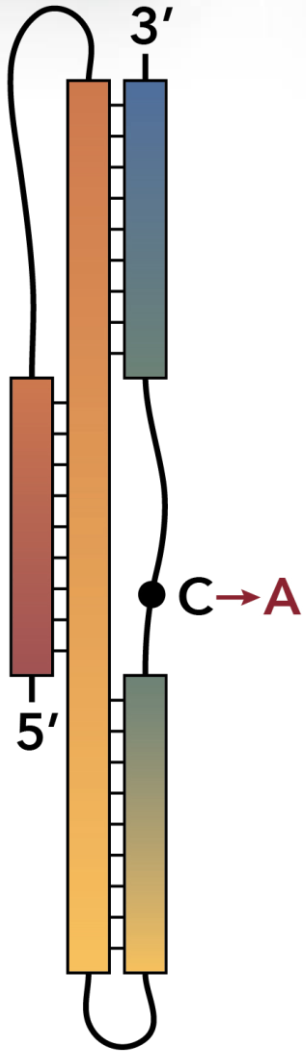
Targeting a critical molecular switch in COVID-19



The graphic shows a stylized version of the SARS-CoV-2 programmed -1 ribosomal frameshift signal.

Scientific Achievement

Scientists compared the three-stemmed RNA pseudoknots of SARS-CoV and SARS-CoV-2 that function as critical switches in the replication pathways of these viruses and found a small molecule that could inhibit their function.

Significance and Impact

This work shows that such inhibitors may possibly be used to fight the current COVID-19 pandemic.

Research Details

- Coronaviruses utilize a molecular mechanism called programmed −1 ribosomal frameshift for replication.
- Small-angle X-ray scattering analyses at the LiX beamline at NSLS-II showed SARS-CoV and SARS-CoV-2 have a similar structure for the three-stemmed pseudoknot used in replication.
- A small molecule that is known to inhibit SARS-CoV frameshifting was shown to be also similarly effective against SARS-CoV-2.

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