

What makes us musical animals

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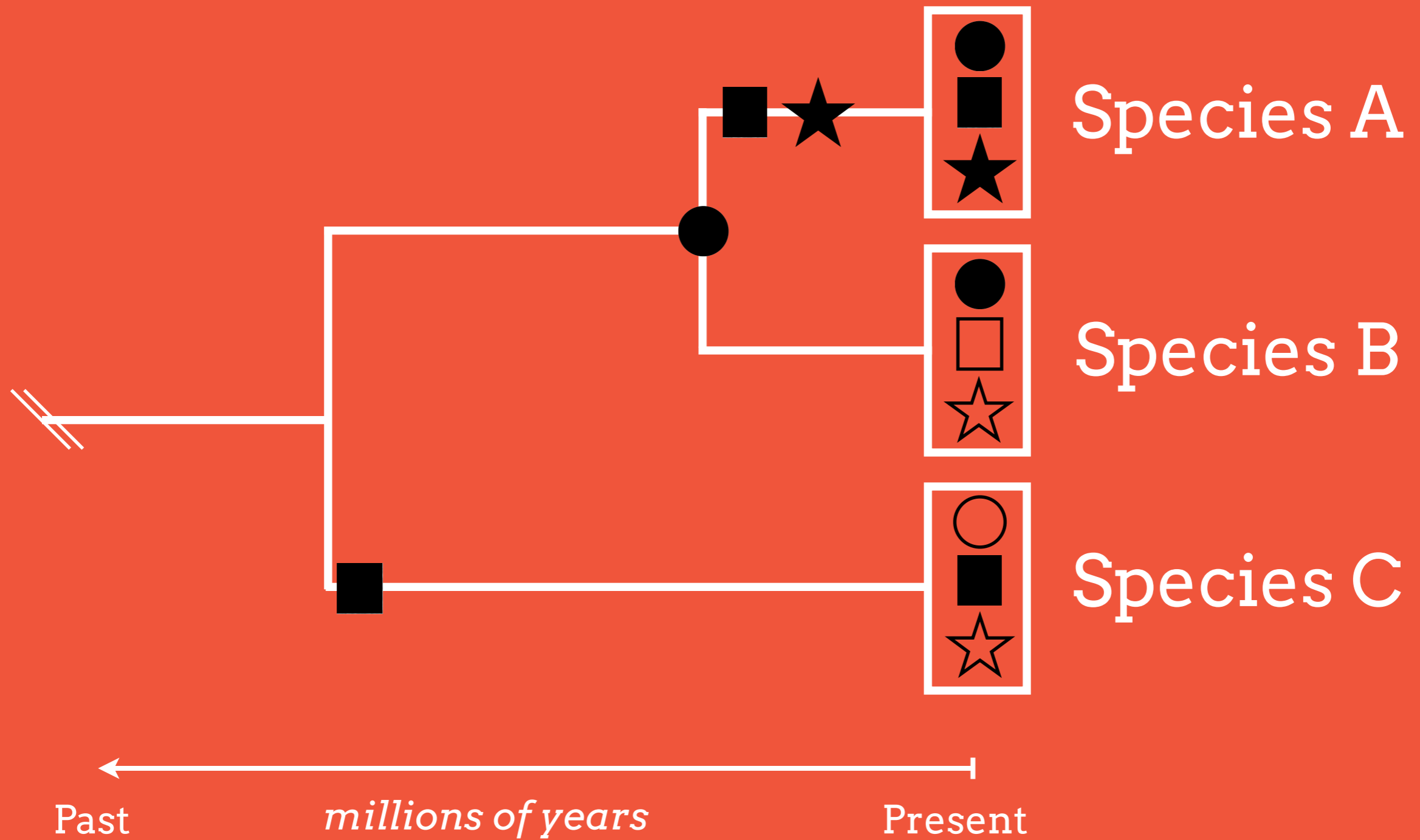




Musicality – in all its complexity – can be defined as a natural, spontaneously developing set of traits based on and constrained by our cognitive and biological system.

Music – in all its variety – can be defined as a social and cultural construct based on that very musicality.

