SUPPORTING INFORMATION

Adenylate Kinase-Catalyzed Reactions of AMP in Pieces: Specificity for Catalysis at the Nucleoside Activator and Dianion Catalytic Sites

Patrick L. Fernandez and John P. Richard[†,*]

[†] Department of Chemistry, University at Buffalo, SUNY, Buffalo, New York, 14260–3000, United States

[*] Author to whom correspondence should be addressed: EMAIL: jrichard@buffalo.edu

---

Figure S1 shows the Michaelis–Menten plot of v_{obs}/[E] against [AMP] for rabbit muscle adenylate kinase (RAdK)-catalyzed phosphoryl transfer from 1.0 mM ATP to AMP. Figure S2 shows the Michaelis–Menten plot of v_{obs}/[E] against [2'-dAMP] for HAdK1-catalyzed phosphoryl transfer from 1 mM ATP (saturating) to 2'-dAMP. These plots give the Michaelis–Menten parameters reported in Table 1.

Figures S3A and S3B show kinetic data for EA-activated RAdK-catalyzed phosphoryl transfer from ATP to FPO_3^{2-}. Figures S4A and S4B show kinetic data for adenosine-activated HAdK-catalyzed phosphoryl transfer from ATP to HPO_3^{2-}. The kinetic parameter $(k_{cat})_{XPi•EA}/K_{XPi}K_{EA}$ for the EA- and Ado-activated reactions, respectively, reported in Table 2 were determined from the fits of these plots to eq 1 and 2 from the main text. Figure S5 and S6 show, respectively, the effect of increasing [2'-dAdo] and [3'-dAdo] on v_{obs}/[E] for *Hs*AdK1-catalyzed reactions of saturating (1 mM) ATP with 23 mM [HPO_3^{2-}] at pH 7.5, I = 0.150 (NaCl), and 25 °C.

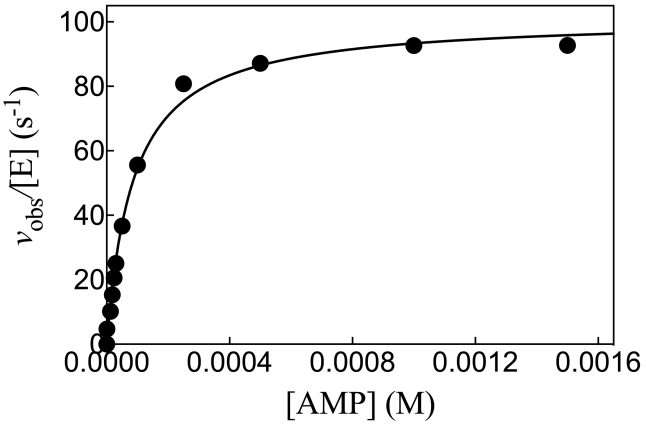

Figure S1. The increase in v_{obs}/[E] with increasing [AMP] for RAdK1-catalyzed phosphoryl transfer from ATP (1 mM) to AMP at pH 7.5, I = 0.150 (NaCl) and 25 °C.

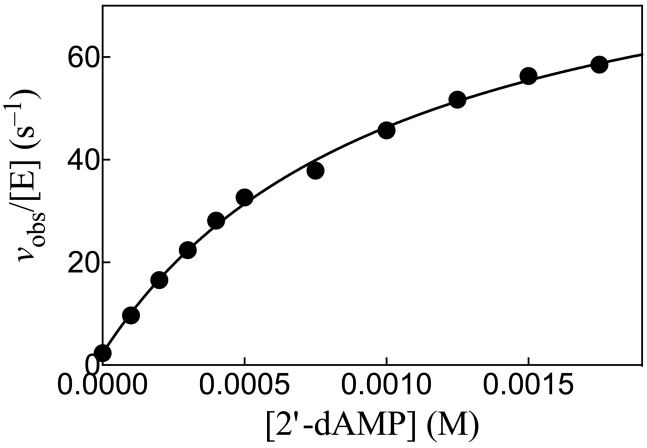

Figure S2. The increase in v_{obs}/[E] with increasing [2'-dAMP] for HAdK1-catalyzed phosphoryl transfer from ATP (1 mM) to 2'-dAMP at pH 7.5, I = 0.150 (NaCl), and 25 °C.

