Founded in 1877 by Felix Hoppe-Seyler as Zeitschrift für Physiologische Chemie

Felix Hoppe-Seyler (1825–1895) was a pioneer of biochemistry, remembered not only for his discovery of hemoglobin and his contributions to the chemical characterization of many other biological compounds and processes but also for having been the mentor of Friedrich Miescher and Albrecht Kossel. In his preface to the first issue of Zeitschrift für Physiologische Chemie, Felix Hoppe-Seyler coined the term Biochemistry ('Biochemie') for the then newly emerging discipline.
The cover image displays a cold atmospheric plasma (CAP) jet above a petri dish containing a biological sample. The plasma jet generates a small-scale contracted plasma for spot-like treatments of biological targets. For large-area treatment, the plasma jet has to be moved via the surface (or other sources must be applied such as dielectric barrier discharge-based or microwave-driven plasma sources). Plasma medicine involves the direct application of CAP on or in the human body for therapeutic purposes. For example, patients with chronic wounds (e.g. chronic ulcer) or pathogen-based skin diseases have benefited from clinical plasma therapy. However, plasma research is still focused on in vitro experiments using cultivated microorganisms or cells as well as on animal studies. In this highlight issue, mainly results of in vitro investigations are presented using plasma jets but also other types of plasma devices. Plasma interactions both with the liquid cellular environment but also directly with cellular structures in liquids or on surfaces trigger specific biochemical and molecular biological signal cascades in the cell. Biological plasma effects are caused by coaction of plasma components like reactive oxygen and nitrogen species, electrons and charged molecules, but also ultraviolet and visible light and electromagnetic fields. Further exploration of the detailed, mainly redox-based mechanisms of plasma-induced effects in living cells and microorganisms is the focus of this highlight issue.

Image courtesy of Leibniz Institute for Plasma Science and Technology (INP), Greifswald, Germany.
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