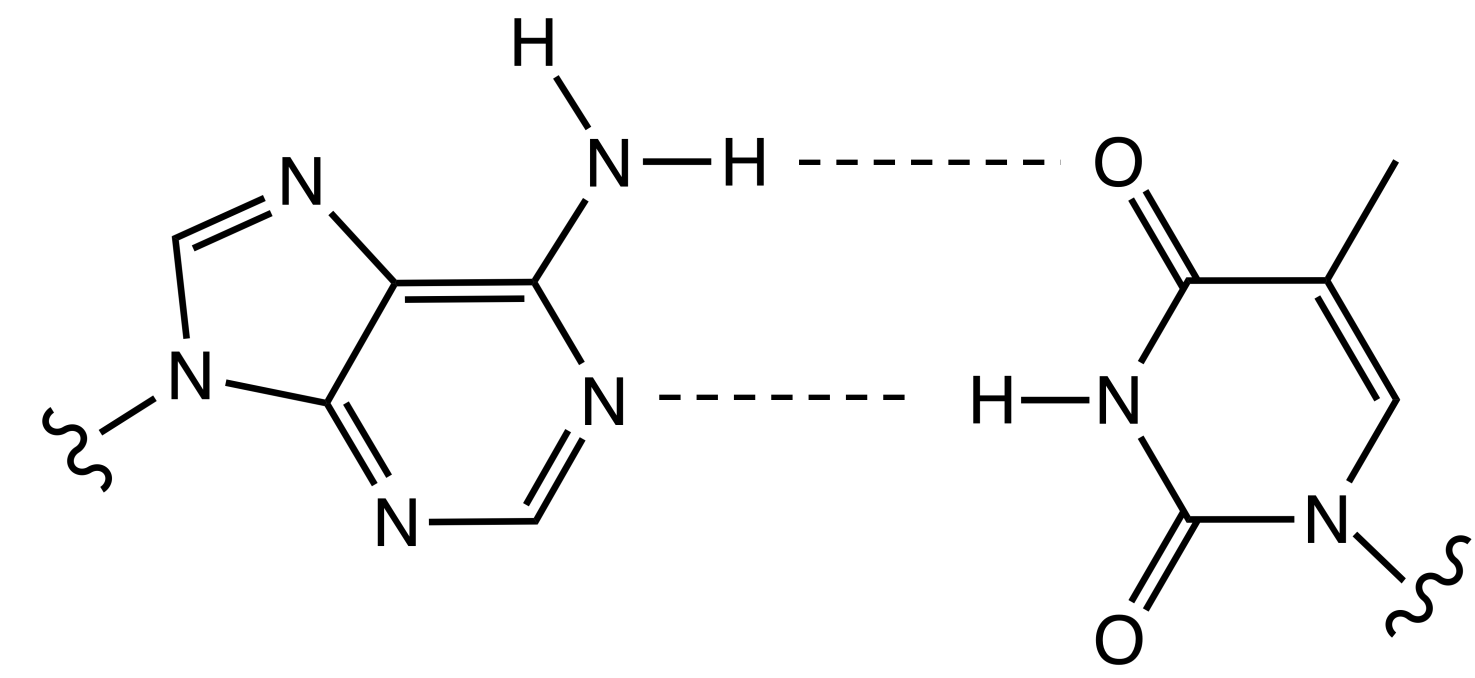


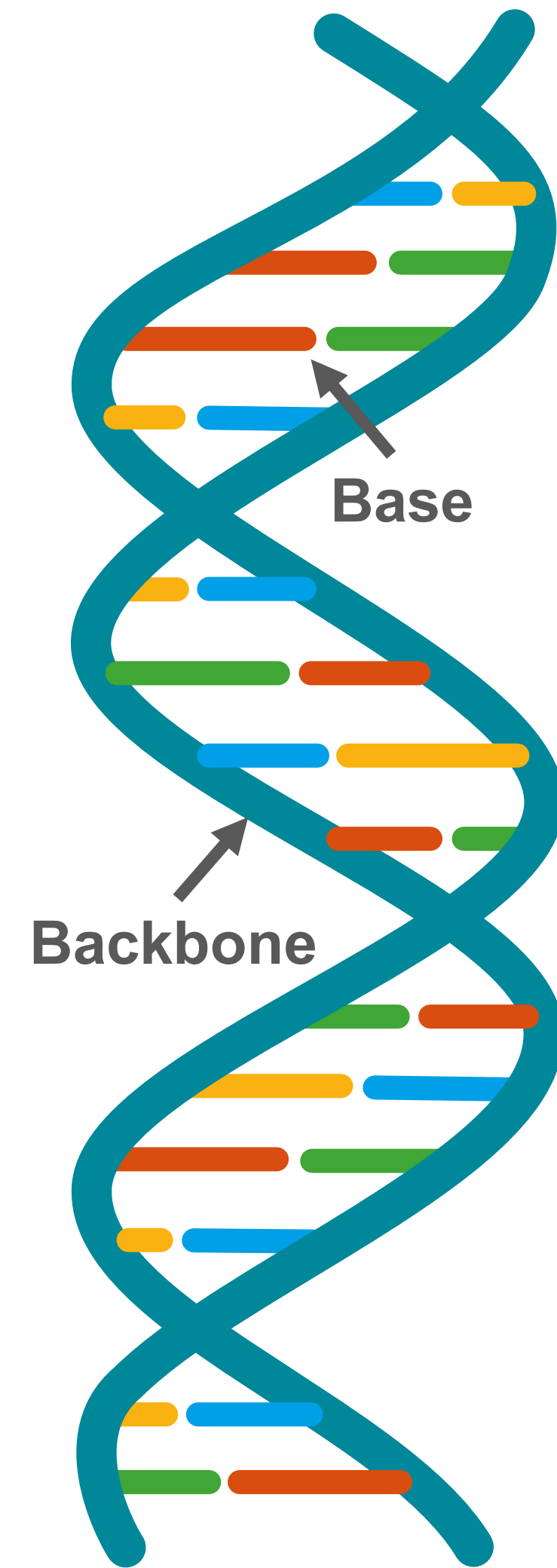
