Nutrition and the Brain-

PD, MS, Depression, Alz, Aging, Anxiety

Goals

- Optimize your diet
- Reduce inflammation
- Reduce toxicity
- Maintain bowel regularity
- Maintain bone health

Optimize your diet

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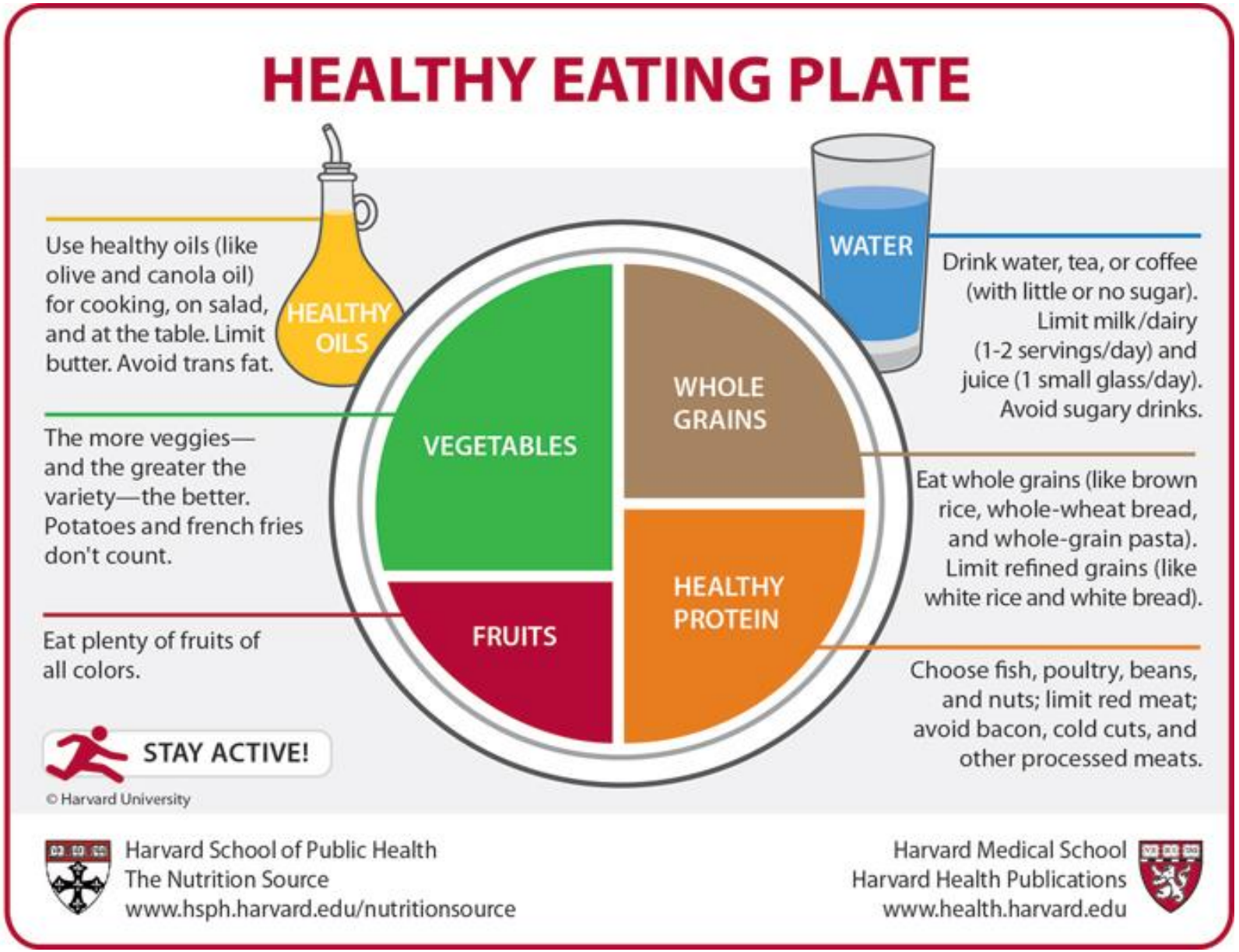

Reduce Inflammation

Reduce Inflammation

- **Keep your blood sugar levels balanced.** Eat several small meals throughout the day. Glucose imbalance symptoms include fatigue, irritability, dizziness, insomnia, depression, excessive sweating (especially at night), poor concentration and forgetfulness. In addition, excess sugar in the blood contributes to inflammation.

