

GMOD powering LanzaTech

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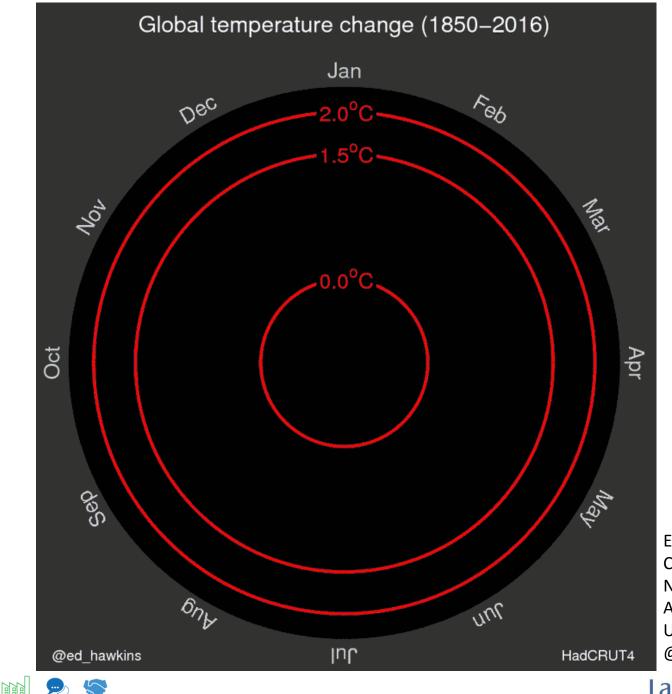


The outline

- LanzaTech Who we are and what we do
- How GMOD is powering the information flow at LanzaTech
- Proposing a Synthetic Biology platform?







Ed Hawkins, Climate scientist, National Centre for Atmospheric Science, University of Reading. @ed_hawkins





Must stay in the ground





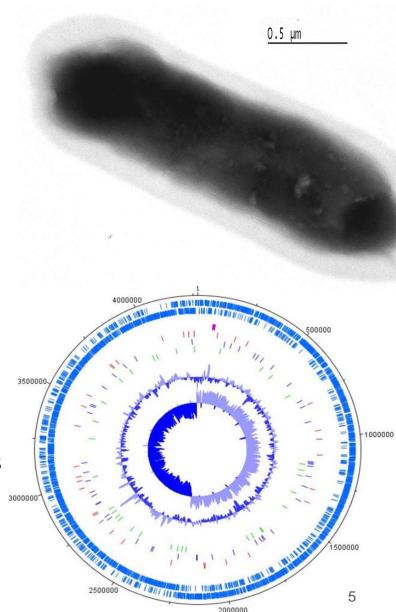


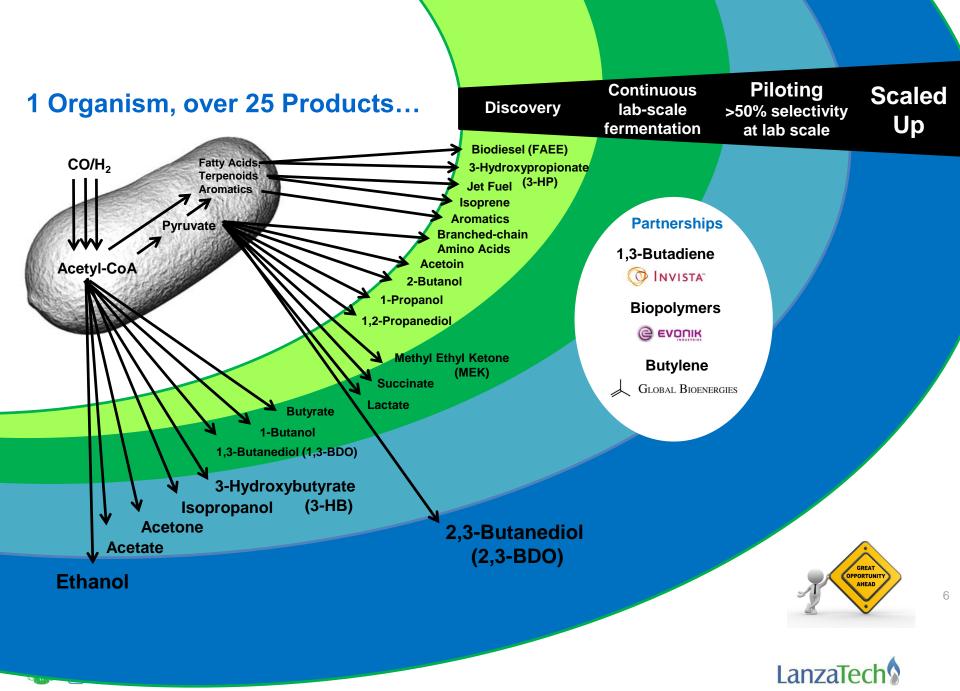
Proprietary Acetogenic Biocatalyst

- Worlds' first autotrophs
- Acetogenic bacterium with ability to utilize <u>sole</u> energy and carbon source
 - CO
 - CO+H₂ or CO+CO₂+H₂
 - $CO_2 + H_2$
- LanzaTech has developed a proprietary strain of *Clostridium autoethanogenum*
- Obtained by extensive selection program,

