

Mouse Cranioskeletal Atlas

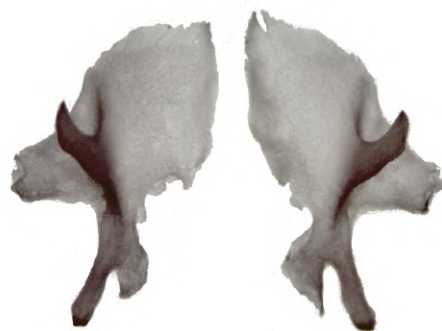
A collection of reference images and drawings of anatomical structures in the crania of C57BL/6J mice.

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The bulk of these figures were generated from μ CT scan renderings and images of tissue stained with a range of histological techniques.

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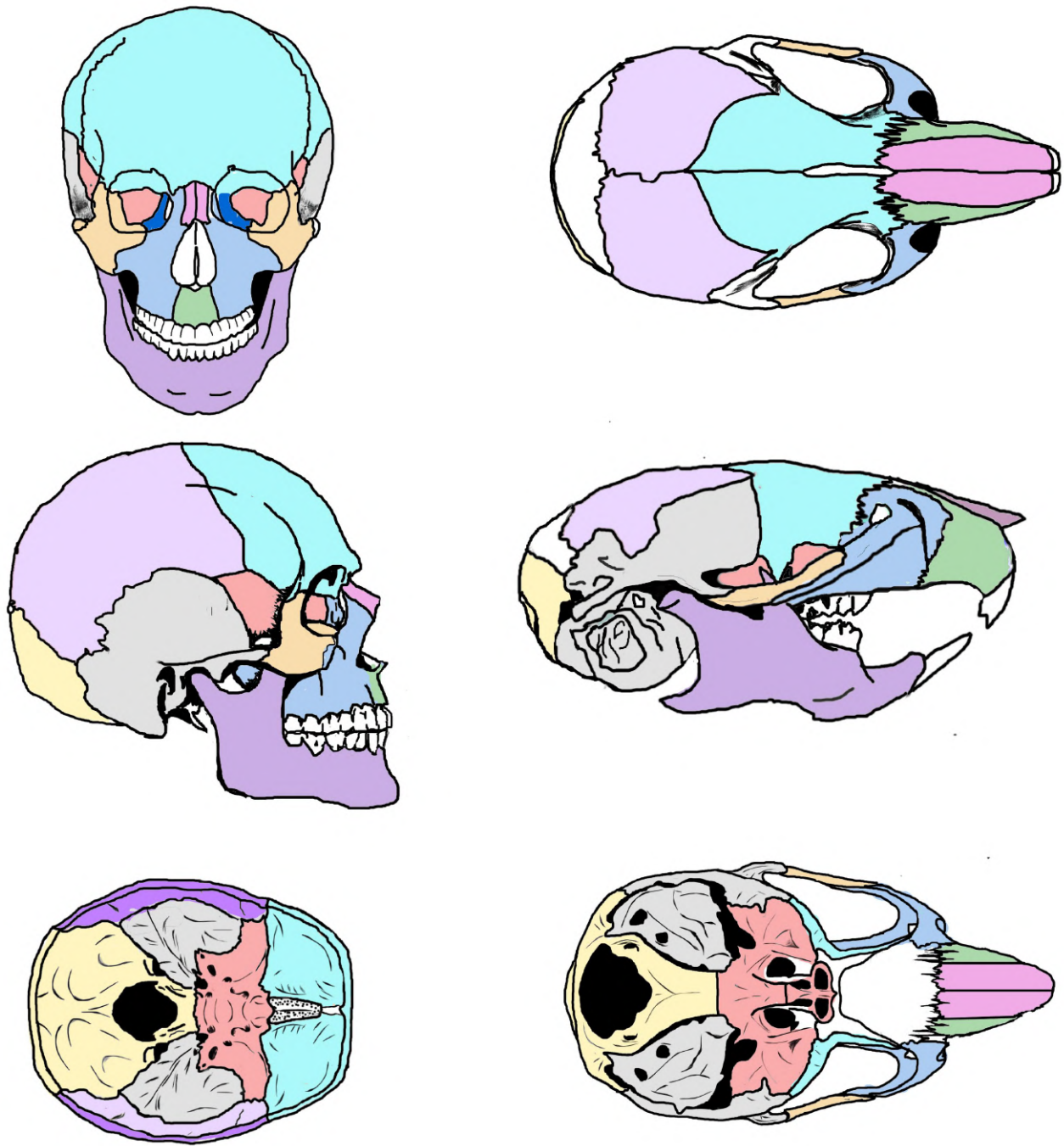


Figure 1: Homology

Craniofacial bones are conserved between humans and mice. (Gans, 1993; Richtsmeier, Baxter, and Reeves, 2000)

