DEVELOPMENT OF THE BASIPTERYGOID PROCESS IN LACERTID LIZARDS

Oleksandr Yaryhin[1], Jozef Klembara[2]

[1] I. I. Schmalhausen institute of zoology NAS of Ukraine, Department of Evolutionary Morphology of Vertebrates, B. Khmelnitsky str., 15,Kyiv, 01601, Ukraine

[2]Comenius University in Bratislava, Faculty of Natural Sciences, Department of Ecology, Mlynská dolina B-2, SK-84215 Bratislava, SLOVAKIA

alex.yarigin@gmail.com; klembara@fns.uniba.sk

Introduction

In embryogenesis of chondrocranium in most lizards, basipterygoid process first appears as a lateral extension of posterior end of trabecle and articulates with pterygoquadrate cartilage. However, in *Lacerta agilis* basipterygoid process first appears as an independent nodule of cartilage positioned close to the posterior end of trabecle and only later in ontogeny fuses with it. Similar ontogeny of basipterygoid process was described in chamaeleonid *Microsaura pumila*. We studied the ontogenetic origin of basipterygoid process at growth stages of *Lacerta viridis, Darevskia armeniaca* and *Eremias arguta* in comparison with *L. agilis.*

Material and methods

Developmental stages were determined using the table of normal development for *Zootoca vivipara.* Serial sections were stained with alcian blue, hematoxylin and eosin.

Fig.2. *Lacerta viridis.* Transverse sections through basipterygoid process at stage 32 (a), 33 (b) and 34 (c)

