**PENGUINN-RNA: prediction of RNA G-quadruplexes using interpretable Neural Networks**

Kriti Bhagat1, Ilektra-Chara Giassa1, Panagiotis Alexiou1,\*

1Central European Institute of Technology, Brno, Czech Republic

\*To whom correspondence should be addressed.

G-quadruplexes (G4s) are non-canonical structures of nucleic acids that have gained increasing interest due to their involvement in a series of biological processes. While the first DNA G4 was identified more than 30 years ago, RNA G4s became known two decades ago. Since then there is accumulating evidence for their importance in cellular mechanisms, including translation regulation, telomere maintenance, and alternative splicing. Here we present PENGUINN-RNA, a machine learning method able to predict RNA G4s based on raw RNA sequence and highlight the regions of the sequence that contribute to the formation of the G4 structure. The trained model is available online and is also accessible through a user-friendly interface that can calculate the G4-forming propensity of user-submitted RNA sequences.