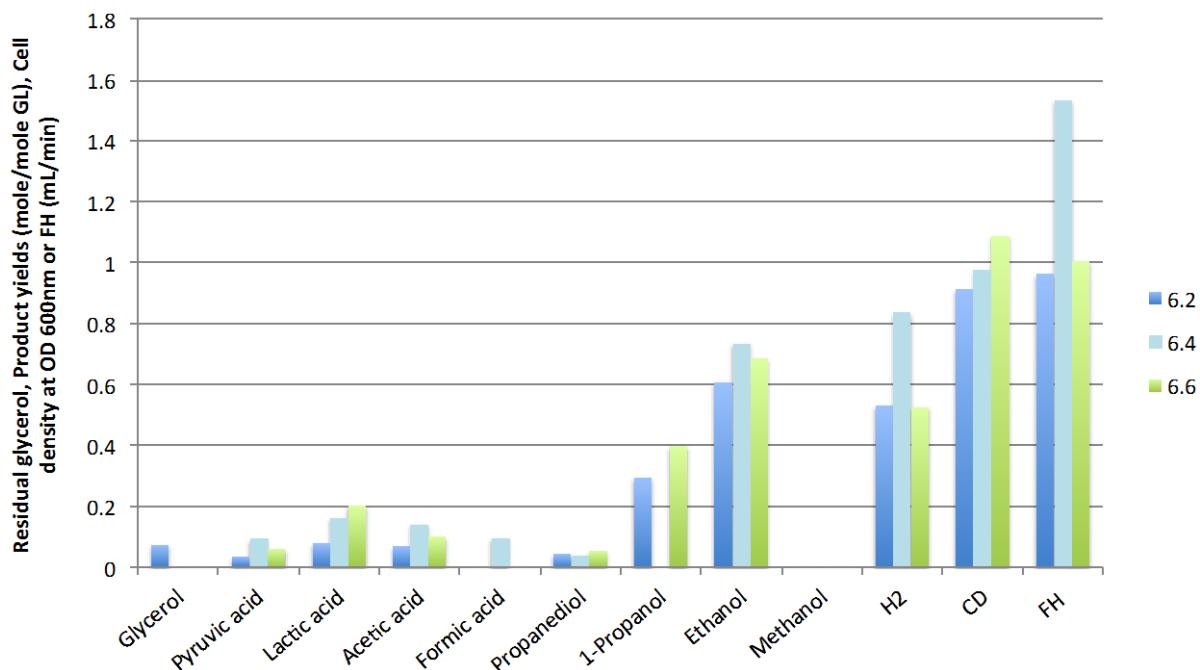
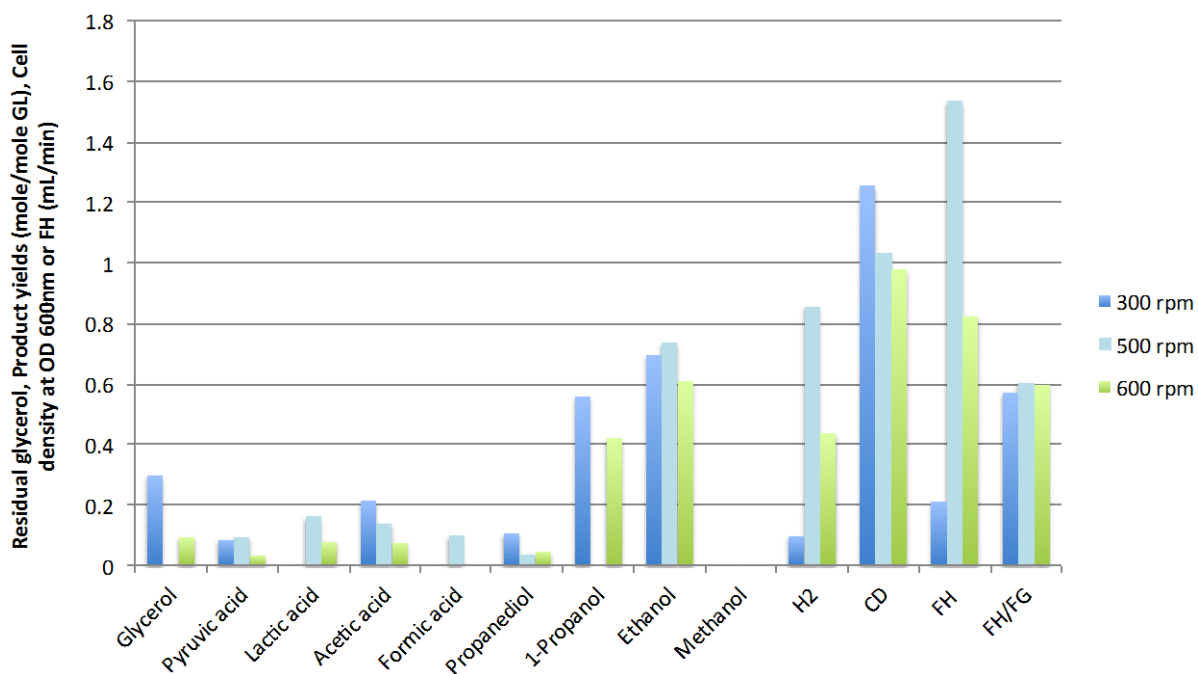