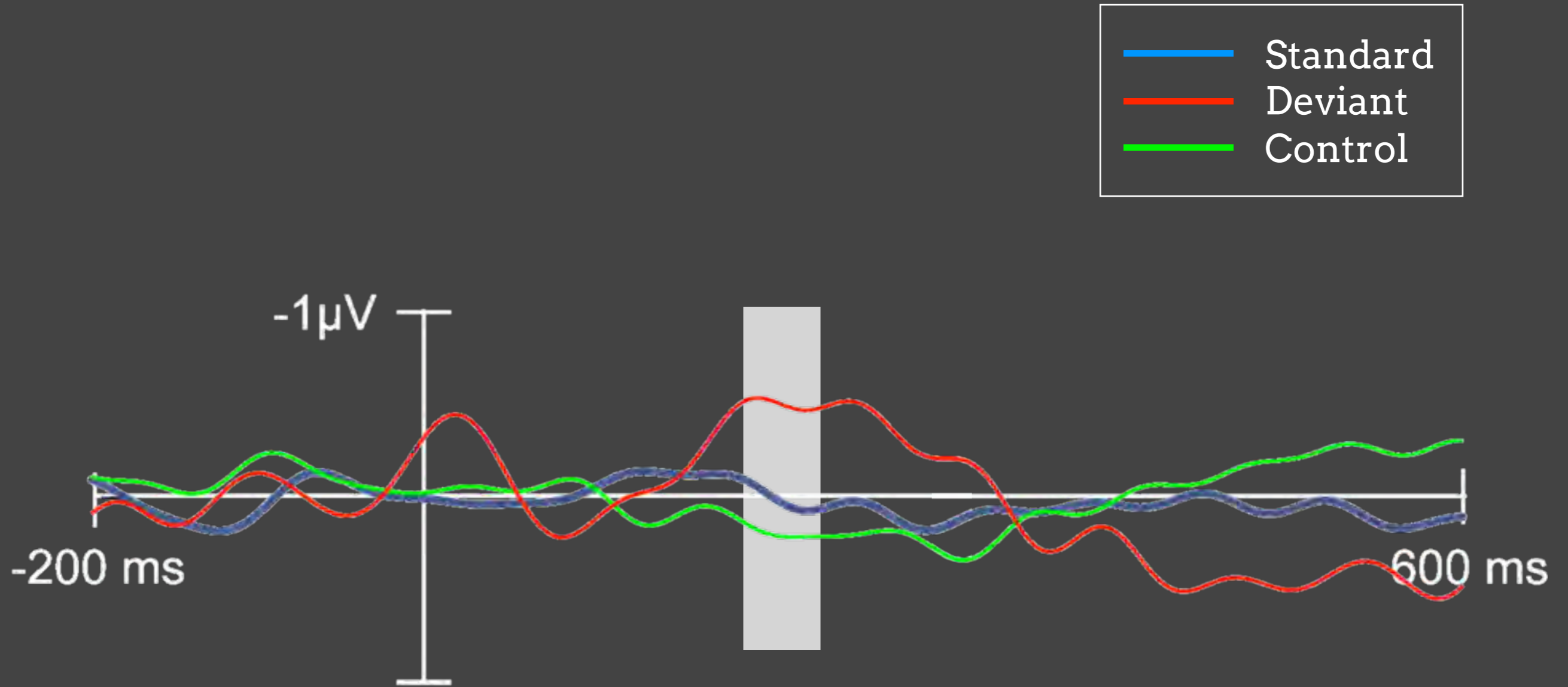
Multicomponent perspective