Key

Green, premaxilla

Blue, maxilla

Purple, mandible

Pink, nasal bones

Light blue, frontal bones

Yellow-orange, zygomatic

Salmon, sphenoid

Gray, temporal bones and bulla

Light purple, parietal bones

Light yellow, occipital

White, mouse interfrontal and interparietal bones

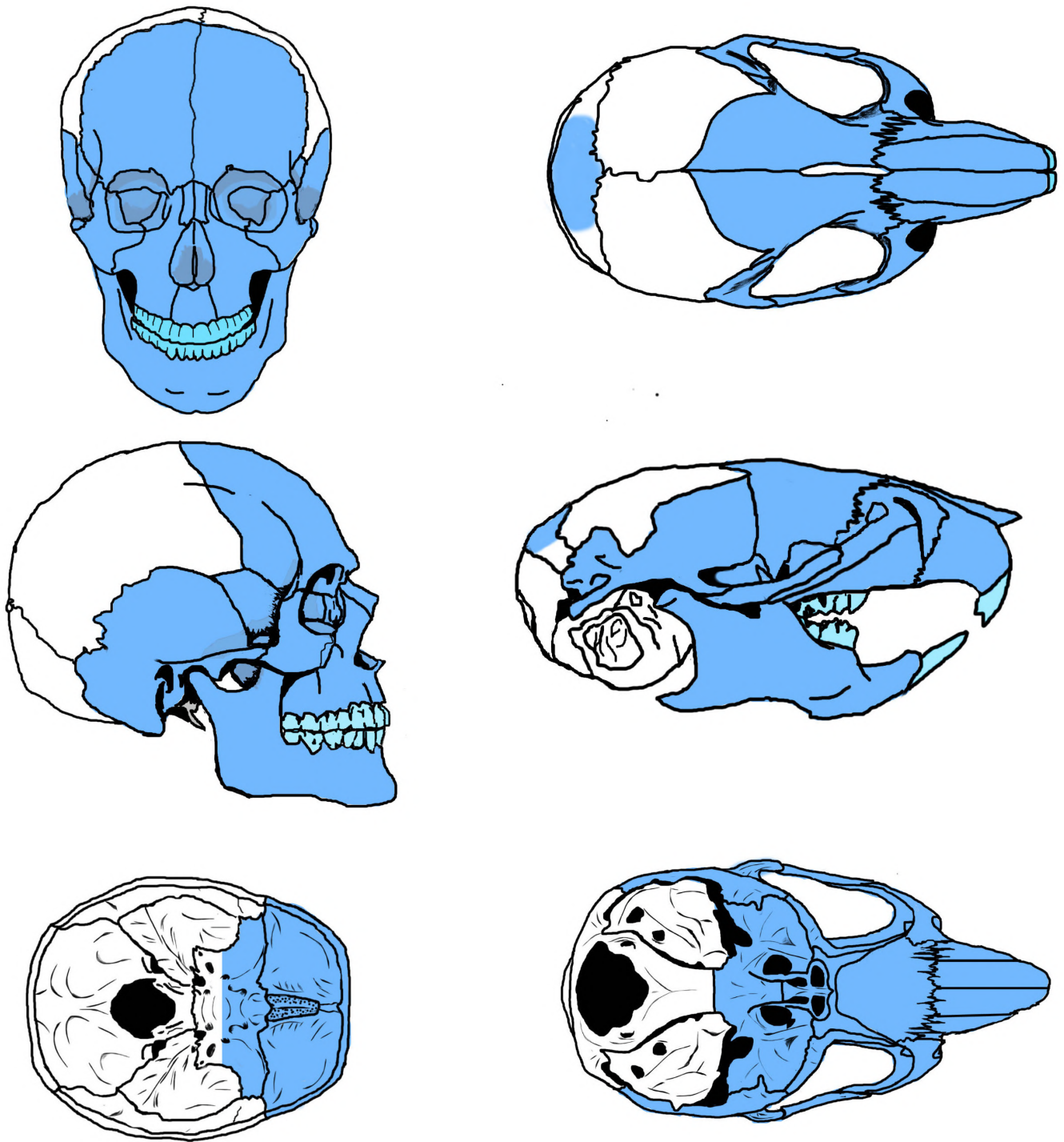


Figure 2: Bones of CNCC origin

Bones derived from cranial neural crest cells. (McBratney-Owen et al., 2008; G. H. Sperber, S. M. Sperber, and Guttman, 2010)

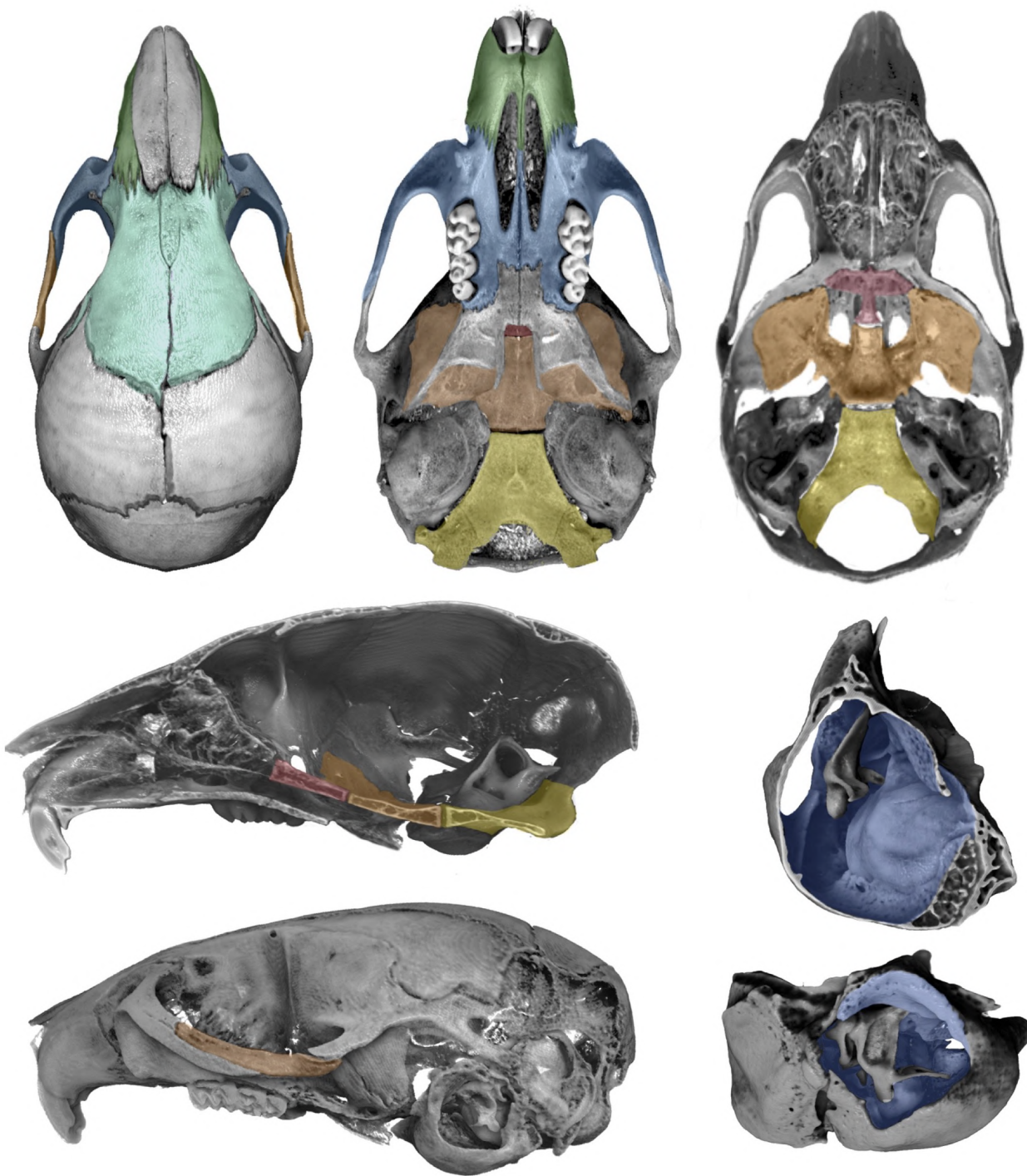


Figure 3: Cranial bones

μ CT scan rendering of C57BL/6J crania at postnatal day 28.

