytoplasmic domains of members of the CD2 receptor family. *Clinical Immunology* 100:15-23, 2001
- Bennett C, Brunkow M, Ransdell F, O'Briant K, Zhu Q, Fuleihan R, Shigeoka A, Ochs HD, Change P. A rare polyadenylation signal mutation of the FOXP3 gene (AAUAAA>AAUGAA) leads to the IPEX syndrome. *Immunogenetics* 53:435-439.
- Bennett C, Ochs HD. IPEX is a unique X-linked syndrome characterized by immune dysfunction, polyendocrinopathy, enteropathy, and a variety of autoimmune phenomena. *Curr Opin in Pediatr* 13:533-538, 2001
- Notarangelo LD, Mazza C, Giliani S, D'Aria C, Gandellini F, Ravelli C, Locatelli MG, Nelson DL, Ochs HD, Notarangelo LD. Missense mutations of the WASP gene cause intermittent X-linked thrombocytopenia. *Blood* 99:2268-2269, 2002
- Agematsu K, Futatani T, Hokibara S, Kobayashi N, Takamoto M, Tsukada S, Suzuki H, Koyasu S, Miyawaki T, Suguane K, Komiyama A, Ochs HD. Absence of memory B cells in patients with common variable immunodeficiency. *Clin Immunol* 103:34-42; 2002
- Aiuti A, Vai S, Mortellaro A, Casorati G, Ficara F, Andolfi G, Ferrari G, Tabucchi A, Carlucci F, Ochs HD, Notarangelo L, Roncarola M, Bordignon C. Immune reconstitution in ADA-SCID after PBL gene therapy and discontinuation of enzyme replacement. *Nat Med* 8:423-425; 2002
- Ochs HD, Khattri R, Bennett C, Brunkow ME. Immune dysregulation polyendocrinopathy, enteropathy, X-linked syndrome and the scurfy mutant mouse. *Immunol Allergy Clin N Am* 22:357-368; 2002.
- Brunner C, Kreth HW, Ochs HD, Schuster V. Unimpaired activation of c-Jun NH₂-Terminal kinase (JNK) 1 upon CD40 stimulation in B cells of patients with X-linked agammaglobulinemia. *Journal of Clin Immunol* 22:244-251; 2002.