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# Biological and cultural foundations of human language: Insights from computer simulations.

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## Abstract

It has been standard in linguistics to argue that language acquisition is so difficult that it is only possible if most linguistically interesting structure is embedded in a genetically-specified "language module," "language instinct," or "universal grammar." But how could a biological basis for language have evolved, in the absence of a prior linguistic environment which could shape biological evolution. A natural, and popular, assumption is that the biological evolution of a language faculty must have co-evolved with the cultural evolution of language itself. Here I report work with Morten Christiansen, Florencia Reali, Andrea Baronchelli and Romualdo Pastor-Satorras, which places strong limitations on such co-evolution. Indeed, these simulations suggest that the traditional conception of a "universal grammar" can be ruled out on evolutionary grounds; and may have broader indications for claims that humans have biologically based adaptations to other aspects of culture.