Key

Green, premaxilla

Blue, maxilla

Light green, frontal and interfrontal bones

Red, presphenoid

Orange, basisphenoid

Yellow, basioccipital

Dark blue, middle ear

Slightly different orange, jugal bone

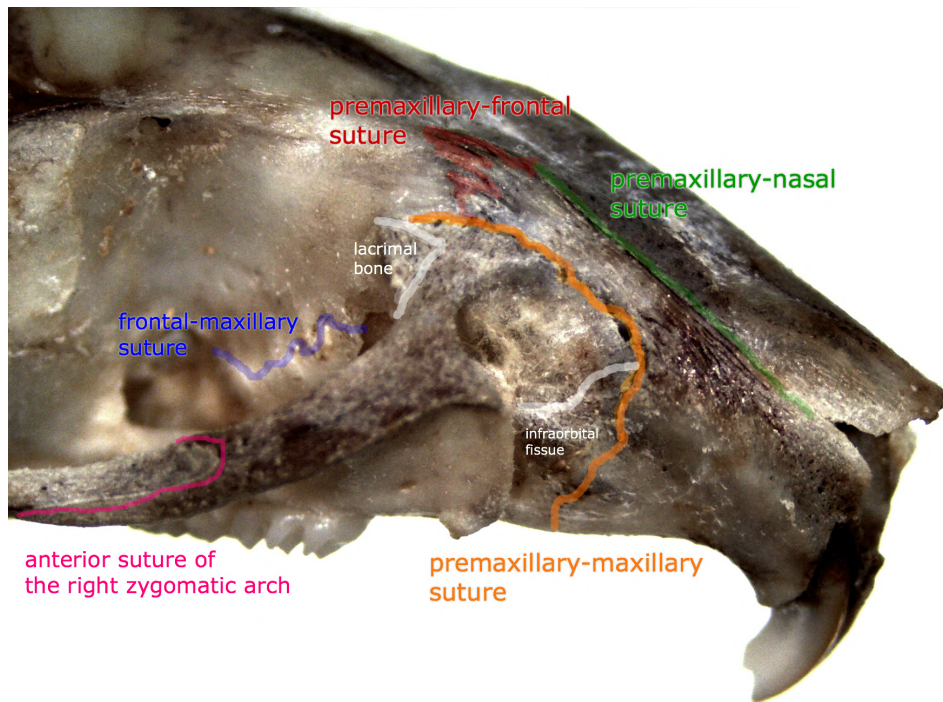


Figure 4: Facial sutures

Photograph of an adult C57BL/6J skull with labeled facial sutures.

Key

Pink, anterior suture of the zygomatic
Red, premaxillary-frontal
Orange, premaxillary-maxillary
Green, premaxillary-nasal
Blue, frontal-maxillary

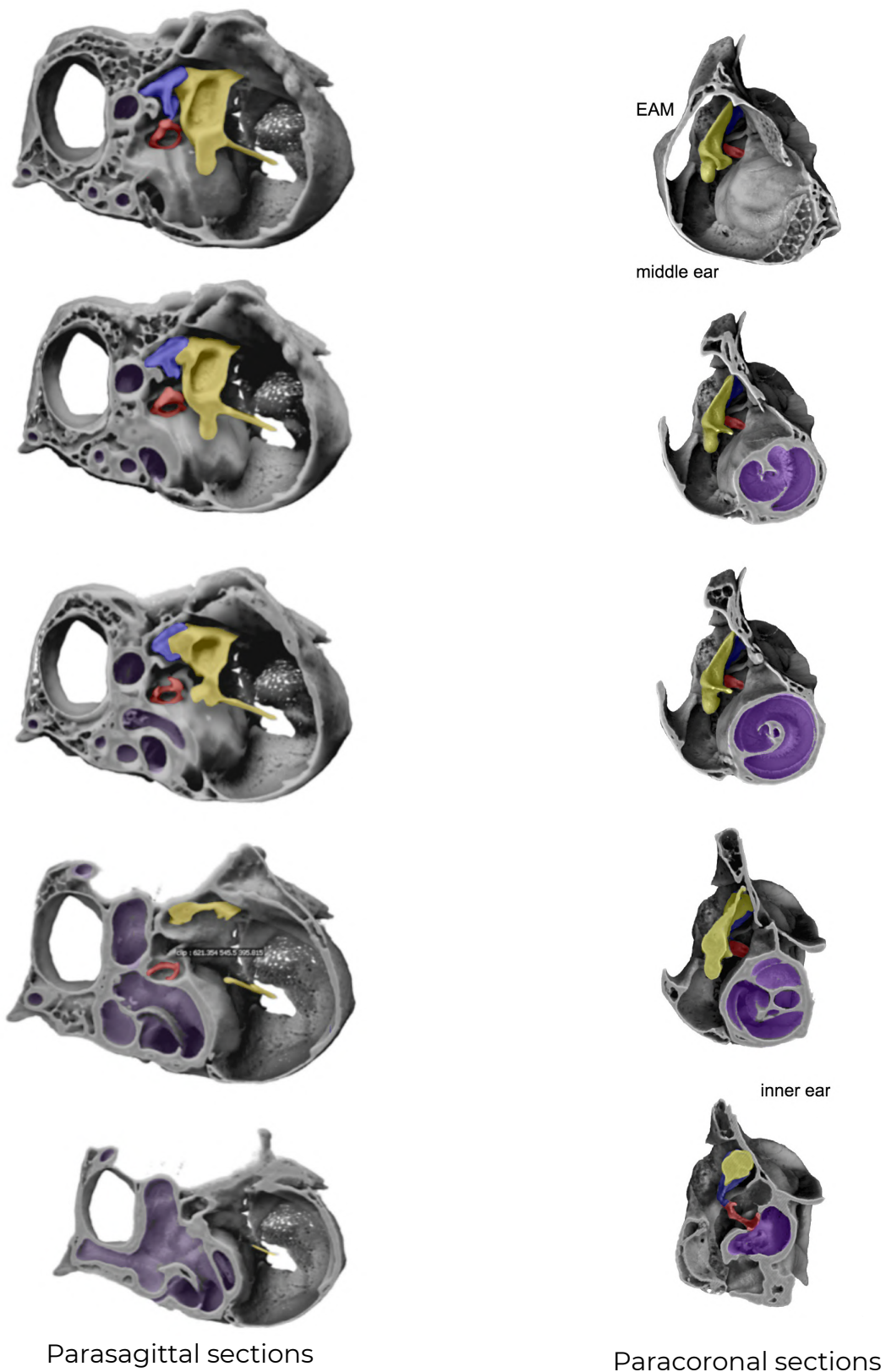


Figure 5: Tympanic bulla

Pseudosections through a disarticulated tympanic bulla, showing the position of the ossicles. μ CT scan rendering from a C57BL/6J mouse older than 50 days.

