

**Table S1.** Composition of the inorganic solution

Component	Concentration
NaCl	1.2 g/L
KCl	0.3 g/L
NH <sub>4</sub> Cl	0.3 g/L
KH <sub>2</sub> PO <sub>4</sub>	0.2 g/L
Na <sub>2</sub> SO <sub>4</sub>	0.009 g/L
MgCl <sub>2</sub> ·6H <sub>2</sub> O	0.4 g/L
HEPES (pH 7.0)	20 mM

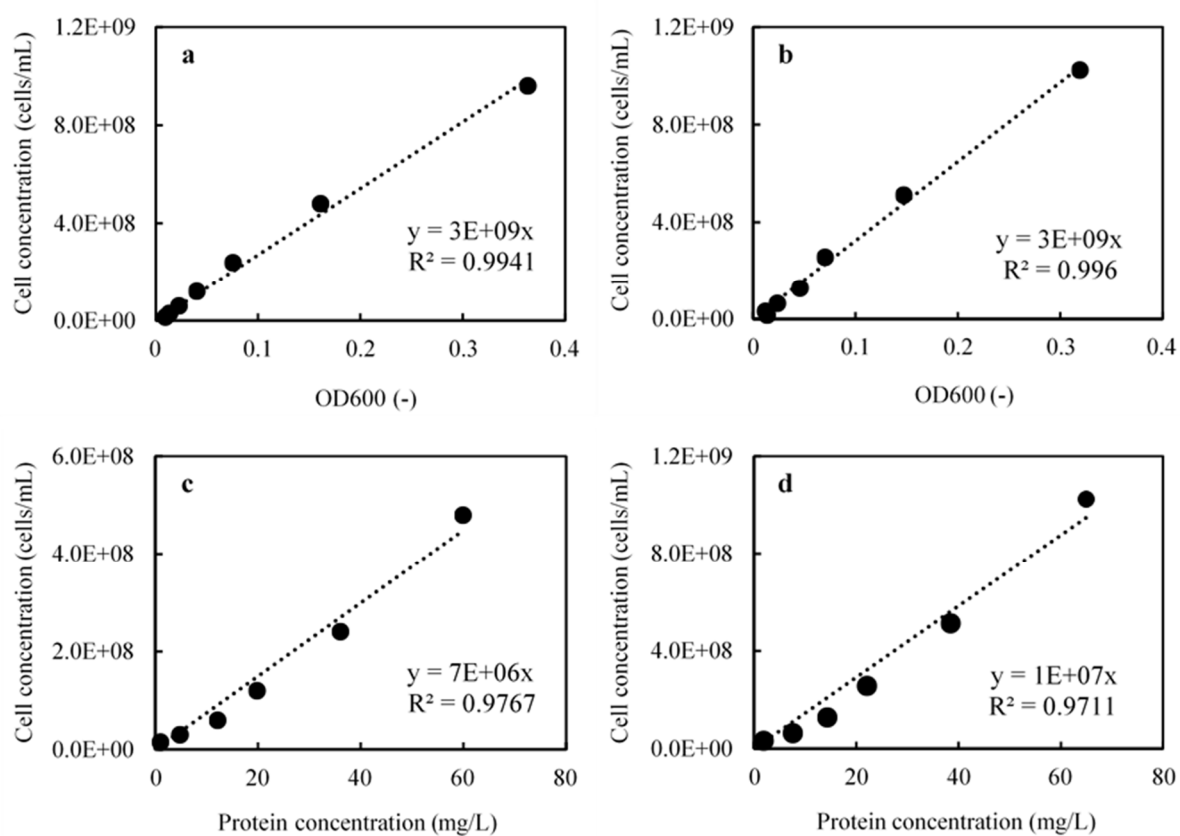
**Table S2.** Buffers used to adjust the pH of LB broth in experiments to test the growth ability of strains AR-2 and AR-3

pH	Buffer
5.0	MES (2-( <i>N</i> -Morpholinoethanesulfonic acid)
6.0	MES
7.0	HEPES (2-[4-(2-Hydroxyethyl)-1-piperazinyl]ethanesulfonic acid)
7.8	CHES ( <i>N</i> -Cyclohexyl-2-aminoethanesulfonic acid)
8.5	CAPS ( <i>N</i> -Cyclohexyl-3-aminopropanesulfonic acid)