- **Take in antioxidants from fresh fruits and vegetables.** Alcohol is a toxin. Antioxidants combat inflammation and support your body's detoxification pathways.

- **Increase omega 3 fats.** The omega-3's are **anti-inflammatory** which may be beneficial as brain-inflammation is a feature of neurodegenerative disorders like PD, Alzheimer's, dementia, stress-related and stroke. Mood problems are also a common feature and there has been a lot of research into the **mood-boosting properties** of the omega-3 essential fats. A small placebo-controlled pilot trial reported significantly greater improvement of depression in Parkinson's patients treated with omega-3 fatty-acid supplementation versus placebo. The precise cause(s) of Parkinson's Disease is unknown, but there is consensus that an inflammatory event or episode is involved in the initiation of neurodegeneration.

- Consider **Aloe Vera as an excellent supplement to reduce inflammation**.

Reduce inflammation by increasing omega fats.

Omega-3 Fatty Acids

- Group of polyunsaturated fatty acids
- Essential – must be obtained in the diet
- Component of cell membranes
- Mediate inflammation, regulate blood clotting and contraction/relaxation of arterial walls
- May be helpful in relieving symptoms in rheumatoid arthritis and age-related macular degeneration

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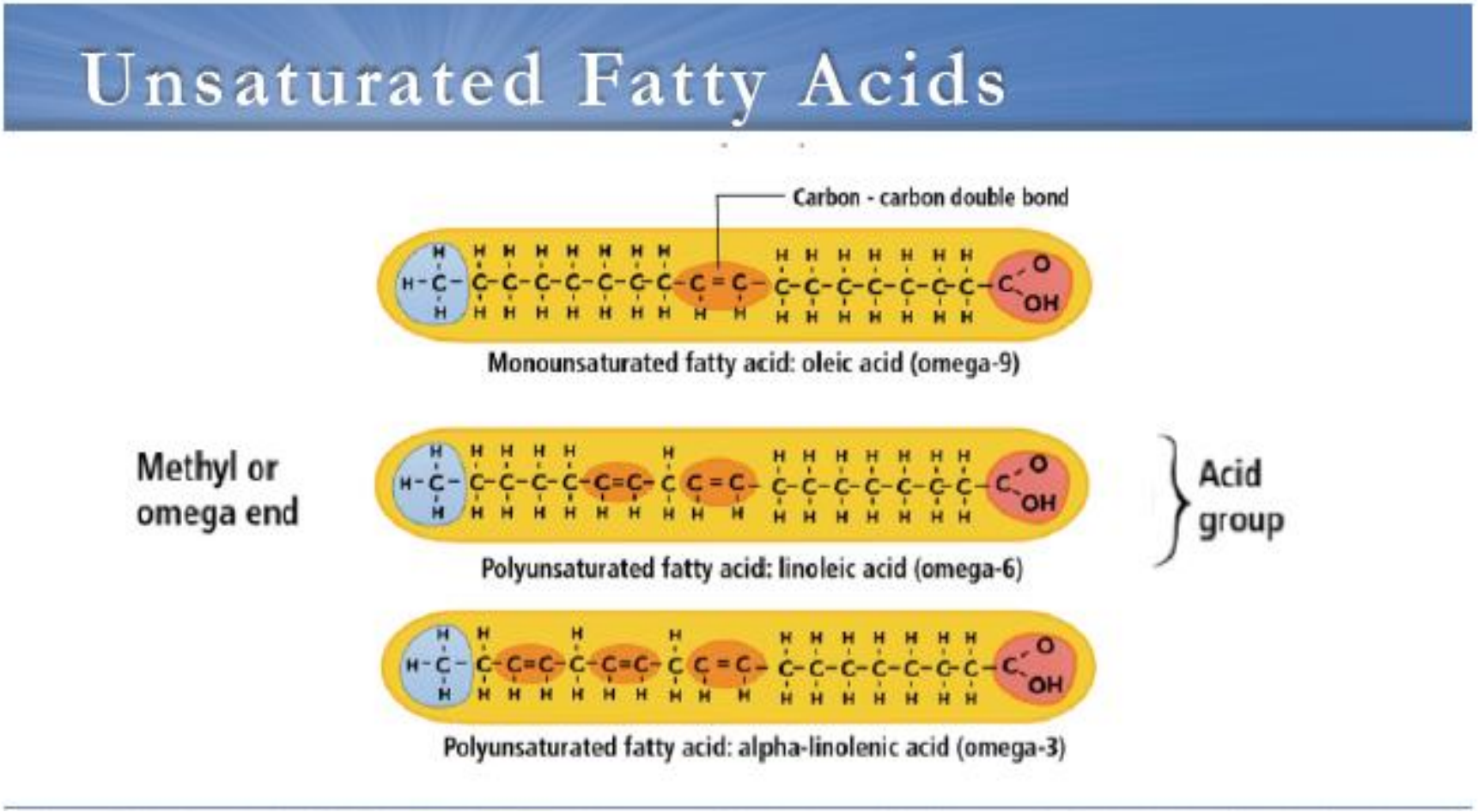
National Center for Complementary and Alternative Medicine, Omega-3 Supplements: An Introduction, available at: http://nccam.nih.gov/health/omega3/introduction.htm

