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**EDUCATION:**

University of Sciences Debrecen, Hungary	M. Sc.	1979
University of Sciences, Debrecen, Hungary	Ph.D.	1982
Hungarian Academy of Sciences, Budapest, Hungary	Ph.D./CSc.	1990
Harvard Med. School, Brigham and Women's Hospital, Boston MA		
Harvard Med. School, Brigham and Women's Hospital, Boston MA		1995

**ACADEMIC APPOINTMENTS:**

*In Hungary:*

1979-1980	Research Associate, Institute of Biology, University Medical School, Debrecen
1980-1990	Assistant Professor, Institute of Clinical Genetics, Dept. OB/GYN, University Medical School, Debrecen
1980-1990	Human Geneticist, Dept. of Obstetrics and Gynecology, University Hospital, Debrecen
1990-1997	Reproductive Biologist, Dept. of Obstetrics and Gynecology, Budapest
1990-1997	Associate Professor, Institute of Reproductive Biology, Dept., OB/GYN, Semmelweis University of Medicine, Budapest

*In the United States:*

1988-1989	Research Fellow in Reproductive Biology, Harvard Medical School, Boston, MA
1988-1995	Embryologist, Reproductive Immunologist, Dept. of Obstetrics and Gynecology, Brigham and Women's Hospital, Boston, MA
1989-1995	Research Fellow in Reproductive Biology, Harvard Medical School, Boston, MA
1/98-12/99	Andrologist, Center for Reproductive Medicine and Infertility, New York Hospital, New York, NY
1/98-12/99	Staff Associate, Cornell University, Weill Medical College, New York, NY
1/00- 1/01	Instructor, Mount Sinai School of Medicine, New York, NY, Dept OB/GYN
1/01-Present	Assistant Professor Mount Sinai School of Medicine, Dept Medicine and OB/GYN

**Awards and Other Professional Activities:**

1984	EFIS Bursary, 6 <sup>th</sup> European Immunology Meeting, Interlaken, Switzerland
1985	Travel Award from the March of Dimes Birth Defects Foundation to the Third International Congress of Reproductive Immunology, Toronto, Ontario, Canada
1988	Fellowship from University Medical School, Hungary
1989	Fellowship from Harvard Medical School, Boston
1993	WHMA Grant for organizing an International Scientific Meeting on Reproductive Medicine and

**Publications (selected from 36)**

Szabó M, Nagy E, Bede E, **Polgár K**, Harsányi A, Török O, Papp Z. Importance of alphafetoprotein (AFP) in prenatal diagnosis. *Neurol Surveys*. 1982;35:814-825.

Harsányi A., Szabó M, Török O, Farkas B, Juhász, Zs, Tóth Z, **Polgár K**, Lehel F, Tóth I, Papp Z, Prenatal diagnosis of rubella-embryopathy. *Neurol Surveys*. 1982;35:884-891.

Harsányi A, Török O, Lehel F, Tóth I, Szabó M, **Polgár K**, Bede E, Nagy E, Tóth Z, Papp Z. Genetic counseling in cases of rubella exposition. *Hung J Gynecologist*. 1983;46:525-533.

**Polgár K**, Sipka S, Abel G, Papp Z, Neutral-red uptake by amniotic fluid macrophages in neural-tube defects: a rapid test. *New England Journal of Medicine*. 1984;310:1463-1464.

**Polgár K**, Sipka S, Abel G, Papp Z. A rapid demonstration of phagocytic cells from amniotic fluid in cases of fetal neural tube defects. *Med Weekly J*. 1984;125:9-12

**Polgár K**, Török O, Harsányi A, Papp Z. Cost-benefit analysis of the prenatal screening program of Down syndrome. *Hung J Gynecologists*. 1984;47:69-74.

**Polgár K**, Cell and tissue culturing in cytogenetic studies. In: Modern research methods in medicine. Eds.: Kover A, Modis L, *University Press*. Debrecen 1984; pp. 25-37.

Török O, Szokol M, Mechler F, Diószeghy P, Harsányi A, Szabó M, **Polgár K**, Papp Z, Genetic counseling in Duchenne-dystrophy. *Hung J Gynecologists* 1984;47:53-58.

**Polgár K**, Abel G, Laczkó, Szabados S, Papp Z. Immunocytochemical evidence for the presence of AFP and GFAP in amniotic fluid macrophages in cases of fetal neural tube defects. *Am J Reprod Immunol Microbiol*. 1985;7:8

**Polgár K**, Abel G, Sipka S, Papp Z. On the neutral-red test of amniotic fluid macrophages in neural-tube defects. Invited article. *Karyogram*. USA. 1985;11:39-42.

