



Translational research models and methods for mother-infant interactions and developmental studies

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The disruption of mother-infant interactions can have life-long detrimental consequences for offspring and mothers. Recently, science has begun to emphasize translational research including preclinical and neurobiological research that may have direct implications for clinical populations and issues (see **Figure 1**) (Watson et al., 2006). This group of papers focuses broadly on translational studies highlighting factors that may affect or alter infant or child development and maternal response capability. Articles, both preclinical and clinical, highlight topics such as drug abuse, maternal neglect, altered reward systems, stress, biological and neural system development, child and infant behavioral development, genetics/epigenetics, inter-generational studies, and logistical issues of comparative measurement. Articles include research methods papers, reviews, original research articles, techniques, and opinion articles that address these topics. New methods papers for comparative measures between

clinical and preclinical populations are included. Our aims include introducing new translational models and methods for research through a group of outstanding papers focused on these topics.

REFERENCE

Watson, R. E., DeSesso, J. M., Hurtt, M. E., and Cappon, G. D. (2006). Postnatal growth and morphological development of the brain: a species comparison. *Birth Defects Res. B Dev. Reprod. Toxicol.* 77, 471–484.

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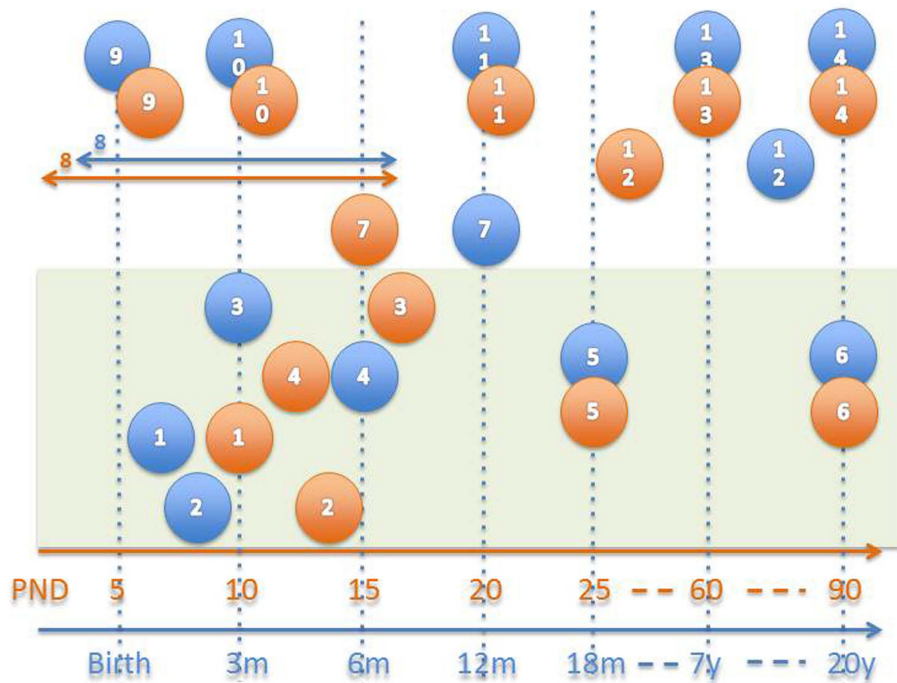


FIGURE 1 | Approximate neuro-development comparison in humans (blue) and rats (orange; Watson et al., 2006). 1–6 = Myelination, 1 = myelination onset internal capsule, 2 = onset olfactory tract, 3 = onset anterior commissure, 4 = onset fornix, 5 = 50% myelination of corpus callosum, 6 = mature

myelination, 7 = 50% cerebellum size, 8 = peak synaptogenesis period, 9 = maximum brain growth velocity (peak), 10 = cortical dominance established, 11 = mature cerebral metabolism, 12 = adult pattern of slow wave and REM sleep, 13 = adult brain weight, 14 = mature prefrontal cortex.