Omega 3 fats are a group of unsaturated fatty acids.



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[More evidence suggests eating omega 3s and avoiding meat, dairy linked to preserving memory]- **Mediterranean diet.**

Omega 3 fats are a group of unsaturated fatty acids.

Omega-3 Fatty Acids

ALA: alpha-linolenic acid	Vegetable oils: canola, soybean, flaxseed Nuts (walnuts), flax Brussels sprouts, kale, spinach, greens Can be converted – in very small amounts – to EPA + DHA in the body
EPA: eicosapentaenoic acid	EPA + DHA Fatty fish: salmon, herring, mackerel, trout, sardines
DHA: docosahexaenoic acid	DHA: brain development, nervous system

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World's Healthiest Foods ranked as quality sources of omega-3 fats						
Food	Serving Size	Cals	Amount (g)	DV (%)	Nutrient Density	World's Healthiest Foods Rating
Flax Seeds, ground	2 tbs	74.8	3.19	132.9	32.0	excellent
Walnuts	0.25 cup	163.5	2.27	94.6	10.4	excellent
Salmon	4 oz-wt	244.9	1.47	61.2	4.5	very good
Sardines	3.20 oz-wt	188.7	1.34	55.8	5.3	very good
Beef, grass-fed	4 oz	175.0	1.10	45.8	4.7	very good
Cloves	2 tsp	13.6	0.18	7.5	9.9	very good
Soybeans	1 cup cooked	297.6	1.03	42.9	2.6	good
Halibut	4 oz-wt	158.8	0.62	25.8	2.9	good
Scallops	4 oz-wt	127.0	0.41	17.1	2.4	good
Shrimp	4 oz-wt	112.3	0.37	15.4	2.5	good
Tofu	4 oz-wt	86.2	0.36	15.0	3.1	good
Tuna	4 oz-wt	157.6	0.33	13.8	1.6	good
Cod	4 oz-wt	119.1	0.32	13.3	2.0	good
Winter Squash	1 cup baked	75.8	0.19	7.9	1.9	good
Collard Greens	1 cup cooked	49.4	0.18	7.5	2.7	good
Spinach	1 cup cooked	41.4	0.17	7.1	3.1	good
Raspberries	1 cup	64.0	0.15	6.2	1.8	good
Kale	1 cup cooked	36.4	0.13	5.4	2.7	good
Mustard Seeds	2 tsp	20.3	0.11	4.6	4.1	good
Romaine Lettuce	2 cups	16.0	0.11	4.6	5.2	good
Turnip Greens	1 cup cooked	28.8	0.09	3.8	2.3	good
Strawberries	1 cup	46.1	0.09	3.8	1.5	good
Brussels Sprouts	1 cup raw	37.8	0.09	3.8	1.8	good
Miso	1 tbs	34.2	0.08	3.3	1.8	good
Green Beans	1 cup raw	31.0	0.07	2.9	1.7	good
Summer Squash	1 cup raw	18.1	0.06	2.5	2.5	good

Omega 3 fats are a component of cell membranes.

