Supplementary information

Appendix to Figure 4, simulation details.

Simulation outcomes (1, time in mins; 2, no. of 4 $tRNA_i$ cells/10^{-5}ml; 3, no. of 3 $tRNA_i$ cells/10^{-5} ml; 4, proportion of 4-$tRNA_i$ cells; 5, proportion of 3-$tRNA_i$ cells; 6, nutrient level (arbitrary units); 7, waste accumulation (arbitrary units)

A. Independent growth of cells under nutrient rich conditions (see Fig. 4A).

(a) Only 4-tRNA$_i$ cells

1	2	3	4	5	6	7
0	1.00E-05	0.00E+00	1	0	2.50E+01	0.00E+00
50	5.23E-05	0.00E+00	1	0	2.50E+01	6.39E-05
100	2.73E-04	0.00E+00	1	0	2.50E+01	3.98E-04
150	1.42E-03	0.00E+00	1	0	2.50E+01	2.14E-03
200	7.39E-03	0.00E+00	1	0	2.50E+01	1.12E-02
250	3.73E-02	0.00E+00	1	0	2.49E+01	5.76E-02
300	1.65E-01	0.00E+00	1	0	2.46E+01	2.77E-01
350	4.78E-01	0.00E+00	1	0	2.39E+01	1.05E+00
400	7.25E-01	0.00E+00	1	0	2.31E+01	2.60E+00
450	7.53E-01	0.00E+00	1	0	2.25E+01	4.48E+00
500	6.94E-01	0.00E+00	1	0	2.18E+01	6.30E+00
550	6.20E-01	0.00E+00	1	0	2.10E+01	7.94E+00
600	5.49E-01	0.00E+00	1	0	2.02E+01	9.40E+00
650	4.85E-01	0.00E+00	1	0	1.93E+01	1.07E+01
700	4.27E-01	0.00E+00	1	0	1.85E+01	1.18E+01
750	3.76E-01	0.00E+00	1	0	1.77E+01	1.28E+01
800	3.30E-01	0.00E+00	1	0	1.69E+01	1.37E+01
850	2.90E-01	0.00E+00	1	0	1.61E+01	1.45E+01
900	2.54E-01	0.00E+00	1	0	1.55E+01	1.52E+01
950	2.22E-01	0.00E+00	1	0	1.49E+01	1.58E+01
1000	1.95E-01	0.00E+00	1	0	1.43E+01	1.63E+01
1050	1.70E-01	0.00E+00	1	0	1.38E+01	1.67E+01
1100	1.48E-01	0.00E+00	1	0	1.33E+01	1.71E+01
1150	1.29E-01	0.00E+00	1	0	1.29E+01	1.75E+01
1200	1.13E-01	0.00E+00	1	0	1.26E+01	1.78E+01
1250	9.78E-02	0.00E+00	1	0	1.23E+01	1.80E+01
1300	8.50E-02	0.00E+00	1	0	1.20E+01	1.83E+01
1350	7.38E-02	0.00E+00	1	0	1.17E+01	1.85E+01
1400	6.40E-02	0.00E+00	1	0	1.15E+01	1.86E+01
1450	5.54E-02	0.00E+00	1	0	1.13E+01	1.88E+01
1500	4.80E-02	0.00E+00	1	0	1.12E+01	1.89E+01
1550	4.15E-02	0.00E+00	1	0	1.10E+01	1.90E+01
1600	3.59E-02	0.00E+00	1	0	1.09E+01	1.91E+01
1650	3.10E-02	0.00E+00	1	0	1.08E+01	1.92E+01
1700	2.68E-02	0.00E+00	1	0	1.07E+01	1.93E+01
1750	2.31E-02	0.00E+00	1	0	1.06E+01	1.93E+01
1800	2.00E-02	0.00E+00	1	0	1.06E+01	1.94E+01
1850	1.72E-02	0.00E+00	1	0	1.05E+01	1.94E+01
1900	1.49E-02	0.00E+00	1	0	1.05E+01	1.95E+01
1950	1.28E-02	0.00E+00	1	0	1.04E+01	1.95E+01
2000	1.10E-02	0.00E+00	1	0	1.04E+01	1.96E+01

