SUPPLEMENTARY INFORMATION

Fig S1. Determination of kinetic constants of RMGP*a*, *Ec*GS and SuSy4. Plots of initial reaction velocity (Vo) *versus* substrate concentration. RMGP*a* was tested in the direction of glycogen phosphorolysis (A, B) and glycogen synthesis (C, D). *Ec*GS (E, F) and SuSy4 (G, H) were tested in the direction glycogen and sucrose synthesis, respectively. The variable substrate is indicated in the X-axes of the plots. All experiments were performed at pH 7 and 30 °C in HEPES buffer. The plotted values represent the mean of three independent measurements.

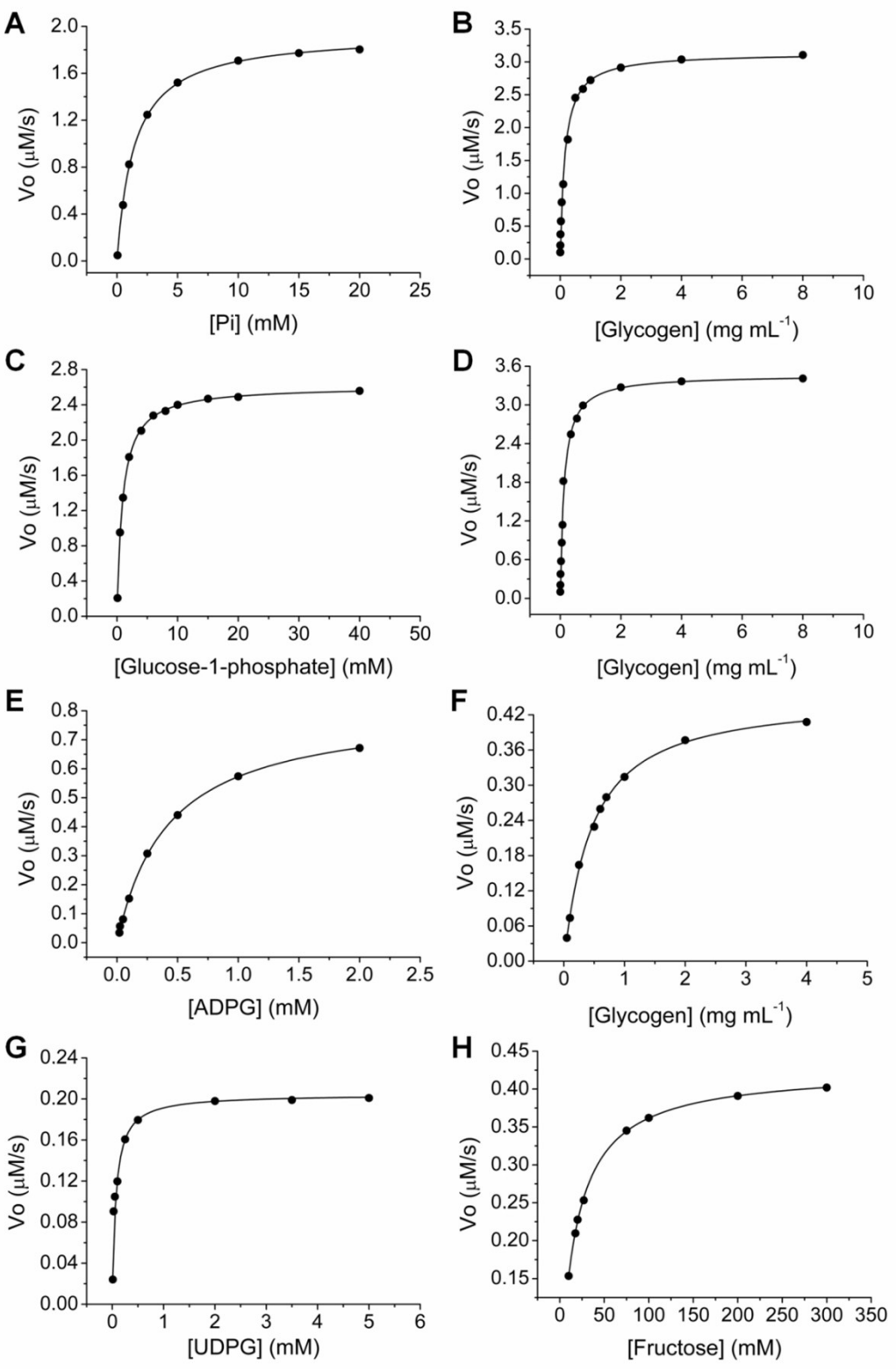

Table S2. Kinetic parameters of RGMP*a* in the direction of glycogen degradation and synthesis, and *Ec*GS and SuSy4 in the direction of glycogen and sucrose synthesis, respectively. All experiments were performed at pH 7 and 30 °C in HEPES buffer.

Enzyme	Substrate	K_m	V_{max} (mmol $min^{-1}mg^{-1}$ protein)
RMGP*a* (glycogen phosphorolysis)	Pi	1.41 ± 0.04 mM	11.65 ± 0.08
	Glycogen	0.15 ± 0.01 mg mL^{-1}	18.82 ± 0.03
RMGP*a* (glycogen synthesis)	Glc-1-P	0.92 ± 0.02 mM	66.0 ± 0.3
	Glycogen	0.12 ± 0.01 mg mL^{-1}	83.2 ± 0.03
*Ec*GS	ADPG	0.42 ± 0.01 mM	348.7 ± 0.4
	Glycogen	0.47 ± 0.01 mg mL^{-1}	197.7 ± 0.3
SuSy 4	UDPG	0.069 ± 0.009 mM	3.07 ± 0.01
	Fructose	17.7 ± 0.4 mM	6.38 ± 0.07