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Brain Nerve Cell diagram illustrates highly branched enclosing cell membrane that is critical for nerve function.

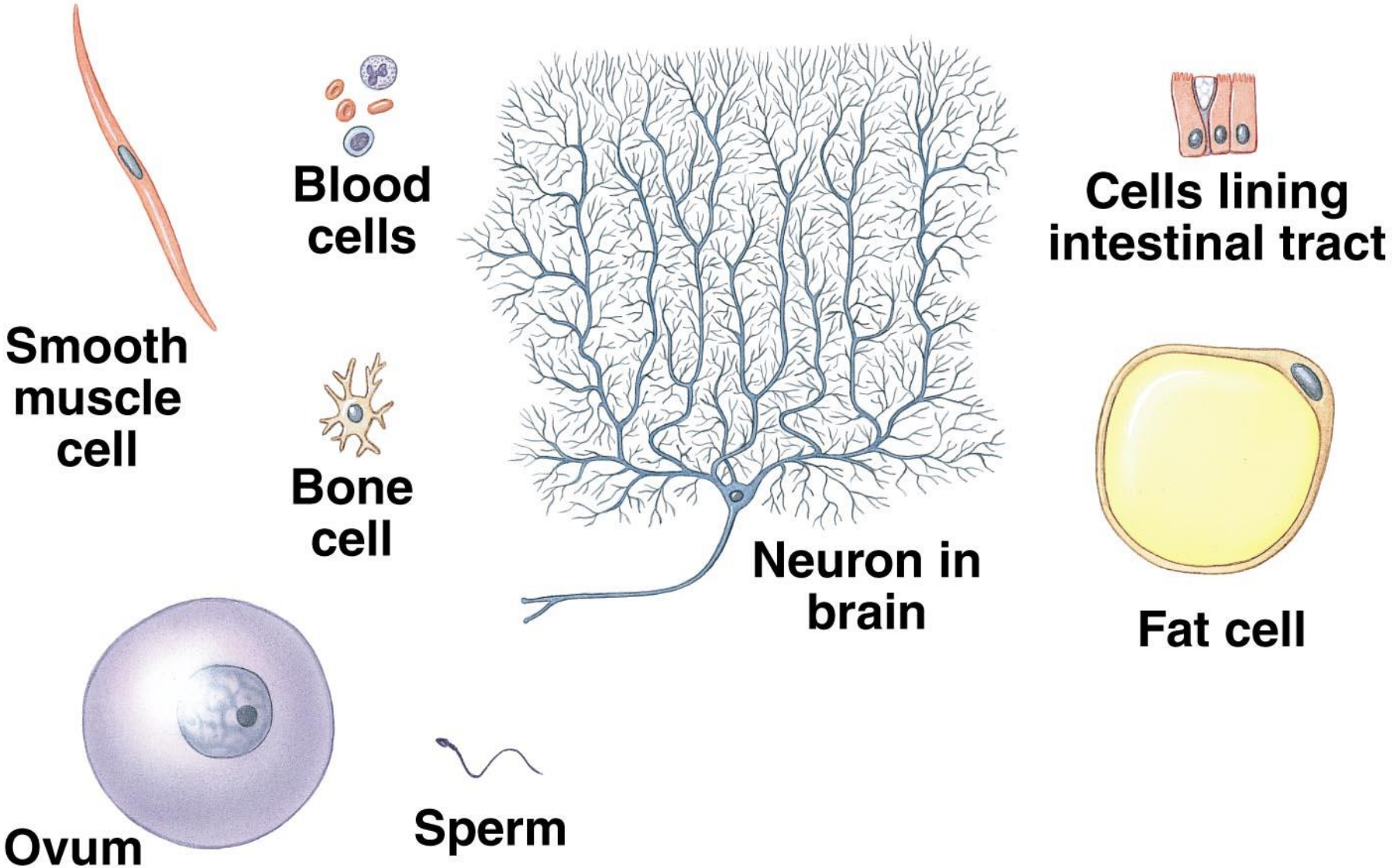


Figure 3-1

Detail of the Cell Membrane shows it is a ‘sea’ of fatty acids (phospholipidbilayer), proteins, and cholesterol.

