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Like mother, like child...how extrinsic factors influence neurogenesis.

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Despite similar brain organization mammals present with a variety of neocortex sizes, which are generated during a short developmental window in embryogenesis. The final neuronal output is determined by the initial pool size and proliferative capacity of various cell lineages as well as by the length of the neurogenic period.
In our study we explore the previously proposed link (Lewitus et al., 2014) between the neurogenic period and gestation length in a mouse model system. We use mouse strains with genetically different gestation length to determine the number of produced neocortical neurons in relation to the length of this developmental period. The long-gestation strain produces more cortical layer neurons belonging specifically to the upper but not lower layers. Moreover, the onset of gliogenesis, which in mouse follows the neurogenic period, appears later in this strain suggesting the lengthening of the neurogenic period. This effect depends on the maternal environment as embryo transfer between the short- and long-gestation strains equalizes neuron production consistent with maternal phenotype.
Our results point to a common developmental mechanism synchronizing gestation with neurogenic period and suggest an important role of maternally-derived factors in determining the final neocortex size.

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