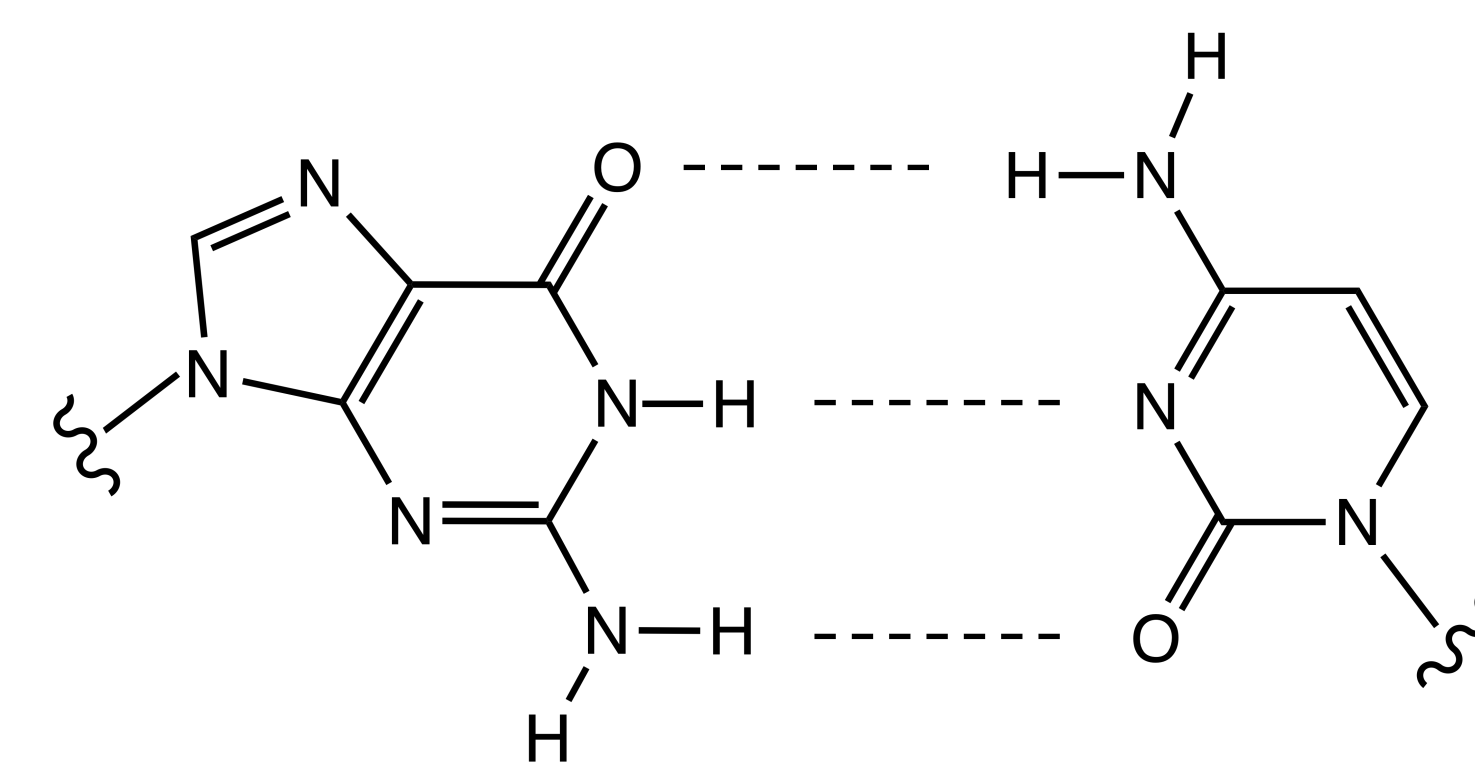