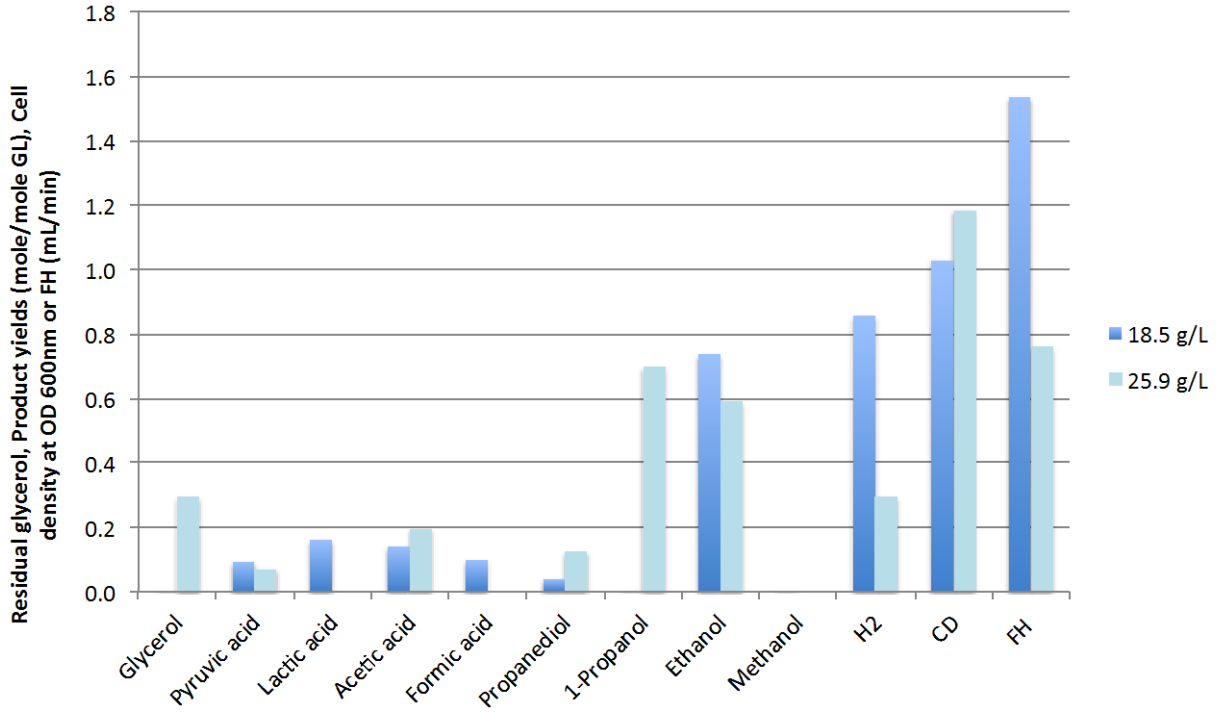
## Supplementary Information



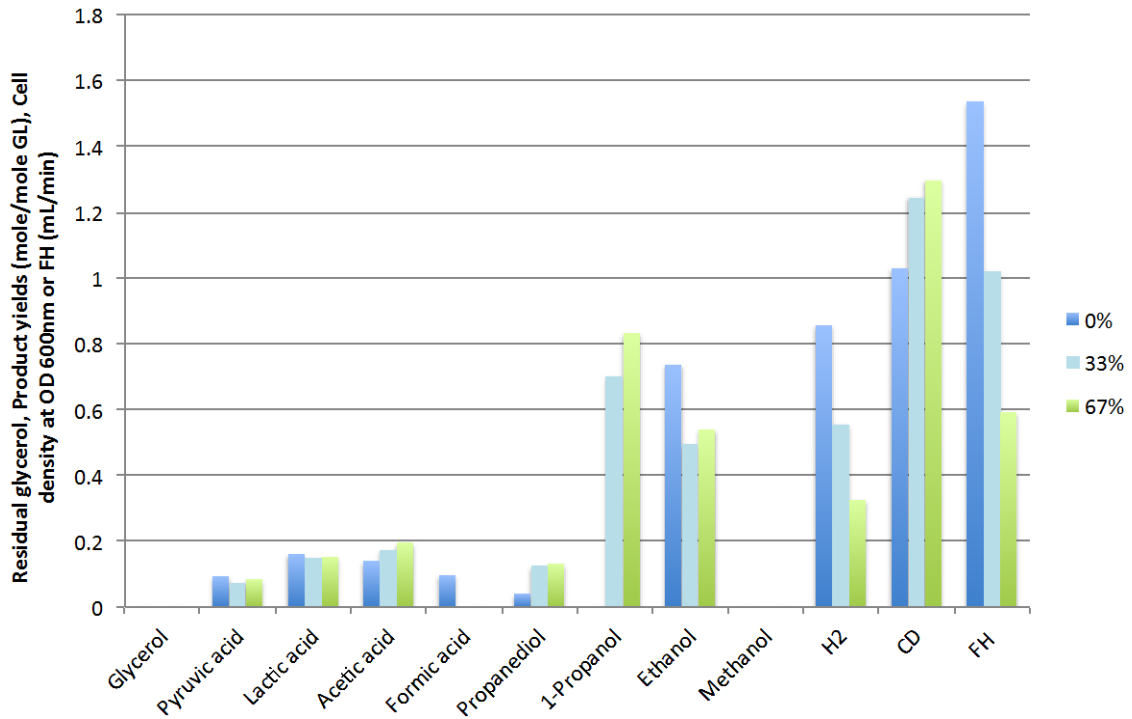
**Figure S1.** Effect of pH on residual glycerol, hydrogen, ethanol and other product yields, cell density, and rate of hydrogen production (FH) (3 replicates).



**Figure S2.** Effect of mixing speed on residual glycerol, hydrogen, ethanol and other product yields, cell density and rate of hydrogen production (FH) (3 replicates).



**Figure S3.** Effect of glycerol concentration on residual glycerol, hydrogen, ethanol and other product yields, cell density and rate of hydrogen production (FH) (3 replicates).



**Figure S4.** Effect of waste recycling on residual glycerol, hydrogen, ethanol and other product yields, cell density and rate of hydrogen production (FH) (3 replicates).