Key

Yellow, incus
Blue, malleus
Red, stapes
Purple, inner ear

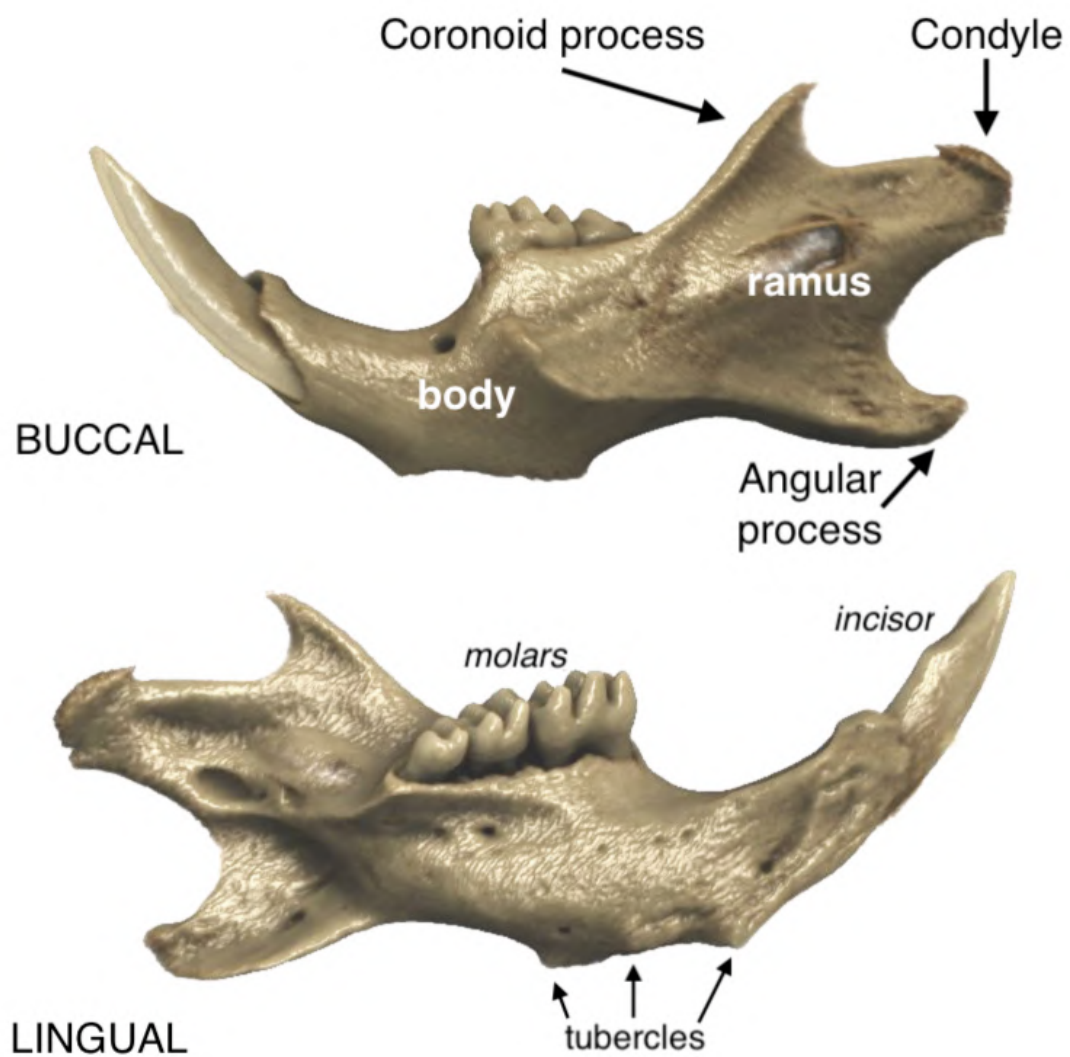


Figure 6: Hemimandible

μ CT scan renderings of lingual and buccal sides of an adult mouse hemimandible.

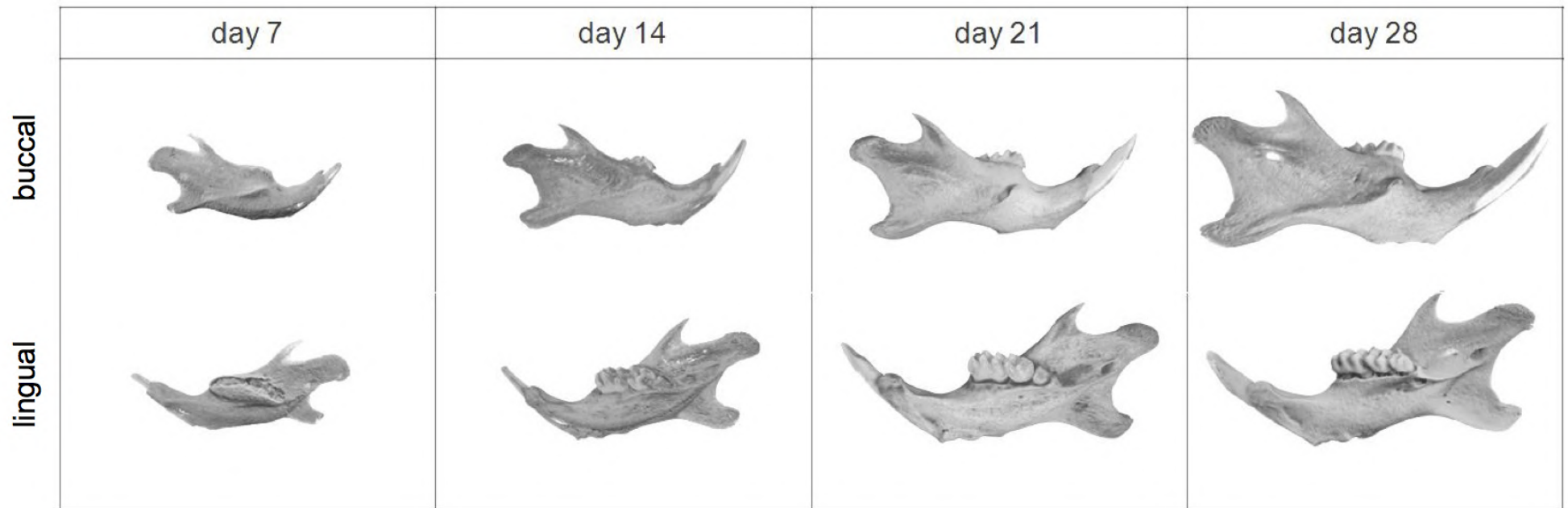


Figure 7: Hemimandibular morphology over the first month of life
 μ CT scan renderings of mouse hemimandibles at postnatal days 7, 14, 21 and 28.