(b) Only 3 tRNA*i* cells

1	2	3	4	5	6	7
0	0.00E+00	1.00E-05	0	1	2.50E+01	0.00E+00
50	0.00E+00	4.58E-05	0	1	2.50E+01	5.88E-05
100	0.00E+00	2.09E-04	0	1	2.50E+01	3.28E-04
150	0.00E+00	9.57E-04	0	1	2.50E+01	1.56E-03
200	0.00E+00	4.36E-03	0	1	2.50E+01	7.17E-03
250	0.00E+00	1.96E-02	0	1	2.50E+01	3.26E-02
300	0.00E+00	8.30E-02	0	1	2.48E+01	1.43E-01
350	0.00E+00	2.82E-01	0	1	2.44E+01	5.63E-01
400	0.00E+00	5.85E-01	0	1	2.36E+01	1.65E+00
450	0.00E+00	7.29E-01	0	1	2.29E+01	3.34E+00
500	0.00E+00	7.14E-01	0	1	2.23E+01	5.16E+00
550	0.00E+00	6.46E-01	0	1	2.16E+01	6.87E+00
600	0.00E+00	5.71E-01	0	1	2.08E+01	8.39E+00
650	0.00E+00	5.01E-01	0	1	2.00E+01	9.73E+00
700	0.00E+00	4.38E-01	0	1	1.93E+01	1.09E+01
750	0.00E+00	3.82E-01	0	1	1.85E+01	1.19E+01
800	0.00E+00	3.33E-01	0	1	1.78E+01	1.28E+01
850	0.00E+00	2.90E-01	0	1	1.71E+01	1.36E+01
900	0.00E+00	2.52E-01	0	1	1.64E+01	1.43E+01
950	0.00E+00	2.19E-01	0	1	1.59E+01	1.49E+01
1000	0.00E+00	1.90E-01	0	1	1.54E+01	1.54E+01
1050	0.00E+00	1.65E-01	0	1	1.49E+01	1.58E+01
1100	0.00E+00	1.43E-01	0	1	1.45E+01	1.62E+01
1150	0.00E+00	1.24E-01	0	1	1.41E+01	1.65E+01
1200	0.00E+00	1.08E-01	0	1	1.38E+01	1.68E+01
1250	0.00E+00	9.30E-02	0	1	1.35E+01	1.71E+01
1300	0.00E+00	8.05E-02	0	1	1.33E+01	1.73E+01
1350	0.00E+00	6.96E-02	0	1	1.31E+01	1.75E+01
1400	0.00E+00	6.01E-02	0	1	1.29E+01	1.76E+01
1450	0.00E+00	5.19E-02	0	1	1.27E+01	1.78E+01
1500	0.00E+00	4.48E-02	0	1	1.26E+01	1.79E+01
1550	0.00E+00	3.87E-02	0	1	1.24E+01	1.80E+01
1600	0.00E+00	3.33E-02	0	1	1.23E+01	1.81E+01
1650	0.00E+00	2.88E-02	0	1	1.22E+01	1.82E+01
1700	0.00E+00	2.48E-02	0	1	1.22E+01	1.82E+01
1750	0.00E+00	2.14E-02	0	1	1.21E+01	1.83E+01
1800	0.00E+00	1.84E-02	0	1	1.20E+01	1.83E+01
1850	0.00E+00	1.59E-02	0	1	1.20E+01	1.84E+01
1900	0.00E+00	1.37E-02	0	1	1.19E+01	1.84E+01
1950	0.00E+00	1.18E-02	0	1	1.19E+01	1.85E+01
2000	0.00E+00	1.01E-02	0	1	1.19E+01	1.85E+01

B. Growth competition of cells under nutrient rich conditions (see Fig. 4C).

1	2	3	4	5	6	7
0	1.00E-05	1.00E-05	0.5	0.5	2.50E+01	0.00E+00
50	5.23E-05	4.58E-05	0.533	0.467	2.50E+01	1.23E-04
100	2.73E-04	2.09E-04	0.566	0.434	2.50E+01	7.25E-04
150	1.42E-03	9.57E-04	0.598	0.402	2.50E+01	3.70E-03
200	7.39E-03	4.36E-03	0.629	0.371	2.50E+01	1.84E-02
250	3.72E-02	1.96E-02	0.656	0.344	2.49E+01	9.01E-02
300	1.64E-01	8.18E-02	0.667	0.333	2.45E+01	4.18E-01
350	4.66E-01	2.67E-01	0.636	0.364	2.33E+01	1.58E+00
400	6.80E-01	5.09E-01	0.572	0.428	2.18E+01	4.06E+00
450	6.62E-01	5.79E-01	0.533	0.467	2.02E+01	7.17E+00
500	5.58E-01	5.12E-01	0.522	0.478	1.86E+01	1.01E+01
550	4.50E-01	4.13E-01	0.521	0.479	1.70E+01	1.25E+01
600	3.55E-01	3.21E-01	0.526	0.474	1.54E+01	1.44E+01
650	2.79E-01	2.44E-01	0.533	0.467	1.41E+01	1.59E+01
700	2.18E-01	1.84E-01	0.542	0.458	1.29E+01	1.71E+01
750	1.69E-01	1.37E-01	0.552	0.448	1.20E+01	1.79E+01
800	1.31E-01	1.01E-01	0.564	0.436	1.12E+01	1.86E+01
850	1.02E-01	7.43E-02	0.578	0.422	1.07E+01	1.91E+01
900	7.86E-02	5.41E-02	0.593	0.407	1.02E+01	1.95E+01
950	6.07E-02	3.91E-02	0.608	0.392	9.86E+00	1.98E+01
1000	4.69E-02	2.81E-02	0.625	0.375	9.60E+00	2.00E+01
1050	3.62E-02	2.01E-02	0.643	0.357	9.40E+00	2.02E+01
1100	2.80E-02	1.44E-02	0.661	0.339	9.25E+00	2.03E+01
1150	2.16E-02	1.02E-02	0.679	0.321	9.13E+00	2.04E+01
1200	1.67E-02	7.24E-03	0.698	0.302	9.04E+00	2.05E+01
1250	1.29E-02	5.11E-03	0.717	0.283	8.98E+00	2.05E+01
1300	1.00E-02	3.61E-03	0.735	0.265	8.93E+00	2.05E+01
1350	7.74E-03	2.54E-03	0.753	0.247	8.89E+00	2.06E+01
1400	5.99E-03	1.79E-03	0.77	0.23	8.86E+00	2.06E+01
1450	4.64E-03	1.26E-03	0.787	0.213	8.84E+00	2.06E+01
1500	3.59E-03	8.81E-04	0.803	0.197	8.82E+00	2.06E+01
1550	2.79E-03	6.18E-04	0.818	0.182	8.81E+00	2.06E+01
1600	2.16E-03	4.33E-04	0.833	0.167	8.80E+00	2.06E+01
1650	1.67E-03	3.04E-04	0.846	0.154	8.79E+00	2.06E+01
1700	1.30E-03	2.13E-04	0.859	0.141	8.79E+00	2.07E+01
1750	1.01E-03	1.49E-04	0.871	0.129	8.78E+00	2.07E+01
1800	7.80E-04	1.04E-04	0.882	0.118	8.78E+00	2.07E+01
1900	5.00E-05	7.30E-05	0.892	0.108	8.78E+00	2.07E+01
1900	4.69E-04	5.11E-05	0.902	0.098	8.78E+00	2.07E+01
1950	6.40E-04	3.57E-05	0.911	0.089	8.77E+00	2.07E+01
2000	8.20E-04	2.50E-05	0.919	0.081	8.77E+00	2.07E+01