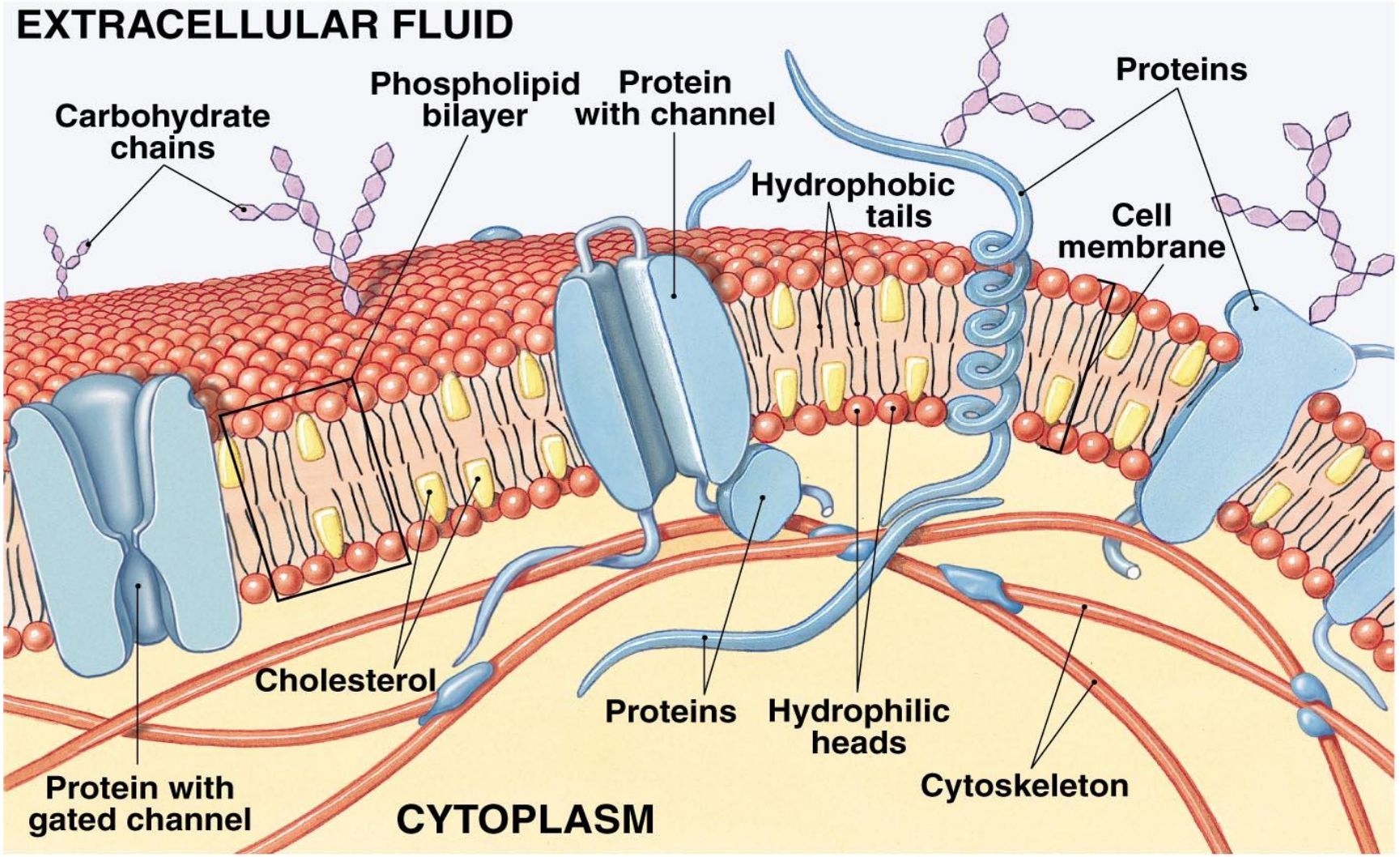
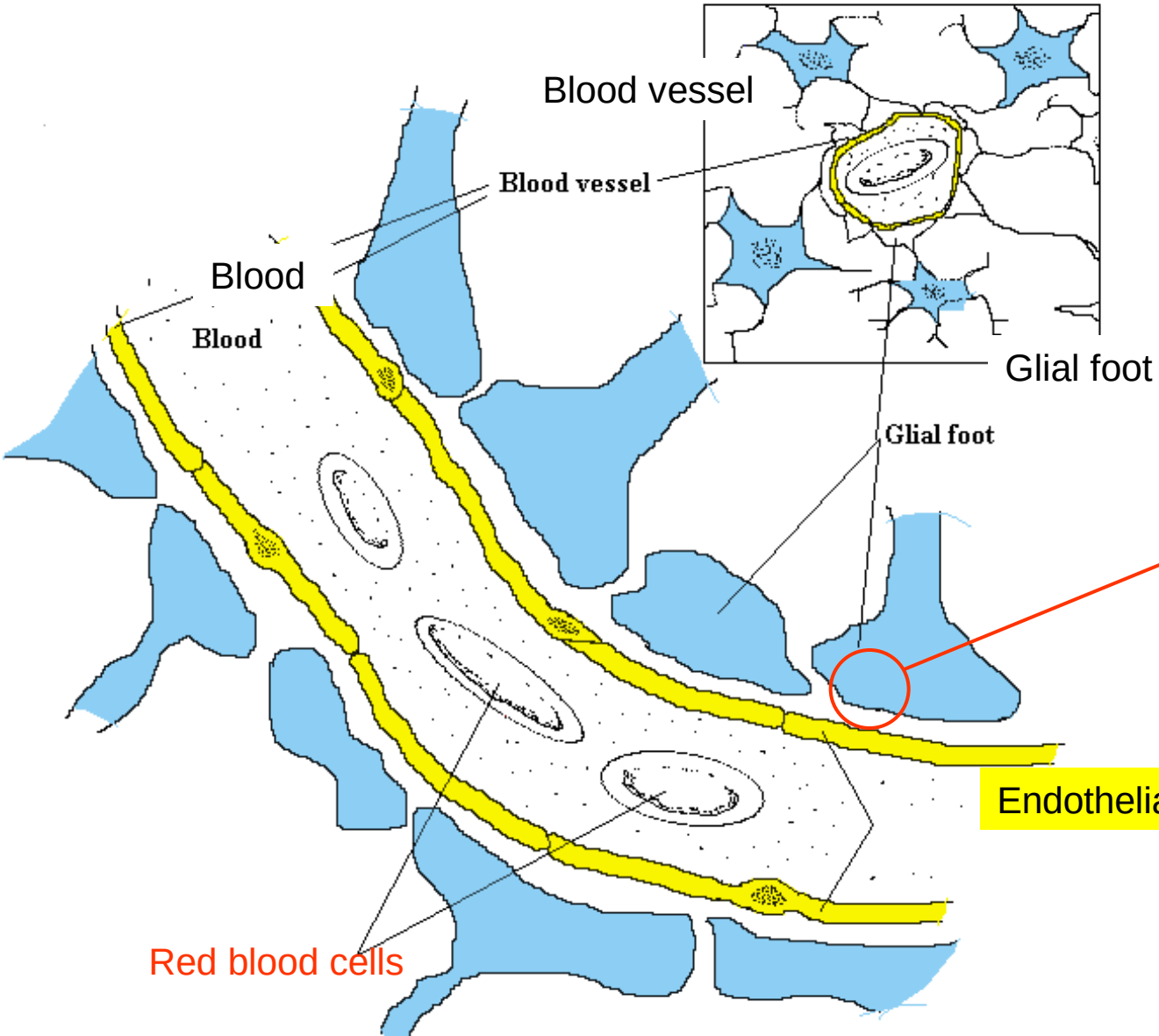


Figure 3-3

Endothelial cell membranes form the blood-brain barrier and fatty acids in the membrane regulate relaxation of the arterial walls.



