Mammals in the News

[Name of the Writer]

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***Summary of the Article:***

The article focuses on the Mendelian Inheritance induced through Clustered Regularly Inter Spaced Palindromic Repeats (CRISPR) in the germline cells of a female mouse. A gene drive produces a biased for the transmission in that particular allele of a gene in such a way that it is inherited at a greater frequency through the model of random assessment which was proposed by Mendel. Recently, a high efficient gene drive was developed in insects, which has leverage of the specific targeting activity on the DNA and provides a and provides a repair mechanism on the endogenous homology to convert heterozygous genotype into homozygous. The implementation of the laboratory rodents would enable the conversion of the genotypes that involve multiple genes. However, this is not possible because it requires time, cost and a large number of procured animals, to obtain a few individuals of a genotype. But, the efficiency of the CRISPR/Cas9 system is not yet been accurately observed in the mammals. In the study, a “CopyCat’ element is added into the Tyrosinase gene of the enzyme to detect the genotypic conversions, after the activity of Cas9 in the embryo and in the germline. Although, the defect of this system is that it produces breaks in the double-stranded DNA in the early embryonic stages, therefore known to be highly mutagenic. These breaks cannot be even resolved by the homology-directed repair mechanism of the DNA. When the expression of the Cas9 is done in the germline of the female mouse, this results in the repairing of those DNA breaks ; it copies the CopyCat allele from the donor to the receiver chromosome, which resolves the homology-directed repair, leading to the Super Mendelian Inheritance. Through the results, the study showed that the CRISPR/Cas9 gene driving system be used for the implantation in the normalizing of the complex genetic crosses that might come across in the laboratory mice and can provide applicability to combat a massive number of rodent population in the island communities.

***Accessing the accuracy of the News Article***

The news article assesses a brief overview of the article that has been studied. The news provided a literature review on the topics which discusses the introductory statements on the topic. A short paragraphical discussion was noted, which concluded the building of the genre drive called CopyCat (A Modified Gene Drive). The news favors the study in terms of the female mammals, i.e. mice that were being used, assessing the sister chromosomes in paired recombination that occurred longer than the males. “The mutations that were created in the males are known to be 25 percent than more which occurred in the males” news supports. But, the discussion segment analyzes the high rate of the which can either alter or slow down the rate of the CRISPR/Cas9 efficiency systems. The gene drive is induced permanently into the female's mice so it can be made sure that they pass the gene drive to the offspring. However, in the case of more effectiveness for the purpose, it should be injected to both parents.

 A rodent gene drive might one day be used to eliminate invasive rodent species that can destroy island habitats and sometimes overrun crops. As is, the gene drive would not work in the wild, says Bruce Conklin, a human geneticist at the University of California, San Francisco, who wrote a commentary in the same issue of Nature. “By no means is this ready to deploy.” But the researchers have taken an important first step in creating a gene drive that could work in mice and possibly other mammals, he says.

***Additional Questions:***

1. I would email Hannah A. Grunwald. Her email is hannahg827@gmail.com.
2. The master on the topic would be Jennifer Doudna. Email address is doudna@berkeley.edu. She works at **Doudna Lab University of California, Berkeley 512G, 2151 Berkeley Way #5230 Berkeley, CA 94720-5230**
3. Nature

***Link to the story:*** [***https://www.sciencenews.org/article/crispr-gene-drive-mice-pest-control-one-step-closer-reality***](https://www.sciencenews.org/article/crispr-gene-drive-mice-pest-control-one-step-closer-reality)

***References***

1. Tina Hesman Saey. ScienceNews A CRISPR gene drive for mice is one step closer to reality (2003) <https://www.sciencenews.org/article/crispr-gene-drive-mice-pest-control-one-step-closer-reality>. Accessed Feb 13, 2019
2. Hannah A. Grunwald, Valentino M. Gantz, Gunnar Poplawski2, Xiang-run S. Xu Ethan Bier, Kimberly L. Cooper, Super-Mendelian inheritance mediated by CRISPR/Cas9 in the female mouse germline. bioRxiv Jul. 4, 2018; doi: <http://dx.doi.org/10.1101/362558>

End Notes