Redox mediators to boost butyrate-producing gut bacteria.

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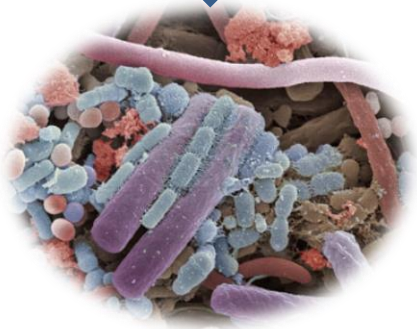
Gabriela Bravo-Ruiseco

Functions of Microbiota

Digestion/Absorption

Food particles escaping human digestion are available for colonic bacterial fermentation

Gut microbes

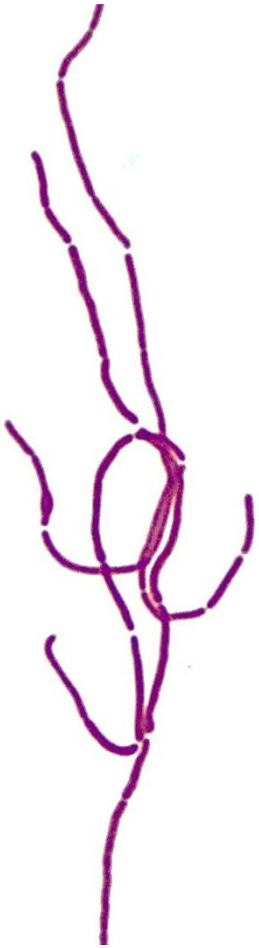


Has many beneficial features, such as:
Regulation of colon pH
Providing energy for colonocytes
Detoxification of certain metabolites
Vitamin production
Regulation of oxidative stress

Short chain fatty acids: Butyrate, Acetate, Formate, Lactate
Gases: Hydrogen, Methane, Carbon-dioxide

Faecalibacterium prausnitzii

- Clostridium group of firmicutes
- Gram variable, stains purple and pink
- **Strict anaerobe,** difficult to isolate
- Marker species of a **healthy gut**
- Produces **butyrate**
- **Anti-inflammatory** effect on colitis.

