

The Emergence of RNA. Ramnarayanan Krishnamurthy, The Scripps Research Institute, Department of Chemistry
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Introduction: RNA is considered the most central of the class of biomolecules in extant biochemistry. The focus on RNA as a key player in origins of life research is exemplified by the RNA-world hypothesis where RNA functioned both as the carrier of information and as a catalyst of many reactions. The past-present omnipresence of RNA has made it a molecule of intense appeal from an origins of life perspective.^[1]

RNA's chemistry and biology, which are intertwined with the physicochemical properties of its chemical components in a neutral aqueous environment, are incompatible with plausible early earth environments. The question arises whether RNA could have appeared later, at a stage where both the chemical processes and the environment would have been more conducive for RNA's sustained origination and function.^[2]

The presentation will focus on our search for alternatives to RNA, and the insights gained by comparing them to RNA. The results from these studies not only allow for a greater understanding of the structure-function relationship of RNA, but also have implications for the consideration of RNA as a product of chemical evolution.^{[3][4]}

References:

Eschenmoser, A. (2011) *Angew. Chem. Int. Ed.*, 50, 12412-12472. [2] Hud, N. V., Cafferty, B. J., Krishnamurthy, R., Willams, L. D. (2013) *Chemistry and Biology*, 20, 466-474. [3] Krishnamurthy, R. (2012) *Acc. Chem. Res.* 45, 2035-2044. [4] Krishnamurthy, R. (2014) *Synlett*, 25, 1511-1518.