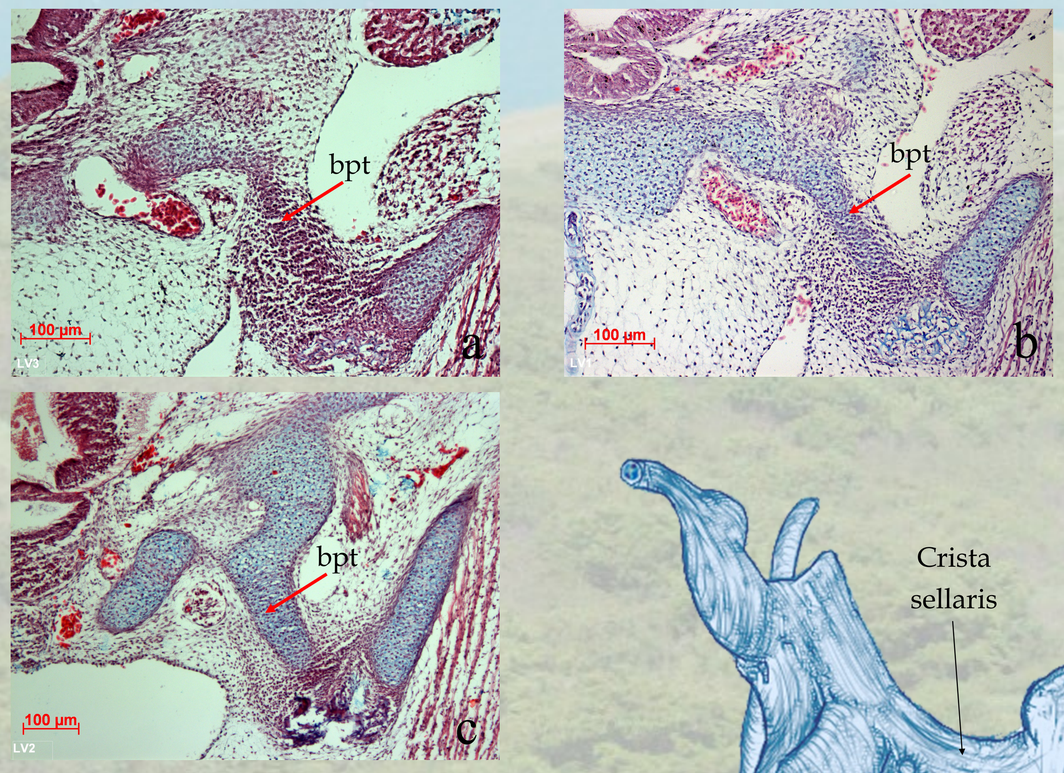
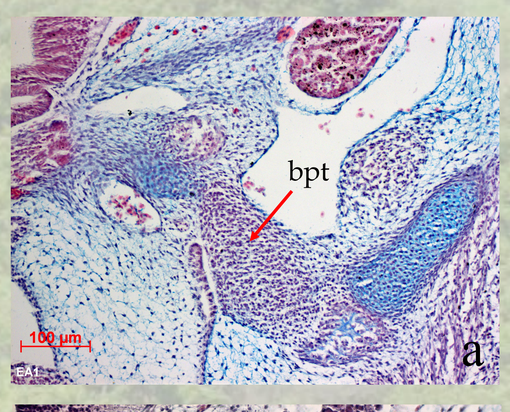
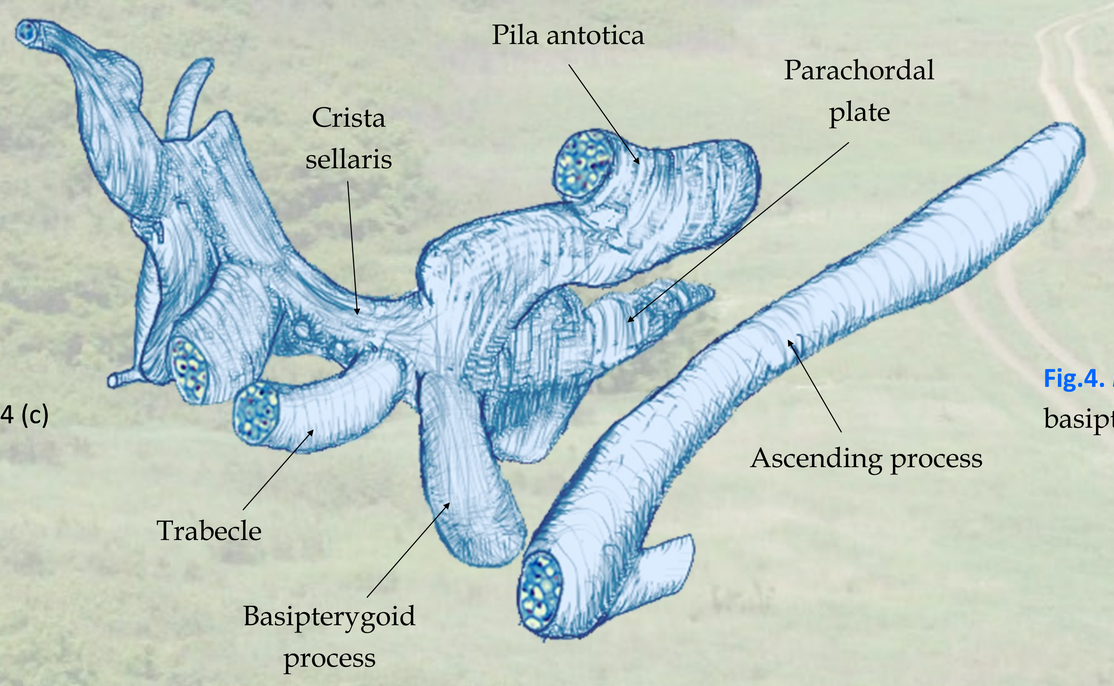


Fig.3. *Eremias arguta.* Transverse sections through basipterygoid process at stage 32 (a), 33 (b) and 34 (c)





Schematic drawing of the part of lacertid chondrocranium with fully formed basipterygoid process.

Fig.4. *Darevskia armeniaca.* Transverse sections through basipterygoid process at stage 32 (a), 33 (b) and 34 (c)