STRUCTURE AND FUNCTION OF DNA

A Adenine **T** Thymine



G Guanine **C** Cytosine

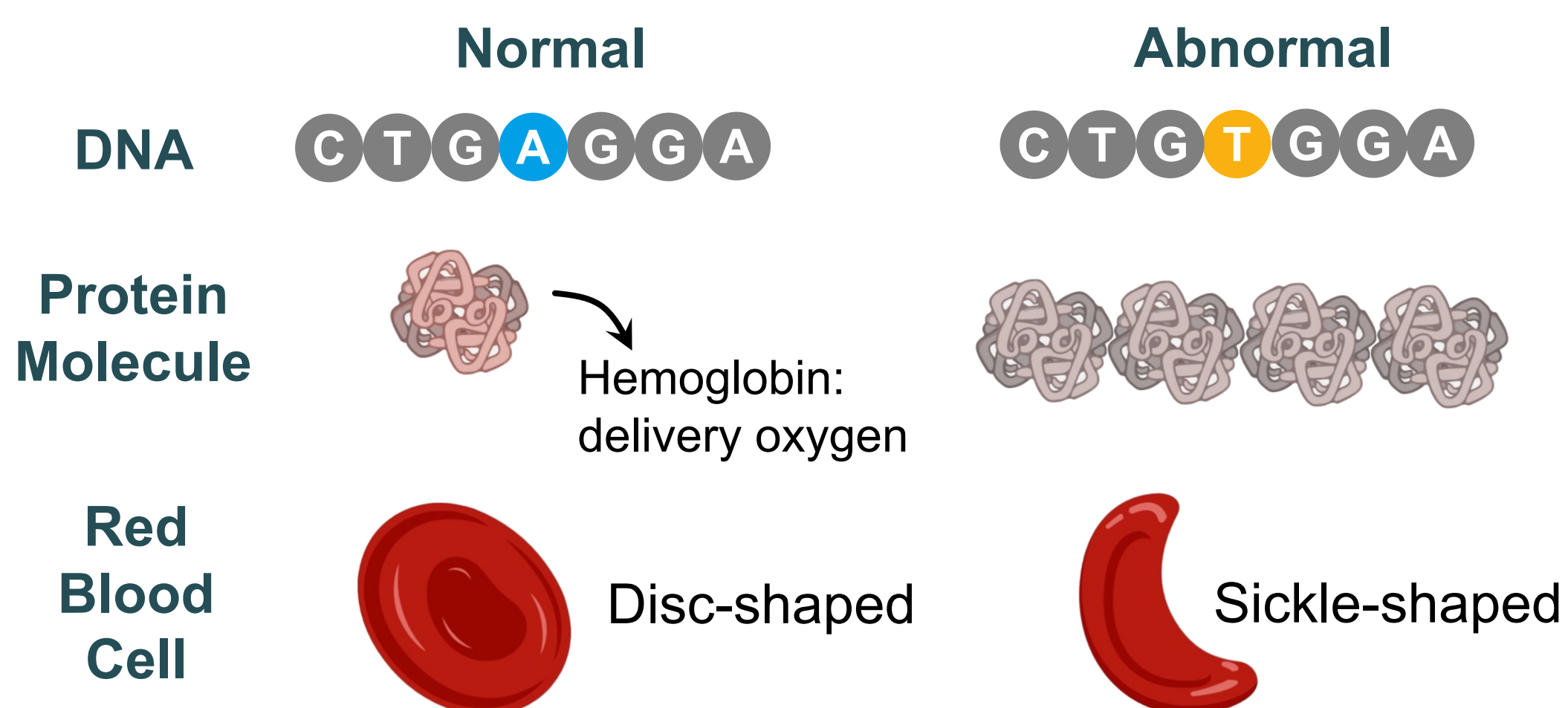


From DNA to Protein

The bases on a single strand of DNA act as a code. Those codes are turned into proteins through transcription and translation processes.