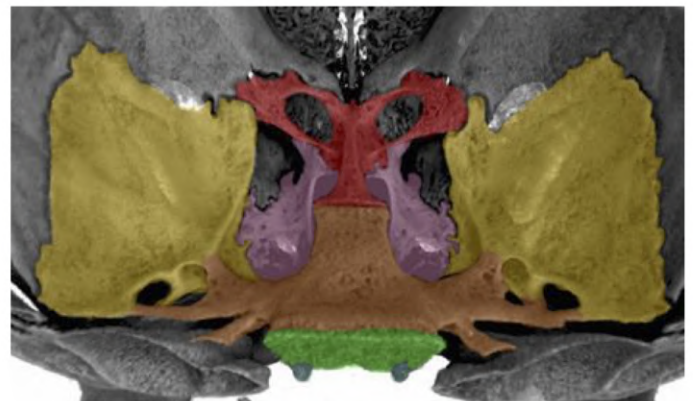
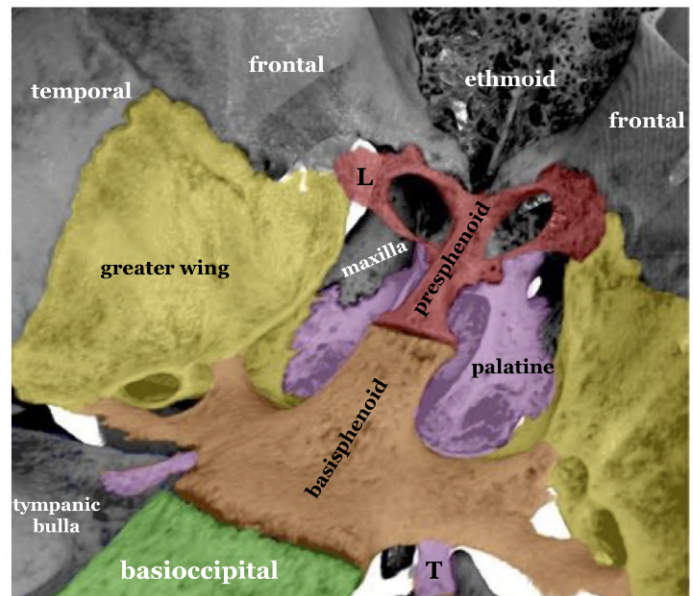
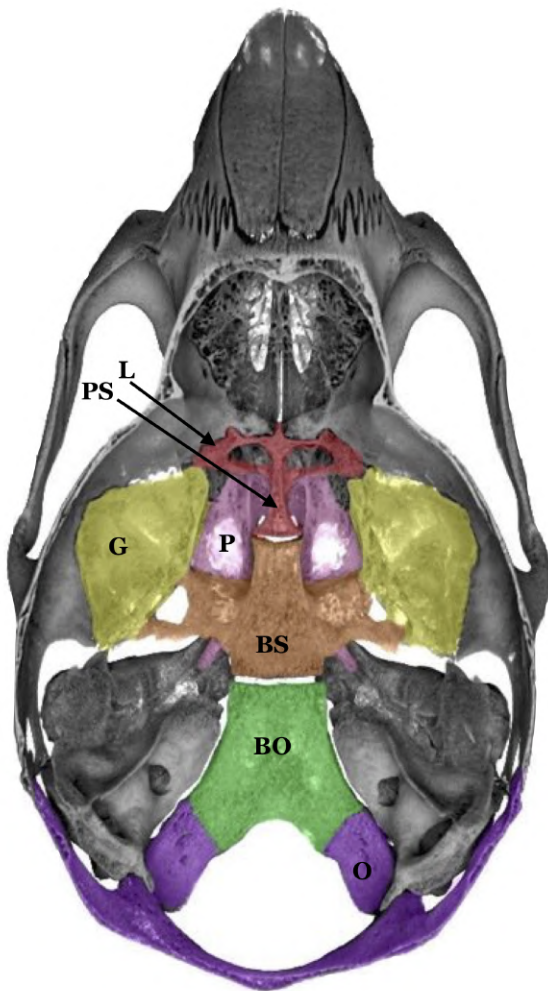


Figure 8: Cranial base anatomy

μ CT scan rendering of the C57BL/6J cranial base at postnatal day 28.

key

Red, presphenoid

Orange, basisphenoid with Yellow, greater wing of the sphenoid

Pink, palatine

Green, basioccipital

Purple, exoccipital

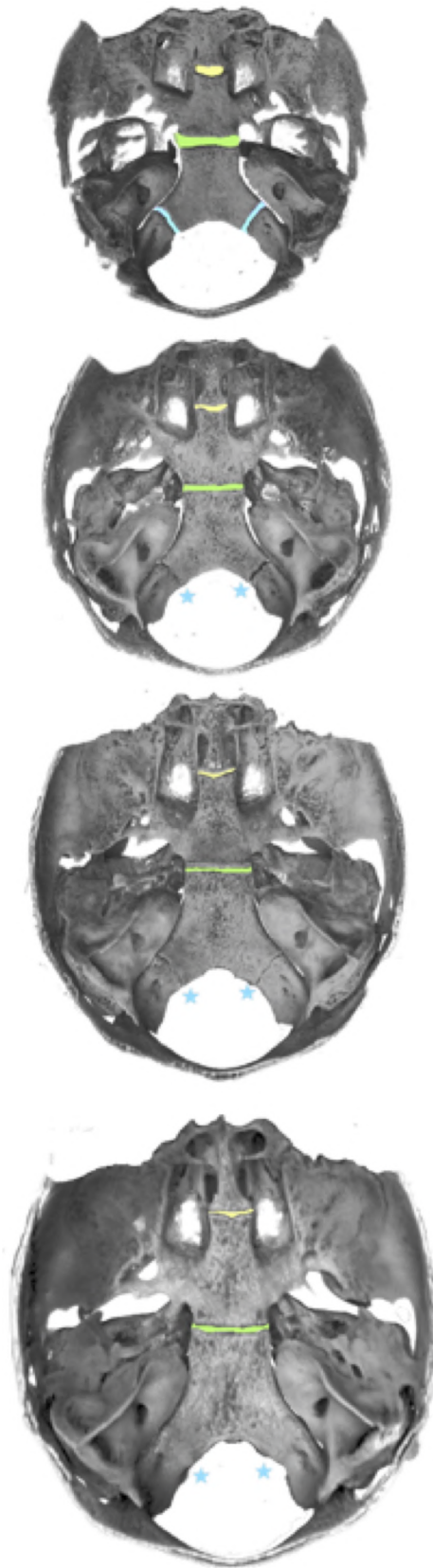


Figure 9: Cranial base morphology over the first month of life
 μ CT scan renderings of the C57BL/6J cranial base at postnatal days 7, 14, 21 and 28.

Key

Yellow, presphenoid synchondrosis

Green, sphenoccipital synchondrosis

Blue, basioccipital-exoccipital synchondrosis



Figure 10: Cervical vertebra

μ CT scan rendering of the cervical vertebral stack of a 28 day old *sbse* mutant.