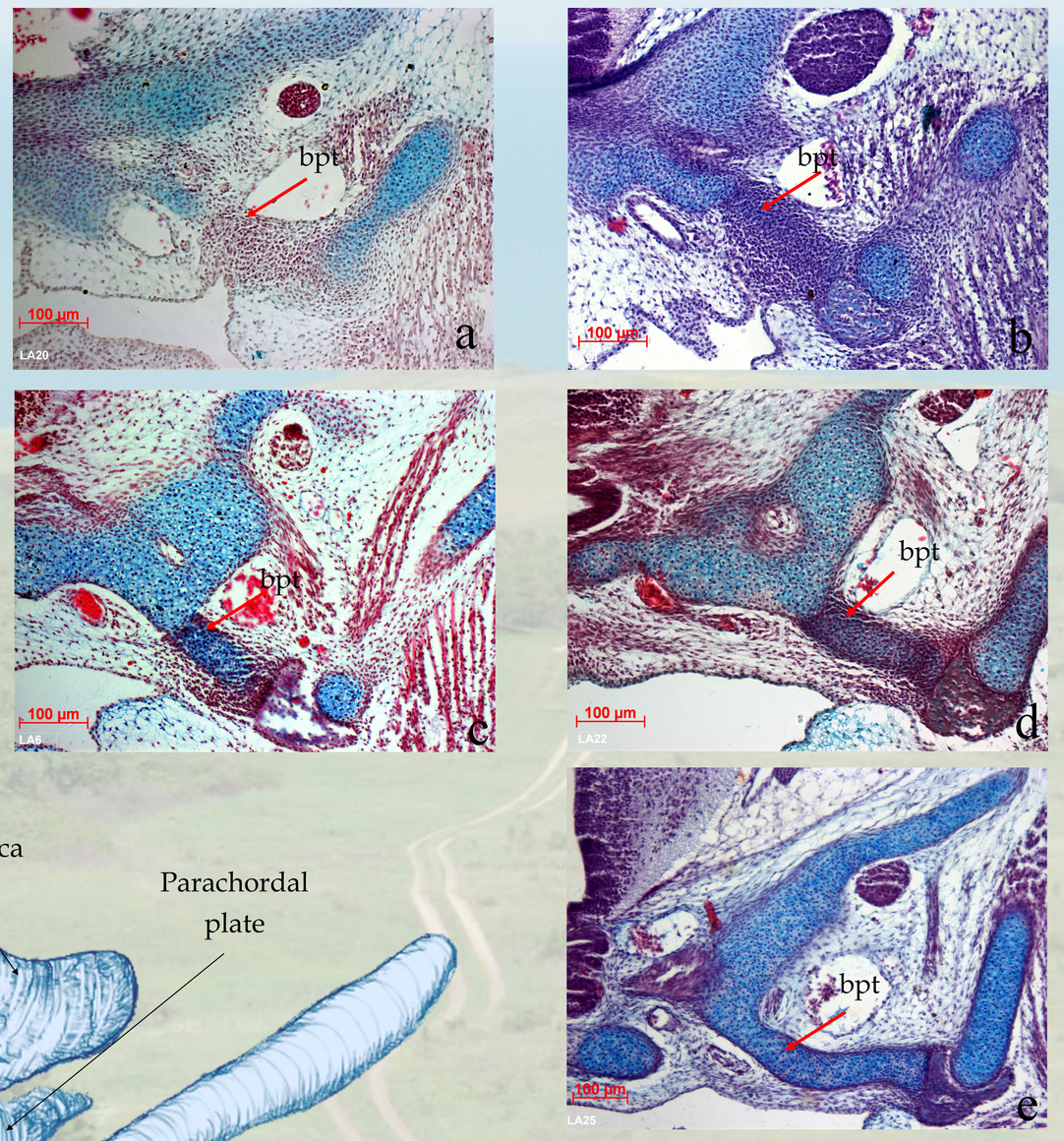
At stage 33 basipterygoid process starts to chondrify (Fig. 1b, 2b, 3b, 4b). However, only in *L. agilis* basipterygoid process appears as an independent center of chondrification (Fig. 2b). At stage 34 (Fig. 1c, 2c, 3c, 4c) basipterygoid process is already cartilaginious, but in *L.agilis* the boarder of the fusion between basipterygoid process and trabecle is well distinguished.