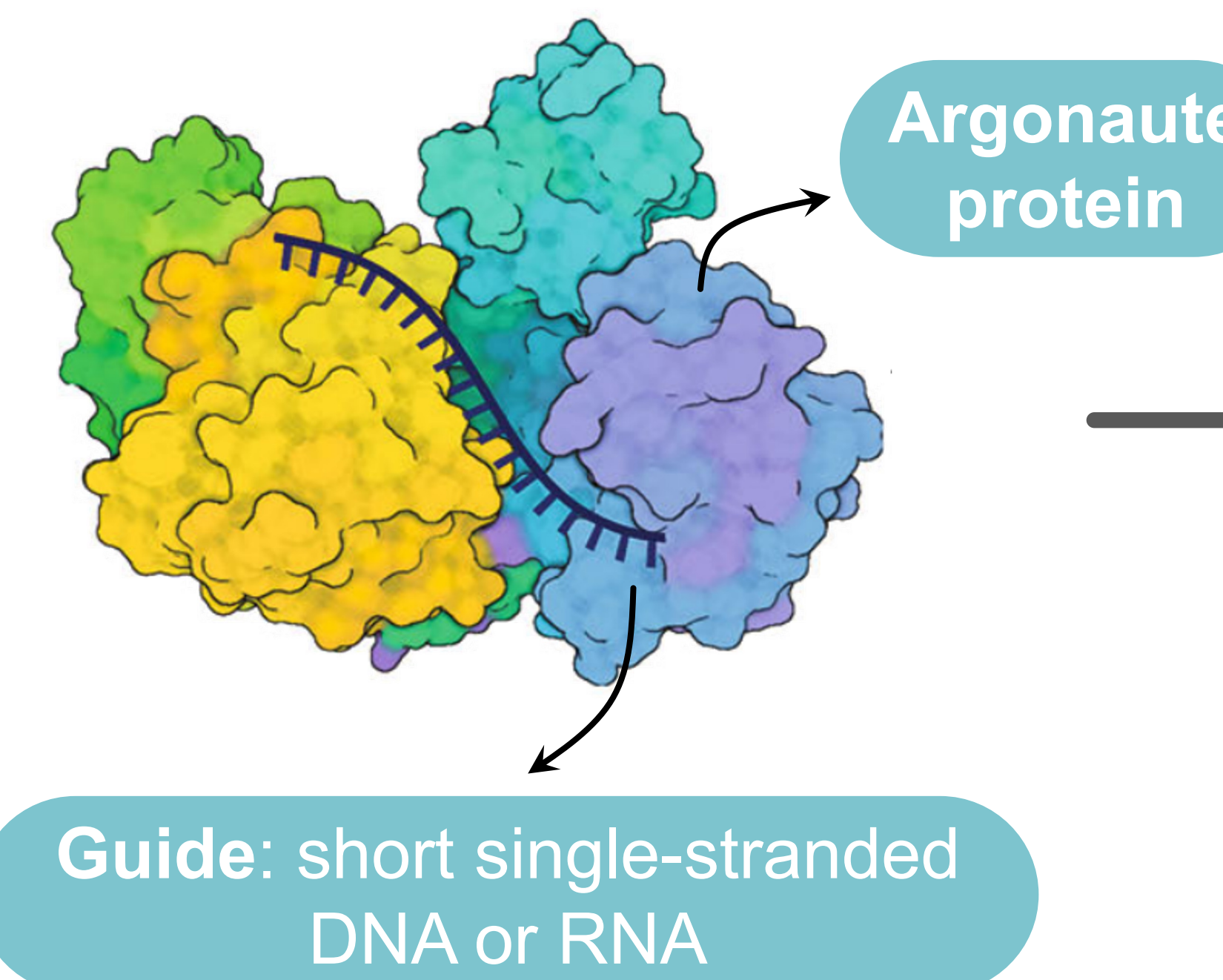
Mutations causes diseases



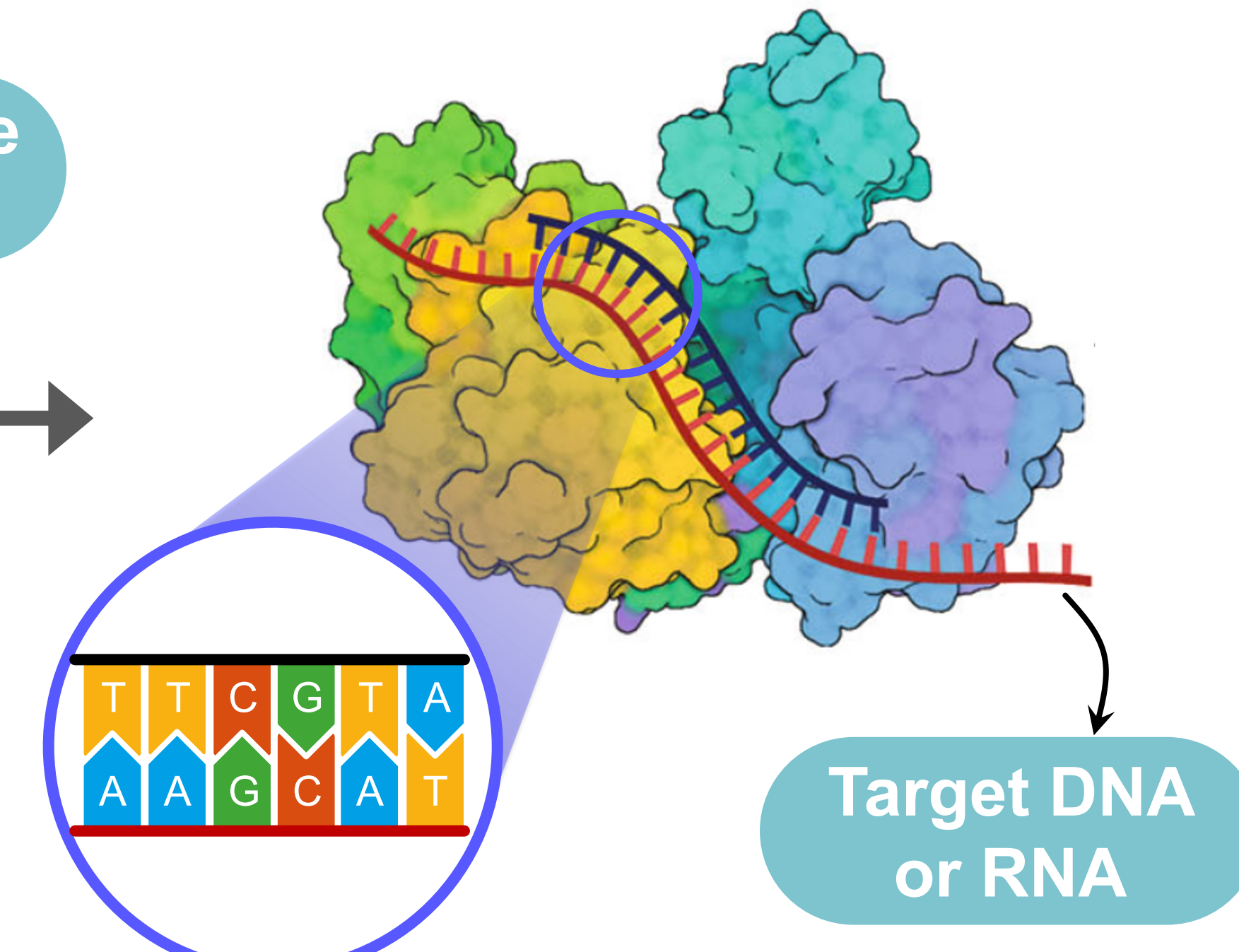