**Table S3.** Results of biochemical and assimilation tests of strains AR-2 and AR-3

Reaction/Enzyme		AR-2	AR-3
Biochemical tests	Nitrate reduction	+	+
	Indole production	-	-
	Glucose fermentation	-	-
	Arginine dihydrolase	-	-
	Urease	-	-
	Hydrolysis (esculin)	-	-
	Hydrolysis (gelatin)	-	-
	$\beta$ -Galactosidase	-	-
	Cytochrome oxidase	+	+
Assimilation tests	Glucose	-	-
	L-Arabinose	-	-
	D-Mannose	-	-
	D-Mannitol	-	-
	<i>N</i> -acetyl-D-glucosamine	-	-
	Maltose	+	+
	Potassium gluconate	-	-
	n-Capric acid	-	-
	Adipic acid	-	-
	DL-Hydroxybutanedioic acid	-	-
	Sodium citrate	-	-
	Phenyl acetate	+	-

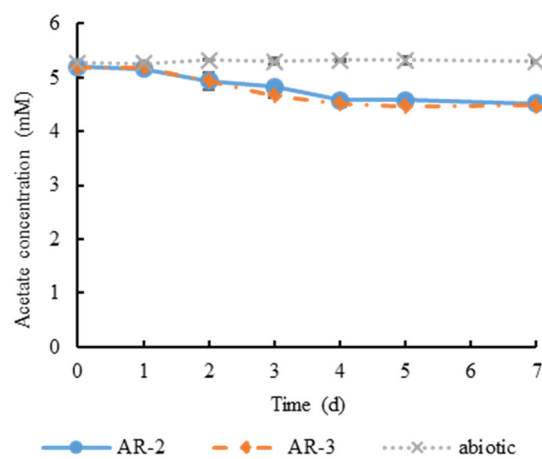
+: Positive, -: Negative



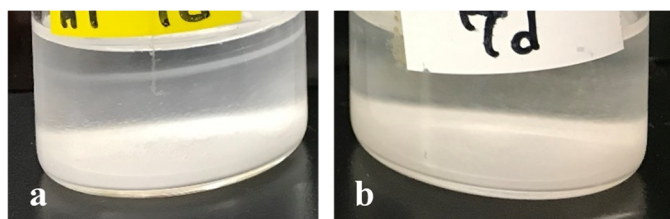
**Figure S1.** Relationships between cell concentrations and OD<sub>600</sub> values (a and b) or protein concentrations (c and d) for strains AR-2 (a and c, respectively) and AR-3 (b and d, respectively).



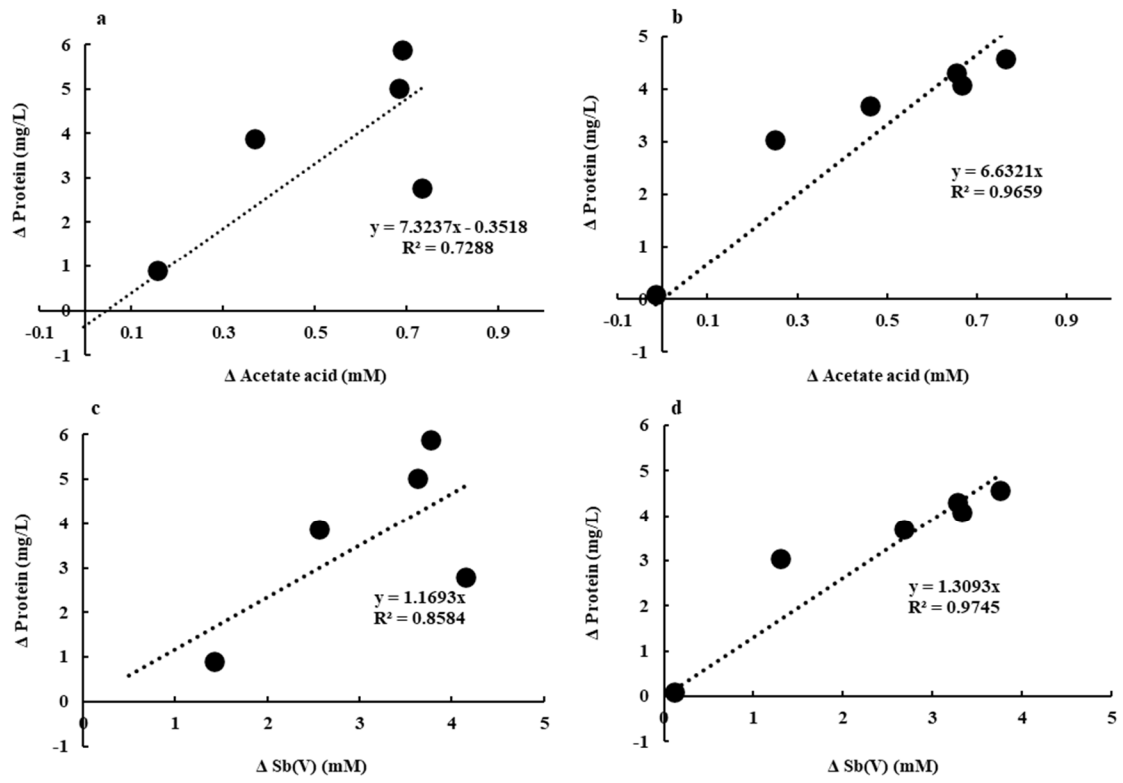
**Figure S2.** Appearance of the enrichment culture before the onset of enrichment (a) and after the 1st (b) and 6th batches (c).