Reduce toxicity

Reduce Toxicity

- **Avoid environmental toxins.** Pesticides and herbicides in foods, in the environment, as well as occupational and household chemicals are implicated.

- **Take in antioxidants from fresh fruits and vegetables.** Alcohol is a toxin. Antioxidants combat inflammation and support your body's detoxification pathways. Antioxidants help rid body of harmful free radicals. (Consider supplementing with Vitali-C Plus)

- **Identify any food intolerances** and avoid these foods, or you could avoid some of the key culprits (gluten, dairy, soya, yeast) for a trial period.

- **Body Wraps** can remove toxins from skin.

Avoid environmental toxins.

EWG's 2012 Shoppers Guide to Pesticides in Produce™

Cut along line

Instructions:
1. Cut along outside line.
2. Fold along middle line.

Fold together

EWG's 2012 Dirty Dozen™ Plus

Shoppers Guide to Pesticides in Produce™

Buy these organic

Domestic
Imported

- Apples
- Bell Peppers
- Blueberries
- Celery
- Cucumbers
- Grapes
- Lettuce
- Nectarines
- Peaches
- Potatoes
- Spinach
- Strawberries

Plus

Green Beans
Kale/Greens

Pesticides residues of special concern.
Questions? foodnews.org

EWG's 2012 Clean Fifteen™

foodnews.org

Shoppers Guide to Pesticides in Produce™

Lowest in pesticides

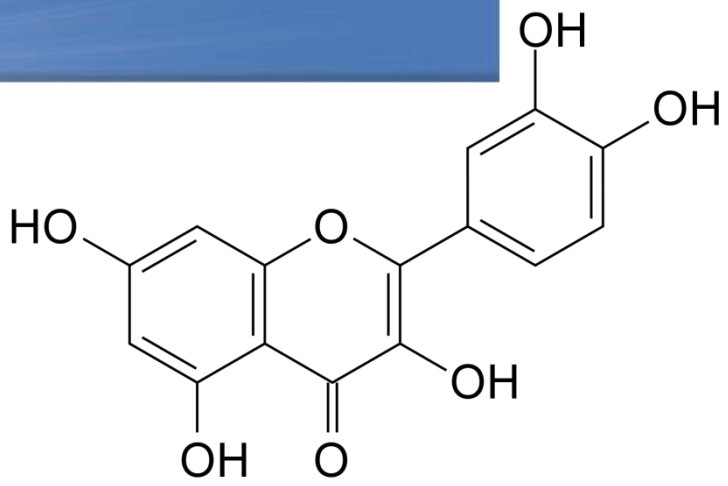
- Asparagus
- Avocado
- Cabbage
- Cantaloupe
- Corn
- Eggplant
- Grapefruit
- Kiwi
- Mangoes
- Mushrooms
- Onions
- Pineapples
- Sweet Peas
- Sweet Potatoes
- Watermelon

Take in antioxidants from fresh fruits and vegetables.

Colorful foods contain color molecules that are ANTIOXIDANTS. They are BIOFLAVONOIDS or POLYPHENOLS (many Oxygen/Hydrogen groups attached to a carbon ring structure). They come from plants so they are called phytochemicals.

