

SIGNIFICANCE STATEMENT

Renal water excretion is controlled by vasopressin, in part through transcriptional regulation of the *Aqp2* gene in collecting duct cells. Defects in this mechanism are responsible for several water balance disorders. Using mouse collecting duct cells, the authors used several next generation sequencing (NGS) techniques to investigate *Aqp2* regulation. These approaches identified two enhancer regions vicinal to the *Aqp2* gene centered 81 kb upstream and 5.8 kb downstream from the *Aqp2* transcriptional start site. ChIP-Seq analysis for the transcription factor *C/EBP β* identified a strong binding site within the second region. ChIP-Seq analysis for another transcription factor CREB, which widely held to regulate *Aqp2* gene transcription, identified many canonical CREB binding sites throughout the genome but none within 390 kb of *Aqp2*.