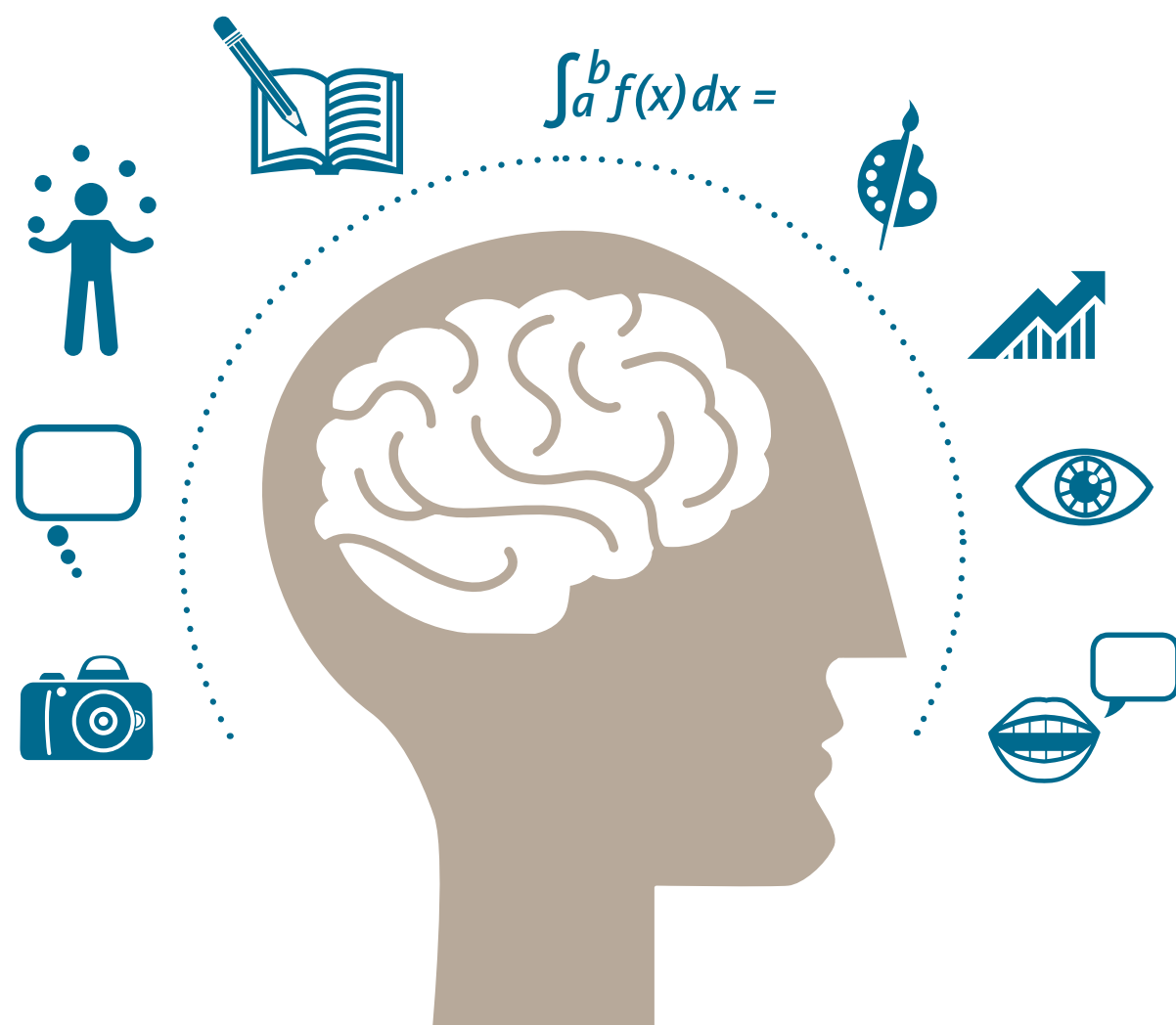


NUTRITION AND COGNITIVE FUNCTION

Your brain needs good nutrition to support its high metabolic activity and neural functions.

