

Supplemental information for Moulin et al.

Continuous photoproduction of hydrocarbon drop-in fuel by microbial cell factories

Solène Moulin¹, Bertrand Légeret¹, Stéphanie Blangy¹, Damien Sorigué¹, Adrien Burlacot¹,

Pascaline Auroy¹, Yonghua Li-Beisson¹, Gilles Peltier¹, Fred Beisson^{1*}

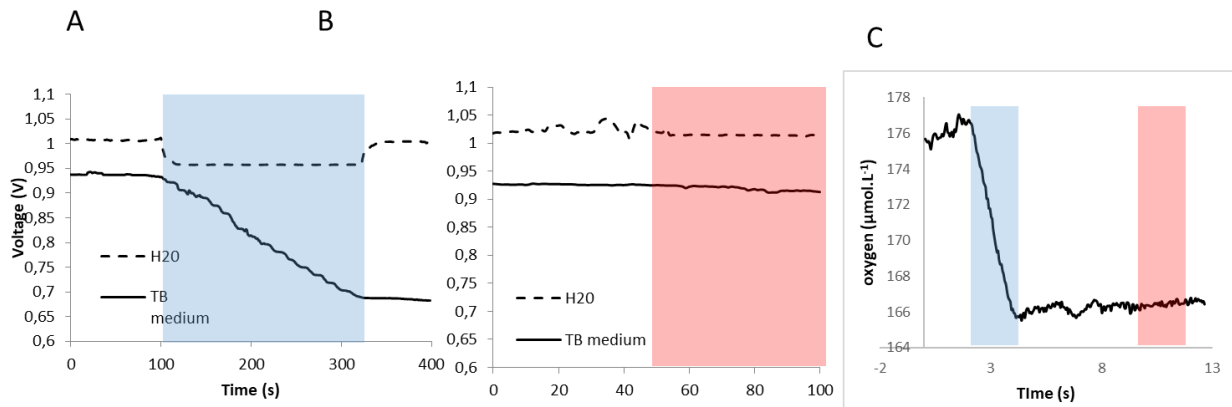
¹Aix Marseille University, CEA, CNRS, BIAM, EBM-Heliobiotec, Saint-Paul-lez-Durance, F-13108 France.

Supplemental Table 1 : List of strains used for metabolic engineering

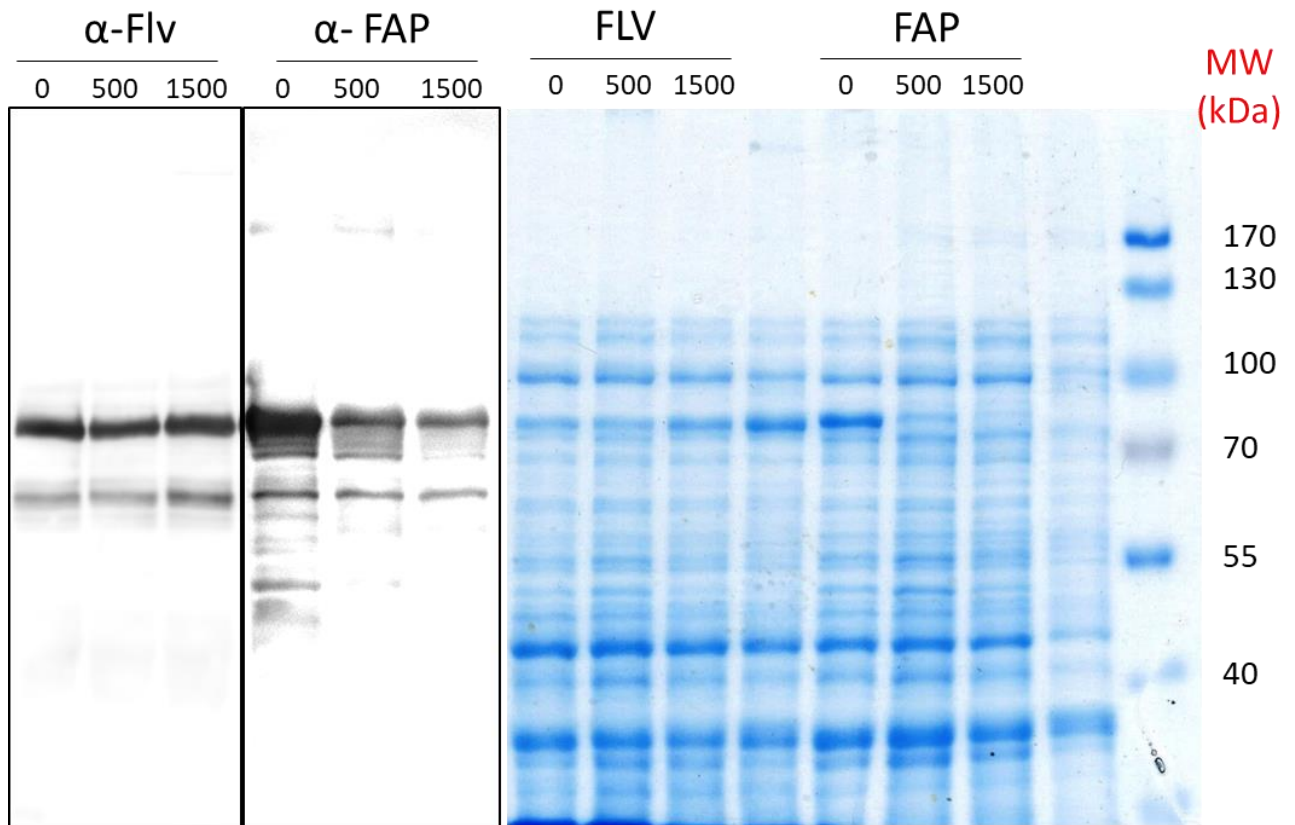
Strain	Relevant genotype
BL21	<i>E. coli</i> B F ⁻ ompT hsdS(r _B ⁻ m _B ⁻) dcm ⁺ Tet ^r gal λ(DE3) endA Hte [<i>argU ileY leuW Cam^r</i>]
FAP	pLIC07 : FAP in BL21
EV	pBAD/Myc-his B (empty vector) in BL21
Tes	pBAD/Myc-his B : Tes in BL21

