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Shewanella putrefaciens CN32 outer membrane cytochromes MtrC and UndA reduce electron shuttles to produce electricity in microbial fuel cells

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Highlights

- Functions of *c*-Cyts MtrC and UndA were investigated via in-frame gene deletion.
- Deletion of *mtrC* gene severely depressed MFC start-up and electricity production.
- MtrC might be the primary reductase towards electron shuttles.
- Flavins-mediated electron transfer is the key factor to MFC performance.