Indian scientists develop GM mice through transgenic sperms

Indian scientists have made history by developing transgenic sperms to help mice give birth to genetically modified (GM) pups - an effort that is expected to boost clinical research and drug development across the world.

Scientists at the National Institute of Immunology (NII) here have been successful in inserting human genes inside the testes of male mice and integrating it with the chromosome of the germ cells.

Thus they have created transgenic sperms in a natural manner.

'This is a completely new technique of developing transgenic mice without killing hundreds of mice as was the practice earlier. We have achieved 94 percent success,' said Subeer S. Majumdar, a scientist with the NII.

'We have managed to do this through a process called in vivo electroporation in which the foreign gene was introduced to the mice testes by passing a mild current for a fraction of a second,' Majumdar, who has developed the new procedure, told IANS in an interview.

'Developing transgenic sperms is a unique achievement.'

Earlier, scientists used to inject female mice with a particular hormone, put them for mating and kill them the next morning to extract the eggs from the ovary. After collecting the eggs, the scientists would insert a foreign gene inside it in the laboratory and then place it in the ovary of a surrogate mother mice.

But thanks to the successful experiment, a male mouse now just needs to mate with a female counterpart to produce transgenic pups on a regular basis.

'The earlier process was difficult, expensive, time taking and necessitated the killing of many of these rodents. Worldwide, 200 mice, including females, were required to produce one or two transgenic mice,' Majumdar explained.

Majumdar said since human beings cannot be experimented upon, scientists and researchers need transgenic animals for studying how diseases are initiated and for developing treatments.

'Now we have made the process of producing transgenic mice less cumbersome and natural. We need not kill female mice to do the procedure. The childbirth process remains the same as prescribed by god but the result is an advanced scientific development.'

These transgenic animals can help in finding the unknown functions of many human genes. Transgenic mice are a good option for researchers and drug developers as their life span is short.

'The short life span of mice helps researchers study disease initiation, its progress, manifestation and finally in the development of therapies,' Majumdar explained.

Majumdar and one more of his colleague at NII had worked on the process for the last seven years

before achieving success. 'We have published the research in the science magazine Nature for international scientific acceptance.'

The NII is an autonomous scientific institution under the Department of Biotechnology, Ministry of Science and Technology. It's the leading institute in India to produce transgenic animals for any kind of experimentation and clinical research.

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