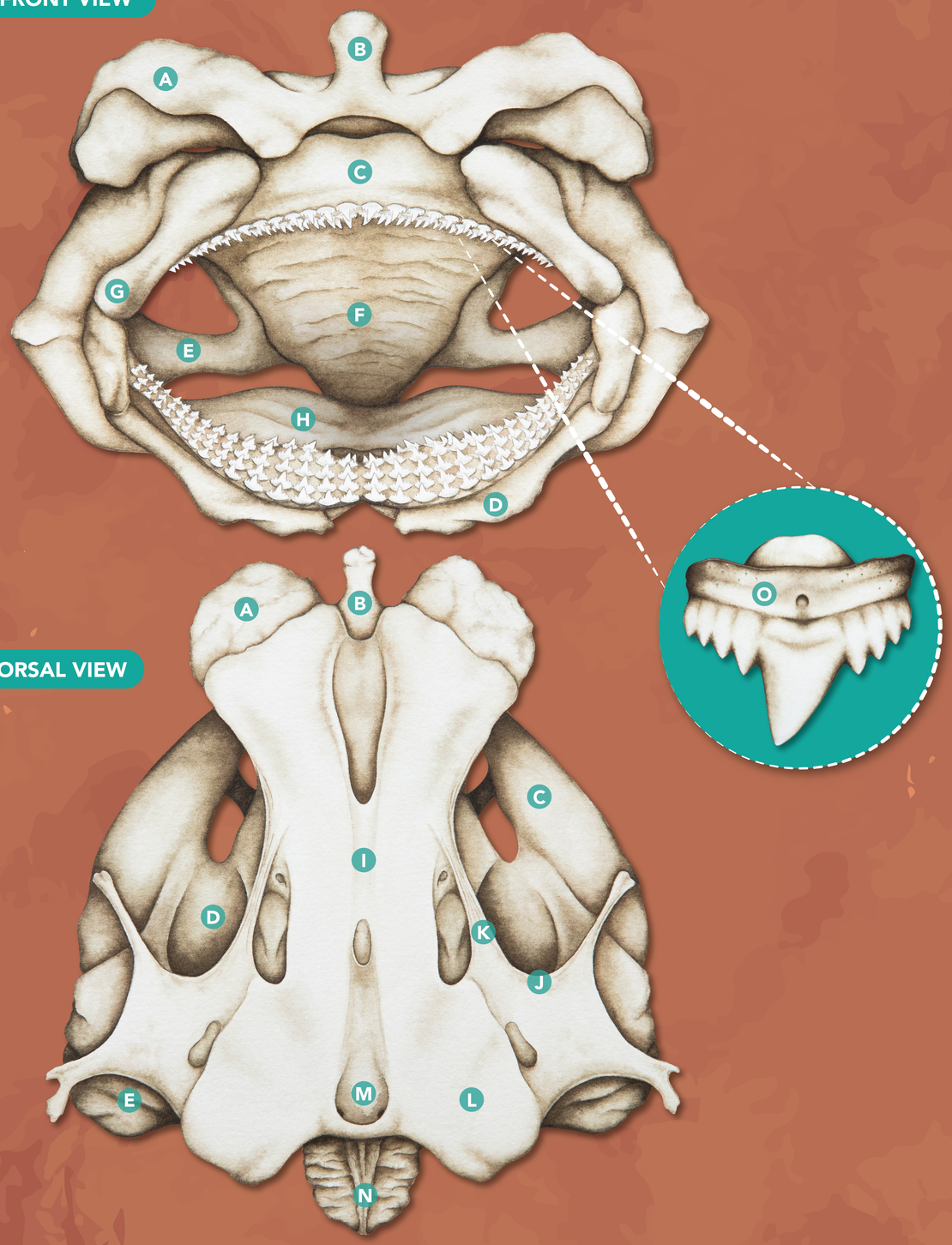
THE SKULLS PROJECT
a collaboration of art and science

NURSE SHARK

GINGLYMOSTOMA CIRRATUM

BIMINI BIOLOGICAL FIELD STATION FOUNDATION
SHARK LAB - SOUTH BIMINI, BAHAMAS

FRONT VIEW



DORSAL VIEW

FRONT VIEW

DORSAL VIEW

KEY FEATURES OF THE CHONDROCRANIUM

- **A NASAL CAPSULE:** Inside are the **olfactory organs**, where scent chemicals, such as amino acids in blood, flow into the connected nostrils. Barbels (whisker-like sensory organs) are located at the interior edge of this capsule and are made of flexible tissue, not cartilage.
- **B ROSTRAL CARTILAGE:** This part is composed of one single branch of cartilage. Unlike other shark species, the taxonomic order that nurse sharks belong to, only have one.
- **C PALATOQUADRATE:** The two cartilages that form the **upper jaw** of a shark.
- **D MECKEL'S CARTILAGE:** The two cartilages that form the **lower jaw** of the shark.
- **E HYOMANDIBULAR CARTILAGE:** This cartilage supports movement of the jaw through ligament connections.
- **F BASAL PLATE:** This is the bottom side of the **chondrocranium**, providing lower support for brain.
- **G LABIAL CARTILAGE:** This large and well developed cartilage supports vertical jaw movement and helps create powerful suction. The nurse shark has a narrower jaw opening, but with this sturdy cartilage, small teeth, and powerful jaw muscles, they are **suction-feeding** specialists.
- **H BASIHYAL CARTILAGE:** This is the **tongue cartilage** of the shark which supports jaw movement.
- **I CRANIAL ROOF:** This is where the shark's brain is encased. The entrance hole, called the **anterior fontanelle**, is covered by tissue, not cartilage.
- **J POSTORBITAL PROCESS:** This V-shaped curve of cartilage provides support for the eyes which are attached with muscle and nerves to the skull. The nurse shark's eyes are very small compared to its body size, about the size of a bean. Unlike some other species, the nurse shark does not have a preorbital process.
- **K SUPRAORBITAL CREST:** This cartilage runs from the anterior of the **postorbital process** to the **cranial roof**.
- **L OTIC CAPSULE:** This is the shark's inner ear case. Inside are the hearing organs which resemble small sandbags resting on innervated hair cells.
- **M ENDOLYMPHATIC AND PERILYMPHATIC FORAMINA:** This is essentially the shark's ears. The upper hole is the endolymphatic and lower is perilymphatic, both are connected to the **otic capsule**. Tissue connects to a pore on the top of the head called the endolymphatic pore.
- **N VERTEBRAE:** This is where the first vertebra attaches to the **occipital condyle**, which connects the skull to the body.
- **O TEETH:** Nurse shark teeth are comprised of one main cusp and up to seven smaller triangular cusps, called **cusplets**. The teeth toward the front of the mouth tend to have more cusplets than the teeth at the rear of the mouth. The tooth's crown has a rounded protrusion called an "**apron**," which can be an important feature for tooth identification. In the center of the posterior side of the root is a small, narrow, circular groove.

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