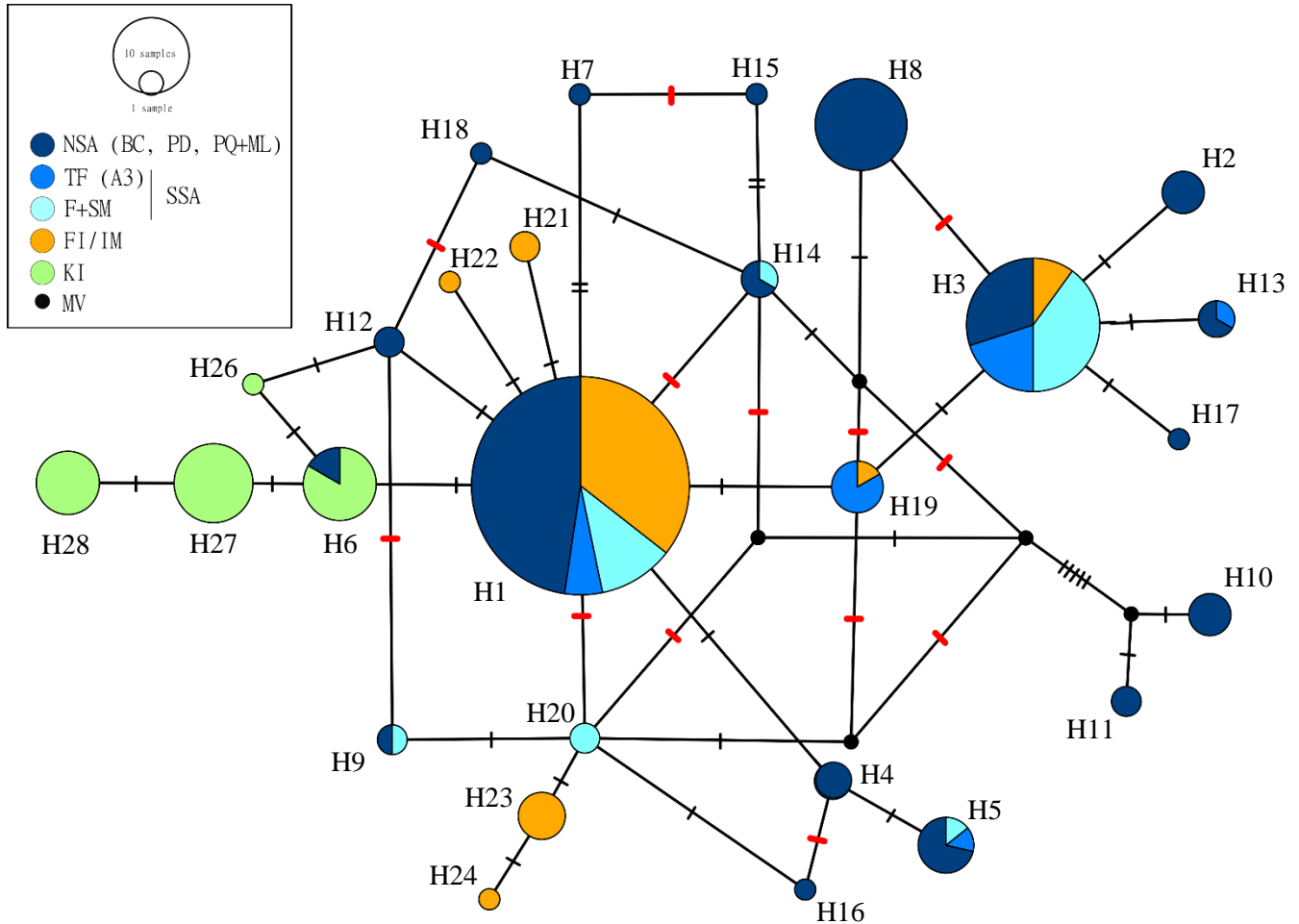
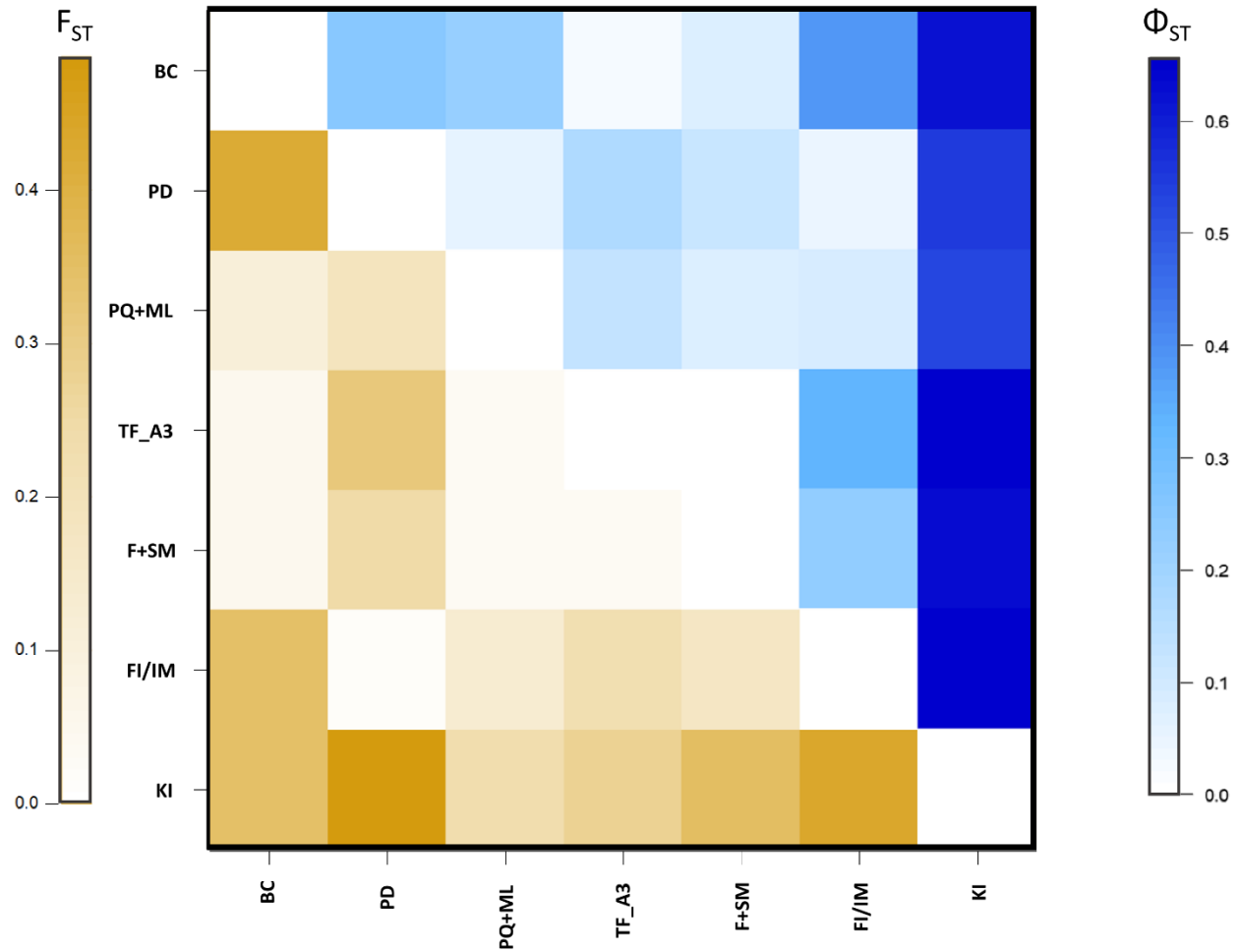


