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## Electrical stimulation of embryo development supports the Inside story scenario of human development and evolution.

Animal evolution, such as vertebrate evolution, is driven by random mutations at the genome level. However, it has long been suggested that there exist physical constraints which limit the set of possible outcomes. In vertebrate evolution, it has been observed that head features, notably in the genus homo, can be ordered in a morphological diagram such that, as the brain expands, the head rocks more forward, face features become less prognathous and the mouth tends to recede. One school of paleontologist suggests that this trend is wired somewhere structurally into the anatomy, and that random modifications of genes push up or down animal structures along a pre-determined path. This view of human origin is called Inside story, with reference to the classical East side story of human origin. This view has received some support at an observational and theoretical level, but no actual experiment is able to settle the dispute. I present here an experiment of electric stimulation of head tissue in the chicken embryo which is able to enhance suddenly the magnitude of tension forces during development. This experimental intervention at the whole level, causes brain shrinkage and a rotatory movement of the head around the mouth, congruent with tissue texture, which explains the correlation between increased brain size, increased head flexure and reduced prognathism. This shows that reciprocally, reduction in tension forces during development may cause simultaneously brain extension, anterior rotation of the head, and reduction of prognathism. This gives the first experimental support to the idea that there is, in the texture of the vertebrate embryo, a latent dynamic pattern for the observed paleontological trends in craniates towards homo.

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