**Polgár K**, Adány R, Abel G, Kappelmayer J, Muszbek L, Papp Z. Characteristics of rapidly-adhering amniotic fluid cells by combined immunofluorescence and phagocytosis assays. *Am J Hum Genet*. 1985;45:786-792.

Török O, Szokol M, Fényi A. **Polgár K**, Szabó M, Papp Z. Prenatal diagnosis of metachromatic leukodystrophy. *Med Weekly J* 1985;126:273-276.

Török O, Szokol M, Tóth A, **Polgár K**, Beress L, Csé K, Harsányi A, Horváth K, Papp Z. Prenatal diagnosis policy in pregnancies at high risk for neural tube defects (NTDs). *Med Weekly J*. 1985;126:1785-1788.

Csécsei K, Tóth A, **Polgár K**, Szeifert GT, Szabó M, Veress L, Török O, Papp Z. Prenatal diagnosis and pathology of exencephaly in human fetuses. *Med Weekly J*. 1985;126:2397-2400

Papp Z, Csécsei K, Tóth A, **Polgár K**, Szeifert GT. Exencephaly in human fetuses. *Clin Genet*. 1986;30:440-444.

**Polgár K**, Abel G, Laczkó J, Sipka S, Papp Z. Immunocytochemical characterization of amniotic fluid macrophages in cases of fetal neural tube defects. *Am J Clin Pathol*. 1987;87:37-42.

**Polgár K**, Abel G, Sipka S, Papp Z. Neutral-red uptake by amniotic fluid macrophages: a novel approach for prenatal diagnosis of neural-tube defects. *Am J Reprod Immunol Microbiol*. 1988;18:81-86

**Polgár K**, Abel G, Sipka S, Csongor J, Facht J, Papp Z. Immunobiological methods in the prenatal diagnosis and evaluation of fetal neural tube defects. *Acta Physiol Acad Sci Hung*. 1988;71/4:551-555.

**Polgár K**, Abel G, Sipka S, Csongor J, Laczkó J, Papp Z. Amniotic fluid mononuclear phagocytes: Phenotypes and functions. *Acta Paediatr Hung*. 1988;29:63-67.

**Polgár K** Characterization of phagocytic amniotic fluid cells and their value in prenatal diagnosis. Academy of Sciences. Budapest 1990. pp.1-280.

Hill JA, **Polgár**Harlow BL, Anderson DJ. Evidence of embryo- and trophoblast toxic cellular immune response(s) in women with recurrent spontaneous abortion. *Am J Obstet Gynecol.* 1992; 166:1044-1052.

Ecker JL, Laufer MR, Hill JA. Measurement of embryotoxic factors is predictive of pregnancy outcome in women with history of recurrent abortion. *Obstet Gynecol.* 1993;81: 84-87.

Yanushpolsky EH, Ozurk M, **Polgár K**, Berkowitz RS, Hill JA. The effects of cytokines on human chronic gonadotropin production by a trophoblast cell line. *J Reprod Immunol.* 1993;25: 235-247.

**Polgár K**, Yacono P, Hill JA, Anderson DJ, Lee G, Golan D. Use of transitional mobility of a plasma membrane protein to assess fertilization of mouse oocytes and viability of mouse zygotes and two cell embryos. *Biol Reprod.* 1994

Yamada H, **Polgár K.**, Hill J.A., Evidence of cell-mediated immunity to trophoblast antigens in women with recurrent spontaneous abortion. *Am J Obstet Gynecol.* 21994; 1: 1339-1344.

Hill,JA, Anderson DJ, **Polgár K**, T-helper 1-type cellular immunity to trophoblast antigens in women with recurrent spontaneous abortion. *JAMA.* 1995; 24: 1933-1936.

**Polgár K**, Lee G, Golan D, Hill JA, Immune interferon inhibits lateral mobility of a membrane protein in murine embryos: A potential mechanism for RH1-mediated reproductive failure. *Am J Obstet Gynecol.* 1996;174: 282-287.

**Polgár K**, Choi BC, Xiao L, Hill JA, Progesterone inhibits in-vitro embryotoxic TH1 cytokine production in trophoblast in women with recurrent pregnancy loss, *Hum Reprod.* 2000, Suppl 1, 46-59.

