

FIGURE LEGENDS

Fig.1: 3D reconstruction of the juvenile chondrocranium of *Syngnathus rostellatus* UGMD175388 (13.1 mm SL). **A** lateral view of the right side; **B** dorsal view; **C** ventral view. Abbreviations: bh, basihyal cartilage; c-Meck, Meckel's cartilage; c-rost, rostral cartilage; ch, ceratohyal cartilage; et-p, ethmoid plate; f-on, orbitonasal foramen; fn-hyp, fenestra hypophyseae; hh, hypohyal cartilage; hs, hyosymplectic cartilage; ih, interhyal cartilage; lm-on, orbitonasal lamina; ot-cap, otic capsule; p-p, palatine part of palatoquadrate cartilage; p-q, pterygoquadrate part of palatoquadrate cartilage; pl-oc, pila occipitalis; s-in, internasal septum; tn-m, taenia marginalis; tn-t-m-p, taenia tecti medialis posterior; tr-c, trabecula communis; tt-p, tectum posterius; tt-syn, tectum synoticum. Scale bar, 0.2 mm.

Fig 2: Histological cross sections of the juvenile cranium of *Syngnathus rostellatus* UGMD175388 (13.1 mm SL). **A** rostradorsal part of the snout at the level of the autopalatine; **B** lower jaw; **C** dorsal part of ethmoid region; **D** internasal region; **E** hyoid; **F** right hyoid-suspensorium articulation. Abbreviations: bh, basihyal cartilage; c-Meck, Meckel's cartilage; ch, ceratohyal cartilage; et-p, ethmoid plate; hh, hypohyal cartilage; hs, hyosymplectic cartilage; ih, interhyal cartilage; lm-on, orbitonasal lamina; o-ang, anguloarticular bone; o-apal, autopalatine bone; o-bh, basihyal bone; o-ch, ceratohyal bone; o-den, dentary bone; o-ecp, ectopterygoid bone; o-hh, hypohyal bone; o-hm, hyomandibular bone; o-ih, interhyal bone; o-meth, mesethmoid bone; o-mp, metapterygoid bone; o-mx, maxillary bone; o-par, parietal bone; o-para, parasphenoid bone; o-pop, preopercular bone; o-q, quadrate bone; o-rart, retroarticular bone; o-sym, symplectic bone; ot-cap, otic capsule; p-p, palatine part of palatoquadrate cartilage; p-q, pterygoquadrate part of palatoquadrate cartilage; s-in, internasal septum. Scale bars, 50 μ m.

Fig. 3: 3D reconstruction of the juvenile chondrocranium of *Hippocampus capensis* UGMD175394 (12.8 mm SL) with hyoid depressed. **A** lateral view of the right side; **B** dorsal view; **C** ventral view. Abbreviations: bh, basihyal cartilage; c-Meck, Meckel's cartilage; c-rost, rostral cartilage; ch, ceratohyal cartilage; cp-a, anterior copula; et-p, ethmoid plate; hh, hypohyal cartilage; hs, hyosymplectic cartilage; ih, interhyal cartilage; lm-on, orbitonasal lamina; ot-cap, otic capsule; p-p, palatine part of palatoquadrate cartilage; p-q, pterygoquadrate part of palatoquadrate cartilage; pl-oc, pila occipitalis; r-s-pt, sphenopterotic ridge; s-in, internasal septum; tn-m, taenia marginalis; tn-t-m-p, taenia tecti medialis posterior; tr-c, trabecula communis; tt-syn, tectum synoticum. Scale bar, 0.2 mm.

Fig 4: Histological cross sections of the juvenile cranium of *Hippocampus capensis* UGMD175394 (12.8 mm SL). **A** rostradorsal part of the snout at the level of the autopalatine; **B** dorsal part of ethmoid region; **C** left lower jaw; **D** internasal region; **E** part of right suspensorium; **F** hyoid-suspensorium articulation. Abbreviations: bh, basihyal cartilage; c-Meck, Meckel's cartilage; ch, ceratohyal cartilage; et-p, ethmoid plate; hh, hypohyal cartilage; hs, hyosymplectic cartilage; ih, interhyal cartilage; lm-on, orbitonasal lamina; o-ang, anguloarticular bone; o-apal, autopalatine bone; o-ch-p, posterior ceratohyal bone; o-ecp, ectopterygoid bone; o-hh, hypohyal bone; o-hm, hyomandibular bone; o-ih, interhyal bone; o-leth, lateral ethmoid bone; o-meth, mesethmoid bone; o-mp, metapterygoid bone; o-par, parietal bone; o-para, parasphenoid bone; o-pop, preopercular bone; o-q, quadrate bone; o-rart, retroarticular bone; o-sym, symplectic bone; o-vm, vomeral bone; p-p, palatine part of palatoquadrate cartilage; p-q, pterygoquadrate part of palatoquadrate cartilage; s-in, internasal septum. Scale bars, 50 µm.