Supplemental Table 2: List of primers used.

Primer	Sequence	Gene
pLIC07-FAP-F	TTGGTCTC CCAATG GCCAGCGCAGTTGAAGATATTC	short version FAP (<i>Chlorellavariabilis</i>)
pLIC07-FAP-R	TTGGTCTC CCTAC TCA TGCTGCAACGGTTGCCGG	
pBAD-Tes-F	GAGGAATTAACCATGTTAGAATGGAAACCAAAACCAA	Thioesterase (<i>Umbellularia californica</i>)
pBAD-Tes-R	GAGTTTTTGTCTAGAACACGTGGTTCAGCTGGAATAACTGA	



Supplemental Figure 1 : Light induced O₂ consumption by TB medium. Concentration of O₂ in TB medium was recorded upon illumination by red and blue light. (A,B) O₂ in TB and water upon blue (A) and red (B) light exposure ($700 \mu\text{mol}_{\text{photon}} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$) measured by a Clark-type electrode. (C) O₂ measurement in TB upon blue and red light exposure ($600 \mu\text{mol}_{\text{photon}} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$) measured by a MIMS.



Supplemental Figure 2: Uncropped versions of blots and gels of Fig.1

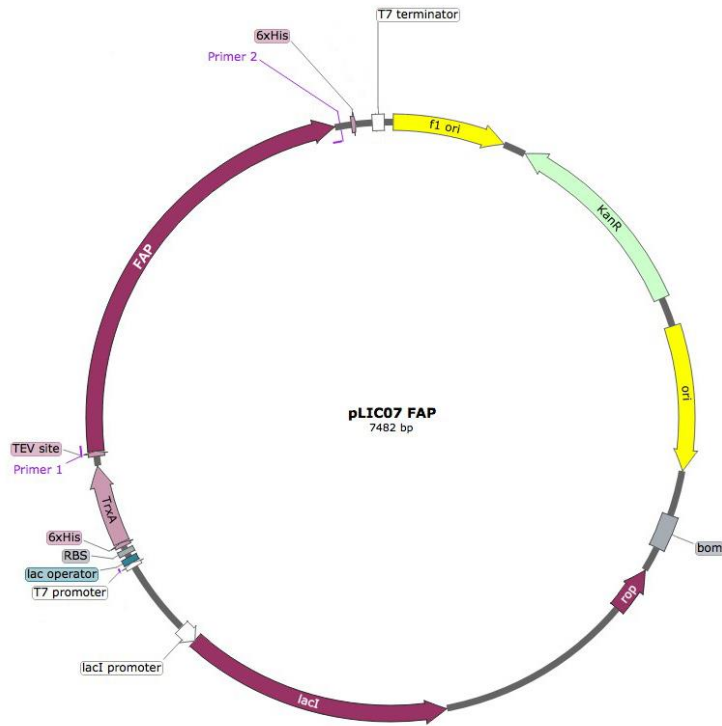
(A)