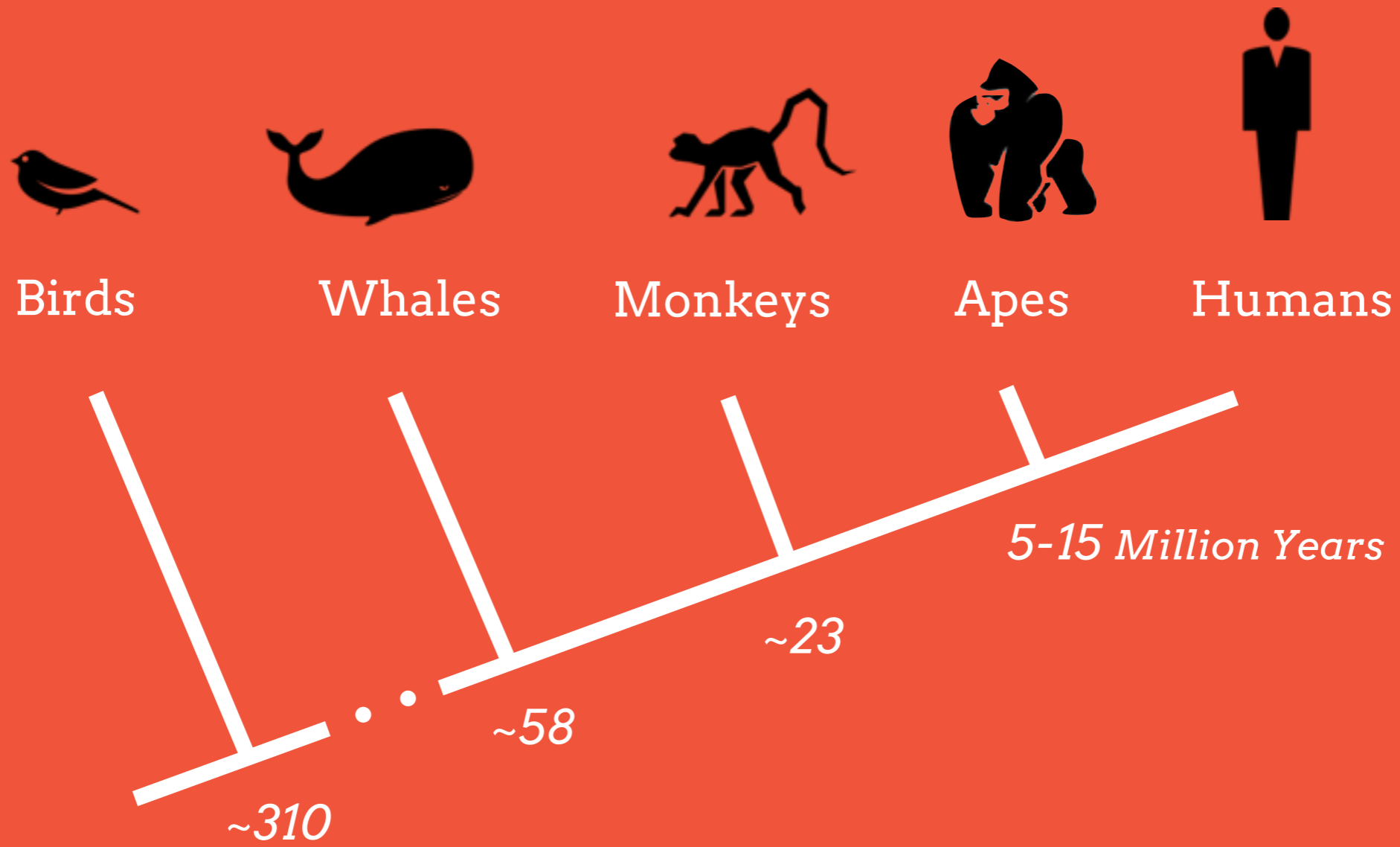




