

## **Prebiotic iron-sulfur peptides as precursors of enzymes**

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Much recent progress in our understanding of the origins of life has centered on delineating prebiotic analogues of extant metabolism. Such work has been useful in revealing accessible chemistries that were then shaped by later catalysts. However, there has been difficulty in identifying prebiotic versions of the biological, metabolic steps that rely on iron-sulfur enzymes. As the Holm group showed decades ago, iron-sulfur clusters can assemble spontaneously under the right conditions. We, therefore, set out to explore if such iron-sulfur clusters could be stabilized by short, prebiotically plausible peptides, and if such peptides could engage in reactions that may have impacted protometabolic processes. Nonenzymatic paths that acquire electrons from fuel sources and couple electron transfer to the generation of a proton gradient will be discussed. Additionally, the relevance of such findings on our understanding of protocellular chemistry will be evaluated.