having improved characteristics

- High gas uptake and ethanol production rates
- Fast growth on defined minimal media
- Non-sporulating and non-motile





The LanzaTech Process



A sensible path

We use:



We do not use:



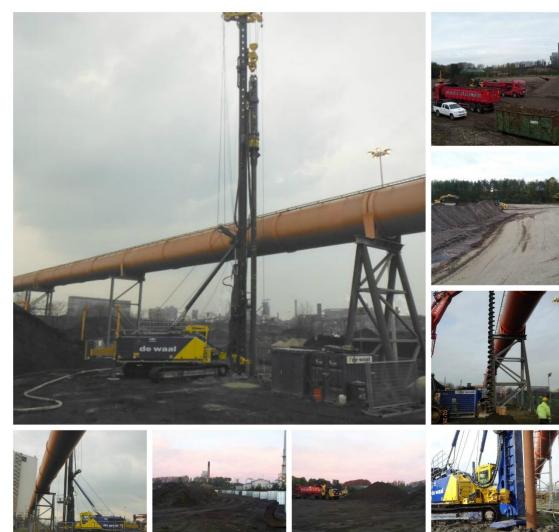




3 Commercial projects underway



ArcelorMittal, Gent



Ground Works Started October 2015

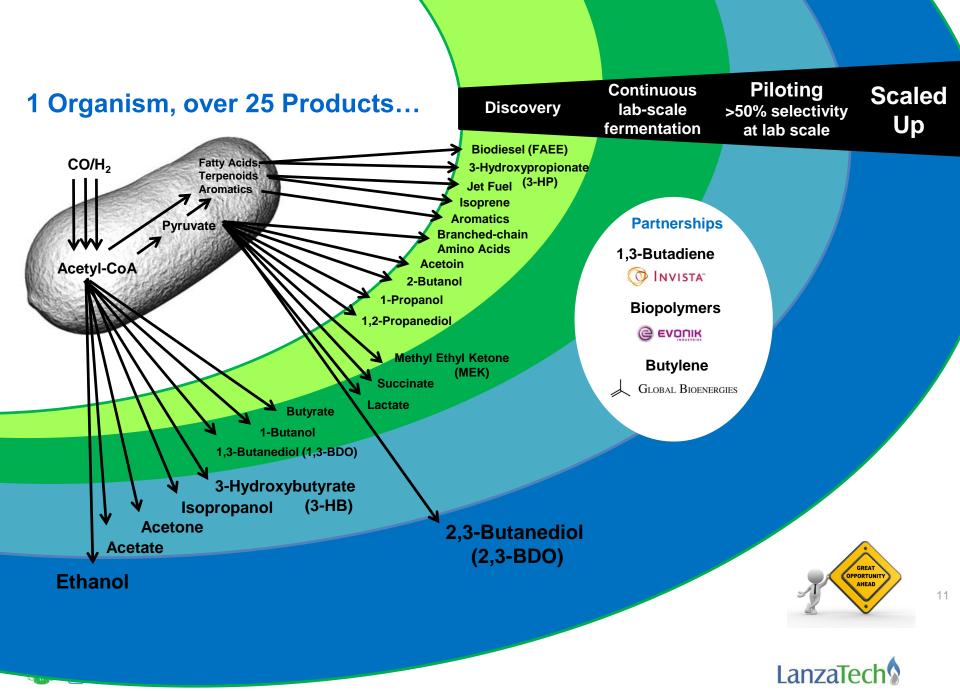
Gas Testing Station Produces Ethanol January 2016