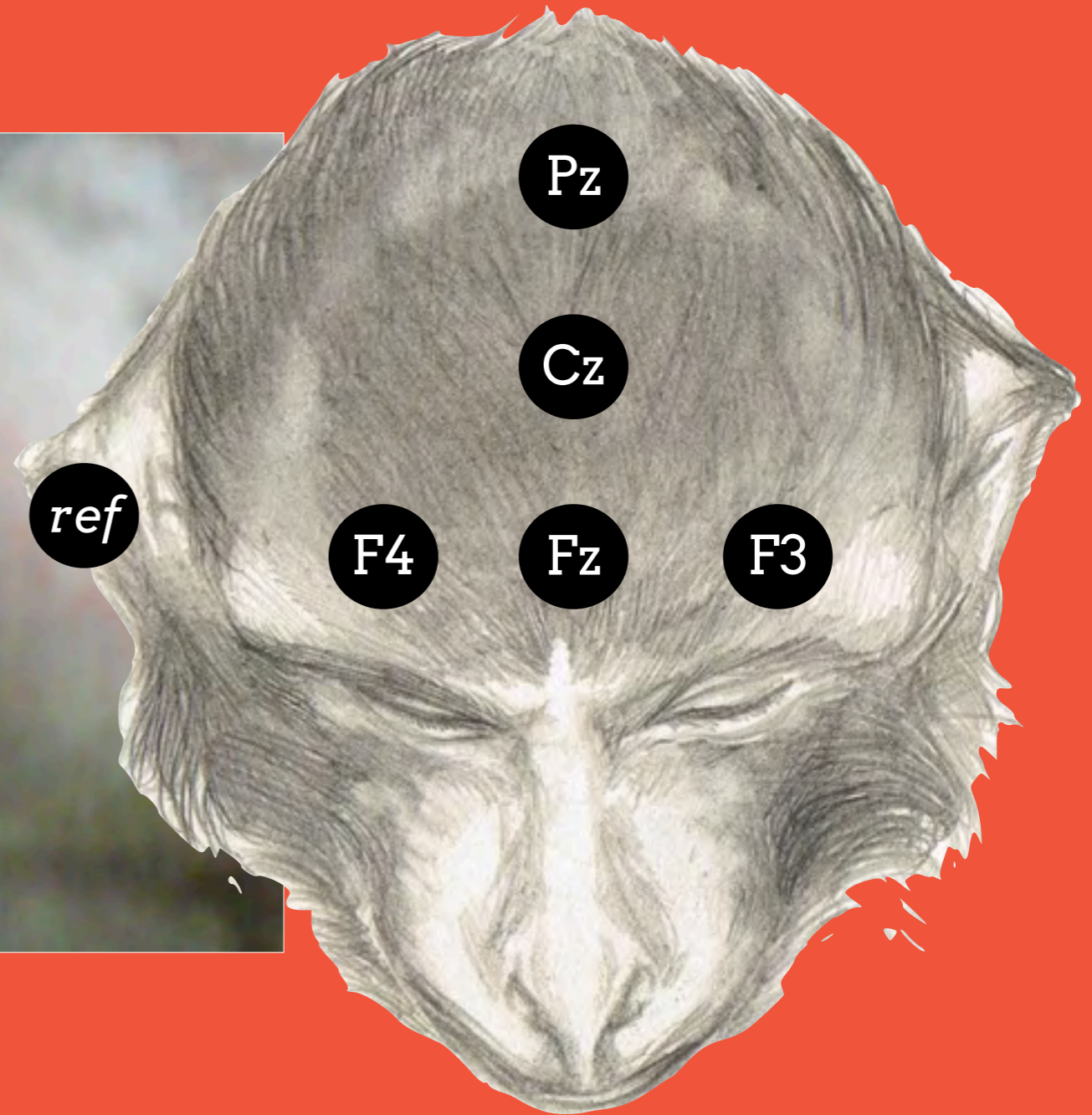
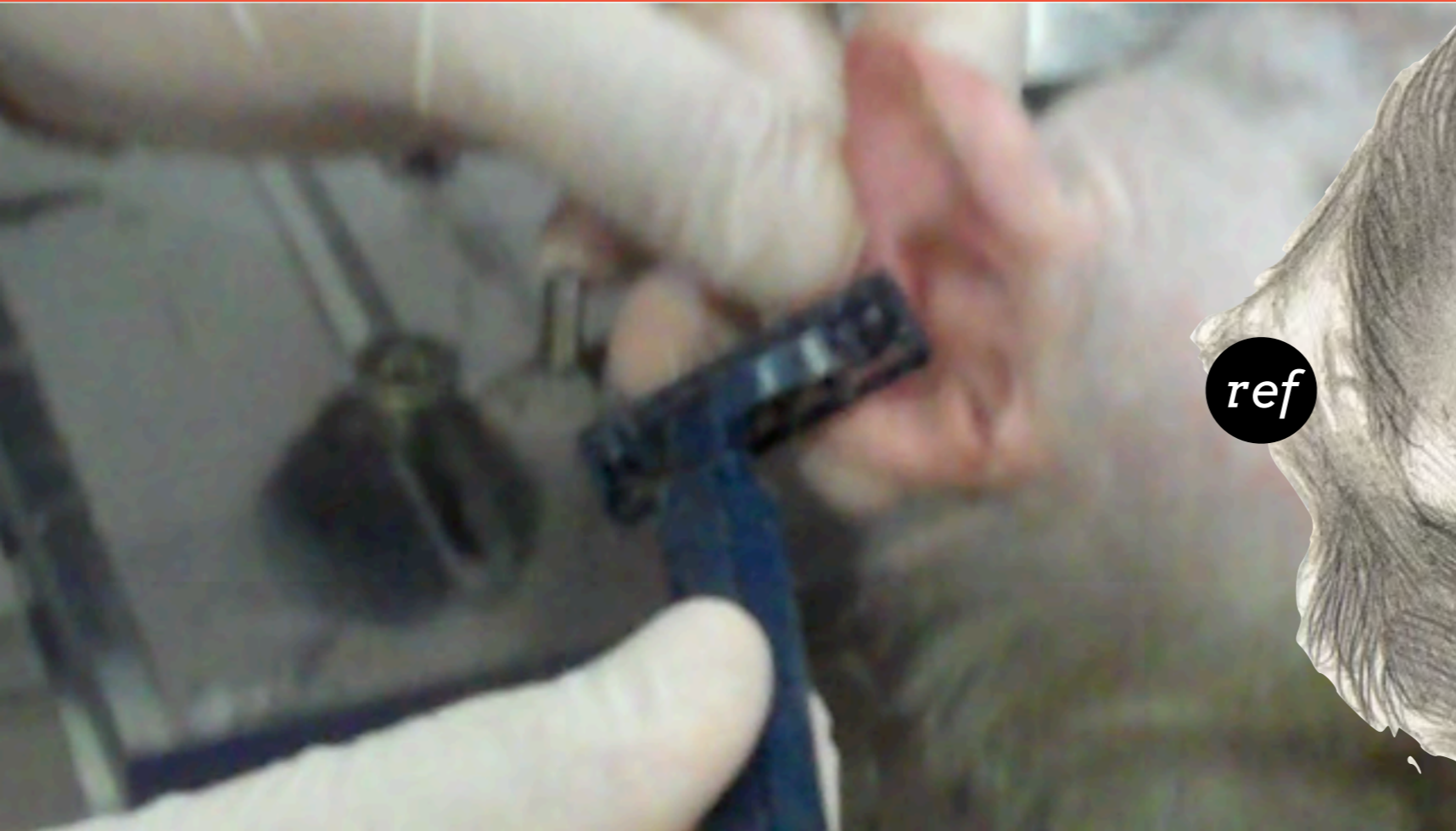




