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Inge Liebaers

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Inge Liebaers received her M.D. from the (VUB), in 1971 and completed a residency in paediatrics at the University Hospital St. Pierre and Brugmann Brussels between 1971-1981. During the same period she was a research fellow of the Belgian National Research Foundation (NFWO) and a Fogarthy International research fellow and Visiting Associate of the National Institute of Health, NIH, Bethesda, MD, USA focusing on lysosomal storage diseases and more in particular the Hunter syndrome. She obtained her Ph. D. in 1980. In 1978 Inge Liebaers started with a Medical Genetics Clinic at the Academic Hospital, Vrije Universiteit Brussel (VUB) and in 1982 she became the director of the Centre for Medical Genetics at the same university.

From 1980 till 1982 Inge Liebaers was lecturer in medical genetics at the Brussels Free University. Later on she became associate professor and finally full professor since 1998 at the same university.

She became a member of the Belgian Council of Anthropogenetics in 1980. In 2003 she became vice president and since 2006 she is president.

She served as a member of the National Council for Bio-Ethics between 1995-1999.

Inge Liebaers is a member of several societies including the Society for the Study of the Inborn Errors of Metabolism; European Society of Human Reproduction and Embryology; European Study Group on Lysosomal diseases; European Society for Human Genetics; American Society of Human Genetics; Belgian Society of Human Genetics and the Preimplantation Genetic Diagnosis International Society.

She has received research grants for her work from the Research Council of the Dutch Speaking Free University of Brussels, the Belgian Fund for Medical Research (NFWO), the Belgian National Lottery, and the Cystic Fibrosis Foundation. Her international publications include over 220 papers on inherited metabolic diseases, on follow-up of pregnancies and children born after assisted reproduction and on preimplantation diagnosis.

She has communicated at over 191 international meetings.

Preimplantation Genetic Diagnosis and Stem Cells

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Preimplantation genetic diagnosis (PGD) has been carried out since 15 years for couples with a high recurrence risk for monogenic diseases and chromosomal disorders. In most circumstances the genetic diagnosis is done on one or two blastomeres from an in-vitro embryo usually on day 3. For monogenic diseases PCR-based technology is used and for chromosomal disorders FISH technology is used. The number of diseases for which PGD can be offered is still expanding. According to international surveys such as the one done annually by the ESHRE Consortium the chance for a couple to conceive until term is about 20% per treatment cycle.

Besides PGD "stricto sensu" PGD for aneuploidy screening is also applied widely; the aim of PGD-AS is to investigate whether the transfer of euploid embryos will increase the success rate of IVF/ICSI. As of now it is unclear whether this goal can be achieved, therefore PGD-AS is in the authors' opinion still clinical research.

After PGD affected embryos are not transferred. In a number of centres, including the VUB centre, patients donate these embryos for research including for derivation of embryonic stem cells (ESC). Since the first report on derivation of human ESC, many more reports were published on the derviations of several hESC lines. Research on hESC lines focuses on different projects: 1) study of mechanisms of cell differentiation an developmental biology and 2) possible use in cell replacement therapies for the treatment of degenerative human diseases. Because animal models are not fully representative and experiments on human are restricted, derivation of hES cell lines known to be carriers of monogenic diseases can offer the opportunity of an *in-vitro* model of the disease. Those affected lines would be a readily accessible source for pharmacogenetic tests or *in-vitro* gene therapy experiments.

At the VUB, since July 2003, IVF embryos without any known genetic defect or PGD embryos identified as affected were donated for research and used for the derivation of hES cell lines. Sofar we have established ten nex hES cell lines: five from IVF embryos and five from PGD embryos affected by 1) DM1 (myotonic dystrophy), 2) Huntington disease, 3) Marfan's syndrome - two cell lines; a cell line was also derived from a PGD embryo diagnosed as compound heterozygote for the F508del mutation and the 5T variant to cystic fibrosis.