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).

* The Bm objective has 1 as all coefficients.

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.

# Modeling Brugia life stages

The microfilariae appears to be covered in N-acetyl-D-glucosamine (Kaushal, Simpson, Hussain, & Ottesen, 1984).

* The infective larvae and adults lacked evidence of these lectins.