

#### Additional file 4.

#### Fermentation analysis of *B. smithii* ET 138 wild-type and mutant strains in 1 L pH-controlled bioreactors after $\pm 24$ h.

ET 138 strain	Products (mM) <sup>1</sup>						OD <sub>600</sub>
	Lac	Ace	Pyr	Mal	Suc	Total	
wild-type	73.14	3.97	0.34	2.67	0.34	80.46	0.891
$\Delta ldhL$	1.82	3.72	3.15	1.19	0.12	10.01	0.251
$\Delta ldhL \Delta sigF$	1.17	3.42	2.18	0.12	1.56	8.46	0.232
$\Delta ldhL \Delta sigF \Delta pdhA$	1.03	-1.33	6.43	nd <sup>2</sup>	0.15	7.60	0.236

Cells were grown for 22.5 h (wild-type, single and double mutant) or 28 h (triple mutant) in 1 L TVMY medium containing 30 g/L glucose in a 2 L reactor at 55°C and pH 6.5, without any gas additions.

<sup>1</sup> Abbreviations: Lac: lactate, Ace: acetate, Pyr: pyruvate, Mal: malate, Suc: succinate.

<sup>2</sup> nd: not determined: in the case of strain  $\Delta ldhL \Delta sigF \Delta pdhA$ , malate could not be separated precisely from pyruvate due to high pyruvate concentrations.