

## OVERVIEW ON RNA AND RNA ANALOGUE REPLICATION

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The task assigned to me is to review experimental work relevant to the origin of the RNA world *de novo* from a pool of prebiotic nucleotides or nucleotide analogues. I will not discuss the equally plausible scenario in which the RNA world is "invented" by some completely unrelated genetic system.

Template-directed synthesis using activated mononucleotides as substrates provides a mechanism for copying some preformed oligonucleotide using activated D-nucleotides as substrates. However, the reaction is not sufficiently general to permit exponential replication. Furthermore, template-directed synthesis, even on homochiral templates, does not proceed satisfactorily with racemic substrates.

Many of the obstacles facing template-directed synthesis can be overcome by using homochiral oligomeric substrates, instead of monomers. However, this solves one difficult problem only to create another. How does one generate a homochiral oligomer from racemic substrates in the absence of a homochiral template? Various possibilities will be discussed.

Simple template-directed reactions may have been needed to get RNA synthesis started, but ribozyme catalyzed reactions soon must have taken over. These reactions are discussed in a different overview.