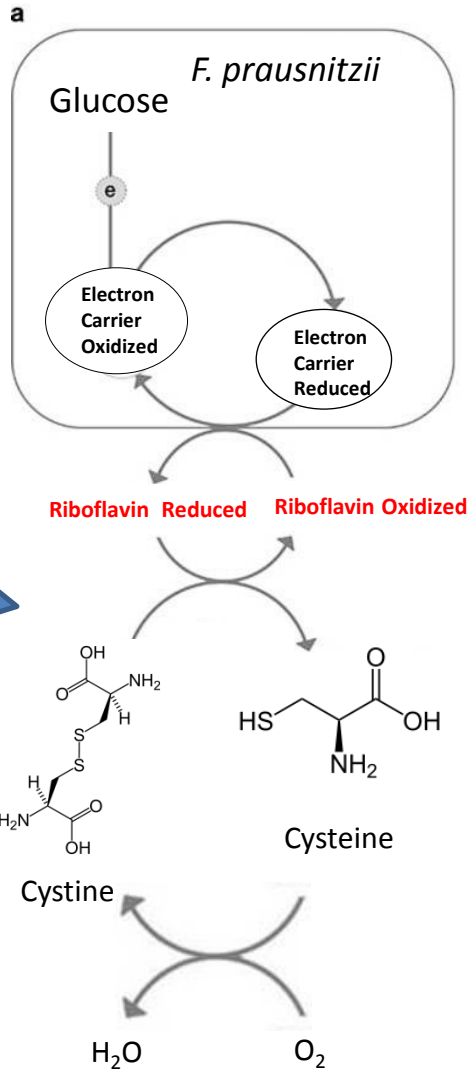


Survival under oxygen stress

O2

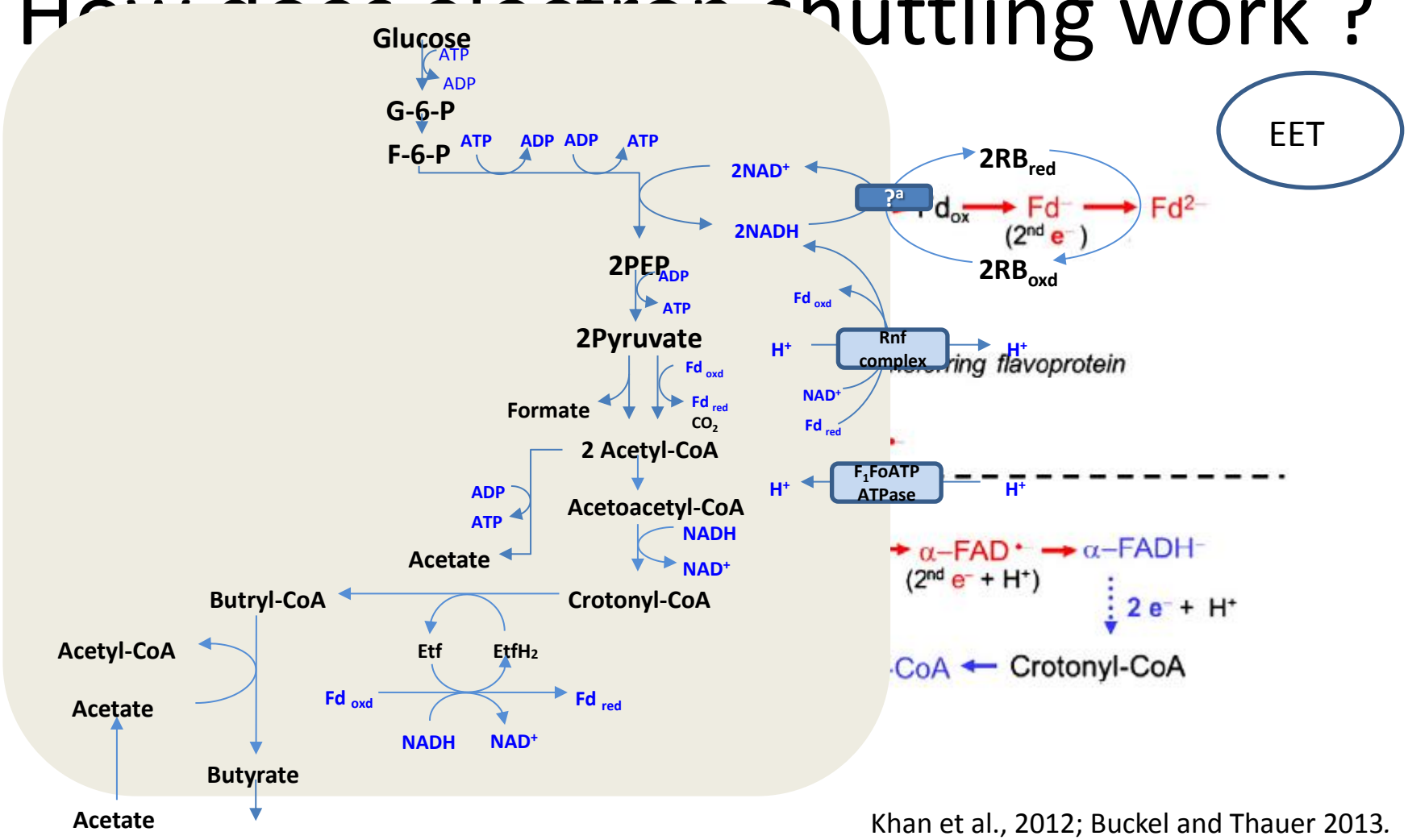
O2

Riboflavin as electron mediator (EMT)



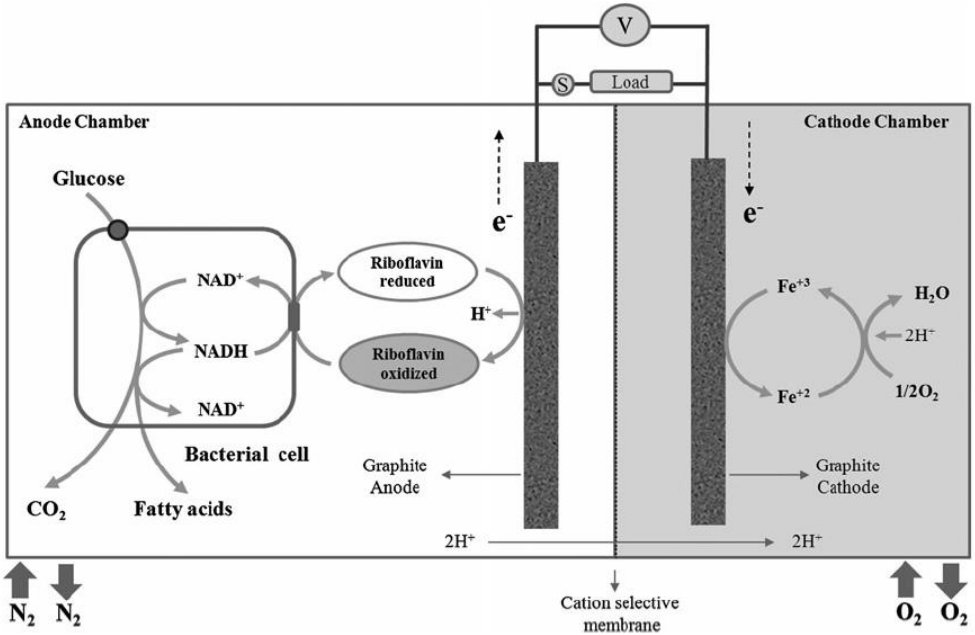
M. Tanweer Khan The ISME Journal (2012)

How does electron shuttling work ?

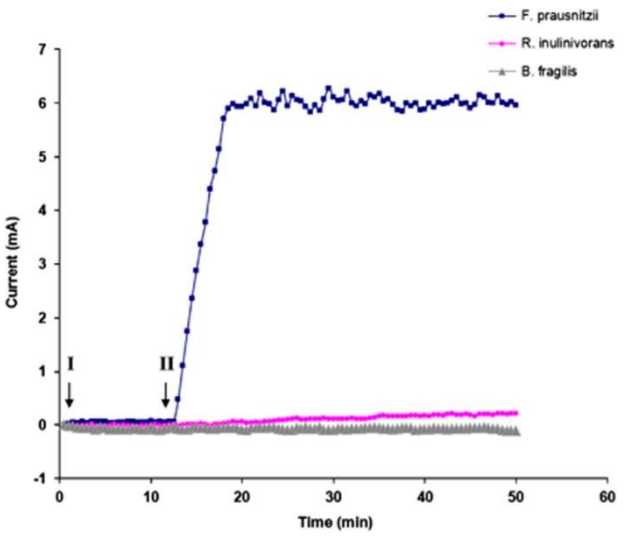


Khan et al., 2012; Buckel and Thauer 2013.

Microbial fuel cell



Riboflavin as ETM



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