

Table 1

Comparison of *Escherichia coli* with other industrial strains for biofuel synthesis

Strains	Biofuel types			Available genetic tools	Biofuel tolerance
	Higher alcohols	Fatty acids	Terpenoids		
<i>Escherichia coli</i>	<ul style="list-style-type: none"> • Non-native producer • Engineered for production of many higher alcohols • Titer: 143 g/L isopropanol [27], 50.9 g/L isobutanol [28], 30 g/L 1-butanol [29], and so on. 	<ul style="list-style-type: none"> • Non-native producer • Engineered for production of many fatty acid derivatives • Titer: 1.95 g/L fatty alcohols [45*], 0.6 g/L fatty alkanes [46], 1.1 g/L fatty ester [97**], and so on. 	<ul style="list-style-type: none"> • Non-native producer • Engineered for production of many terpenoids via MEP or MVA pathway • Titer: 2.2 g/L isopentenol [61*], 0.53 g/L farnesol [63*], 1.1 g/L bisabolene [91], > 60 g/L isoprene [69], and so on. 	Many	<ul style="list-style-type: none"> • Low tolerance to most biofuels • Many studies on tolerance engineering
<i>Corynebacterium glutamicum</i>	<ul style="list-style-type: none"> • Non-native producer • Engineered for production of few higher alcohols • Titer: 4.0 g/L isobutanol [113], 2.8 g/L 3-methyl-1-butanol, and 0.37 g/L 2-methyl-1-butanol [114] 	<ul style="list-style-type: none"> • Non-native producer 	<ul style="list-style-type: none"> • Non-native producer • Engineered for valencene production via MEP pathway • Titer: 2.4 mg/L valencene [115] 	Not many	<ul style="list-style-type: none"> • Not clear for biofuel tolerance • Few studies on tolerance engineering
<i>Saccharomyces cerevisiae</i>	<ul style="list-style-type: none"> • Native ethanol producer • Engineered for isobutanol production • Titer: 1.62 g/L isobutanol [31] 	<ul style="list-style-type: none"> • Non-native producer • Engineered for production of many fatty acid derivatives • Titer: 0.1 g/L fatty alkanes [47], 1.1 g/L hexadecanol [48], and so on. 	<ul style="list-style-type: none"> • Non-native producer • Engineered for production of many terpenoids via MVA pathway • Titer: 0.1 g/L farnesol [64], 1.0 g/L bisabolene [68], >100 g/L farnesene [71], and so on. 	Many	<ul style="list-style-type: none"> • High tolerance to ethanol • Not many studies on tolerance engineering
<i>Clostridium acetobutylicum</i>	<ul style="list-style-type: none"> • Native butanol producer • Engineered for high butanol production • Titer: 130 g/L butanol [30] 	<ul style="list-style-type: none"> • Non-native producer 	<ul style="list-style-type: none"> • Non-native producer 	Few	<ul style="list-style-type: none"> • High tolerance to butanol • Not many studies on tolerance engineering
<i>Pseudomonas putida</i>	<ul style="list-style-type: none"> • Non-native producer • Engineered for butanol production • Titer range: 0.12 g/L butanol [21] 	<ul style="list-style-type: none"> • Non-native producer 	<ul style="list-style-type: none"> • Non-native producer • Engineered for geranic acid production via MVA pathway • Titer: 0.19 g/L geranic acid [116] 	Not many	<ul style="list-style-type: none"> • High tolerance to many organic solvents • Few studies on tolerance engineering
<i>Bacillus subtilis</i>	<ul style="list-style-type: none"> • Non-native producer • Engineered for production of few higher alcohols • Titer: 24 mg/L butanol [21] and 6.1 g/L isobutanol [33] 	<ul style="list-style-type: none"> • Non-native producer 	<ul style="list-style-type: none"> • Native isoprene producer • Engineered for isoprene production via MEP pathway 	Not many	<ul style="list-style-type: none"> • Not clear for biofuel tolerance • No study on tolerance engineering
<i>Yarrowia lipolytica</i>	<ul style="list-style-type: none"> • Non-native producer 	<ul style="list-style-type: none"> • Native producer • Engineered for production of fatty acid derivatives • Titer: 0.5 g/L decanol [53], 4.98 mg/L pentane [54], and 0.64 g/L hexadecanol [55] 	<ul style="list-style-type: none"> • Non-native producer • Engineered for α-farnesene production via MVA pathway • Titer: 0.26 g/L α-farnesene [117] 	Not many	<ul style="list-style-type: none"> • Not clear for biofuel tolerance • No study on tolerance engineering