C. Independent growth of cells under nutrient poor conditions (see Fig. 4B).

(a) Only 4-tRNA$_i$ cells

1	2	3	4	5	6	7
0	1.00E-05	0.00E+00	1	0	2.50E+01	0.00E+00
50	3.32E-05	0.00E+00	1	0	2.50E+01	4.83E-05
100	1.10E-04	0.00E+00	1	0	2.50E+01	2.09E-04
150	3.65E-04	0.00E+00	1	0	2.50E+01	7.40E-04
200	1.21E-03	0.00E+00	1	0	2.50E+01	2.50E-03
250	3.99E-03	0.00E+00	1	0	2.50E+01	8.33E-03
300	1.31E-02	0.00E+00	1	0	2.50E+01	2.75E-02
350	4.18E-02	0.00E+00	1	0	2.49E+01	8.96E-02
400	1.24E-01	0.00E+00	1	0	2.47E+01	2.80E-01
450	3.00E-01	0.00E+00	1	0	2.43E+01	7.89E-01
500	5.20E-01	0.00E+00	1	0	2.37E+01	1.82E+00
550	6.39E-01	0.00E+00	1	0	2.31E+01	3.30E+00
600	6.38E-01	0.00E+00	1	0	2.25E+01	4.92E+00
650	5.77E-01	0.00E+00	1	0	2.20E+01	6.44E+00
700	5.00E-01	0.00E+00	1	0	2.14E+01	7.79E+00
750	4.24E-01	0.00E+00	1	0	2.08E+01	8.95E+00
800	3.55E-01	0.00E+00	1	0	2.02E+01	9.92E+00
850	2.95E-01	0.00E+00	1	0	1.97E+01	1.07E+01
900	2.43E-01	0.00E+00	1	0	1.92E+01	1.14E+01
950	1.99E-01	0.00E+00	1	0	1.88E+01	1.20E+01
1000	1.62E-01	0.00E+00	1	0	1.85E+01	1.24E+01
1050	1.31E-01	0.00E+00	1	0	1.82E+01	1.28E+01
1100	1.06E-01	0.00E+00	1	0	1.80E+01	1.31E+01
1150	8.55E-02	0.00E+00	1	0	1.78E+01	1.33E+01
1200	6.87E-02	0.00E+00	1	0	1.76E+01	1.35E+01
1250	5.51E-02	0.00E+00	1	0	1.75E+01	1.36E+01
1300	4.40E-02	0.00E+00	1	0	1.74E+01	1.38E+01
1350	3.52E-02	0.00E+00	1	0	1.73E+01	1.39E+01
1400	2.81E-02	0.00E+00	1	0	1.72E+01	1.39E+01
1450	2.24E-02	0.00E+00	1	0	1.72E+01	1.40E+01
1500	1.78E-02	0.00E+00	1	0	1.71E+01	1.41E+01
1550	1.42E-02	0.00E+00	1	0	1.71E+01	1.41E+01
1600	1.13E-02	0.00E+00	1	0	1.71E+01	1.41E+01
1650	8.97E-03	0.00E+00	1	0	1.71E+01	1.42E+01
1700	7.13E-03	0.00E+00	1	0	1.70E+01	1.42E+01
1750	5.66E-03	0.00E+00	1	0	1.70E+01	1.42E+01
1800	4.50E-03	0.00E+00	1	0	1.70E+01	1.42E+01
1850	3.58E-03	0.00E+00	1	0	1.70E+01	1.42E+01
1900	2.84E-03	0.00E+00	1	0	1.70E+01	1.42E+01
1950	2.26E-03	0.00E+00	1	0	1.70E+01	1.42E+01
2000	1.79E-03	0.00E+00	1	0	1.70E+01	1.42E+01

