The design of the prebiotic synthesis of the complicated target molecules such as RNA requires multiple steps. The synthesis needs to utilize the starting materials and reagents that we believe were available in the prebiotic times. There are presently two synthetic strategies utilized. The first strategy is in the direction from the starting materials to the target molecules, which is based on the known chemically feasible cases. This strategy is based on the chemical intuition. The second strategy, which is considered to be more systematic and more fail-proof, is called the “retro-synthesis”. It requires the scientists to think “backwards”, and to mentally break up the target molecule into the smaller sub-targets, and so on, until the starting materials are reached. In contrast with the traditional retro-synthesis, the prebiotic version may include various paths which have low yields. The selectivity factor is what we are looking for. We illustrate the utility of the retro-synthetic method on several examples that are relevant to astrobiology.

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