key

Red, C1 (Atlas)
Orange, C2 (Axis)
Yellow, C3
Green, C4
Blue, C5

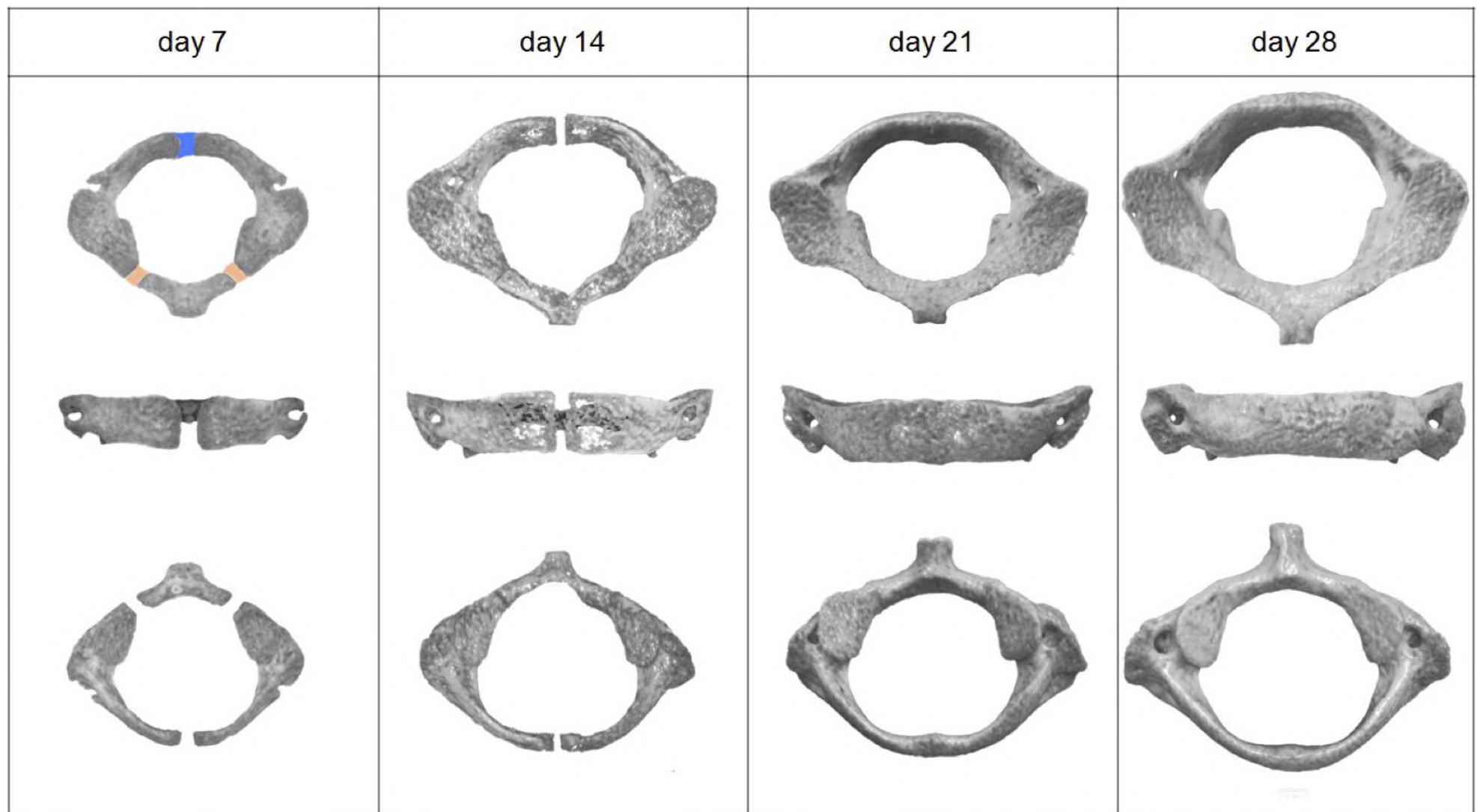


Figure 11: C1 morphology over the first month of life

μ CT scan renderings of representative mouse cervical vertebra 1 (C1) at postnatal days 7, 14, 21 and 28.

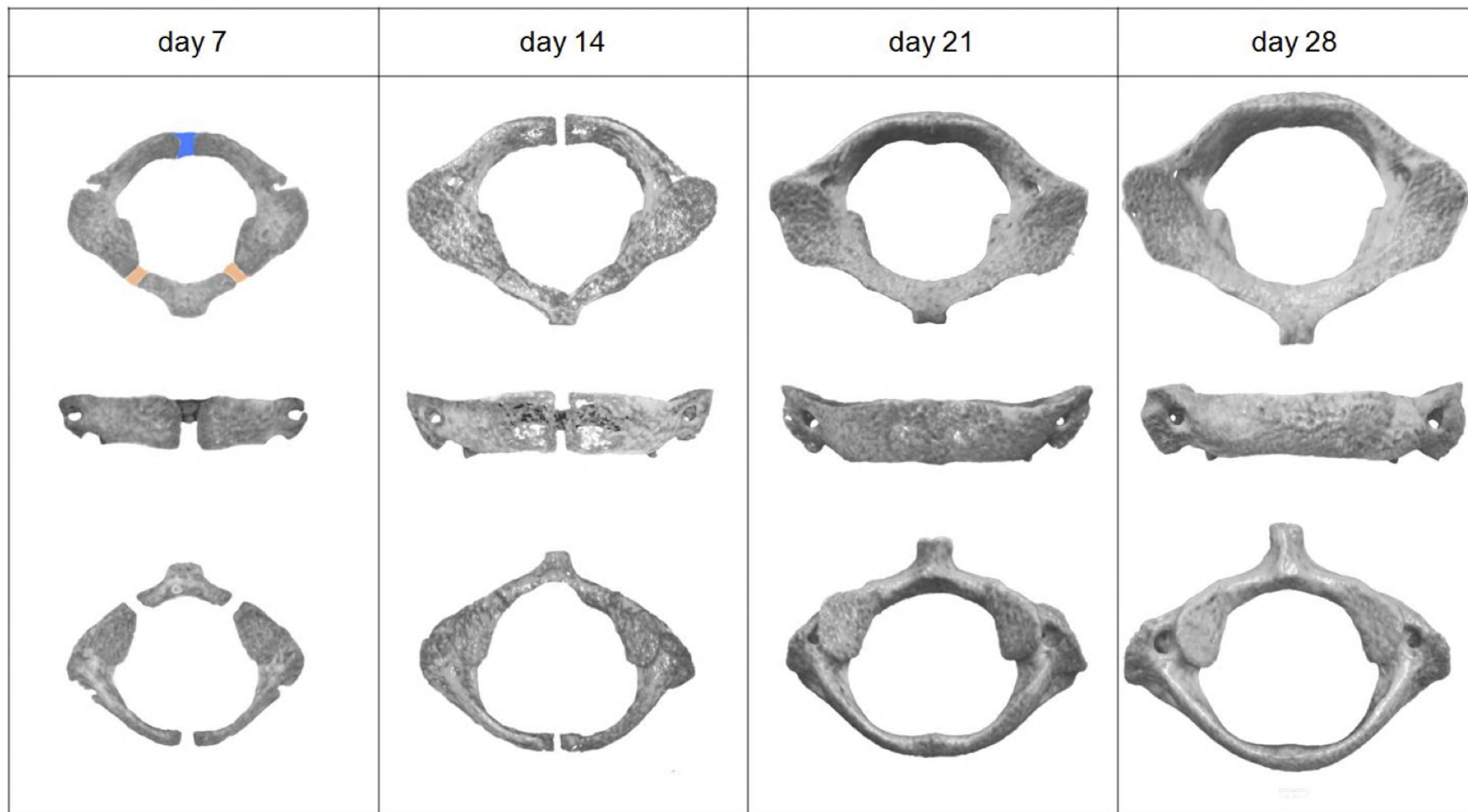


Figure 12: C2 morphology over the first month of life

μ CT scan renderings representative of mouse cervical vertebra 2 (C2) at postnatal days 7, 14, 21 and 28.

