#### Title
Comparative genomics highlights the unique biology of Methanomassiliicoccales, a Thermoplasmatales-related seventh order of methanogenic archaea that encodes pyrrolysine

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#### Publication date
2014-08-13

#### Original citation

#### Type of publication
Article (peer-reviewed)

#### Link to publisher's version
http://dx.doi.org/10.1186/1471-2164-15-679

Access to the full text of the published version may require a subscription.

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Gluconeogenesis

Pyrimidine Metabolism
- UMP-UDP-UTP
- CDP-CTP
- dCDP-dCTP
- dUMP-dUDP-dUTP
- dTMP-dTDP-dTTP

Purine Metabolism
- IMP
- AMP-ADP-ATP
- dADP-dATP
- XMP
- GMP-GTP
- dGDP-dGTP

Glyceraldehyde 3-phosphate
Dihydroxyacetone-phosphate
Ribulose-5P
Ribose-5P
PRPP
Xylulose-5P
1,3-bisphosphoglycerate
3-phosphoglycerate
2-phosphoglycerate
Phosphoenolpyruvate
Pyruvate
Acetyl-CoA
Acetate

GDP-Mannose
Mannose 6-phosphate
Mannose 1-phosphate

Missing enzyme: 6.3.4.18
L-histidine

Incomplete TCA Cycle
- L-Proline
- L-Arginosuccinate
- Ornithine
- L-Arginine
- L-Glutamate
- L-Proline

Incomplete Urea Cycle
- L-Histidine
- L-Arginosuccinate
- Ornithine
- L-Arginine
- L-Glutamate
- L-Proline

N-Glycan Biosynthesis?

- UMP-UDP-UTP
- CDP-CTP
- dCDP-dCTP
- dUMP-dUDP-dUTP
- dTMP-dTDP-dTTP

- IMP
- AMP-ADP-ATP
- dADP-dATP
- XMP
- GMP-GTP
- dGDP-dGTP

- GDP-Mannose
- Mannose 6-phosphate
- Mannose 1-phosphate

- Missing enzyme: 6.3.4.18

- L-Methionine
- L-Phenylalanine
- L-Argininosuccinate
- Ornithine
- L-Arginine
- L-Glutamate
- L-Proline

- Purine Metabolism

- Pyrimidine Metabolism

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