Results

# Model comparison Ov vs Bm

With the Ov model, the optimal FBA (= 724) has as input fluxes (by descending flux): water (1000), diphosphate (633), quinone (17), and oxygen (14). Bm model FBA = 32.4, with input fluxes diphosphate (676), reduced ferredoxin (259), oxygen (194), reduced acceptor (97), and water (35).

TCA cycle has a major difference; R00267 and R00709 both convert isocitrate into 2-oxoglutarate + CO2 + H+. The former also converts NADP+ into NADPH, while the latter converts NAD+ into NADH.

* Ov has 1000 flux through R00267, Bm has -341. Ov has 0 flux through R00709, Bm has 1000.
* So in this part of the cycle, Ov is producing NADPH (standard), while Bm is producing NADH and NADP+ (probably wrong).

The pentose phosphate pathway has some differences too.

* Ov has -340 through R02739, while Bm has -68. So Ov is converting more b-D-glucose-6-P to a-D-glucose-6-P. Most of the a- is produced by R00959 in both species, and both convert it to b-D-fructose-6-P, but Ov produces more overall; this excess is used to generate ATP and a-D-glucose.
  + Most of the b-D-fructose-6-P is converted to b-D-fructose-1-6-P2 (which goes into glycolysis), but some is converted into b-D-glucose-6-P (less in Bm).
* Ov has 158 through R01049, while Bm has -676; Ov produces 5-P-a-D-ribose-1-diP (AKA PRPP) + AMP, while Bm produces D-ribose-5-P + ATP.
  + PRPP feeds into purine, pyrimidine, and histidine metabolism.
  + Ov seems to use PRPP to consume adenine and guanine (minor) to produce AMP/GMP.
  + Bm seems to use PRPP to produce ATP and D-ribose-5-P.

Ov producing:

18% 2e+03 R00707 2.0 C00001 + C00003 + C03912 <=> C00004 + C0002...

9% 1e+03 DIFFUSI... C00001 <=>

9% 1e+03 R00351 C00010 + C00158 <=> C00001 + C00024 + C00036

9% 1e+03 R00658 C00631 <=> C00001 + C00074

9% 1e+03 R01325 C00158 <=> C00001 + C00417

9% 1e+03 R03036 C00001 + C00882 <=> C00020 + C01134

8% 841 R00243 C00001 + C00003 + C00025 <=> C00004 + C00014 + ...

7% 718 R01655 C00001 + C00445 <=> C00080 + C00234

5% 574 R00578 C00001 + C00002 + C00049 + C00064 <=> C00013 + ...

3% 343 R00708 2.0 C00001 + C00006 + C03912 <=> C00005 + C0002...

3% 338 R02109 C00001 + C00369 <=> C00267 + C00718

3% 295 R00710 C00001 + C00003 + C00084 <=> C00004 + C00033 + ...

Bm producing:

21% 2e+03 R00707 2.0 C00001 + C00003 + C03912 <=> C00004 + C0002...

11% 1e+03 R00351 C00010 + C00158 <=> C00001 + C00024 + C00036

11% 1e+03 R00658 C00631 <=> C00001 + C00074

11% 1e+03 R01655 C00001 + C00445 <=> C00080 + C00234

11% 1e+03 R03036 C00001 + C00882 <=> C00020 + C01134

7% 659 R01325 C00158 <=> C00001 + C00417

6% 526 R00248 C00001 + C00006 + C00025 <=> C00005 + C00014 + ...

4% 389 R04749 C05268 <=> C00001 + C05271

4% 356 R03026 C01144 <=> C00001 + C00877

Ov used:

9% 1e+03 R00245 C00001 + C00003 + C01165 <=> C00004 + C00025 + ...

9% 1e+03 R00248 C00001 + C00006 + C00025 <=> C00005 + C00014 + ...

9% 1e+03 R01900 C00311 <=> C00001 + C00417

9% 1e+03 R03314 C01165 <=> C00001 + C03912

7% 789 TRANSPO... C00001 + C00002 --> C00008 + C00009 + C00152

7% 729 R10092 C00080 + C00288 <-- C00001 + C00011

7% 718 R04326 C00001 + C00445 + C03838 --> C00101 + C04376

6% 625 TRANSPO... C00001 + C00002 --> C00008 + C00009 + C00025

4% 398 TRANSPO... C00001 + C00002 --> C00008 + C00009 + C00123

3% 379 R00256 C00001 + C00064 <=> C00014 + C00025

3% 366 TRANSPO... C00001 + C00002 --> C00008 + C00009 + C00065

3% 297 TRANSPO... C00001 + C00002 --> C00008 + C00009 + C00407

Bm used:

11% 1e+03 R00243 C00001 + C00003 + C00025 <=> C00004 + C00014 + ...

11% 1e+03 R00245 C00001 + C00003 + C01165 <=> C00004 + C00025 + ...

11% 1e+03 R03314 C01165 <=> C00001 + C03912

11% 1e+03 R04326 C00001 + C00445 + C03838 --> C00101 + C04376

10% 963 R10092 C00080 + C00288 <-- C00001 + C00011

8% 731 R00708 2.0 C00001 + C00006 + C03912 <=> C00005 + C0002...

7% 659 R01900 C00311 <=> C00001 + C00417

4% 398 TRANSPO... C00001 + C00002 --> C00008 + C00009 + C00148

3% 324 TRANSPO... C00001 + C00002 --> C00008 + C00009 + C00147