**Polgár K**, Hill JA. Identification of the white blood cell populations responsible for Th1 immunity to trophoblastant he timing of the response in women with recurrent pregnancy loss. *Gynecol Obstet Invest.* 2002;53: 59-64.

**Polgar, K**, Li, X, Hyink, D, Borin, J, Gusella, L, Burrow, CR, Wilson, PD. Functional analysis of polycystin-1 in renal development: microinjection of VVC lentiviral vector engineered PKD1 gene into metanephroi of mouse embryos. 2002, *JASN* 13: 112A

**Polgar, K.**, Burrow, CR, Hyink, D., Fernandez, H., Thronton, K., Li, x., Gusella,L., Wilson, PD. Inactivation of the polycystic kidney disease-1 (PKD1) gene disrupts branching morphogenesis of the ureteric bud in developing mouse kidneys. *Development* (submitted for publication)

### ***RESEARCH PROJECTS : 2002-present***

#### ***Gene therapy approaches for Polycystic Kidney Disease (PKD) using VVC and AAV viral vector constructs***

Using a novel approach combining an embryonic organ culture system that reproduces the early phases of kidney development with gene transfers mediated by viral vectors. Study the effects of transdominant mutants on the interactions between polycystin-1 and signaling and cytoskeletal molecules. Interested in the effects of the inhibition of different domains of polycystin-1 on embryonic kidney development. These studies will be important in the understanding of the pathogenetic mechanisms of ADPKD and to define the therapeutical potential of a genetic approach to this disease.

#### ***Molecular Biology of PKD and Polycystic Ovary Syndrome (PCOS)***

First in the literature we are attempting to link these two common genetic diseases representing totally different etiology. Both PKD and PCOS are characterized by formation and progressive expansion of cysts. These cysts eventually interfere with normal kidney/ovary function and ultimately lead to renal failure/infertility. Using mice models (orpk, sprauty) we are looking for markers to be present both ADPK and PCOS trying to find a possible same mechanism of cyst development. We are expanding these studies to human research establishing an international database connecting the two diseases. We are planning to use human granulose cells to correlate our data obtained from mouse models.

#### ***Progenitor stem cell studies***

Purification of renal stem cells from mouse embryos and microinjection into mouse embryonic organ culture . This technique will allow for both lineage tracing of stem cells as well as a route for potential gene therapy for PKD.

Totipotent embryonic stem (ES) cells can be cultured under conditions to give rise to aggregates termed embryoid bodies (EB) which previously have been shown to contain multiple mesodermal and neuroectodermal cell lineages. As a result of gene targeting experiments, a significant new understanding is emerging concerning the genetic pathways regulating kidney organogenesis. Intercellular signals in the developing kidney regulate the survival and proliferation of the progenitor stem cell population. The maintenance of this cell population is a key mechanism in the control of nephron number. We have begun to elucidate soluble factors that have effect on this process. We are developing a method to identify renal stem cells in the developing mouse embryo or in EB structures generated in culture from mouse ES cell lines. We plan to analyze the developmental function of isolated renal stem cells to determine if they can generate the complex set of cellular types found in the nephrons of the kidney. Using a combination of in vitro cell culture and metanephric organ culture approaches, we will also determine if the metanephric renal stem cell population demonstrates self-renewal proliferation.

#### ***Erb-B3 receptor and renal development***

These studies allow the definition of the role of Erb variants of the EGF receptor in renal development and involve molecular, cell and organ culture analyses.

#### **RESEARCH PROJECTS: Completed**

1980-1988 Prenatal genetics: Identification and characterization of pathognomonic amniotic fluid cells in fetal neural tube defects.

1989-1997 Pre-implantation: Use of translational mobility of a plasma membrane protein to assess fertilization of mouse oocytes and viability of mouse zygotes and two cell embryos; Effects of cytokines on lateral mobility of a plasma membrane protein in early stage mouse embryos measured by fluorescence photobleaching recovery; Effects of cytokines on pre-implantation embryo development (in light and electron microscopical level). Reproductive toxicology. Reproductive immunology: immunological approach to recurrent spontaneous abortion: Identification of cellular mediated mechanisms of recurrent spontaneous abortion (establishing a mouse model, responsible cell populations, cytokines: Th1-Th2"swing"); Effects of progesterone on embryotoxic factor production and Th1 immunity in women with recurrent spontaneous abortion.

1988-2002 Reproductive medicine/reproductive biology