## Supplementary Material



**Supplementary Figure 1.** Haplotype network of the 256 sequences with all polymorphic sites, displaying the numerous loops and median vectors. To focus on the greater distribution-wide patterns, localities were color-coded to broadly show their origin within the distribution of Commerson's dolphins, as in the map: N ARG (dark blue): Bahía Camarones (BC), Puerto Deseado, (PD) and Punta Quilla and Monte León (PQ+ML); S ARG: Tierra del Fuego (TF (A3), blue), and Fitzroy and Strait of Magellan (F+SM, light blue), Falkland Islands/Islands Malvinas (FI/IM, orange) and Kerguelen Islands (KI, green). MV: median vector. Transversal dashes indicate one mutational step, and removed hypervariable sites are highlighted in red. The smallest circles are of frequency  $n=1$ .



**Supplementary Figure 2.** Heatmap of genetic ( $F_{ST}$ , orange) and phylogeographic ( $\Phi_{ST}$ , blue) structure values between the sampling localities along the global distribution of Commerson's dolphins. Localities are Bahía Camarones (BC), Puerto Deseado (PD), Punta Quilla and Monte León (PQ+ML), Tierra del Fuego area A3 (TF\_A3), Fitzroy and the Strait of Magellan (F+SM), Falkland Islands/Islas Malvinas (FI/IM), and Kerguelen Islands (KI).

