

# Marked phylogeographic structure of Gentoo penguin reveals an ongoing diversification process along the Southern Ocean

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© 2016 Elsevier Inc. Two main hypotheses have been debated about the biogeography of the Southern Ocean: (1) the Antarctic Polar Front (APF), acting as a barrier between Antarctic and sub-Antarctic provinces, and (2) the Antarctic Circumpolar Current (ACC), promoting gene flow among sub-Antarctic areas. The Gentoo penguin is distributed throughout these two provinces, separated by the APF. We analyzed mtDNA (HVR1) and 12 microsatellite loci of 264 Gentoo penguins, *Pygoscelis papua*, from 12 colonies spanning from the Western Antarctic Peninsula and the South Shetland Islands (WAP) to the sub-Antarctic Islands (SAI). While low genetic structure was detected among WAP colonies (mtDNA  $F_{ST} = 0.037 \pm 0.133$ ; microsatellite  $F_{ST} = 0.009 \pm 0.063$ ), high differentiation was found between all SAI and WAP populations (mtDNA  $F_{ST} = 0.678 \pm 0.930$ ; microsatellite  $F_{ST} = 0.110 \pm 0.290$ ). These results suggest that contemporary dispersal around the Southern Ocean is very limited or absent. As predicted, the APF app