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**Speeding up evolution** WOUTER HOFF, Oklahoma State University — Proteins and cells offer great opportunities for green chemistry and renewable energy. However, few of these possible applications have been put into practice because of details that turn out to be major barriers to cost-efficient implementation and that prove difficult to solve by genetic engineering. A better understanding of molecular evolution promises a novel approach to addressing these important challenges. While major advances have been made, major gaps remain in understanding the evolution of proteins. Different approaches to accelerating molecular evolution into targeted directions will be discussed, including recent progress on evolution in non-homogeneous environments.

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