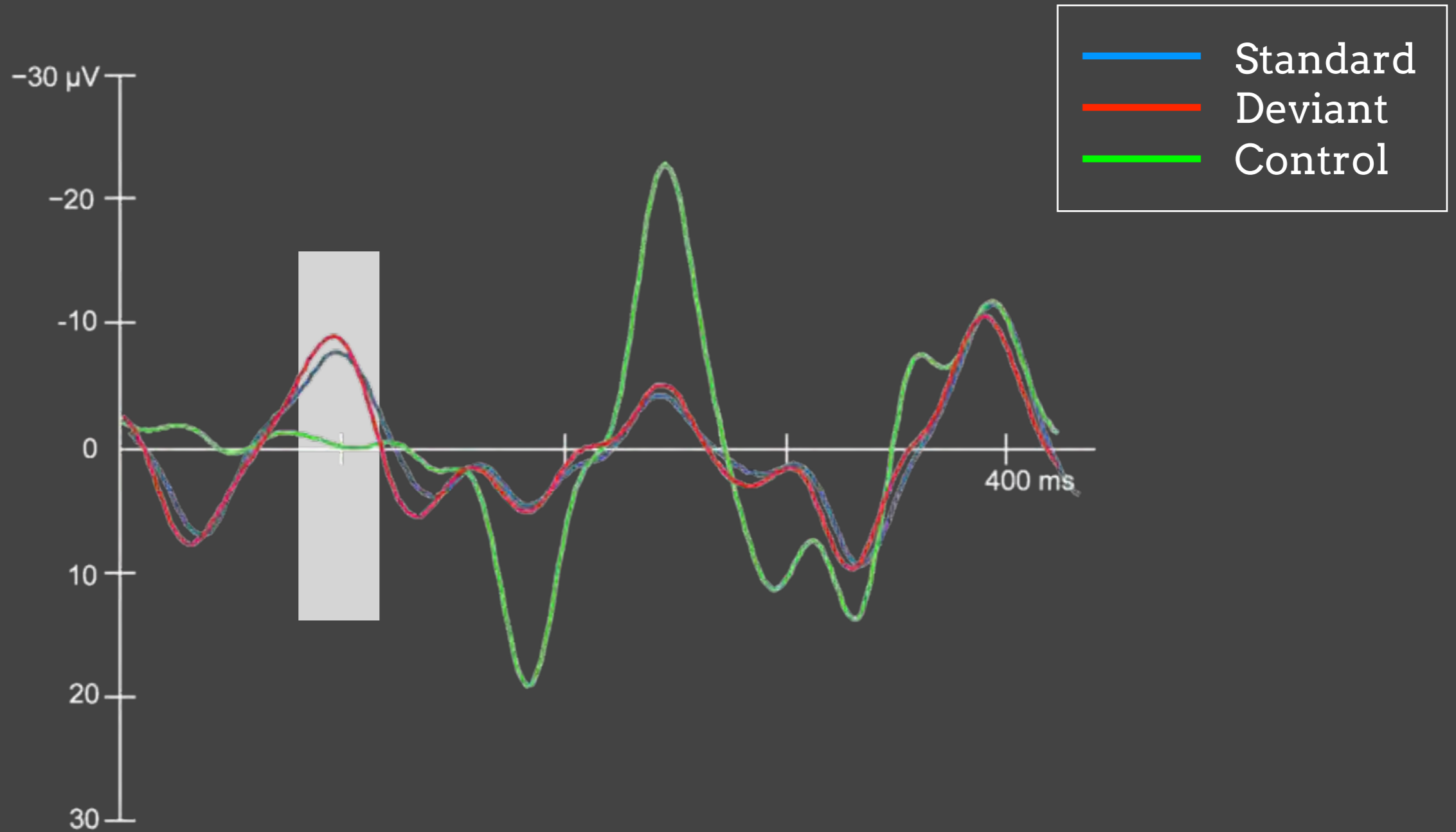




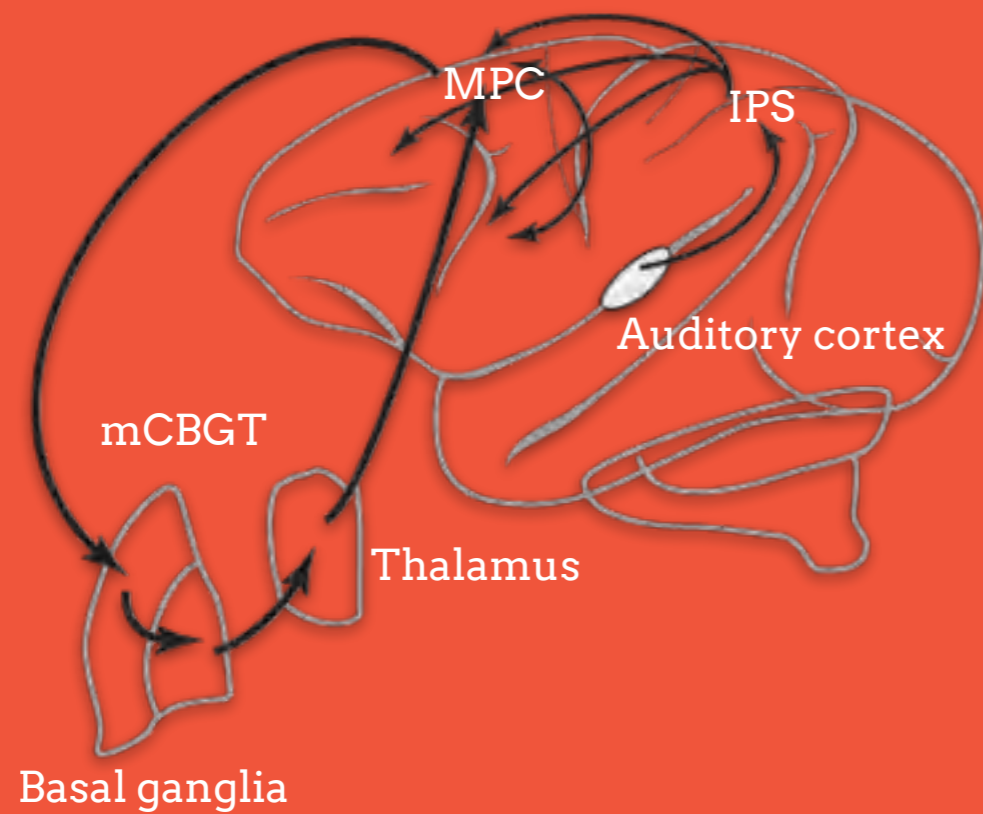




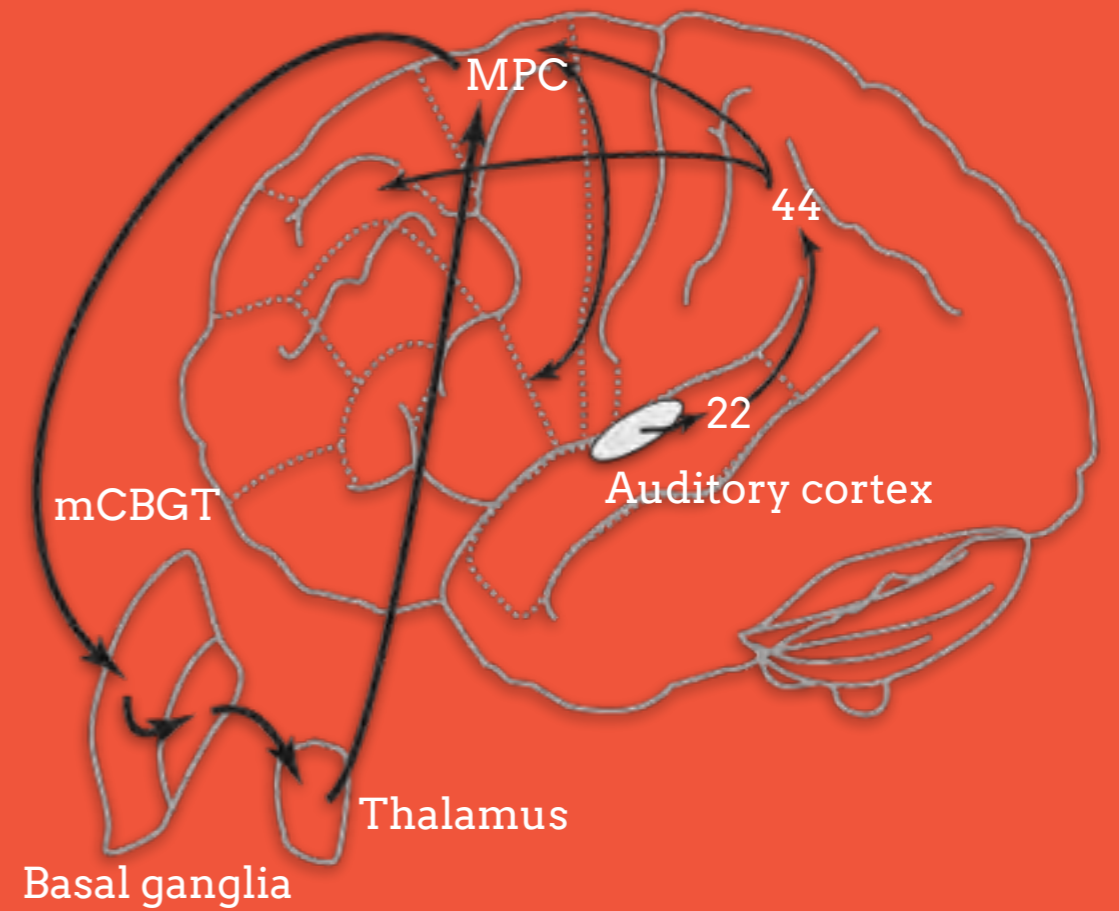


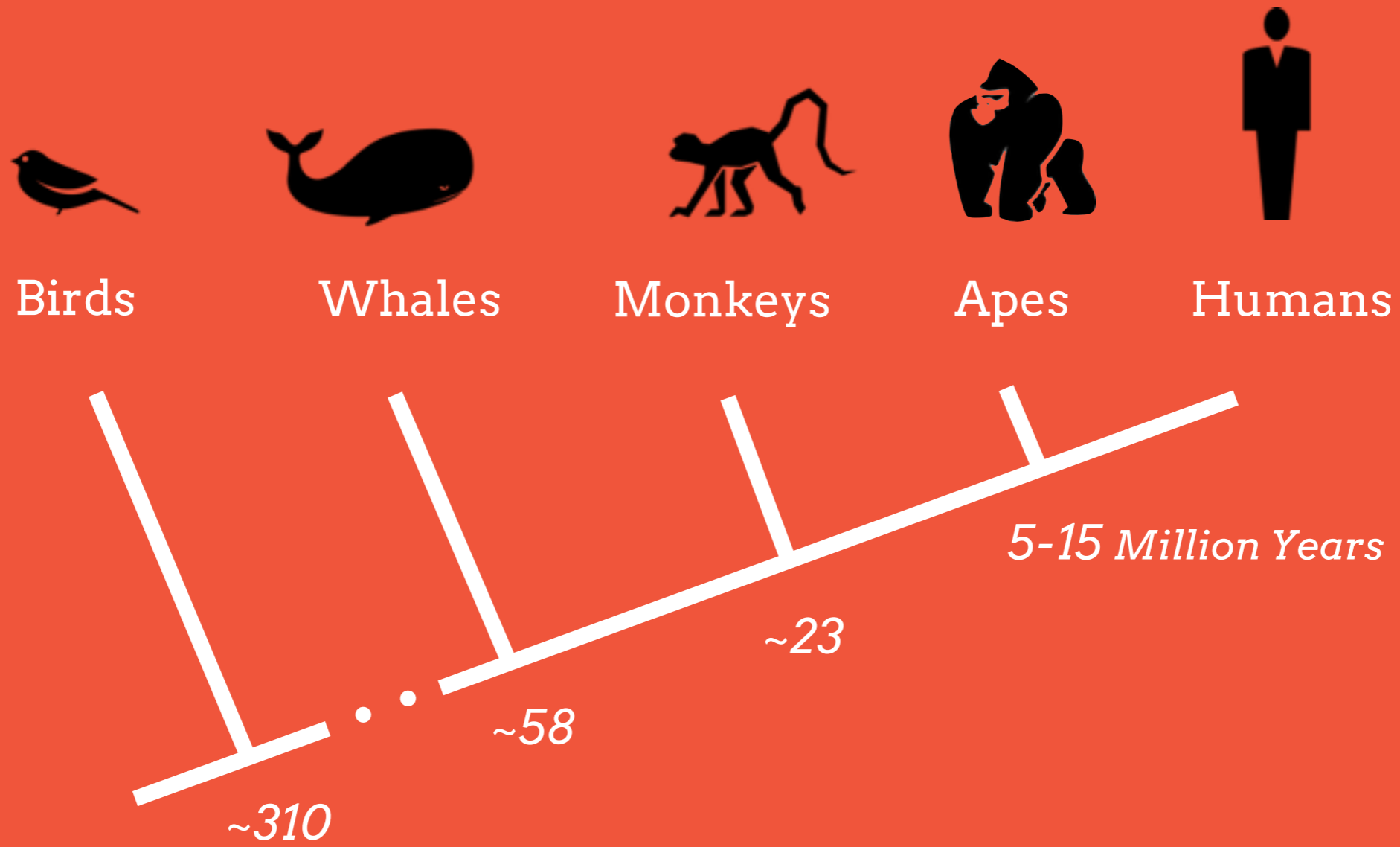


Monkey



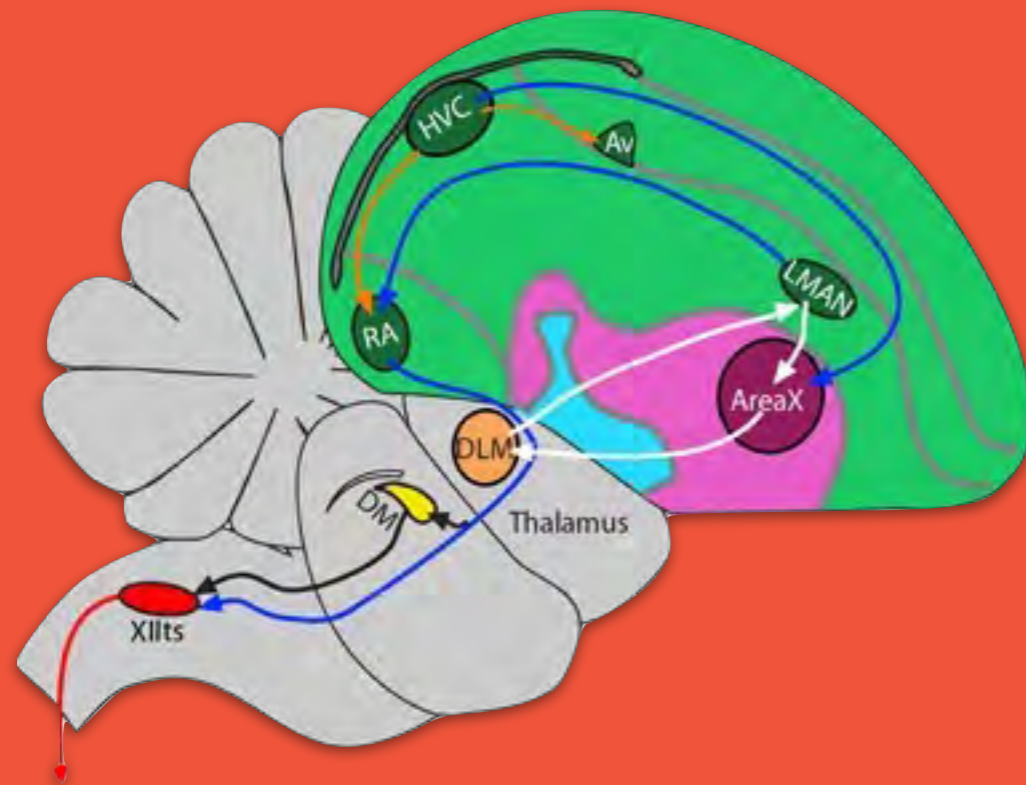
Human



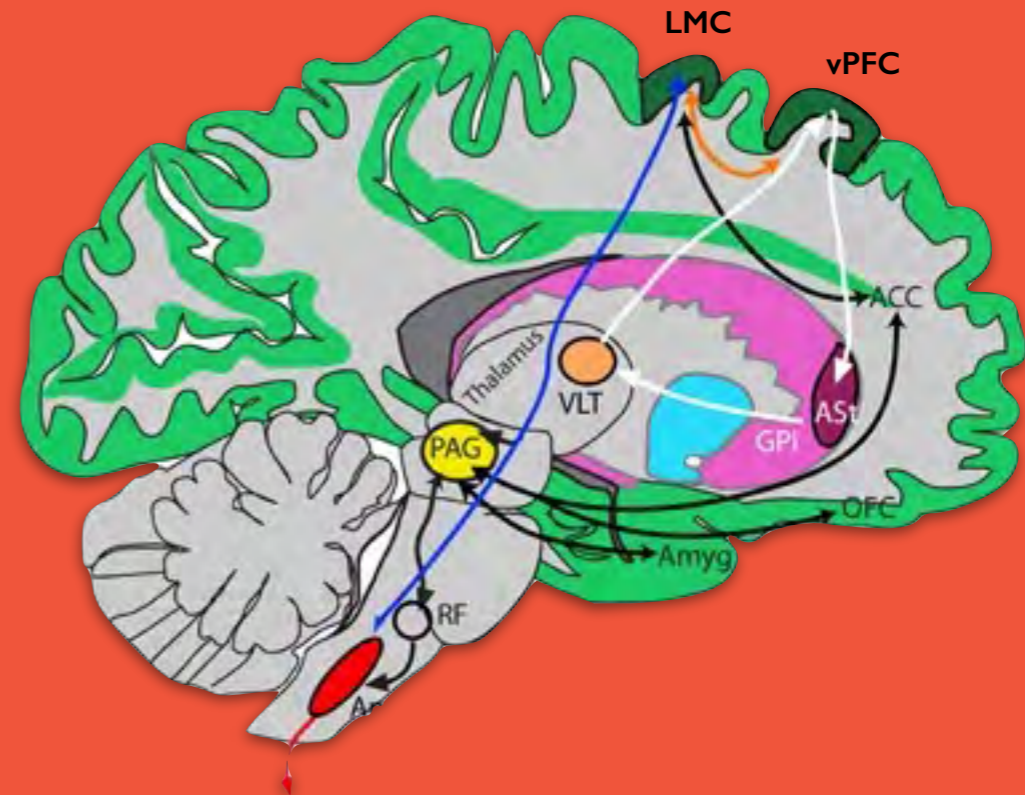




Songbird

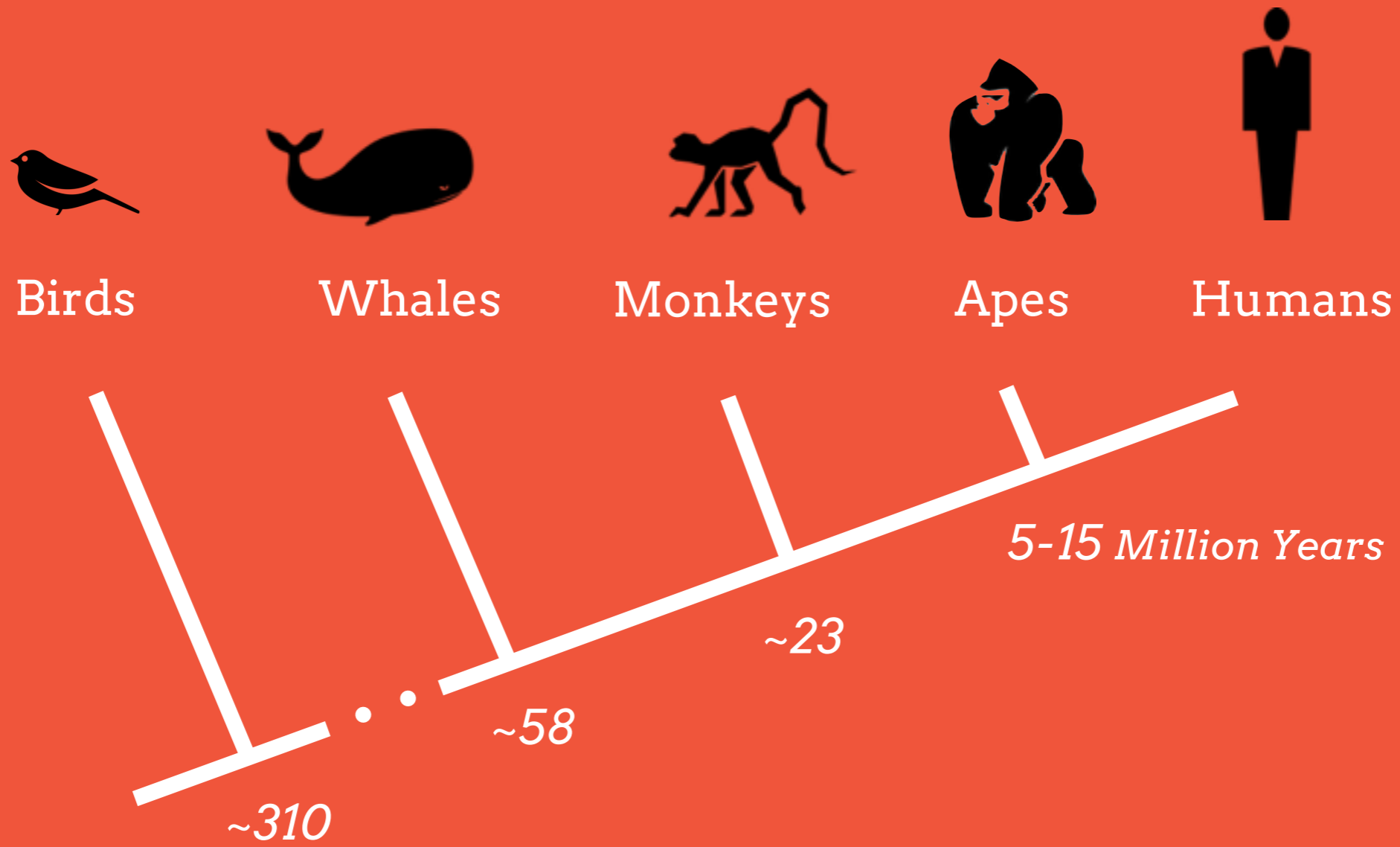


Human



Vocalization subsystems in vocal learners









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Introduction

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One contribution of 13 to a theme issue 'Biology, cognition and origins of musicality'.

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Keywords:
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Without it no music: cognition, biology
and evolution of musicality

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Musicality can be defined as a naturally, spontaneously developing trait, based on and constrained by biology and cognition. Music, by contrast, can be defined as a social and cultural construct based on that very