(b) Only 3-tRNA$_i$ cells

1	2	3	4	5	6	7
0	0.00E+00	1.00E-05	0	1	2.50E+01	0.00E+00
50	0.00E+00	3.25E-05	0	1	2.50E+01	4.78E-05
100	0.00E+00	1.06E-04	0	1	2.50E+01	2.03E-04
150	0.00E+00	3.44E-04	0	1	2.50E+01	7.09E-04
200	0.00E+00	1.12E-03	0	1	2.50E+01	2.35E-03
250	0.00E+00	3.63E-03	0	1	2.50E+01	7.69E-03
300	0.00E+00	1.17E-02	0	1	2.50E+01	2.49E-02
350	0.00E+00	3.68E-02	0	1	2.49E+01	7.99E-02
400	0.00E+00	1.09E-01	0	1	2.48E+01	2.47E-01
450	0.00E+00	2.69E-01	0	1	2.44E+01	6.99E-01
500	0.00E+00	4.88E-01	0	1	2.38E+01	1.65E+00
550	0.00E+00	6.26E-01	0	1	2.32E+01	3.07E+00
600	0.00E+00	6.40E-01	0	1	2.26E+01	4.67E+00
650	0.00E+00	5.86E-01	0	1	2.21E+01	6.21E+00
700	0.00E+00	5.11E-01	0	1	2.15E+01	7.59E+00
750	0.00E+00	4.36E-01	0	1	2.09E+01	8.77E+00
800	0.00E+00	3.66E-01	0	1	2.03E+01	9.77E+00
850	0.00E+00	3.06E-01	0	1	1.98E+01	1.06E+01
900	0.00E+00	2.53E-01	0	1	1.93E+01	1.13E+01
950	0.00E+00	2.09E-01	0	1	1.89E+01	1.19E+01
1000	0.00E+00	1.72E-01	0	1	1.85E+01	1.24E+01
1050	0.00E+00	1.40E-01	0	1	1.82E+01	1.27E+01
1100	0.00E+00	1.14E-01	0	1	1.80E+01	1.31E+01
1150	0.00E+00	9.31E-02	0	1	1.77E+01	1.33E+01
1200	0.00E+00	7.56E-02	0	1	1.76E+01	1.35E+01
1250	0.00E+00	6.12E-02	0	1	1.74E+01	1.37E+01
1300	0.00E+00	4.95E-02	0	1	1.73E+01	1.38E+01
1350	0.00E+00	4.00E-02	0	1	1.72E+01	1.39E+01
1400	0.00E+00	3.23E-02	0	1	1.71E+01	1.40E+01
1450	0.00E+00	2.60E-02	0	1	1.71E+01	1.41E+01
1500	0.00E+00	2.10E-02	0	1	1.70E+01	1.42E+01
1550	0.00E+00	1.69E-02	0	1	1.70E+01	1.42E+01
1600	0.00E+00	1.36E-02	0	1	1.69E+01	1.43E+01
1650	0.00E+00	1.09E-02	0	1	1.69E+01	1.43E+01
1700	0.00E+00	8.80E-03	0	1	1.69E+01	1.43E+01
1750	0.00E+00	7.07E-03	0	1	1.69E+01	1.43E+01
1800	0.00E+00	5.69E-03	0	1	1.69E+01	1.43E+01
1850	0.00E+00	4.57E-03	0	1	1.69E+01	1.44E+01
1900	0.00E+00	3.67E-03	0	1	1.68E+01	1.44E+01
1950	0.00E+00	2.95E-03	0	1	1.68E+01	1.44E+01
2000	0.00E+00	2.37E-03	0	1	1.68E+01	1.44E+01

(D) Growth competition between cells under nutrient poor conditions(see Fig. 4D).

