NEWS IN BRIEF

THE THREE PARENT EMBRYO

The House of Commons in the United Kingdom passed a historic vote to allow a new genetic technique called mitochondrial replacement or '3 person in-vitro fertilization.' There were 382 *ayes* and 128 *nays* in the vote on 3rd February 2015 which was closely watched by researchers and scientists all over the globe. The House of Lords is still to vote on the issue, and then it will go for further approval to the UK fertility regulator – The Human Fertility and Embryology Authority (HFEA). The technique will help women who have children with mitochondrial disorders. Around 1 in 5000 children are born with diseases caused by mitochondrial mutations.

There are two techniques which will prevent children from inheriting their mother's mitochondria. In Pronuclear transfer, the mother's egg is fertilized in vitro by the father's sperm. The pronucleus of the fertilized egg is then transferred into a donor egg whose pronucleus has been removed. In the other technique called Maternal spindle transfer, the spindle of chromosomes is removed from the unfertilized egg and introduced into a donor egg which is subsequently fertilized in vitro by the father's sperm.

The technique is still banned in the US, but the UK vote is likely to change the tide in favor in many countries. UK was the first country to approve in vitro fertilization in 1978 which has led to the birth of several million babies since. Those against mitochondrial replacement fear that the law will open up doors to further genetic manipulation for desired traits in offspring i.e. 'designer babies.' Nobel laureates and many of UK's famous scientists have worked hard to create public awareness and support for mitochondrial replacement over the last year and to educate their parliamentarians. But lingering worries remain. Will fragments of residual mutated mitochondrial DNA be inadvertent stowaways and cause health problems for future generations of kids? In animal studies, non human primates born by this technique have survived to adulthood, but will their future generations be healthy? In the brave new world of genetic manipulation, caution and care is paramount. (*Nature 3 February 2015*)

SYNTHETIC ANTIBODY MIMICS

David Spiegel of Yale University went to medical school to become a psychiatrist. On the way he decided to do a PhD in Organic Chemistry. He is in now in the news because of a remarkable achievement. He and his team have developed the world's first synthetic molecules which mimic antibodies. Normally antibodies we use in clinical medicine are large proteins which are difficult and expensive to produce, denature easily, and can trigger unwanted immune responses. Synthetic antibody mimics can be produced in the laboratory, are one twentieth the size, and are unlikely to trigger immune reactions. Their greatest advantage is that they can be given orally.

The history of antibody research was spawned by Paul Erlich in the 19th century when he stated that the body defends itself against pathogens by forming antitoxins. His group worked on forming antitoxins for various diseases like trypanosomiasis. Later antibody research split into two groups. One group developed monoclonal antibodies that are now widely used in clinical medicine. The other group started working on synthetic antibody mimics. Spiegels group has developed synthetic antibody mimics against prostrate cancer, HIV and bacterial triggers for autoimmune diseases. The work is still at the level of the petri dish. A mouse model is still being developed which will then be followed by human studies. These new drugs will change the landscape of medicine and drastically bring down the cost of antibodies in medicine. (*Scientific American 9 February 2015*)

NATIONAL DEWORMING DAY

The Health Minister of India has declared 10th February as the National Deworming Day. About 24 crore children are estimated to receive the medicine in February 2015 itself. Children below two years will receive half a tablet of albendazole, and those above two years will receive a full tablet. Children between 1-19 years are being targeted and will receive the medicine in *anganwadis* and government schools. Stringent adverse event protocols have been put in place with training of teachers, anganwadi workers and health officials. (The Hindu 10 February 2015).

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