Extracellular Polymeric Substances secreted by *Geobacter sulfurreducens* under electroactive conditions.

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<table>
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<th>Motivation</th>
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<td>• Bioelectrochemical Systems (BES) use bacteria as catalysts for the production of current and/or organic products</td>
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<td>• Electroactive bacteria usually form Biofilms on electrodes of Microbial Fuel Cells (MFC)</td>
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<td>• Biofilms consist of water, cells and Extracellular Polymeric Substances (EPS)</td>
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<td>• EPS of electroactive bacteria have been rarely studied</td>
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**Experimental**

+ The electroactive bacterium *G. sulfurreducens* was grown in a H-cell MFC using anode respiration (conditions given in Fig. 2) 
+ Biofilms were harvested for fractionation and analysis as presented in Fig. 3

**Results**

+ *G. sulfurreducens* gave a current density curve typical for MFCs with a maximum current density of 170 µA cm⁻² after 7 days. 
+ Biochemical EPS analysis:
  - The highest amount of EPS were produced by *G. sulfurreducens* under MFC conditions compared to the control
  - The majority of EPS were detected in the soluble fraction of the EPS
  - Proteins dominate all analyzed EPS fractions
  - Electroactive cells secrete significantly more EPS than the controls

**Conclusions**

+ *G. sulfurreducens* was successfully cultivated in a MFC 
+ Electroactive biofilms were harvested for biochemical analysis 
+ Harvesting and fractionation allow biochemical analysis of the EPS: 
  - *G. sulfurreducens* excretes more EPS under anode respiration compared to cells grown with fumarate respiration 
  - Proteins dominate excreted extracellular polymeric substances