ARGONAUTE PROTEINS

Target sequences detection via base-pairing

Guide loading

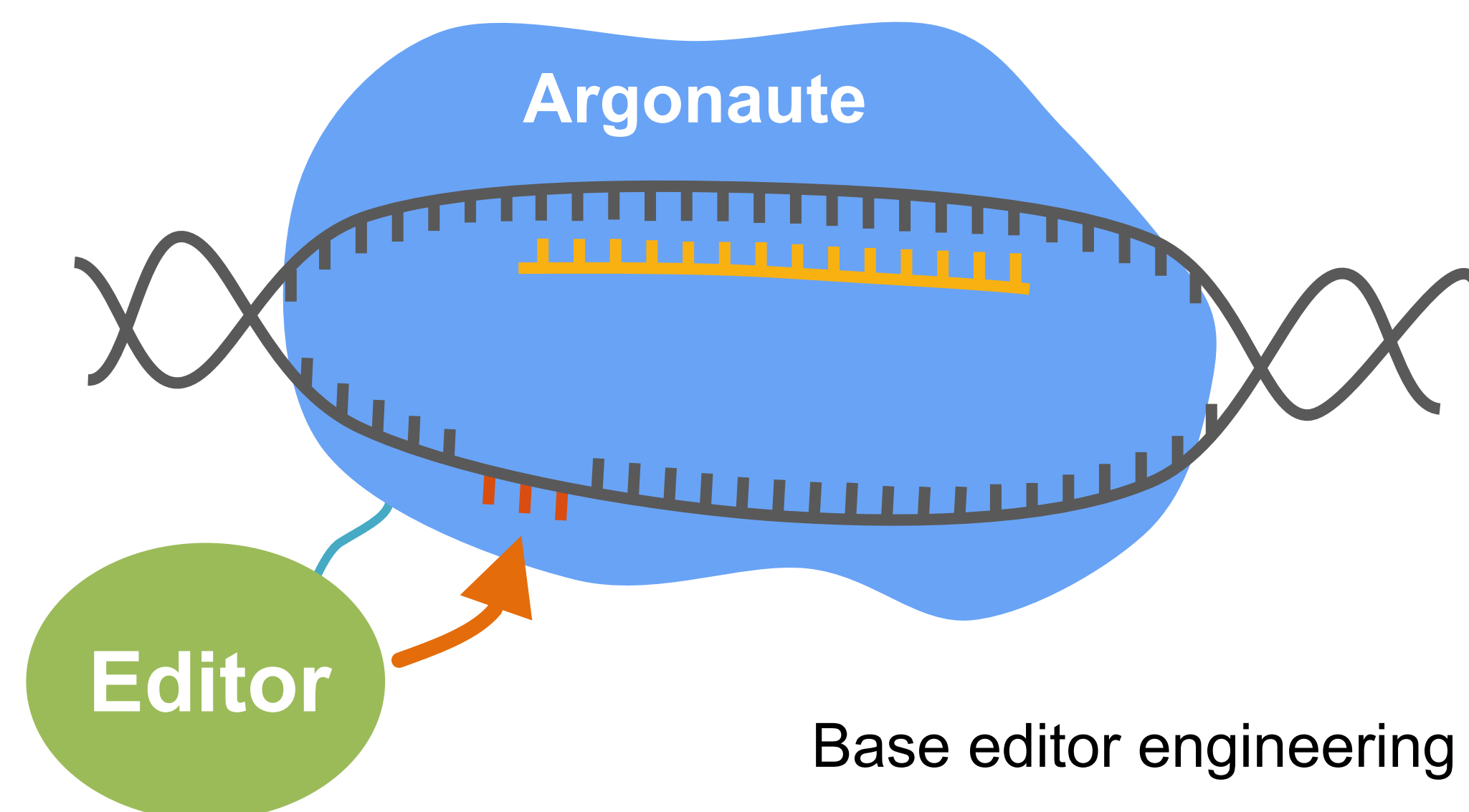


Target Recognition

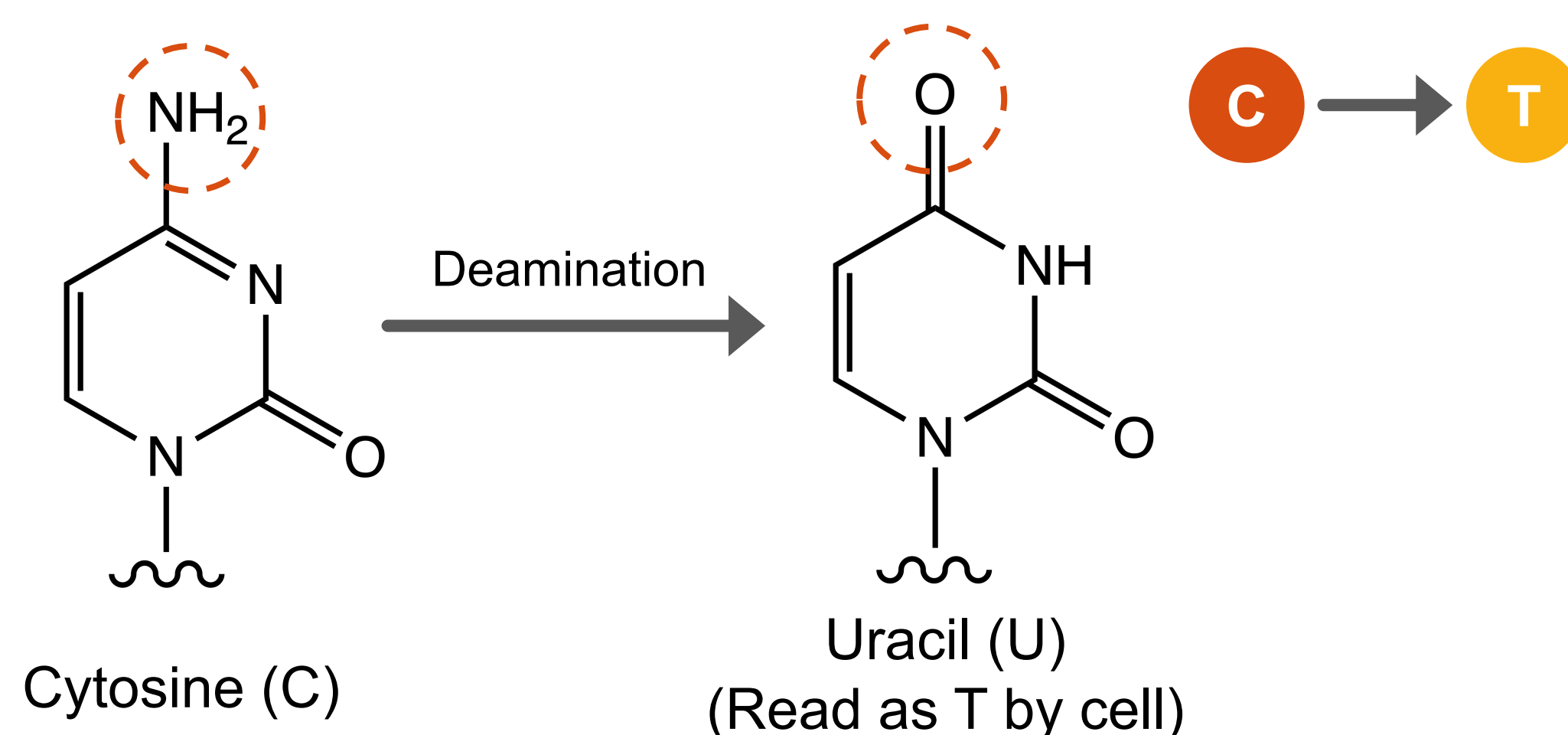


ARGONAUTE RELATED BASE-EDITING