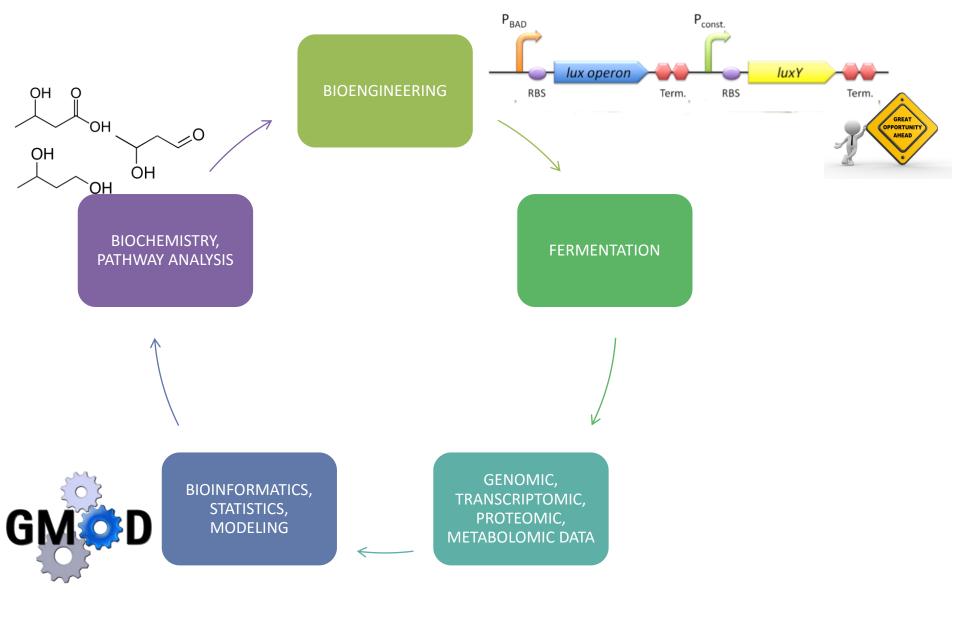
Connection to Steel Mill Gas Lines March 2016







Information flow at LanzaTech

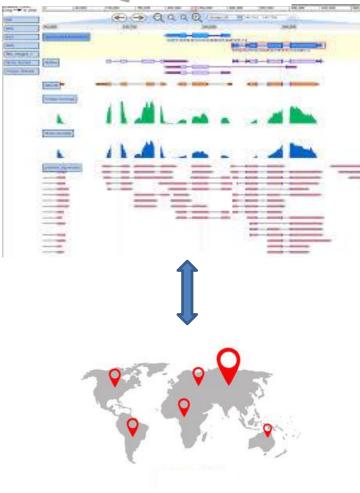






GMOD at LanzaTech





External Collaborators





Chado: Biological database schema







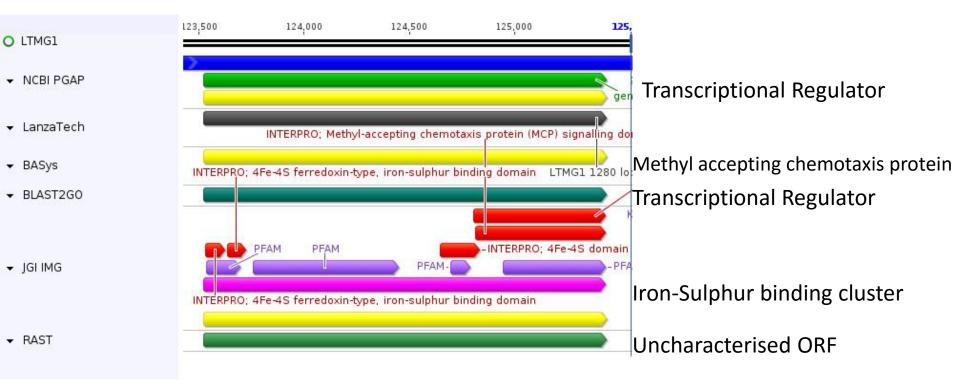


Apollo at LanzaTech - Internal

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Clostridium autoethanogenum LZ1561 🝷 File View Tools Help		Full-screen view 🔔 asela.dassanayake@lanzatech.com
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hypothetical protein CLJU_c33360 membrane protein	hydrolase MULTISPECIES: hypothetical protein dna polymerase i	hemolysin d aspartyl-trna synthetase
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Roshomon





