

**Table S1.** Cultivated *Clostridium* species and the habitat they were isolated from.

<i>Clostridium</i> spp.	Strain	Natural habitat
<i>C. acetobutylicum</i>	DSM 792	Soil
<i>C. akagii</i>	DSM 12554	Beech litter
<i>C. aldrichii</i>	DSM 6159	Wood-fermenting anaerobic digestor
<i>C. butyricum</i>	DSM 10702	Intestine of pig
<i>C. caminithermale</i>	DSM 15212	Deep-sea hydrothermal vent.
<i>C. cellulolyticum</i>	DSM 5812	Decayed grass compost
<i>C. chartatabidum</i>	DSM 5482	Ovine rumen
<i>C. colicanis</i>	DSM 13634	Canine individual (gut bacterial)
<i>C. drakei</i>	DSM 12750	Acidic coal mine pond
<i>C. estertheticum</i>	DSM 8809	Vacuum packed beef
<i>C. grantii</i>	DSM 8605	Mullet gut
<i>C. hungatei</i>	DSM 14427	Soil under a pile of rotting wood chips
<i>C. isatidis</i>	DSM 15098	Woad vat
<i>C. kluyveri</i>	DSM 555	Mud
<i>C. mangenotii</i>	DSM 1289	Soil
<i>C. mayombei</i>	DSM 6539	Gut, termite <i>Cubitermes</i> sp.
<i>C. nitrophenolicum</i>	DSM 21057	Subsurface soil sample
<i>C. oceanicum</i>	DSM 1290	Marine sediment
<i>C. papyrosolvens</i>	DSM 2782	Paper-mill effluent
<i>C. phytofermentas</i>	DSM 18823	Forest soil
<i>C. termitidis</i>	DSM 5398	Hindgut, termite <i>Nasutitermes lujae</i>
<i>C. thermocellum</i>	DSM 1237	Horse manure