**Figure S3.** Acetate consumption during anaerobic Sb(V) reduction by strains AR-2 and AR-3. Error bars indicate the standard deviation ( $n = 3$ ).

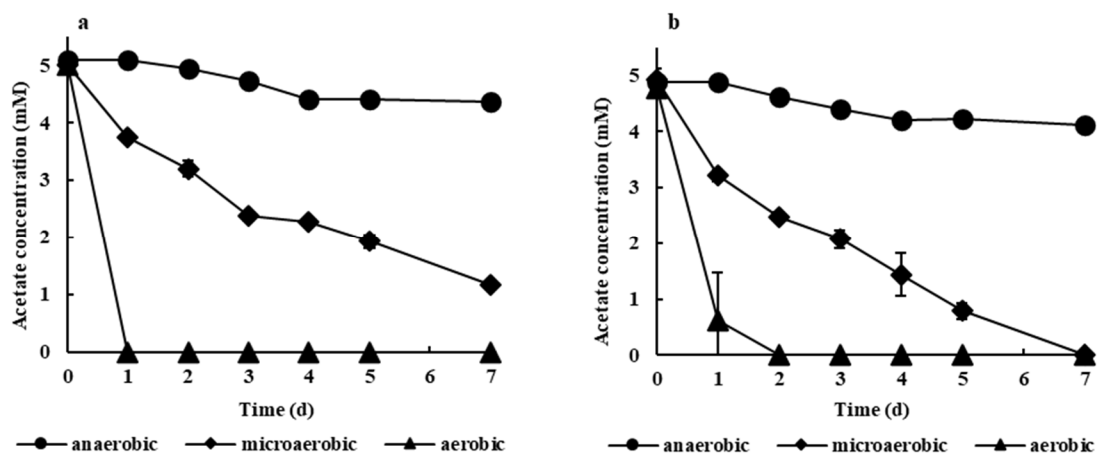


**Figure S4.** Precipitates formed during Sb(V) reduction experiments under microaerobic (a) and anaerobic conditions (b).

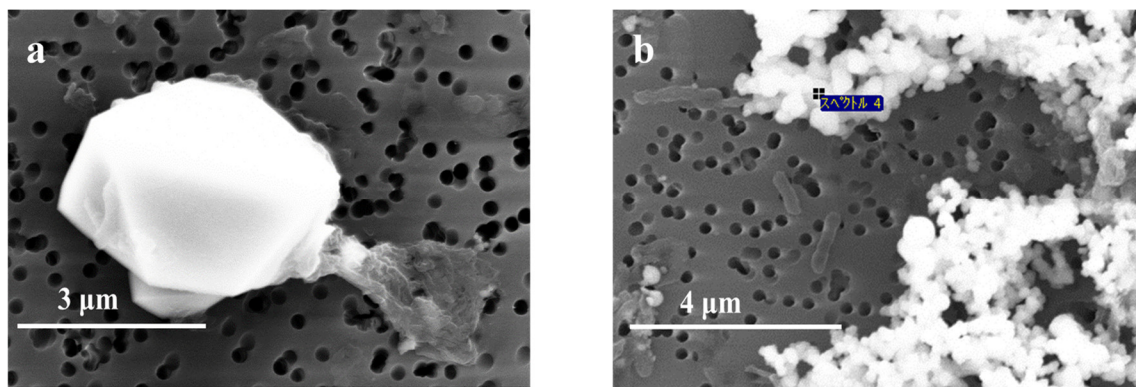


**Figure S5.** Positive correlations between cell growth represented by the increase of protein concentration and acetate consumption ( $\Delta$ Acetate) (a and b) and between cell growth and Sb(V) decline ( $\Delta$ Sb(V)) (c and d) during anaerobic Sb(V) reduction by strains AR-2 (a and c, respectively) and AR-3 (b and d, respectively).





**Figure S6.** Acetate consumption during anaerobic, microaerobic and aerobic Sb(V) reduction experiments by strains AR-2 (a) and AR-3 (b). Error bars indicate the standard deviation ( $n = 3$ ).



**Figure S7.** Scanning electron micrographs of precipitates after 35 d in anaerobic Sb(V) reduction experiments using strains AR-2 (a) and AR-3 (b).