Table 3: Kinetic Constants of Activation and Misactivation by LeuRS and LeuRS-B[a]

enzymes	substrate	K_m (mM)	k_{cat} (s^{-1})	k_{cat}/K_m $(s^{-1}\,mM^{-1})$	discrimination factor $(k_{cat}/K_m)_{Leu}/$ $(k_{cat}/K_m)_{Met\ or\ Ile}$
	Leu	0.052	171	3.3×10^3	
LeuRS	Met	7.5	19	2.5	1.3×10^3
	Ile	3.5	18	5.1	6.5×10^2
	Leu	0.069	101	1.5×10^3	
LeuRS-B	Met	6.2	7.6	1.2	1.3×10^3
	Ile	2.8	6.9	2.5	6.0×10^2

[a] $ATP-PP_i$ exchange kinetics of enzymes were determined in the presence of 0.02−0.2 mM leucine and 5−50 mM methionine or isoleucine. All the data in this table were the average values with a variation of <10% from three independent determinations. The discrimination factors were calculated from the equation $D_{Met\ or\ Ile} = (k_{cat}/K_m)_{Leu}/(k_{cat}/K_m)_{Met\ or\ Ile}$.