

BIOLOGICAL CHEMISTRY

*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.



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COVER ILLUSTRATION

The image on the front cover shows a planarian flatworm of the species *Schmidtea mediterranea*. Large numbers of pluripotent stem cells equip a multitude of planarian species - such as *S. mediterranea* - with fantastic regenerative abilities. As even tiny fragments of these animals regenerate into full worms over the course of about a week, planarians have become a model for regeneration research. Intriguingly, piRNAs, small non-coding RNAs dedicated to transposon control in germ cells of higher organisms, were also found to be essential for planarian regeneration. However, their molecular mode of action in planarians remained enigmatic. To address this shortcoming, Kim et al. characterize the planarian piRNA pathway in their review article on pp. 1123-1141 in this issue, motivated by recent progress that now enables the molecular study of piRNA function in planarians. Furthermore, the authors discuss that piRNAs exhibit crucial roles in mRNA surveillance in planarian stem cells, and describe somatic functions of piRNAs, e.g. in the planarian epidermis. Taken together, the recent advances reviewed by Kim et al. establish that piRNAs possess additional functions in planarians apart from transposon control. These additional functions are likely essential for regeneration and might aid our understanding of human stem-cell driven regeneration.

Photo courtesy of Dr. Elizabeth Duncan, University of Kentucky in Lexington, KY, USA.



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