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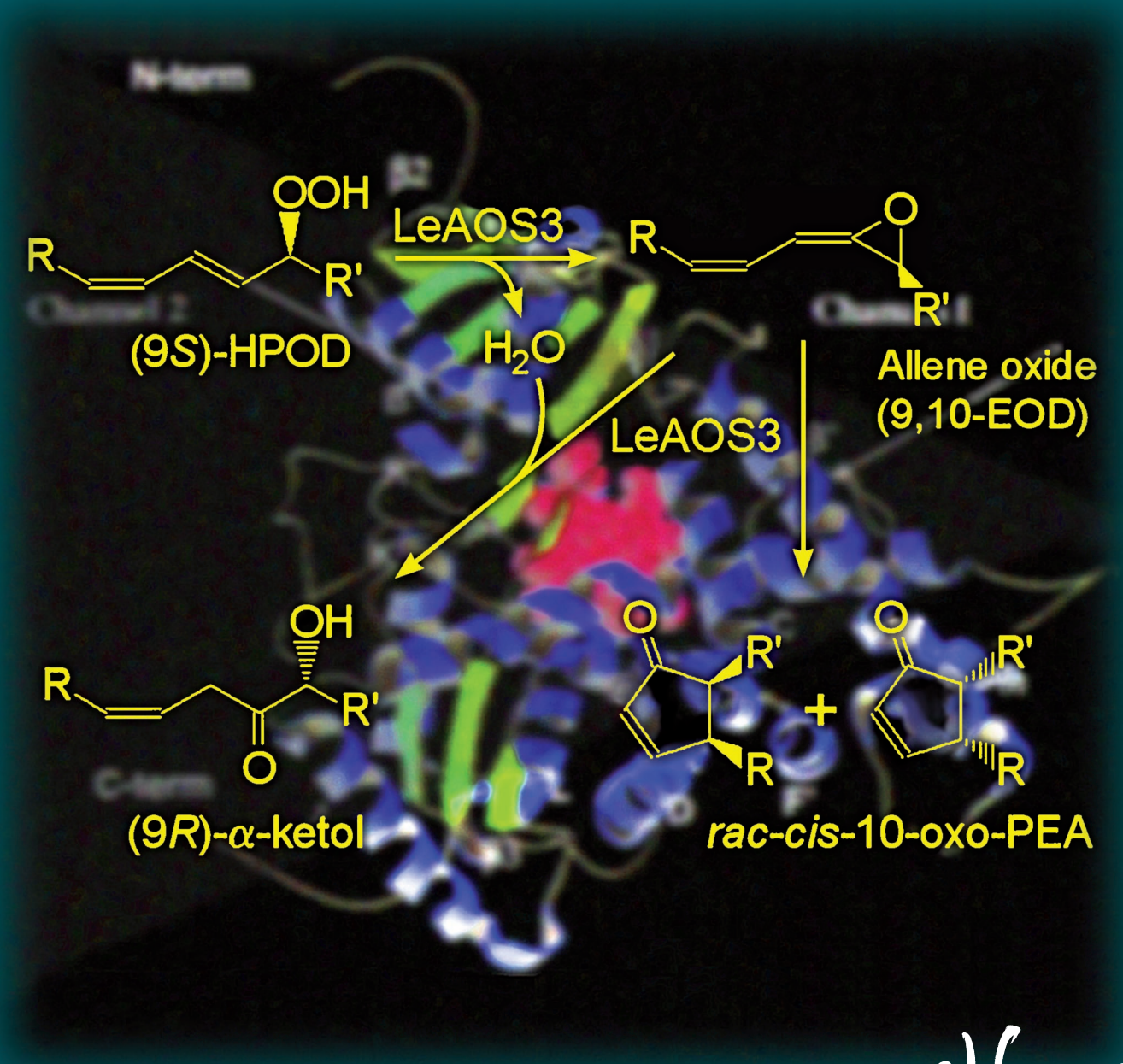

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Chemistry & Life Sciences

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Cover Picture

Alexander N. Grechkin*, Lucia S. Mukhtarova, Larisa R. Latypova, Yuri Gogolev, Yana Y. Toporkova, and Mats Hamberg

The cover picture shows the mechanism of catalysis by the tomato allene oxide synthase (syn. hydroperoxide dehydratase, EC 4.2.1.92.) LeAOS3, CYP74C3. Enzymes of this CYP74 family control the main routes of the plant lipoxygenase cascade, the source of oxylipins, which play important roles in plant signalling and defence. The primary products of allene oxide synthases are the short-lived allene oxides. For instance, the 9-hydroperoxide of linoleic acid is converted by LeAOS3 into allene oxide (12*Z*)-9,10-epoxy-10,12-octadecadienoic acid. Trapping experiments demonstrated that in contrast to the ordinary allene oxide synthases (CYP74A subfamily), LeAOS3 (CYP74C subfamily) is a multifunctional enzyme that catalyses not only the synthesis, but also the hydrolysis and cyclisation of allene oxide. Further details can be found in the article by A. N. Grechkin, L. S. Mukhtarova, et al. on p. 2498 ff.