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The evolutionary history of the tiger shark, *Galeocerdo cuvier*

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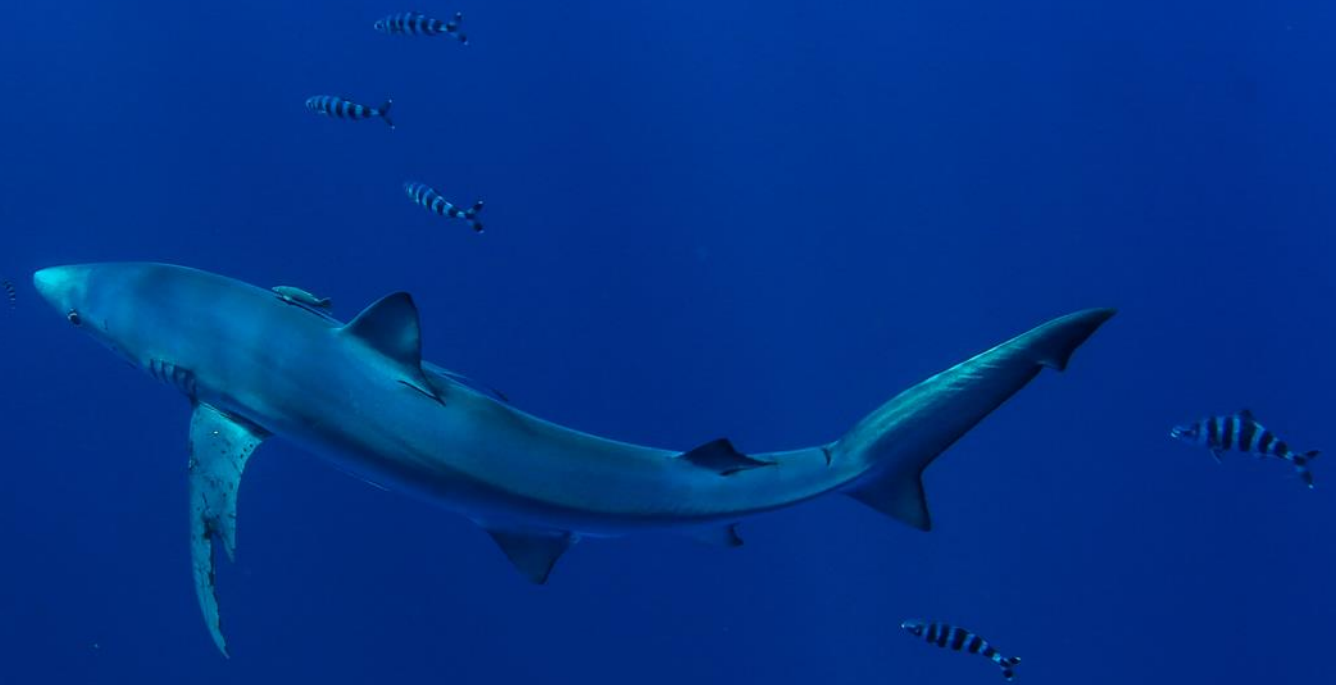
The tiger shark *Galeocerdo cuvier*, one of the largest predatory sharks in today's oceans, has distinctively notched and serrated teeth, which allow it to cut out pieces of its prey and even crack open shells of sea turtles. It is the only extant species of this genus and has a fossil record extending back at least into the late Miocene (~5 Ma). The fossil record of the genus, however, reaches back even further into the early Eocene (~56 Ma). During the last 200 years, more than sixty fossil species were described based on isolated teeth, with some species even based upon a single tooth. About twenty of these species are still considered valid, among them the well-known Miocene tiger shark *Galeocerdo aduncus*.

Theories about the origin of the living tiger shark, *Galeocerdo cuvier*, his direct ancestors and closest extinct relatives were frequently discussed in the past years, but the history of this exceptional shark still remains obscure.

We compared nearly five hundred teeth of several tiger shark species using geometric morphometrics to investigate significant morphological variations and to verify the validity of the examined species. The clustering of the specimens on the morphospace clearly demonstrated the presence of different species, as well as an ontogenetic shift of tooth morphology in extant juvenile and adult tiger sharks. Our results provide new information about the ambiguous evolutionary history of the tiger shark and suggest that the origin of the extant species *Galeocerdo cuvier* lies back more than twice as long as previously thought.

These data greatly augment our understanding of the complex evolutionary history of this iconic shark lineage, which has been very successful for the last 56 million years but is facing many threats today due to human activities and therefore should be a priority target for future conservation efforts.

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