

RNAutrix: Platform for RNA-based drug screening and beyond

Development status

Phase 3

Technology validation and implementing it in real environment. Testing the technology outside of the laboratory and its adjustment to external conditions.

IP protection status

Patent application in preparation.

Partnering strategy

Co-development, Collaboration, investment, licensing, spin-off

Institution



Challenge

Current RNA-targeted drug discovery suffers from low specificity and affinity by focusing on shallow pockets or relying on predicted structures. We use an unbiased FA-based HTS approach targeting complex RNA structures by screening overlapping RNA fragments against a specialized small-molecule library. This identifies binders that modulate RNA structure and function. Screening the 3'UTR of oncogene c-MYC yielded specific binders and functional hits. Our fast, cost-effective method supports lead discovery and builds RNA-compound motif libraries for drug design.

Description

The method introduces a novel, unbiased approach for finding druggable regions in mRNAs and for identifying specific RNA-binding small compounds that modulate RNA structure and function. Instead of screening a long RNA against huge compound libraries optimized for proteins, we maximize the number of RNAs by preparing overlapping fragments of the target mRNA. An FA-based HTS assay against a small, specialized library of heterocyclic compounds is used to monitor structural changes in the RNA under stable buffer conditions. The readout identifies specific binders and whether they expand or compact the target RNA exposing or hiding specific protein or miRNA binding sites. With this information, lead compounds can be discovered in combination with functional assays and libraries of compound-RNA motif pairs are created for future drug design in a very fast and cost-effective way.

Commercial opportunity

RNAutrix is a project developed at CEITEC Masaryk University, currently in the process of being transformed into a spin-off company. The RNA therapeutics market grows at 14-17% CAGR, with HTS exceeding €36B by 2025. RNAutrix enables pharma, biotech, and academic partners to pursue RNA-targeted drugs across cancer,

neurodegeneration, viral infections, and rare diseases. Fee-for-service screening ensures early revenue, while proprietary RNA-compound datasets power AI tools, licensing, and joint drug development. By unlocking complex RNA structures, RNAutrix delivers scalable innovation, strong commercial returns, and lasting patient impact. RNAutrix offers a validated high-throughput screening (HTS) platform and is seeking partners for screening services, licensing opportunities, and co-development collaborations.