

**Supplemental Figure S3. Cell-based demethylation assay. (A)** Quantitation of H3K9me3 levels. 5-Carboxy-8-hydroxyquinoline (SID 85736331) treatments were at 20 $\mu$ M, 50 $\mu$ M, 100 $\mu$ M, 200 $\mu$ M, 300 $\mu$ M, and 400 $\mu$ M compared to 2.5mM Dimethyloxalylglycine (DMOG) and 1mM dimethyl-2,4-PDCA. Treatment with 200 $\mu$ M 5-carboxy-8HQ inhibited JMJD2A demethylase activity to approximately 10% which is greater than treatment with either 2.5mM DMOG (approximately 20% activity) or 1mM dimethyl-2,4-PDCA (approximately 35% activity). **(B)** Indirect immunofluorescence with anti-Flag (green), anti-H3K9me3 (red), and DAPI staining (blue) for DNA in HeLa cells overexpressing Flag-tagged JMJD2E or JMJD2E catalytic mutant.