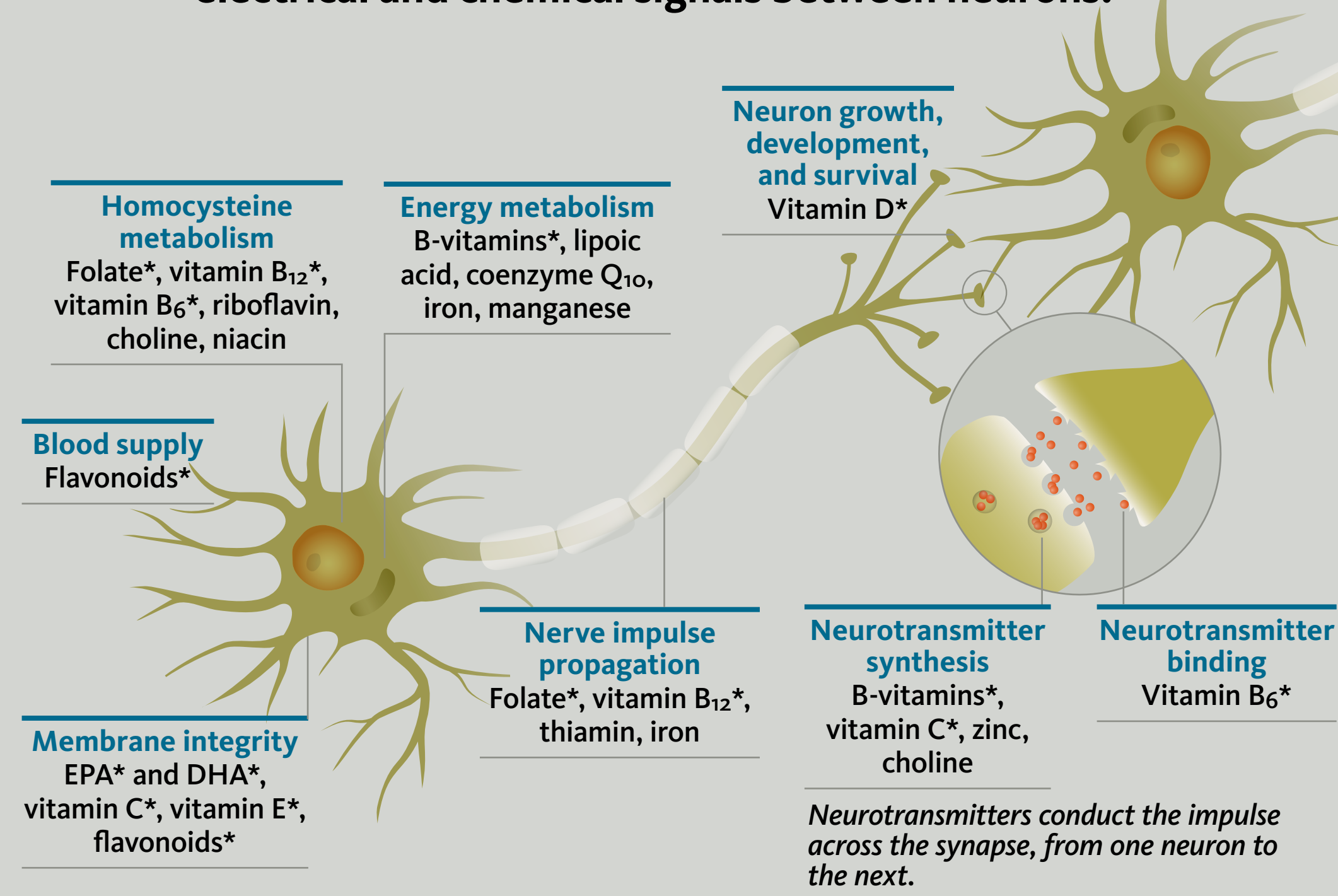
Cognitive function refers to a variety of mental processes, including:

- ATTENTION
- PERCEPTION
- MEMORY
- REASONING
- PLANNING
- PROBLEM SOLVING
- DECISION MAKING
- LANGUAGE
- MULTITASKING



BASIC NEEDS FOR COGNITIVE FUNCTION

All of our actions are the result of the transmission of electrical and chemical signals between neurons.



*These nutrients are discussed in more detail below.

MAINTAINING COGNITIVE FUNCTION

Some decline in cognitive function is part of aging, but there can be different degrees of severity in different individuals.

