

Animals that habitually cross the boundary between water and land face specific challenges with respect to locomotion, respiration, insulation, fouling, and waterproofing. Many semi-aquatic invertebrates and plants have developed complex surface microstructures with water-repellent properties to overcome these problems, but equivalent adaptations of the skin have not been reported for vertebrates that encounter similar environmental challenges. Here, we document the first evidence of evolutionary convergence of hydrophobic structured skin in a group of semi-aquatic tetrapods. Using scanning electron microscopy and contact-angle goniometry, we show that the skin surface of semi-aquatic species of *Anolis* lizards is characterized by a more elaborate microstructural architecture (i.e. longer spines and spinules) and a lower wettability relative to closely related terrestrial species. In addition, phylogenetic comparative models reveal repeated independent evolution of enhanced skin hydrophobicity associated with the transition to a semi-aquatic lifestyle, providing evidence of adaptation. Our findings invite a new and exciting line of inquiry into the ecological significance, evolutionary origin, and developmental basis of hydrophobic skin surfaces in semi-aquatic lizards, which is essential for understanding why and how the observed skin adaptations evolved in some and not other semi-aquatic tetrapod lineages.