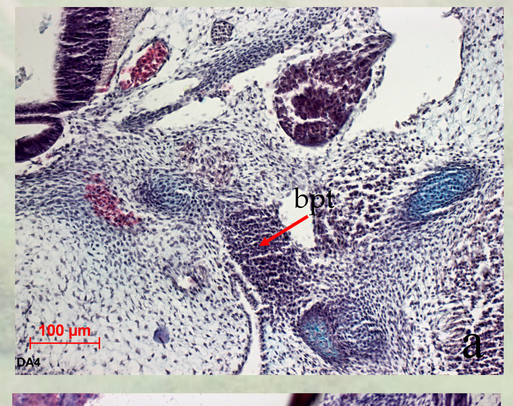
More or less similar state can be seen only in *D. armeniaca* (Fig. 4b), but if in case of *L. agilis* this "boarder" persists during the whole stage 34 (Fig. 1c,d) and disappears only at stage 35 (Fig. 1e), in *D. armeniaca* it disappears just before stage 34.

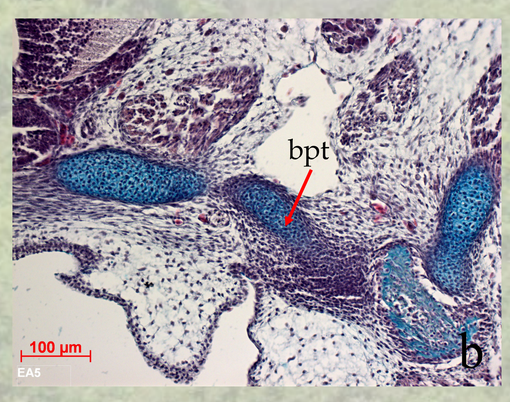
Results

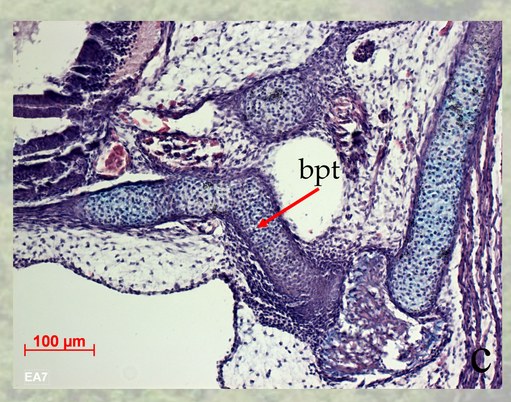
In all studied species the first appearance of the future basipterygoid process (bpt) is visible at stage 32 (Fig. 1a, 2a, 3a, 4a). It is present as a condensation of mesenchymatous cells interposed between the posterior end of trabecle and the basal portion of ascending process.

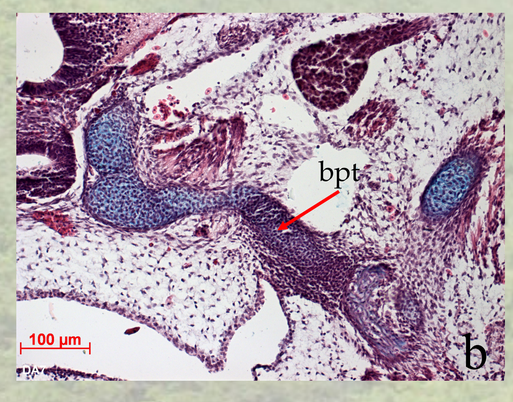
Fig.1. *Lacerta agilis.* Transverse sections through basipterygoid process at stage 32 (a), 33 (b), 34 (c), 34+ (d), 35 (e)

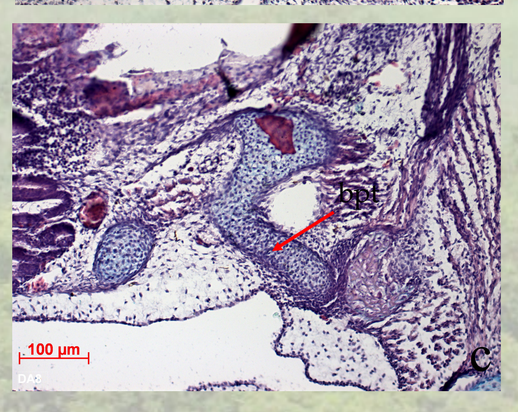












Conclusion

- independent ontogenetic origin of basipterygoid process is rather exceptional within lizards;
- the pattern of ontogenetic origin of basipterygoid process varies even within the genus.