Report: Pint of Science Festival

1. Event Overview

The Pint of Science is an annual science festival that takes place every May and brings researchers to the local bars to show the latest happenings in the world of science. In Singapore, there were in total 22 events happening island-wide between 14 and 16 May 2018, and they cover topics including diseases, neurosciences, society and new technologies. [1] On the night of 16 May, there was a session on gene editing, where our supervisor Prof. Tan Meng How would give a talk. As the topic is related to our research area, we decided to attend, and as young researchers in this field, help to coordinate the event, i.e. help to explain relevant concepts, engage the audience and address their doubts. Meanwhile, we were also interested in finding out the public opinion on gene editing as well as its relevance in our daily lives. Therefore, we did a short interactive session with the audience to have a closer look regarding this topic.

2. Event Summary

1. Small Quiz on DNA

   To make it easier for the audience to understand the more sophisticated concepts on gene editing and its applications, basic knowledge on genetic information, i.e. the central dogma of molecular biology -- the unidirectional flow of genetic information from DNA to mRNA and to proteins, was introduced. Information on complementary base pairing, pairing between tRNA codon and amino acids were also given, after which, a small quiz on translation from mRNA to amino acids was given to the audience. When the mRNA sequence was successfully matched to the sequence of amino acids, a complete sentence would be formed by the letter abbreviations of the amino acids. Where there was ‘mutation’ in the mRNA, there would also be a ‘typo’ in the sentence formed, thus helping to recognize a ‘defect’ in a gene.

As facilitators of the event, we actively conversed with the attendants to see if they fully grasped the important concepts and answered the quiz correctly. When they faced difficulties deciphering what this quiz was about, we explained the concept with more details and simpler phrasing to help them. The level of understanding was fairly good, as most of them answered the questions correctly.

This small quiz gave an excellent head start to the audience, as the attendants are from all walks of life, and not everyone would be familiar with the concepts of genes. Having taken this quiz, they gained a much deeper understanding of how the sequence of DNA and RNA would impact our physical traits due to the induced change in the protein structure. And by understanding the mechanism behind, they would also appreciate more on gene editing. Moreover, the quiz also stimulated their interest in finding out more about genes, which is an integral part of their bodies that most of them never had an idea about.

2. Talk on gene editing via CRISPR

   Our principal investigator, Prof. Tan Meng How, gave an overview of the technologies that would enable us to read and edit DNA wherever we want to, and also described some perhaps futuristic goals that we can achieve with this newfound ability to manipulate DNA in different living organisms. [2] Our professor phrased his speech with simple terms and many synonyms for easier understanding. Together with a quick lesson on genes previously, the participants were able to grasp the seemingly difficult concepts of gene editing in a relatively short period of time, making it easier for us to elicit responses from them during the discussion later on.

3. Interactive session with the audience

   In order to find out more about their opinions on gene editing, we posed several questions on areas like risk, ethics, preference

for DNA editing or RNA editing and GMO to find out the interests and concerns from the public.

3. Thoughts and Conclusion

The general atmosphere during the event was a light and relaxing one, with almost all the audience expressing their views freely and creatively.

We actively engaged the public about gene editing, enriched their knowledge in this field, and gathered some public opinions on gene editing. From the interaction with the audience, we have learned that **safety is of paramount importance** when people consider gene editing or gene therapy. It is also the driving force for people to **choose RNA editing over DNA editing** mainly because of the reversible nature of RNA editing.

4. References

[1] Pint of Science 2018

[2] DNA Editing All Around Us