



**Figure S15.** Three-dimensional views of the three proton channels within the ribbon structure of cytochrome C oxidase subunit 1 (COI; based on the cow COI structure). The proton channels are shown in blue (channel D), green (channel H), and magenta (channel K) space-fill; heme groups are shown in light blue and red, the sodium and magnesium ions are shown with pink and green balls, respectively. (A) channels H and D, (B) channels D and K, (C) channels K and H, (D) top view, (E) bottom view.