Age-related cognitive decline

The normal decline in various cognitive functions due to aging. Memory is the earliest cognitive function to show decline with increasing age.

- Brain shrinks
- Number of connections between neurons declines
- Number of neurotransmitter receptors decreases

Mild cognitive impairment

Noticeable impairment in cognitive function that does not affect instrumental activities of daily living

- Forgetting recent conversations
- Becoming disoriented in familiar places

Dementia

A loss of behavioral and cognitive abilities to an extent that interferes with daily life. Symptoms of dementia may include

- Not recognizing family members
- Difficulty with self care
- Difficulty thinking and remembering

- Consuming a healthy diet and getting regular physical activity can help prevent age-related declines in cognitive function.
- In some situations, a supplement may help too. The decision to supplement should be made in conjunction with a qualified healthcare professional.

IMPORTANT NUTRIENTS

Function	Guidelines and Sources	Take-home Message
LONG-CHAIN OMEGA-3 POLYUNSATURATED FATTY ACIDS (EPA and DHA)		
Nerve cell membranes are very rich in fatty acids, especially the long-chain omega-3 polyunsaturated fatty acid, DHA.	<ul style="list-style-type: none"> Oily fish, e.g., salmon, mackerel, sardines At least 2 servings/week EPA & DHA: At least 500 mg/day 	<ul style="list-style-type: none"> Higher dietary intake of fatty fish is associated with beneficial effects on cognitive function. EPA and DHA supplements may have beneficial effects in individuals with mild cognitive impairment.
FOLATE, VITAMIN B₁₂, AND VITAMIN B₆		
<ul style="list-style-type: none"> These three B-vitamins work together to lower blood homocysteine concentration. Too much homocysteine in the blood has been associated with increased risk of cognitive decline and dementia in older adults. 	<ul style="list-style-type: none"> Folic acid: at most, 1,000 µg/day Vitamin B₁₂: 100–400 µg/day Vitamin B₆: at most, 100 mg/day 	<ul style="list-style-type: none"> In healthy older adults, B-vitamin supplementation lowers homocysteine concentration, but does not improve cognitive function. In those with mild cognitive impairment, B-vitamin supplementation may prevent further cognitive decline.
VITAMIN C		
<ul style="list-style-type: none"> Neurons in the brain retain high concentrations of vitamin C. Antioxidant nutrients like vitamin C protect nerve cells from damage. 	<ul style="list-style-type: none"> Sweet red pepper, kiwi, strawberries Consume at least 400 mg/day 250 mg supplement, twice/day 	Eating a vitamin C-rich diet can have a protective effect against age-related cognitive decline.
VITAMIN D		
Vitamin D influences the growth, development, and survival of neurons.	2,000 IU (50 µg) of supplemental vitamin D daily for generally healthy adults.	Low vitamin D status (serum 25-hydroxyvitamin D below 30 ng/mL [75 nmol/L]) increases the risk of cognitive decline and dementia in older adults.
VITAMIN E		
Vitamin E prevents oxidative damage to lipids and therefore helps protect nerve cell membranes.	<ul style="list-style-type: none"> Almonds, avocado, vegetable oil 15 mg/day 	Increased vitamin E intake, through food or supplementation, may protect against cognitive decline in individuals with low dietary intake of vitamin E (less than 6.1 mg/day).
FLAVONOIDS		
Flavonoids may improve blood vessel function and influence the communication between nerve cells.	Dark cocoa powder, blueberries	Daily consumption of flavonoid-rich food and beverages improves cognitive function in healthy older adults and in those with mild cognitive impairment.

g = grams | mg = milligrams | µg = micrograms | ng = nanograms | nmols = nanomoles | IU = International Units | mL = milliliters | L = liters

PHYSICAL ACTIVITY



- Physical activity increases the number and survival of neurons.
- Physical activity increases the volume of the hippocampus, a region of the brain important for forming new memories.
- Even the aged brain is capable of these improvements. Keep active in order to maintain cognitive function at any age.

SOURCES

- Micronutrient Information Center: ipi.oregonstate.edu/mic/health-disease/cognitive-function
- Best T. and Dye L., Nutrition for Brain Health and Cognitive Performance, New York: CRC Press; 2015.
- BrainFacts.org