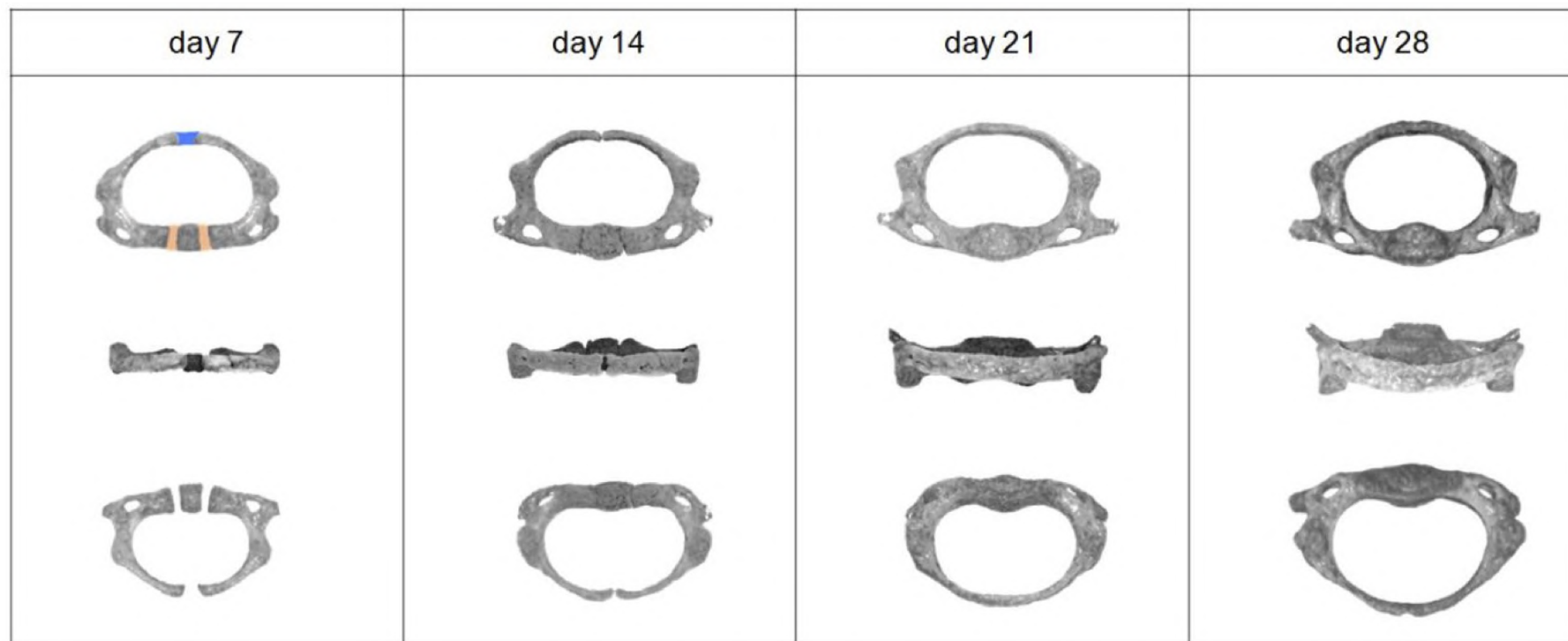
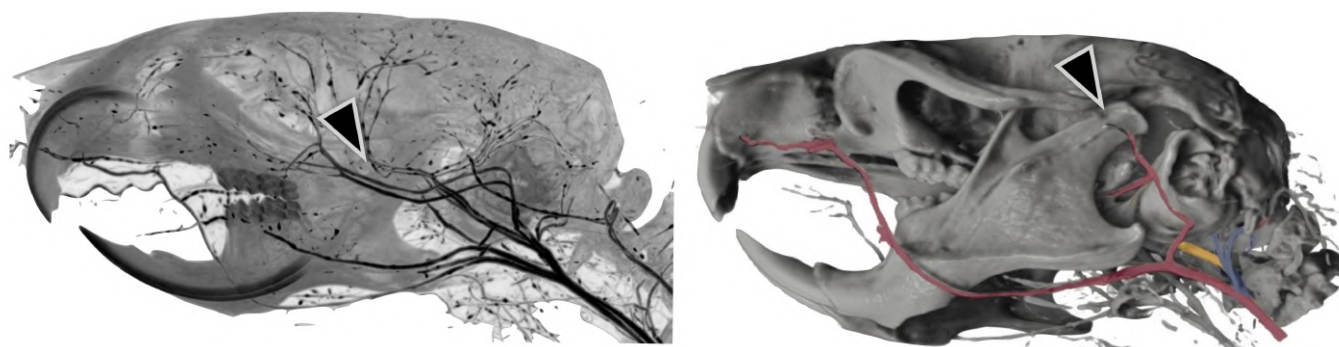


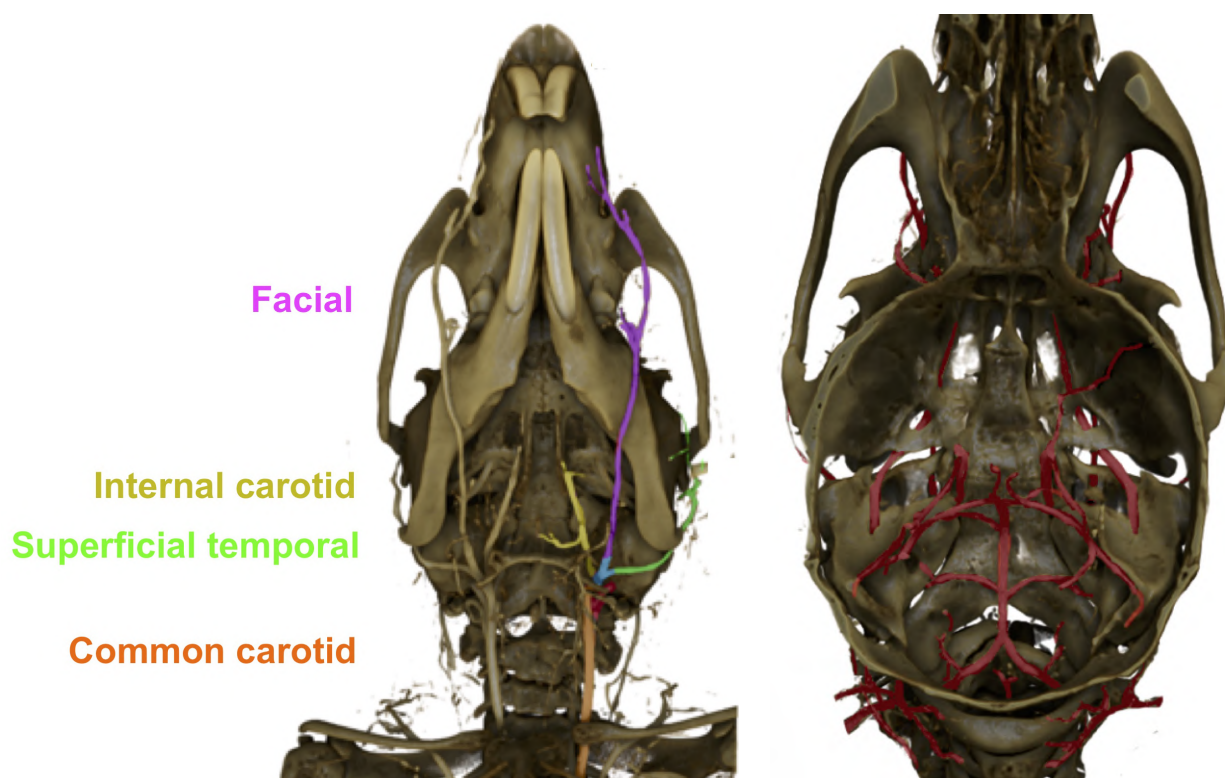
Figure 13: C3 morphology over the first month of life