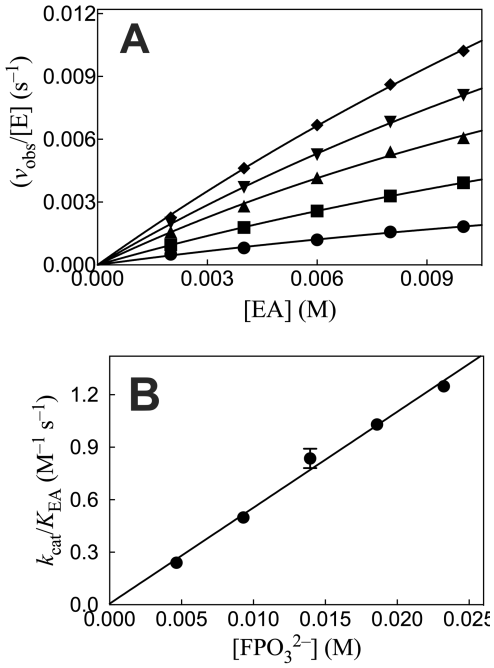

Figure S3. (A) The increase in v_{obs}/[E] with increasing [EA] for RAdK1-catalyzed reactions of ATP (1 mM) with FPO_3^{2-} at pH 7.5, I = 0.150 (NaCl), and 25 °C. Key: ◆, 25 mM [FPO_3^{2-}]; ▼, 20 mM [FPO_3^{2-}]; ▲, 15 mM [FPO_3^{2-}]; ■, 10 mM [FPO_3^{2-}]; ●, 5 mM [FPO_3^{2-}]. (B) The effect of increasing [FPO_3^{2-}] on the values of $(k_{cat}/K_{EA})_{obs}$ determined for Figure 3A.

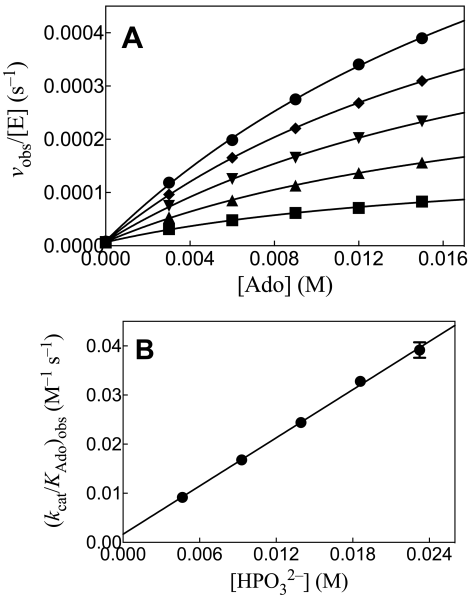

Figure S4. (A) The increase in v_{obs}/[E] with increasing [Ado] for HAdK1-catalyzed reactions of ATP (1 mM) with phosphite dianion at pH 7.5, I = 0.150 (NaCl), and 25 °C. Key: ●, 23 mM [HPO_3^{2-}] (93% dianion); ◆, 19 mM [HPO_3^{2-}]; ▼, 14 mM [HPO_3^{2-}]; ▲, 9.2 mM [HPO_3^{2-}]; ■, 4.6 mM [HPO_3^{2-}]. (B) The effect of increasing [HPO_3^{2-}] on the values of $(k_{cat}/K_{Ado})_{obs}$ determined for Figure S4A.

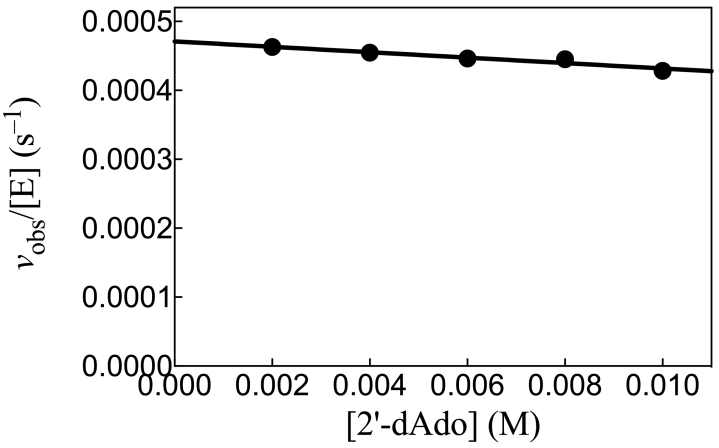

Figure S5. The effect of increasing [2'-dAdo] on v_{obs}/[E] for HAdK1-catalyzed reactions of ATP (1 mM) with 23 mM HPO_3^{2-}at pH 7.5, I = 0.150 (NaCl), and 25 °C.

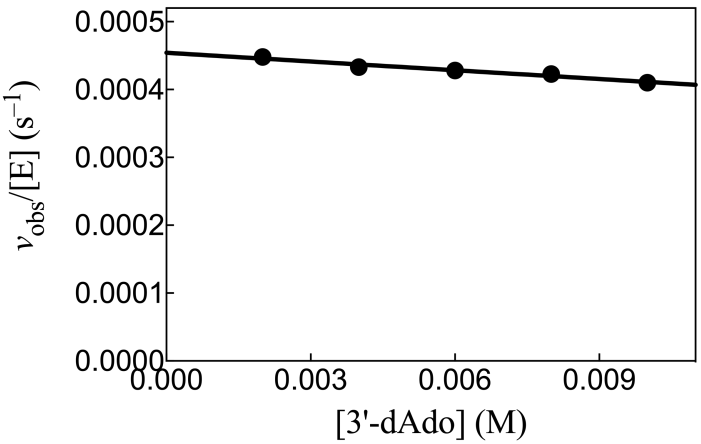

Figure S6. The effect of increasing [3'-dAdo] on v_{obs}/[E] for HAdK1-catalyzed reactions of ATP (1 mM) with 23 mM [HPO_3^{2-}]at pH 7.5, I = 0.150 (NaCl), and 25 °C.