Fig. 5: Adult osteocranium of *Syngnathus rostellatus* UGMD175381 (111.1 mm SL).

A lateral view of the right side; **B** dorsal view; **C** ventral view; **D** lateral view of snout tip; **E** dorsal view of snout tip. Abbreviations: c-rost, rostral cartilage; o-ang, anguloarticular bone; o-ant-lac, antorbitolacrimal bone; o-apal, autopalatine bone; o-ch-a, anterior ceratohyal bone; o-ch-p, posterior ceratohyal bone; o-cl, cleithral bone; o-den, dentary bone; o-ecp, ectopterygoid bone; o-hm, hyomandibular bone; o-ih, interhyal bone; o-io-II, second infraorbital bone; o-iop, interopercular bone; o-leth, lateral ethmoid bone; o-meth, mesethmoid bone; o-mp, metapterygoid bone; o-mx, maxillary bone; o-op, opercular bone; o-par, parietal bone; o-para, parasphenoid bone; o-pop, preopercular bone; o-postp, postparietal bone; o-postt, posttemporal bone; o-prmx, premaxillary bone; o-pt, pterotic bone; o-q, quadrate bone; o-rart, retroarticular bone; o-soc, supraoccipital bone; o-sph, sphenotic bone; o-spop, suprapreopercular bone; o-sym, symplectic bone; o-uh, urohyal bone; o-vm, vomeral bone; r-br, branchiostegal ray. Scale bars, 1 mm.

Fig. 6: Adult osteocranium of *Hippocampus capensis* UGMD175389 (96.1 mm SL).

A lateral view of the right side; **B** dorsal view; **C** ventral view; **D** lateral view of snout tip; **E** dorsal view of snout tip. Abbreviations: c-rost, rostral cartilage; cr, corona; o-ang, anguloarticular bone; o-ant, antorbital bone; o-apal, autopalatine bone; o-ch-a, anterior ceratohyal bone; o-ch-p, posterior ceratohyal bone; o-cl, cleithral bone; o-den, dentary bone; o-ecp, ectopterygoid bone; o-epoc, epioccipital bone; o-hm, hyomandibular bone; o-ih, interhyal bone; o-io-II, second infraorbital bone; o-iop, interopercular bone; o-leth, lateral ethmoid bone; o-lac, lacrimal bone; o-meth, mesethmoid bone; o-mp, metapterygoid bone; o-mx, maxillary bone; o-op, opercular bone; o-par, parietal bone; o-para, parasphenoid bone; o-pop, preopercular bone; o-postt, posttemporal bone; o-prmx, premaxillary bone; o-pt, pterotic bone; o-q, quadrate bone; o-rart, retroarticular bone; o-soc, supraoccipital bone; o-sop,

subopercular bone; o-sph, sphenotic bone; o-sym, symplectic bone; o-uh, urohyal bone; o-vm, vomeral bone; r-br, branchiostegal ray. Scale bars, 1 mm.

Fig. 7: Crania, scaled to same head length (from front of autopalatine bone to back of occipital region), of juveniles (beige) and adults (grey). **A** juvenile *Gasterosteus aculeatus* (16.0 mm SL) (after Swinnerton, 1902); **B** adult *G. aculeatus* (SL not mentioned) (after Anker, 1974); **C** juvenile chondrocranium *Syngnathus rostellatus* UGMD175388 (13.1 mm SL); **D** adult *S. rostellatus* UGMD175381 (111.1 mm SL); **E** juvenile chondrocranium *Hippocampus capensis* UGMD175394 (12.8 mm SL); **F** adult *H. capensis* UGMD175389 (96.1 mm SL). Black arrows indicates rostral border of orbita, white arrows indicate front of the autopalatine bone. Area in between the arrows corresponds to the ethmoid region. Bars show length of ethmoid region relative to head length of juveniles (beige) and adults (grey). Note the elongation in both syngnathid species.