μ CT scan renderings representative of mouse cervical vertebra 3 (C3) at postnatal days 7, 14, 21 and 28.



Lateral view

Black arrowhead, mandibular condyle



Ventral view with major vessels

Dorsal endocranial view

Figure 14: Cranial vasculature

μ CT scan renderings of the cranium of a 145 day old C57BL/6J mouse after perfusion with radioopaque contrast media.

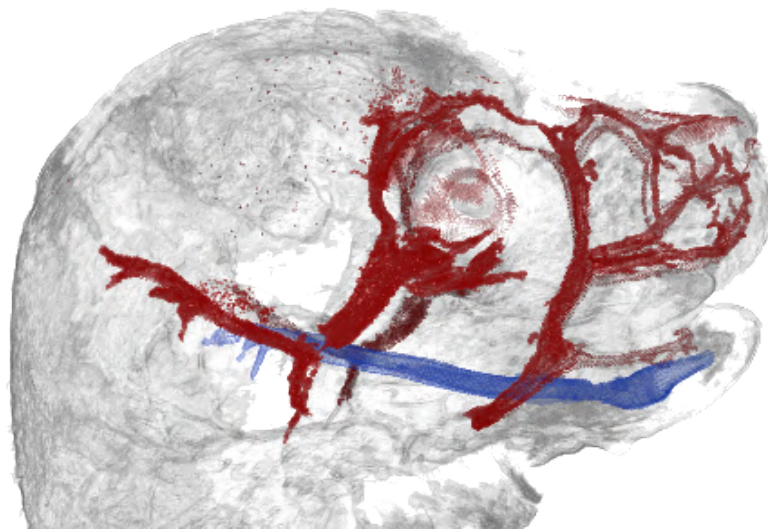


Figure 15: Meckel's cartilage and superficial vasculature

Meckel's cartilage and superficial cranial vasculature in an embryonic mouse pup stained with Alcian blue to label cartilage. The image was generated by segmenting an OPT (Optical Projection Tomography) scan reconstruction and selectively rendering the mandibular cartilage, vasculature, and skin. Absent from this image is the nasal capsule and endochondral bone anlage.

Key

Blue, Meckel's cartilage

Red, Superficial craniovasculature

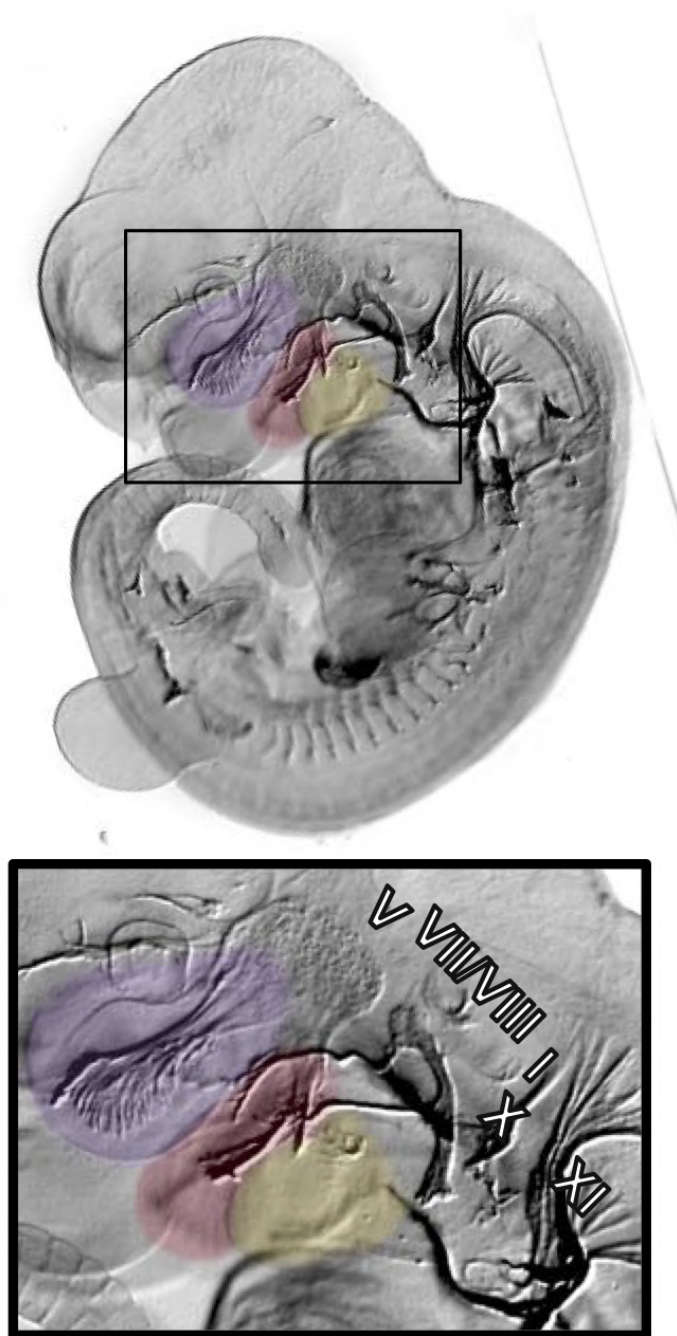


Figure 16: Embryonic cranial nerves

Cranial nerves in the embryonic day 11 C57BL/6J mouse, labeled with mouse α -rat neurofilament (2h3) antibody and stained with DAB.

Key

Purple and red, branchial arch 1
Yellow, branchial arch 2

CN V trigeminal
 CN VII facial
 CN VIII vestibulocochlear
 CN IX glossopharyngeal
 CN XI accessory

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