1	2	3	4	5	6	7
0	1.00E-05	1.00E-05	0.5	0.5	2.50E+01	0.00E+00
50	3.32E-05	3.25E-05	0.505	0.495	2.50E+01	9.61E-05
100	1.10E-04	1.06E-04	0.51	0.49	2.50E+01	4.12E-04
150	3.65E-04	3.44E-04	0.514	0.486	2.50E+01	1.45E-03
200	1.21E-03	1.12E-03	0.519	0.481	2.50E+01	4.85E-03
250	3.99E-03	3.63E-03	0.524	0.476	2.50E+01	1.60E-02
300	1.31E-02	1.17E-02	0.528	0.472	2.49E+01	5.24E-02
350	4.15E-02	3.66E-02	0.532	0.468	2.48E+01	1.69E-01
400	1.21E-01	1.06E-01	0.533	0.467	2.45E+01	5.22E-01
450	2.85E-01	2.54E-01	0.529	0.471	2.38E+01	1.45E+00
500	4.66E-01	4.31E-01	0.52	0.48	2.26E+01	3.26E+00
550	5.29E-01	5.06E-01	0.511	0.489	2.14E+01	5.73E+00
600	4.76E-01	4.65E-01	0.506	0.494	2.02E+01	8.24E+00
650	3.79E-01	3.75E-01	0.502	0.498	1.90E+01	1.04E+01
700	2.82E-01	2.83E-01	0.499	0.501	1.80E+01	1.20E+01
750	2.01E-01	2.05E-01	0.495	0.505	1.72E+01	1.32E+01
800	1.39E-01	1.45E-01	0.49	0.51	1.66E+01	1.41E+01
850	9.46E-02	1.01E-01	0.484	0.516	1.61E+01	1.47E+01
900	6.32E-02	6.94E-02	0.477	0.523	1.58E+01	1.51E+01
950	4.18E-02	4.74E-02	0.469	0.531	1.56E+01	1.53E+01
1000	2.74E-02	3.22E-02	0.46	0.54	1.54E+01	1.55E+01
1050	1.79E-02	2.18E-02	0.45	0.55	1.53E+01	1.57E+01
1100	1.16E-02	1.48E-02	0.441	0.559	1.53E+01	1.57E+01
1150	7.54E-03	9.99E-03	0.43	0.57	1.52E+01	1.58E+01
1200	4.88E-03	6.75E-03	0.42	0.58	1.52E+01	1.58E+01
1250	3.15E-03	4.56E-03	0.409	0.591	1.52E+01	1.58E+01
1300	2.04E-03	3.08E-03	0.398	0.602	1.52E+01	1.59E+01
1350	1.31E-03	2.08E-03	0.388	0.612	1.52E+01	1.59E+01
1400	8.47E-04	1.40E-03	0.377	0.623	1.52E+01	1.59E+01
1450	5.46E-04	9.46E-04	0.366	0.634	1.52E+01	1.59E+01
1500	3.52E-04	6.38E-04	0.356	0.644	1.51E+01	1.59E+01
1550	2.27E-04	4.31E-04	0.345	0.655	1.51E+01	1.59E+01
1600	1.46E-04	2.91E-04	0.335	0.665	1.51E+01	1.59E+01
1650	9.42E-05	1.96E-04	0.324	0.676	1.51E+01	1.59E+01
1700	6.07E-05	1.32E-04	0.314	0.686	1.51E+01	1.59E+01
1750	3.91E-05	8.93E-05	0.305	0.695	1.51E+01	1.59E+01
1800	2.52E-05	6.03E-05	0.295	0.705	1.51E+01	1.59E+01
1850	1.62E-05	4.07E-05	0.285	0.715	1.51E+01	1.59E+01
1900	1.05E-05	2.75E-05	0.276	0.724	1.51E+01	1.59E+01
1950	6.74E-06	1.85E-05	0.267	0.733	1.51E+01	1.59E+01
2000	4.34E-06	1.25E-05	0.258	0.742	1.51E+01	1.59E+01

Supplementary figure legends

Figure S1: Schematic of competition experiments. Overnight cultures of isogenic strains carrying four and three $tRNA_i$ genes along with the plasmid $pCAT_{am1}$ were mixed in desired amounts by volume to make 1% of the total culture volume to start a fresh mixed culture. Periodically, samples of the mixed culture were streaked onto fresh plates with appropriate selection followed by patching of isolated colonies on plates (Cm) to distinguish between strains carrying four and three $tRNA_i$ genes. A count of the mixed culture was taken immediately after mixing to ensure the initial numbers.

Figure S2: Viable counts of MG(Tet) and its three $tRNA_i$ gene derivatives. Total viable counts were determined by serial dilution plating method. (A) Independent growth of *E. coli* strains MG(Tet) and MG(Tet)Su15 harboring $pCAT_{am1}$ in non-replenished LB medium. (B) Independent growth of *E. coli* strains MG(Tet) and MG(Tet)Δ*metY* in non replenished LB medium. Means with SEM are plotted.

Figure S3: Growth curves of isogenic *E. coli* strains carrying four and three $tRNA_i$ genes. Growth was monitored by recording OD_{600} using 500 µl aliquots of each culture every 2 h. Independent growth of isogenic *E. coli* strain pairs harboring $pCAT_{am1}$ in LB at 37 ^{o}C. Means with SEM are plotted.

Figure S4: Strain identity is unaffected during the course of the experiment. (A) A fresh colony of *E. coli* CP78(Tet) (designated 'new') harboring $pCAT_{am1}$ was subjected to growth competition with a colony of CP78(Tet)Su15 harboring $pCAT_{am1}$ taken from the mixed culture at the end of a competition experiment (designated 'old'). The purpose was to ensure that the passage of five days had not led to a change in the identity of the strain. (B) The reciprocal experiment was performed using a fresh colony of CP78(Tet)Su15 and an old colony of CP78(Tet) both harboring $pCAT_{am1}$. In both cases, the two strains show

