

Ajeya Cotra attempted to calculate this number in her paper “Forecasting Transformative AI with [Biological Anchors](#)”:

[...] the total amount of computation done over the course of evolution from the first animals with neurons to humans was ($\sim 1e16$ seconds) * ($\sim 1e25$ FLOP/s) = **$\sim 1e41$ FLOP**

Nuño Sempere [argues](#) that this calculation of the computation done by neurons may be an underestimate, as the environment would also need to be simulated.

Cotra posits that this number should be taken as an upper bound to the amount of computation needed to develop AGI. The actual amount of computation needed is probably many orders of magnitude lower.

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Alternate phrasings

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