of coordination geometry. Figures were generated using the PyMOL molecular graphics system (*S9*) and Figure 3B was initially made using the program LIGPLOT (*S10*) then modified using CHEMDRAW (CambridgeSoft, Cambridge, MA).

Yeast Strains and Extract preparation

hADAR2 was expressed in the strain BCY123 as described previously (*S1*). The *IPK1* gene in this strain was replaced with the kanamycin resistance gene (*ipk1Δ::KanMX*) using a PCR-based gene targeting method (*S11*). The knockout was confirmed by the ability to grow in the presence of the antibiotic G418, and PCR of the genomic DNA. The new strain (BCY123-*ipk1*Δ) was also used to express hADAR2 as described above. Cells were harvested by centrifugation, resuspended in buffer (20 mM Tris-HCl pH 8.0, 100 mM NaCl, 20% glycerol and 1 mM 2-mercaptoethanol) and lysed by three consecutive passes through a French pressure cell at 20,000 psi. The lysate was centrifuged at 100,000 x g for 1 hour at 4°C. The supernatant (S100 extract) was stored in aliquots at -80°C until use in the editing assays.

For the ADAT1 activity assays, the yeast strain BY4743 (wild-type; *S12*) and strains with the same genetic background but having the *IPK1* gene or the *KCS1* gene replaced with *KanMX* (*ipk1Δ::KanMX, kcs1Δ::KanMX)*, were obtained from Research Genetics (Huntsville, AL). The strains were grown in YPD, harvested by centrifugation, and S100 extract was prepared as described above.