Human embryo gene editing has been approved by UK HFEA

Gene editing on Human Embryo to study the development of fertilized eggs has been approved by the UK Human Fertilization and Embryology Authority (HFEA).

Dr. Kathy Niakan, a stem cell scientist at Francis Crick Institute in London, and her team wants to look at embryo development from a single cell to about 250 cells. The research aims to find the genes at play in the early days of human fertilization.

The HFEA-approved license application by Dr. Niakan will use genome-editing technique CRISPR–Cas9 in to study a series of genes that mouse studies suggest may be involved even in creating the early human embryo. CRISPR–Cas9 allows clipping out each gene of interest and observe the resulting embryo. By tracking which type of cells continue to grow and develop, genes that are critical to specific types of tissues in the early embryo can be determined.

If the research will be able to determine which specific genes help the embryo to implant successfully in the uterus and grow to term, infertility could be treated. This would not necessarily mean that women would have to undergo CRISPR treatment, but this knowledge could lead to developing drugs that may either enhance or reduce the effects of certain genes.
The license application permits her team to study embryos for 14 days for research purposes only and does not permit them to implant these in women.

**What is CRISPR/Cas9?**

CRISPR/Cas9 is a gene-editing technique that can target and modify DNA with groundbreaking accuracy.

Clustered regularly-interspaced short palindromic repeats (CRISPR) was first discovered in the DNA of bacteria in 1987 by Scientist in Japan. In their attempt to study a particular protein-encoding gene in E.coli, the researchers noticed a pattern of short, repeating, palindromic DNA sequences separated but short, non-repeating, “spacer” DNA sequences. In 2012, scientists coined the term CRISPR, short for “clustered regularly interspaced short palindromic repeats”, which describes the pattern.

Cas9 is a nuclease, an enzyme specialized for cutting DNA. In 2012, a group of scientists combined tracrRNA and spacer RNA into a “single-guide RNA” molecule that, mixed with Cas9, could find and cut the correct DNA targets. The group have created a new gene-editing tool, the CRISPR-Cas9 system which involve CRISPR, Cas9, and hybrid RNA that could be programmed to identify, cut, and even replace any gene sequence.

Over the years, researchers were able to explore many different applications of CRISPR/Cas9 including genetically modifying crops, eradicating viruses, screening for cancer genes, and – the recent and the most debatable – genome engineering.

The CRISPR/Cas9 system was first used in genome engineering with the controversial Protein & Cell paper from the researchers at Sun-Yatsen University in Guangdong, China. And recently, the use of this system has been approved by UK HFEA for the application of Dr. Kathy Niakan which permits her team to use study the earliest stage of embryo development, with defined limitations.

Further studies of the capabilities of this technology can lead to the eradication of hereditary diseases such as cystic fibrosis, sickle-cell anemia, and Huntington's disease from a family line altogether.

However, experts are concerned about CRISPR/Cas9 in human germ cells because there are still too many unknowns. Other scientists, however, believe that weighing the safety and efficacy of this technique in human germ cells is now. There are also ethical concerns such as how to deal with altering the genetic material of future generations. These also trigger fears of eugenics and designer babies.
One of the biggest IVF centers in Iran, completed with Esco equipment

Located in northern part of Lorestan Province, Khorram Abad city is one of the ancient cities of Iran. Shafa hospital, one of the oldest, the biggest and well equipped hospitals in the city and is one of the well know private hospitals in the western part of Iran.

Dr. Fakouri, the manager and owner of the hospital is very well known in the region. The IVF section of this hospital is one of the best centers of its own in Iran. Shafa Hospital, IVF Section has been equipped with Esco Medical products such as Fertilisafe™ IVF Workstation, CelCulture® CO₂ Incubators, and AVT-1 Anti Vibration Table.

Miri® and Fertilisafe™ at Amman Hospital, Jordan

Established in 1993, started with only 2 floors, Amman Hospital today treats patients coming from Jordan and abroad with 95 beds distributed in 6 floors. The hospital specializes in orthopaedic and trauma, Laparoscopic Surgery, Plastic and Reconstructive Surgery, Cardiovascular Surgery, Neurosurgery, Colorectal Surgery, Urology, ENT, and Pediatric Surgery.

Another field is being explored and is about to be another specialty of Amman Hospital. An IVF Laboratory was just recently established under the charge of Dr. Muen Feddah. Believing in equipping the lab with the state-of-the-art technology, the clinic has chosen Miri® Multi-room Benchtop Embryo Incubators and Fertilisafe™ IVF Workstation.
Meet our new family member

Holger Kayser is the newest member of the Esco Medical Team.

He has held several sales management leadership roles in the medical device industry during the past 15 years.

He started his career joining Akzo Nobel as International Key Account Manager establishing dialysis medical device manufacturers for driving sales in Europe, US and parts of Asia.

Holger later joined Gambro, a world-leading provider of dialysis products and became Sales manager in Germany. In this role, he was responsible for a larger group of sales reps selling capital equipment and disposables.

Recently, Holger served as General Manager - Assisted Reproduction, at Origio based in Berlin, Germany, where he managed a team in Sales, Marketing & Customer Service.

Holger received his formal qualifications in Chemistry and Biochemistry from Free University of Berlin, Germany and holds a PhD in Biochemistry.

Learn the latest from Esco, meet us at following events

**COGI 2016**
March 21-23, 2016
Melbourne Convention and Exhibition Centre
Melbourne, Australia

**SSRM Annual Meeting 2016**
April 8-9, 2016
Scandic Rubinen, Kungsportsavenyn 24
Gothenburg, Sweden

**ASPIRE Congress 2016**
April 8-10, 2016
BalaiSidang Jakarta Convention Center
Jakarta, Indonesia

**AGRMB 2016**
April 22-24, 2016
Leogang, Germany

**11th Biennial Conference**
May 5-8, 2016
Raddison Blu, Scandinavia Hotel
Copenhagen, Denmark

**Council of Physicians Scientists**
May 4-6, 2016
Austin, Texas

**American Association of Bioanalyst**
May 12-14, 2016
Las Vegas, Nevada, USA

**ESHRE 2016**
July 3-9, 2016
Messukeskus Expo and Convention Centre
Helsinki, Finland

**Reprofacts 2016**
July 15, 2016
Stelgenberger Airport Hotel Frankfurt
Frankfurt, Germany

**In Vitro Fertilization and Embryo Transfer**
July 17-20, 2015
San Diego, California, USA

**The 4th International Congress of Academy of Clinical Embryologists**
August 26-28, 2016
Marriot, Japur, India

**72nd ASRM Scientific Congress & Expo**
October 15-19, 2016
Salt Lake City, UT, USA