

BIOLOGICAL CHEMISTRY



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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

Reshaping of the cup-like ligand pocket of lipocalin protein family members via combinatorial protein design yields receptor proteins with new ligand specificities termed Anticalin® proteins. Due to their small size (22 kDa), Anticalins promise high tissue penetration and appear particularly useful for application in molecular tumour imaging as well as, potentially, therapy. In their article on pp. 235–252 of this issue, Friedrich et al. describe the selection of an Anticalin against the stress-inducible human 70 kDa heat shock protein (Hsp70.1), which often is seen exposed on the surface of tumour cells in a membrane-bound state, from a naïve lipocalin 2 (Lcn2) random library using bacterial surface display. In order to develop a tracer suitable for *in vivo* tumour imaging, the plasma half-life of the Anticalin was tuned with the help of PASylation® technology. Conjugation with the chelating agent desferrioxamine allowed subsequent radiolabelling with the positron emitter ⁸⁹Zr. The front cover shows two PET/CT images of mice carrying xenografted FaDu tumours (arrow) 24 h after injection of the ⁸⁹Zr-labelled Anticalin-PAS200 protein (left) or ⁸⁹Zr-labelled Lcn2-PAS200 (right), as control. The colour scale indicates the radiation intensity in the range from 0 (dark blue) to ≥ 8.5% (white) injected dose per ml.



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