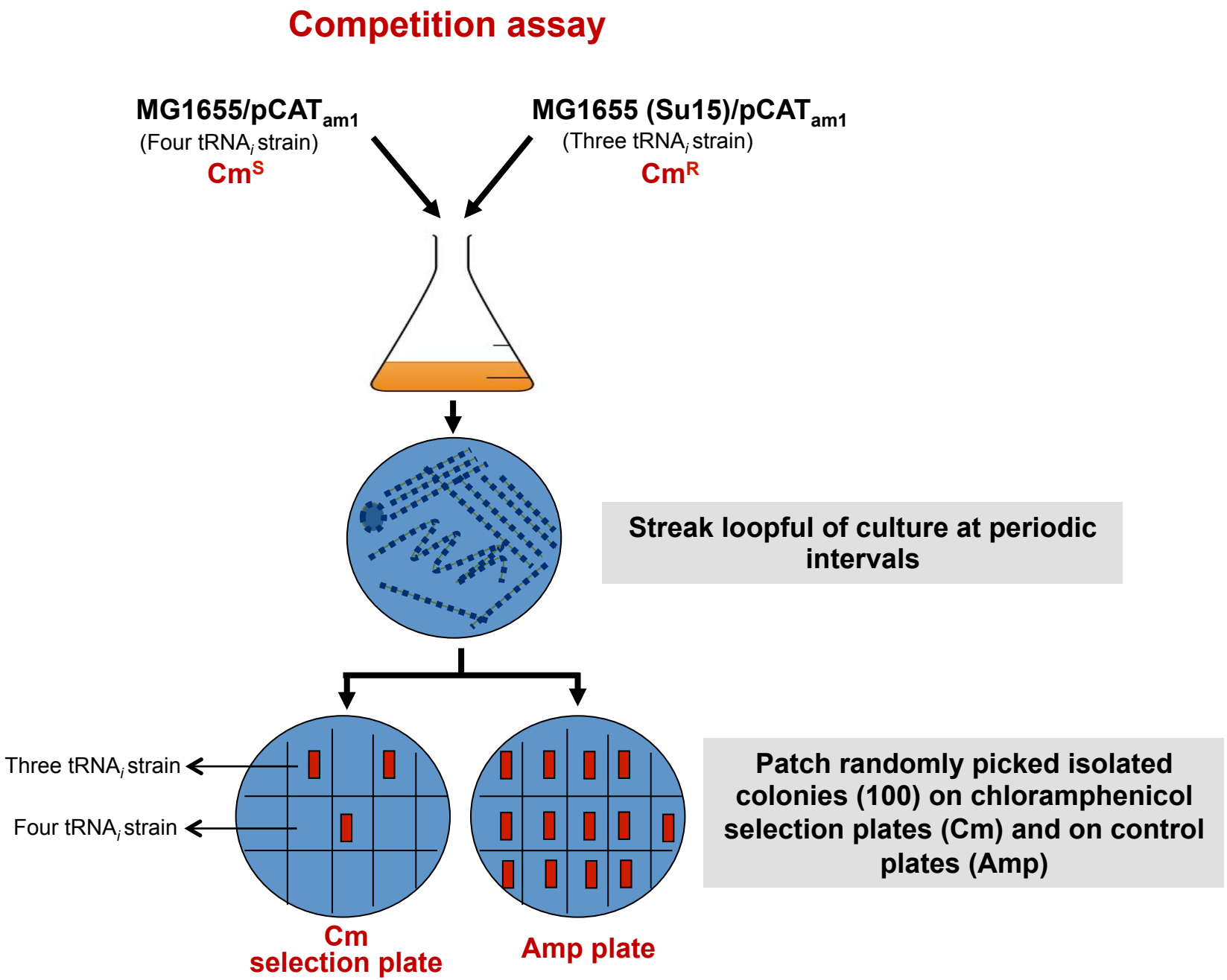
significantly different endpoints, Mann Whitney U test $P < 0.01$. The mean values of three independent experiments are shown along with standard deviations.

Figure S5: Having excess initiator tRNA disadvantages auxotrophs. Auxotrophic *E. coli* CP78(Tet) harboring $pCAT_{am1}$ and CP78 carrying p*metY* (CP78*metY*)were subjected to growth competition in LB and selected using the genomic Tet marker. The two strains show significantly different endpoints, Mann Whitney U test $P < 0.01$. The mean values of three independent experiments are shown along with standard deviations.

Figure S6: The competitive advantages observed are independent of cell to cell contact. Growth competition of isogenic *E. coli* strains CA274 and Su15 harboring $pCAT_{am1}$ in LB. The two cultures were placed in separate compartments of a filter apparatus and incubated at 37 ^{o}C with shaking. (A) Filter apparatus with a membrane filter in the middle to prevent cells from crossing into the next compartment. (B) Growth competition in LB. The two strains show significantly different endpoints, Mann Whitney U test $P < 0.01$. The mean values of three independent experiments are shown along with standard deviations.

Figure S7: RelA does not influence the growth advantages observed. (A) *E. coli* CP79(Tet) and CP79(Tet)Su15 harboring $pCAT_{am1}$, isogenic with CP78 but lacking the *relA* locus, were subjected to growth competition in LB. The two strains show significantly different endpoints, Mann Whitney U test $P < 0.01$. The mean values of three independent experiments are shown along with standard deviations. (B) The $relA^{+}$ strain CP78 was subjected to growth competition with the $relA^{-}$ strain CP79(Tet) using the genomic Tet marker to distinguish the two strains in mixed culture. The two strains did not show significantly different endpoints, Mann Whitney U test $P > 0.5$. (C) The $relA^{-}$ strain CP79 was subjected to growth competition with the $relA^{+}$ strain CP78(Tet). The two strains did not show significantly different endpoints, Mann Whitney U test $P > 0.5$