musicality. One critical challenge is to delineate the constituent elements of musicality. What biological and cognitive mechanisms are essential for perceiving, appreciating and making music? Progress in understanding the evolution of music cognition depends upon adequate characterization of the constituent mechanisms of musicality and the extent to which they are present in non-human species. We argue for the importance of identifying these mechanisms and delineating their functions and developmental course, as well as suggesting effective means of studying them in human and non-human animals. It is virtually impossible to underpin the evolutionary role of musicality as a whole, but a multicomponent perspective on musicality that emphasizes its constituent capacities, development and neural cognitive specificity is an excellent starting point for a research programme aimed at illuminating the origins and evolution of musical behaviour as an autonomous trait.

1. Introduction

Why do we have music? What is music for, and why does every human culture have it? Is it a uniquely human capability, as language is? Are some of its fundamental components present in non-human animals? What biological and cognitive mechanisms are essential for perceiving, appreciating and making music?

Some years ago, it became popular to address such questions from an evolutionary perspective [1–5], but disagreement remains about whether music is grounded in our biology, whether it played a role in our survival as a species and, if so, whether musicality resulted from natural or sexual selection.

Steven Pinker provided the most influential critique of music as an adaptation: 'As far as biological cause and effect are concerned, music is useless. (...) Music could vanish from our species and the rest of our lifestyle would be virtually unchanged' and 'it is a technology, not an adaptation' [6]. These words, including the reference to music as 'auditory cheesecake'—a mere pleasure-producing substance—revitalized interest in the origins of music and its relevance for the biological and cognitive sciences [7–11].

At least three adaptationist accounts of music have been proposed [12–15]. Charles Darwin first suggested a role for sexual selection in the origins of music [16], a view that was revived and elaborated in recent years [17,18]. For Darwin, music had no survival benefits but it offered a means of impressing potential partners, thereby contributing to reproductive success. He, like other subsequent scholars [13,19], argued that musical vocalizations preceded language.

Another view considers music to have its origins in carens' music-like vocalizations to infants, which are thought to enhance parent–infant bonds, ease the burdens of caregiving and promote infant well-being and survival [14,20]. Such

Summary

1. We all share a disposition for music;
2. *Beat induction* might well be one of the basic building blocks of musicality;
3. Comparative research and *multicomponent approach* as promising method to reveal the underlying biology, illuminating the origins and evolution of musicality.

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