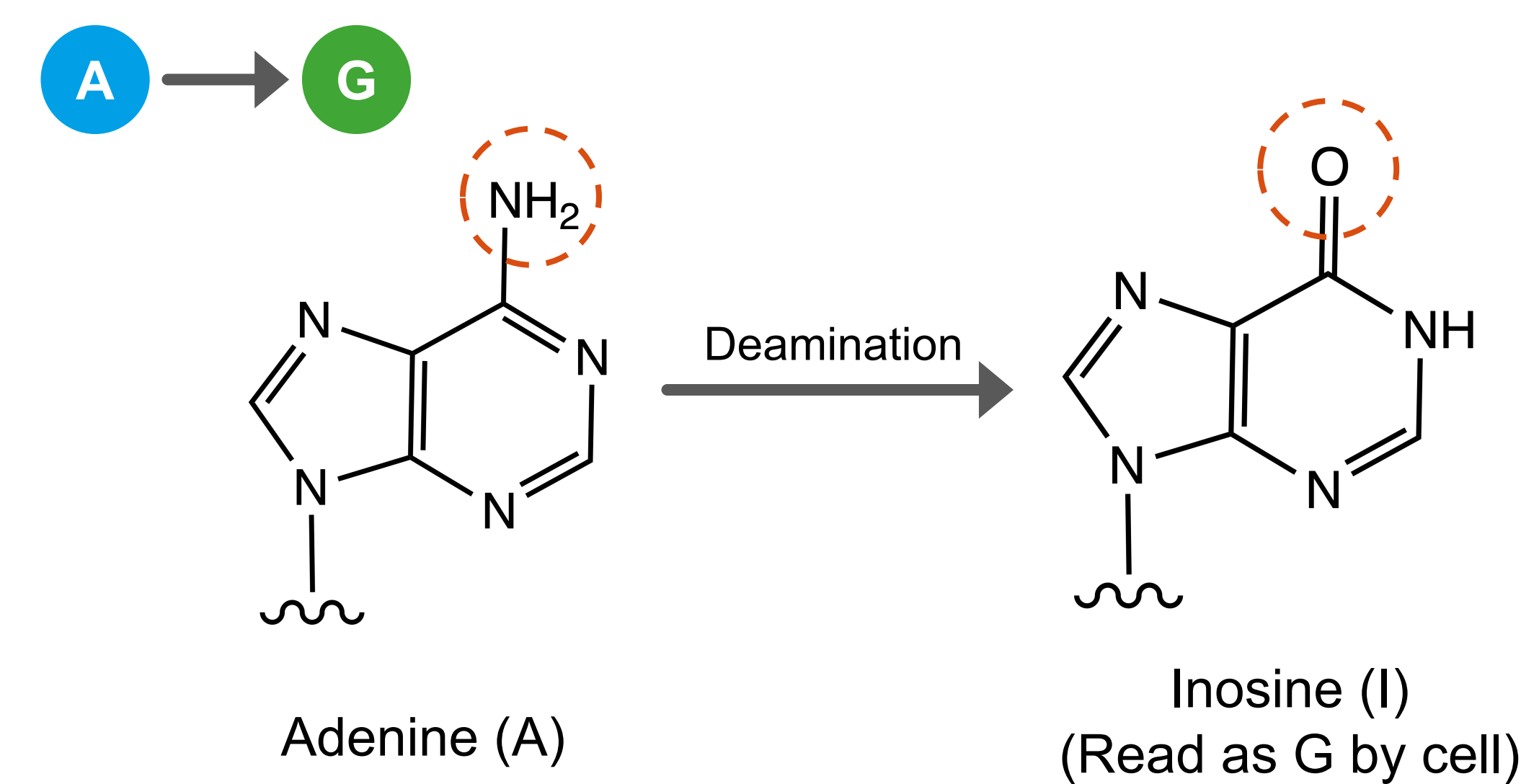
Schematic diagram



Cytosine base editor (CBE)