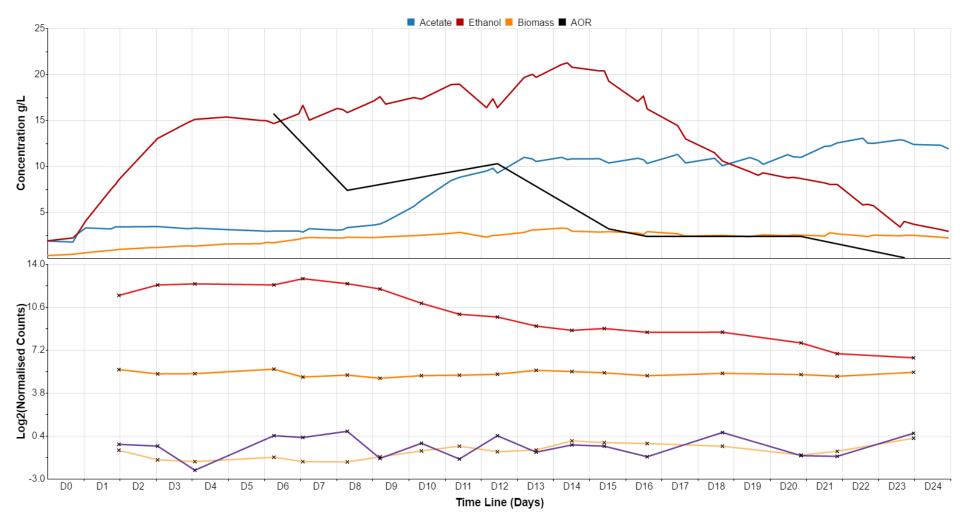


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Gene Key

aldehyde:ferredoxin oxidoreductase (LTMG3_1070)

nitrogenase (LTMG3_4520)

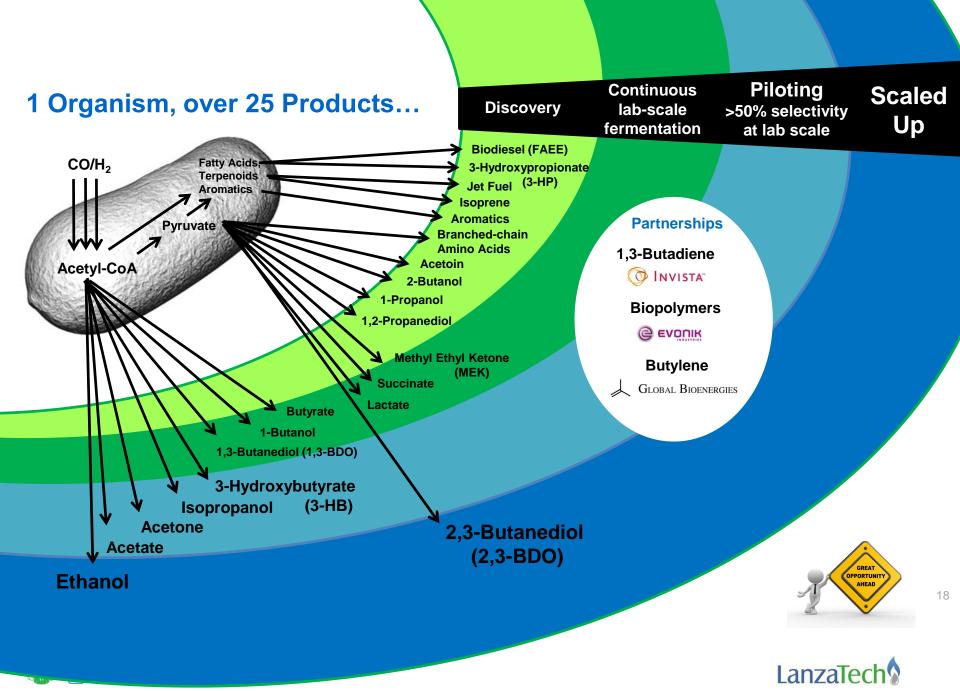
MerR family transcriptional regulator (LTMG3_7540)

histidine kinase (LTMG3_9540)

Back to Form







Proposing an Integrated Synthetic Biology platform

- User data organization and management
 DLAST interface
- BLAST Interface
- Database Searching





• Literature searches and bibliography [] Canto

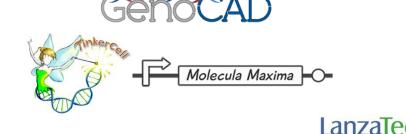
• Genome browser



Data Visualization



• Synthetic Biology CAD with SBML/SBOL





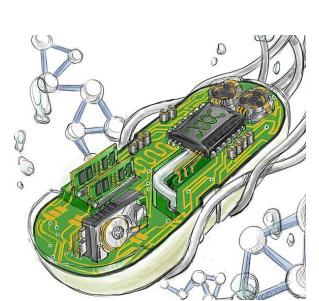
Integrated Synthetic Biology platform

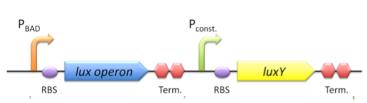
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More Users? Funding?

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◯ Cds	restriction site
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terminator	└── 5' sticky restriction site
operator	3' sticky restriction site
insulator	- 5' overhang
ribonuclease site	— 3' overhang
O rna stability element	assembly scar
★ protease site	× signature
Q protein stability element	user defined
O origin of replication	





GREAT OPPORTUNITY AHEAD







