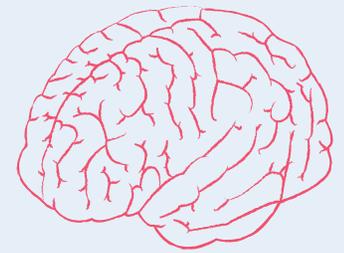
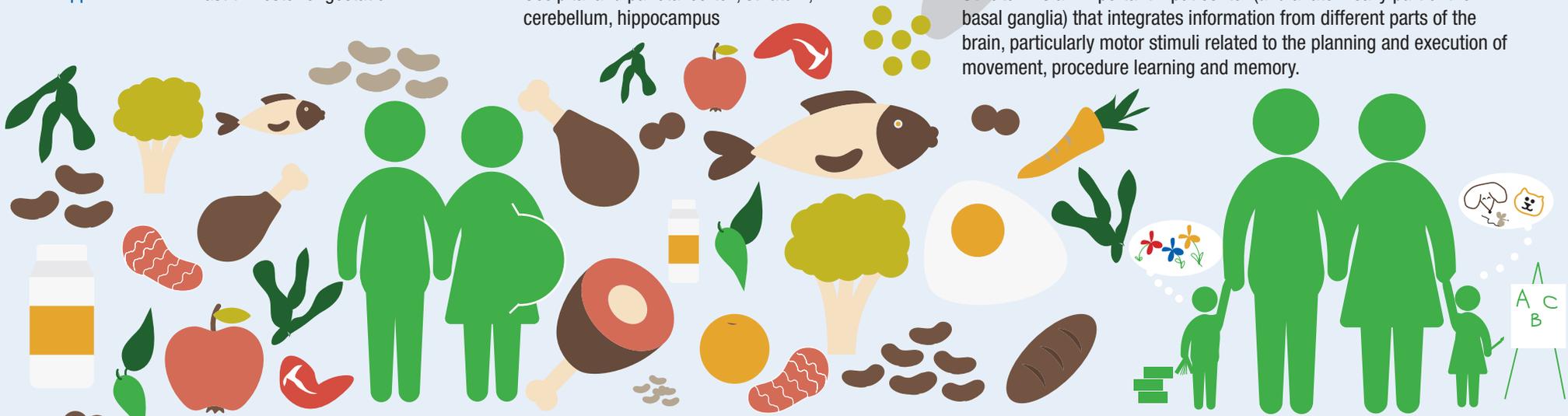


NEURONUTRITION & BRAIN DEVELOPMENT

IMPACTS ON LEARNING, GESTATION THROUGH AGE 3



NUTRIENT	CRITICAL PERIOD	BRAIN STRUCTURE	FUNCTION IMPACTED
Protein	<ol style="list-style-type: none"> 1. Gestation to 3 years 2. 4-12 months postnatal to 3 years 	<ol style="list-style-type: none"> 1. Global, hippocampus, stratum, myelin, cerebellum 2. Cortex (especially prefrontal), myelin 	<p>Hippocampus influences memory and recognition, particularly long-term memory, spatial navigation.</p>
Long-Chain Polyunsaturated Fatty Acids	Last trimester of gestation: 2-3 months postnatal	Global, retina	Global action has total brain effects; especially benefits vision as retina forms.
Iron	<ol style="list-style-type: none"> 1. Last trimester of gestation 2. 6 months - 3 years postnatal 	<ol style="list-style-type: none"> 1. Myelin, striatum, hippocampus 2. Myelin, frontal cortex, basal ganglia (motor) 	<ul style="list-style-type: none"> • Myelin is a fatty sheath around nerve fibers that improves signaling, and is critical to thought processing speed, often likened to functioning as insulation on electrical lines. • Basal ganglia are a set of deep brain structures that help regulate and orchestrate movement.
Zinc	<ol style="list-style-type: none"> 1. Last four months of gestation 2. 6 months - 3 years 	<ol style="list-style-type: none"> 1. Autonomic nervous system, cerebellum, hippocampus 2. Cortex 	Cerebellum influences coordinating muscles in motor functions and movement such as posture and balance; involved in cognitive functions such as language.
Iodine	<ol style="list-style-type: none"> 1. First trimester of gestation 2. Last trimester of gestation 3. Infancy - 3 years 	<ol style="list-style-type: none"> 1. Global 2. Cortex, striatum, cerebellum, hippocampus 3. Myelin, prefrontal cortex 	Prefrontal cortex is linked to higher-order and complex functions such as organization, attention, multitasking, problem solving and emotion processing.
Copper	Last trimester of gestation	Occipital and parietal cortex, striatum, cerebellum, hippocampus	Striatum is an important input center (and anatomically part of the basal ganglia) that integrates information from different parts of the brain, particularly motor stimuli related to the planning and execution of movement, procedure learning and memory.



POWERFUL PARENTING WINDOW: The first 1,400 days, from conception through Age 3