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Insights: Publications

Applying synthetic biology strategies to bioelectrochemical systems

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Although the past 20 years have seen significant advances in tailoring materials for improving the performance of bioelectrochemical systems, recently, there have been efforts in utilizing the synthetic biology toolkit for engineering organisms for bioelectrochemical systems. This review discusses the use of synthetic biology to engineer non-native properties into bioelectrochemical systems for increasing the diversity of fuel utilization in energy applications, allowing for novel electrosynthetic strategies, and improving the selectivity of biosensors. The review also discusses synthetic biology strategies for improving the abiotic/biotic interface, which improves the performance of bioelectrochemical systems. Both strategies are required and need to be combined with materials innovation to produce commercially viable bioelectrochemical systems in the future.