**Supplementary 1**

***Zebrafish anatomy***

The skeletal system of zebrafish is similar to the tetrapod system with a complex ossified skeleton that contains cartilage, bone and teeth, but no spongy bone and bone marrow [3]. In zebrafish, the skeleton can be divided into three parts: the cranium, the axial skeleton with its associated fins, and the fin tail [8]. The skull of the adult zebrafish is composed of 73 cranial bones, including 29 dermal bones, one membrane bone and 43 cartilage bones (Cubbage and Mabee, 1996; Eames et al., 2013). The first bones that begin to form during development are in the cranium. These bones form after 5 days post fertilization (dpf) [10,12] (**S1 Fig.**). In the cranium, the zebrafish has three pairs of otoliths: the sagitta, lapillus and asteriscus (**Video 1**). The lapillus was described as essential for the survival of the fish [30]. The sagitta and lapillus are first formed around 19 -22 hours post fertilization (hpf) [31], whereas the asteriscus is formed later (11-12 dpf) [32]. The three pairs of otoliths differ in their calcium carbonate mineral polymorphs: while the sagitta and lapillus are composed of aragonite, the asteriscus is composed of vaterite [33]. The aragonite and vaterite minerals play a role in the perception of sound and balance [34].

The axial skeleton is separated into 4 regions: (1) the Weberian or cervical vertebrae, including the first 4 vertebrae and the Weberian apparatus (**Video 1**); (2) the precaudal vertebrae, formed by 10 vertebrae bearing ribs; (3) the caudal vertebrae, made up of 14 vertebrae with hemal arches; (4) and the caudal fin vertebrae, formed by 3 vertebrae [8,35]. The bones in the skeleton have both dermal and cartilagenous origins, in addition to a perichordal origin for the centra [35]. At 7 dpf the trunk region of the axial skeleton is observed (based on Alizarin Red staining), with the initial formation of vertebrae 3 and 4 centra [8,35]. Then the first two vertebrae are mineralized at the same time as vertebra 5. The remaining vertebrae mineralize after this. These centra are mineralized first in a ‘ring’ shape which then expands in the antero-posterior axis [35]. The fin tail is formed by 3 caudal vertebrae, 11 other bones and 19 fin rays [8]. The formation of the tail begins with the ural 1 at 17 dpf and is fully formed at 30 dpf [10].

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