GCCAGCGCAGTTGAAGATATTCGTAAAGTTCTGAGCGATAGCAGCAGTCCGGTTGCAGGTCAGAA
ATATGATTATATTCTGGTTGGTGGTGGCACCAGCATGTGTTCTGGCAAATCGTCTGAGCGCAGA
TGGTAGCAAACGTGTTCTGGTTCTGGAAGCAGGTCCGGATAATACCAGCCGTGATGTTAAAATTCC
GGCAGCAATTACCCGTCTGTTTCGTAGTCCGCTGGATTGGAACCTGTTTAGCGAACTGCAAGAACA
GCTGGCAGAACGTGAGATTTATATGGCACGTGGTCTGCTGGGTGGTAGCAGCGCAACCAATGC
AACCCGTGATCATCGTGGTGCAGCCGGTGATTATGATGCATGGGGTGTGAAGGTTGGAGCAGCGA
AGATGTTCTGAGCTGGTTTGTTCAGGCAGAAACCAATGCAGATTTTGGTCCGGGTGCATATCATGG
TAGCGGTGGTCCGATGCGTGTGAAAATCCGCGTTATACCAATAAACAGCTGCATACCCGATTTTT
CAAAGCAGCAGAAGAAGTTGGTCTGACCCCGAATAGCGATTTAATGATTGGAGCCATGATCATGC
AGGTTATGGCACTTTTAGGTTATGCAGGATAAAGGCACCCGTGCAGATATGTATCGTCAGTATCT
GAAACCGGTTCTGGGTCGTGTAATCTGCAGGTTCTGACCGGTGCAGCAGTTACCAAAGTTAATAT
TGATCAGGCAGCAGGTAAGCACAGGCACTGGGTGTTGAATTTCAACCGATGGTCCGACCGGTGA
ACGTCTGAGTGCAGAACTGGCACCAGGTGGTGAAGTTATTATGTGTGCCGGTGCAGTTCATACCC
GTTTCTGCTGAAACATAGCGGTGTTGGTCCGAGCGCAGAACTGAAAGAATTTGGTATTCCGGTGT
TAGCAATCTGGCAGGCGTTGGTGCAGAACTGCAGGATCAGCCTGCATGTCTGACCGCAGCACCGGT
TAAAGAAAAATATGATGGTATTGCCATCAGCGATCACATTTATAACGAAAAAGGTCAGATTCGCAA
ACGTGCAATTGCAAGCTATCTGCTGGGAGGTCTGGTGGTCTGACCAGTACCGGTTGTGATCGTGG
TGCATTTGTTTCGTACCCGAGGTCAGGCATGCCGGATCTGCAGGTACGTTTTGTTCCGGGTATGGCA
CTGGATCCGGATGGTGTAGCACCTATGTTTCGTTTGCAAAATTTAGAGCCAGGGTCTGAAATGG
CCGAGCGGTATTACCATGCAGCTGATTGCATGTCTCCGAGAGCACCGGTAGCGTTGGTCTGAAA
AGCGCAGATCCGTTTGCACCGCCTAAACTGAGTCCGGTTATCTGACCGATAAAGATGGTGCAGAT
CTGGCAACCCTGCGTAAAGGTATTCATTGGGCACGTGATGTTGCACGTAGCAGCGCACTGAGCGAA
TATCTGGATGGTGAAGTGTTCGGGTAGCGGTGTTGTTAGTGATGATCAGATTGATGAATATATCC
GTCGCAGCATTATAGCAGCAATGCAATTACCGGCACCTGTAAAATGGGTAATGCCGGTGATAGCA
GCAGCGTTGTTGATAATCAGCTGCGTGTTCATGGTGTGGAAGGTCTGCGTGTGTTGATGCAAGCG
TTGTTCCGAAAATTCGGGTGGTTCAGACAGGTGCACCGGTTGTTATGATTGCAGAACGTGCAGCAG
CACTGCTGACCGGTAAAGCAACCATTGGTGCAAGCGCAGCAGCACCGGCAACCGTTGCAGCATGA

(B)

ATGTTAGAATGGAAACCAAAACCAAAATTACCACAATTATTAGATGATCACTTTGGTTTACACGGT
TTAGTTTTCCGTCGTACATTTGCTATTCGTTTCATATGAAGTTGGTCCAGATCGTTCAACATCAATTTT
AGCTGTTATGAATCACATGCAAGAAGCTACATTAACACAGCTAAATCAGTTGGTATTTTAGGTGA
TGGTTTTGGTACAACATTAGAAATGTCAAACGTGATTTAATGTGGGTTGTTTCGTCGTACACATGTT
GCTGTTGAACGTTATCCAACATGGGGTGATACAGTTGAAGTTGAATGTTGGATTGGTGCCTCAGGT
AATAATGGTATGCGTCGTGATTTCTTAGTTCGTGATTGTAAAACAGGTGAAATCTTAACACGTTGTA
CATCATTATCAGTTTAAATGAATACACGTACACGTCGTTTATCAACAATTCCAGATGAAGTTCGTGG
TGAAATTGGTCCAGCTTTTATTGATAATGTTGCTGTTAAAGATGATGAAATTAATAAATTACAAAA
ATTAACGATTCAACAGCTGATTATATTCAAGGTGGTTTAAACACCAGTTGGAATGATTTAGATGTT
AATCAACACGTTAATAACTTAAAATACGTTGCTTGGGTTTTTGAACAGTTCCAGATTCAATTTTTG
AATCACACCACATTTTCATCATTTACATTAGAATATCGTTCGTGAATGTACACGTGATTGATTTTACG
TTCATTAACAACAGTTTTCAGGTGGTTTCATCTGAAGCTGGTTTGTGTTGTTGATCACTTATTACAATTA
GAAGGTGGTCTGAAGTTTTACGTGCTCGTACAGAATGGCGTCCAAAATTAAGTATTCTTTTCGTG
GTATTTGAGTTATTCCAGCTGAACCACGTGTT

Supplemental Figure 3: Nucleotide sequences of synthetic genes used for FAP (A) and Tes (B)



Supplemental Figure 4: Plasmid map for FAP expression in pLIC07 vector