Samhita et al., Fig. S1



Samhita et al., Fig. S2

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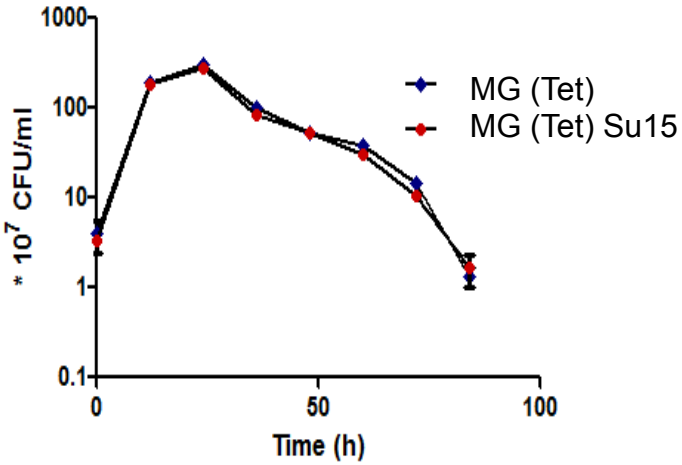

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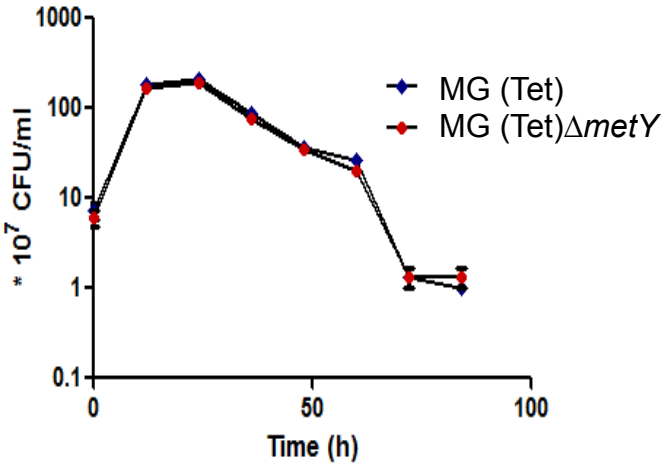
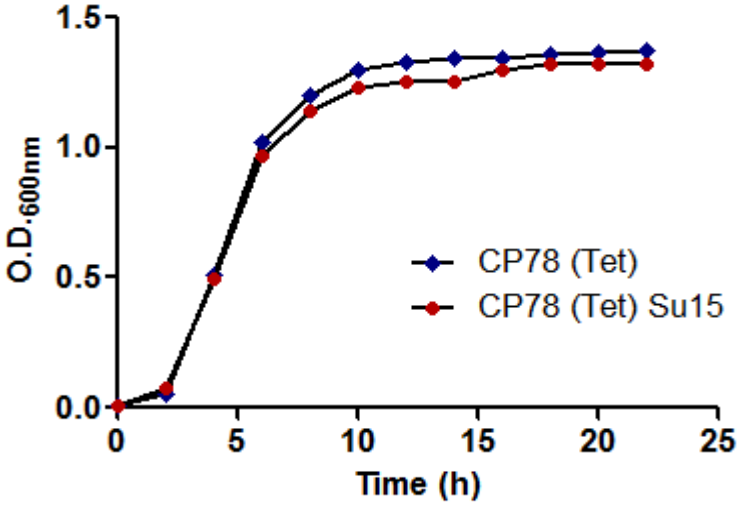
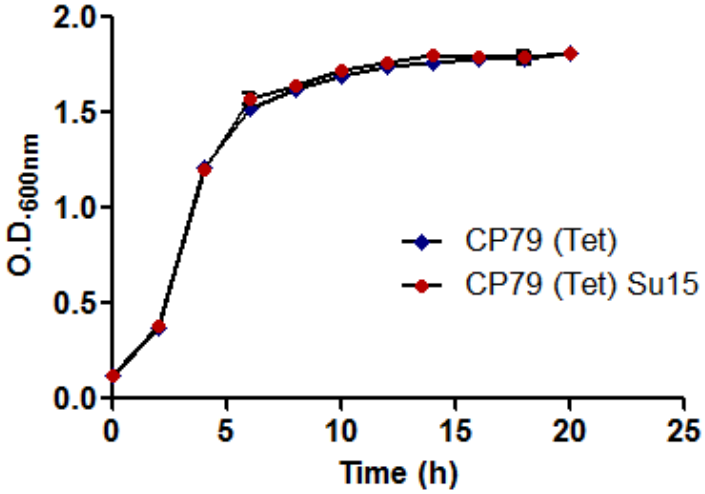
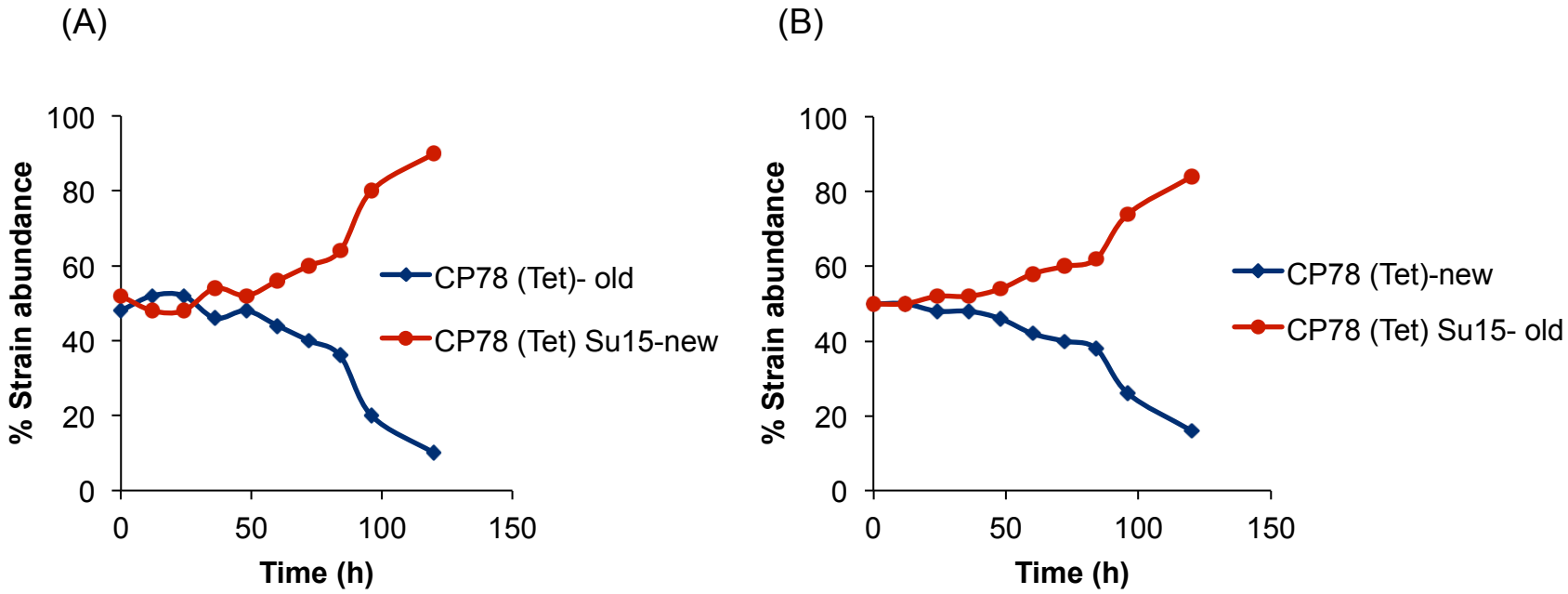


