

Ray of life: Did sunlight kickstart Earth's biological transformation?

A new study suggests that the iron-and-sulfur clusters at the heart of many life-critical enzymes could have been floating around Earth's primordial seas some 4 billion years ago, produced by nothing more than primitive biomolecules, iron salts, and a previously unknown ingredient—ultraviolet (UV) light.

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To find out whether iron-sulfur clusters were a core ingredient for life from the start—or whether the first organisms got along fine without them—[the researchers] recreated the conditions of early Earth in their lab...When the iron was in an oxidation state that predominated on early Earth, iron (II), nothing happened. But when Bonfio flicked on the lights, a transformation took place.

In the presence of UV light, the solution went from violet to red, indicating that the iron and sulfur were reacting...The light was simultaneously freeing sulfur atoms from the peptides and oxidizing the iron—[turning it into a form, iron \(III\), that could readily interact with the sulfur](#)....

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It makes sense, says [Sheref Mansy, a biochemist at the University of Trento in Italy], that sunlight would play a role in early iron-sulfur synthesis. That's because Earth lacked an ozone layer to protect it from UV light.

[Read the full study [here](#) (behind paywall)]

The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion, and analysis. Read full, original post: [How sunlight might have jump-started life on Earth](#)