Adenine base editor (ABE)



Base editors comparison

	DdmE	Cas9
Protein Size	80 kDa	160 kDa
Type of Guide	DNA	RNA
Sequence requirement	No	Need a specific motif (PAM)

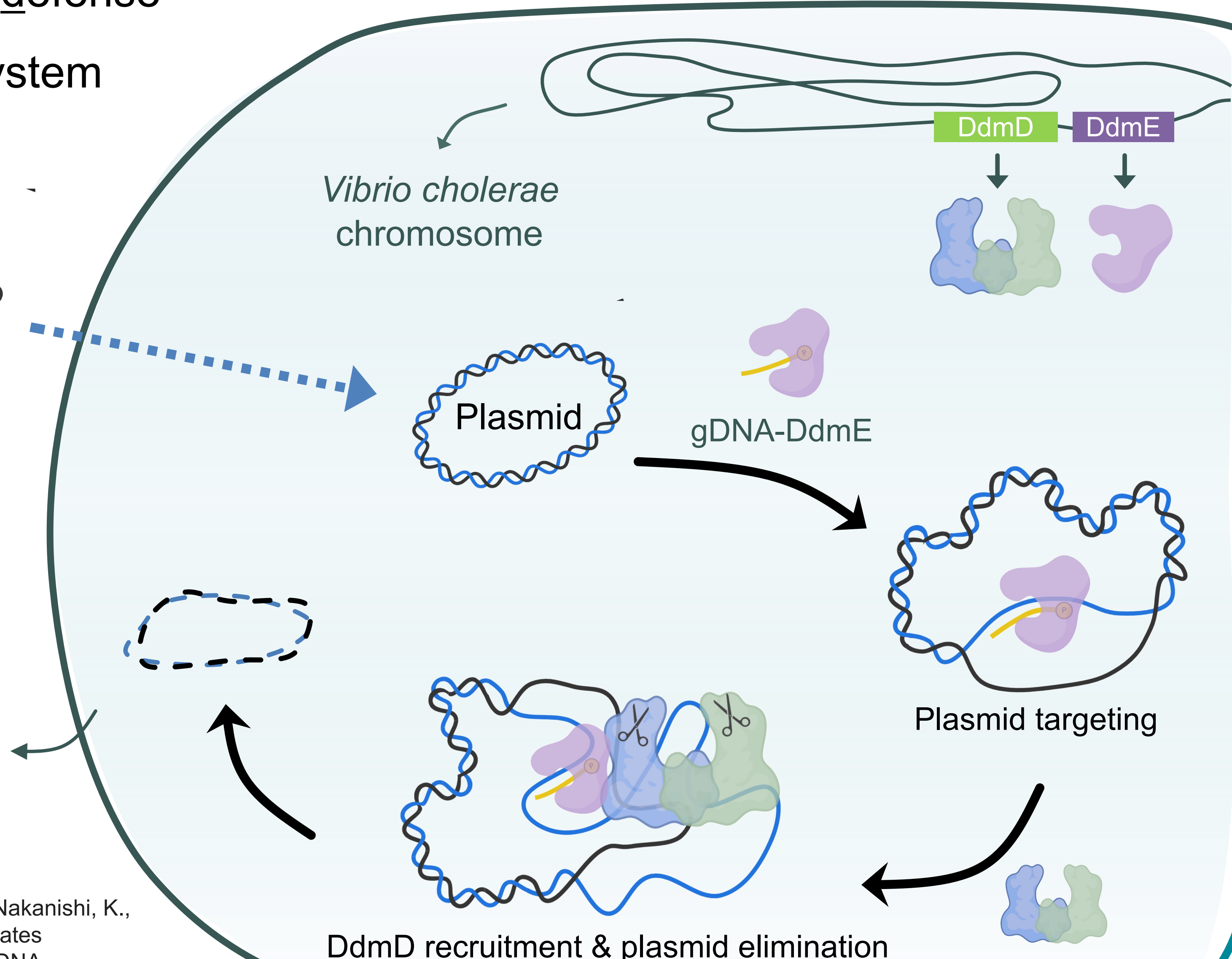
A NEW PROKARYOTIC ARGONAUTE

DdmE is catalytic inactive, DNA-guided DNA targeting protein

DdmDE (DNA defense module D&E) system

Plasmid - A small, circular, double-stranded DNA molecule that is separate from a cell's chromosomal DNA

Vibrio cholerae cell



Yang, X. Y., Shen, Z., Wang, C., Nakanishi, K., & Fu, T. M. (2024). DdmDE eliminates plasmid invasion by DNA-guided DNA targeting. *Cell*, 187(19), 5253–5266.e16.