Samhita et al., Fig. S3

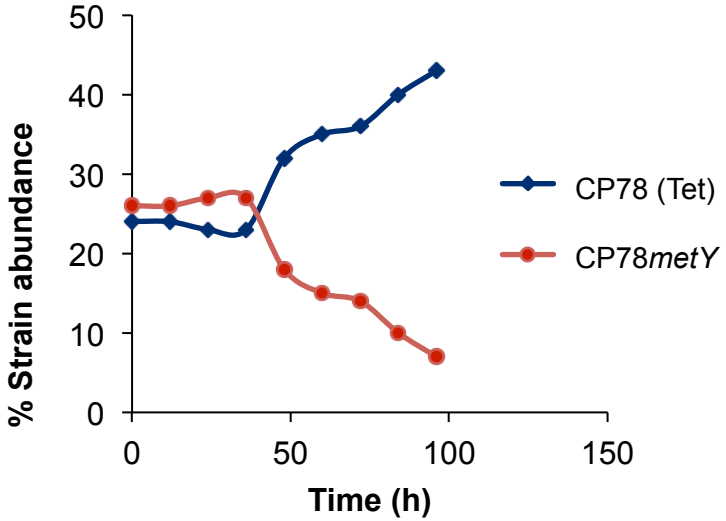




Samhita et al., Fig. S4



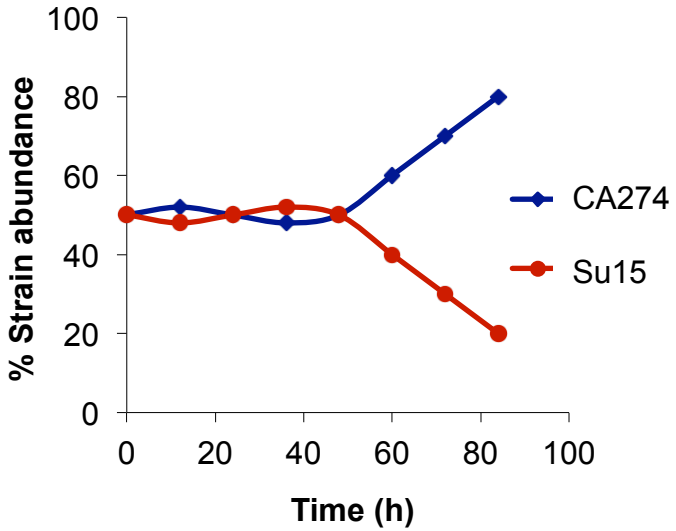
Samhita et al., Fig. S5



Samhita et al., Fig. S6

(A)

(B)



Samhita et al., Fig. S7