

PS3/BS3 Decision Tree for GCK functional studies

Are the following WT GCK kinetic parameters met (including SEM):

1. K_{cat} : 40-80
2. $S_{0.5}$: 6.0-9.0
3. h : 1.4-1.8

NO

Cannot Use PS3 or BS3

YES

Is the WT K_m available and between 0.2-0.5?

YES

NO

MT: $K_{cat}/S_{0.5}$
WT: $K_{cat}/S_{0.5} < 0.5$

YES

PS3_Supporting

Activity index (I_a) calculated using the following equation?
If not, recalculate.

$$I_a = \frac{[ATP]}{[ATP] + K_m} \times \frac{K_{cat}}{S_{0.5}^h}$$
$$RAI = I_{a-MT} / I_{a-WT}$$

PS3_Moderate

YES

RAI ≤ 0.5 ?

NO

NO

Is RSI available?

NO

Cannot Use PS3 or BS3

YES

RSI ≤ 0.5 ?

YES

NO

Does the variant impact interaction with GKRP and/or GKA?

YES

NO

BS3_Supporting

Not assessed or determined

Key:
WT: Wild type
MT: Mutant
SEM: Standard error of the mean
 K_{cat} : Turnover number
 $S_{0.5}$: Affinity for glucose
 h : Hill number
 K_m : ATP affinity
RAI: Relative Activity Index
RSI: Relative Stability Index