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Modulating the activity of CRISPR/Cas9 genome editing by small molecules

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Propositions

Belonging to the thesis

Modulating the Activity of CRISPR/Cas9 Genome Editing by Small Molecules

By Siwei Chen

1. Genetic and epigenetic control of the genome of organisms with CRISPR/Cas9 enables innovations in diverse applications in fields ranging from basic biology to industrial biotechnology and medicine.
2. We are on our way of investigating the role of the highly complex and still poorly understood DNA repair machinery in the working mechanism of CRISPR/Cas9.
3. Development of low molecular weight compounds are promising approaches for timely and precisely modulation of CRISPR/Cas9-mediated genome editing efficiency.
4. The on-target selectivity of small molecule modulators is essential for efficiently modulating CRISPR/Cas9 genome editing.
5. Small perturbations in the tertiary structure of the Cas9 endonuclease can cause a loss of inhibitory activity of Cas9 inhibitors, thus indicating the specific nature of interactions between Cas9 inhibitors and the Cas9:sgRNA:DNA complex.
6. $1.01^{365}=37.8 > 0.99^{365}=0.03$; A long journey can be covered only by taking one step at a time.
--- Hsun Tzu
7. When you are disturbed by a tough problem, break it down into small tasks and solve them one by one.