Docket #: S20-217

Eterna Enterprise: A Secure Platform for Designing Enhanced mRNA Vaccines

Stanford researchers have developed a secured, invite-only version of their popular Eterna platform for designing mRNA vaccines. **Eterna is an online application that integrates RNA folding algorithms, a video game interface, and associated computational methods to revolutionize vaccine design and RNA structure prediction.** The new, secured version of the platform (called Eterna Enterprise) is able to host selected participants to work in a confidential manner on problems such as designing improved mRNA vaccines that can be translated to clinical trials by industry partners and other collaborators. The data and designs generated by Eterna users may be used to develop improved mRNA vaccines immediately.

This technology is part of a portfolio of innovations aimed at fighting the COVID-19 pandemic.

Discover how the Eterna platform is transforming RNA design:

Stanford docket S20-164 - EternaFold: An Algorithm for Predicting RNA Structure
Stanford docket S20-163 - EternaBench: A Database of Multi-State RNA Structures

Applications

- **Structural motif discovery**
  - Identifying RNA structure motifs that confer enhanced physical characteristics, e.g., enhanced in vitro stability, improved translation into proteins for therapeutic or vaccine use
- **Rapid design and refinement of mRNA vaccine candidates** to be deployed in the ongoing COVID-19 pandemic

- Eterna Enterprise can host campaigns **to design other RNA therapeutics** such as antisense oligos, aptamers, siRNAs, and miRNAs diagnostics
- Design of RNA molecules for **detection of viruses** during pandemic situations

Advantages

- Leverages crowdsourcing
- Gamifies computational RNA biochemistry
- Highlights important sequence-structure relationships
- Unique interactive format

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