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Commentary

CRISPR: Relation with Microbiology

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CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) is popular as a genome editing tool. But its origins lies in the field of microbiology, precisely, bacterium-phage interactions. Proper understanding of these systems can help in bringing out the immense potential of this technology that has wide applications.

CRISPR has provided the plot for the 2018 released Hollywood film "Rampage", thus enabling its reach to the common man who may otherwise not know this term at all. They are now gaining access to the great potential of this technique for genome editing, ethical debates concerning modification of germline cells and legal concerns for patients [1]. In the movie, a primatologist is teaming up with a genetic engineer to save his albino gorilla friend and Chicago from annihilation by monstrous creatures that have been produced using CRISPR. The film confronts the general mass as to how this cutting-edge technology reflect cultural fears about science that goes out of control [2]. But many are still unaware that this genome editing tool relies mostly on the use of CRISPR-associated (Cas) proteins and the study of the interactions of bacteria and archaea with the viruses that infect them. For instance, the origins of most of the CRISPR spacers found in bacteria and archaeal genomes are still unknown. Its role as adaptive immune systems has been postulated [3]. Furthermore, with respect to the diversity of CRISPR-Cas systems [4], along with efforts for characterization of even more microbial genomes [5], there is great scope for interrogation of CRISPR systems in their native organisms. The study of related systems can be combined with discovery of new reagents with disruptive applications [6].

But it is to be remembered that the pathway from basics to scientific blockbuster is not easy. Microbiology will continue to play a major role in this journey.

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