Phytochemicals

- Beta carotene
- Ascorbic acid (vitamin C)
- Vitamin E
- Folic acid

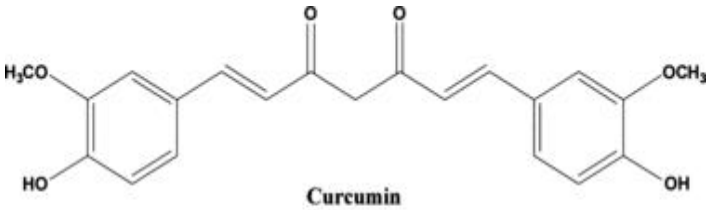


In Vitali-C

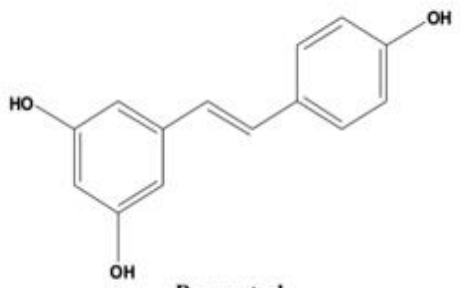
Quercetin -Apples, onions, teas, red wine

Anthocyanidins -Purple grapes, eggplant, red cabbage, radishes, berries, strawberries

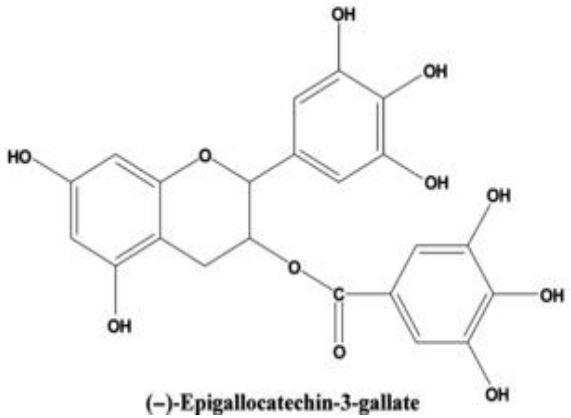
More on phytochemicals...



Curcumin



Resveratrol



(−)-Epigallocatechin-3-gallate

Naturally occurring phytochemicals for the prevention of Alzheimer's disease

Curcumin, resveratrol, and green tea catechins have been suggested to have the potential to prevent AD because of their anti-amyloidogenic, anti-oxidative, and anti-inflammatory properties. These polyphenolic phytochemicals also activate adaptive cellular stress responses, called 'neurohormesis', and suppress disease processes.

GREEN TEA LEAVES

EGCG (epigallocatechin gallate) found in green tea leaves has the ability to inhibit the growth of cancer cells without harming healthy tissues. It also may be useful in lowering LDL cholesterol levels.

Maintain bowel regularity

Maintain bowel regularity

- **Exercise**-Walking, Tai Chi, Qigong
- **Chew your food 100 times.**
- **Soluble Fiber:** Dissolves in water, forms gel-like substance. Slows Gastric Emptying. Soluble fiber-containing foods take longer to digest. Reduces cholesterol production in liver. Good sources include oats, oatmeal, oat bran, beans, peas, rice bran, barley, citrus fruits, strawberries, apple pulp.
- **Insoluble Fiber:** Promotes motility and increased stool bulk. Sources include whole-wheat flour, wheat bran, nuts, beans and vegetables.
- Drink plenty of **fluid**.
- **Magnesium i**s a mineral that acts as a natural relaxant. Some indications of deficiency are: muscle tremors or spasm, muscle weakness, insomnia or nervousness, high blood pressure, irregular heartbeat, constipation, hyperactivity, depression. Magnesium's role in supporting good sleep may also be quite important here, since many people with Parkinson's experience poor sleep patterns. (Osteo Pro Care is a great source of Mg)

Maintain bone health

Maintain bone health

Risk factors for osteoporosis include older age, low body weight, smoking, excessive alcohol intake, limited exposure to sunlight, inadequate intake of vitamin D and calcium and lack of weight-bearing exercise, common in mobility disorders.

- **Calcium**: Milk and milk products are the richest; there are other calcium-containing foods e.g., tofu, calcium-fortified soy-based beverages, orange juice and dark leafy greens, dulse. (Osteo ProCare is a great source of Ca and Vit D)

- **Vitamin D,** in the brain, enhances BDNF – a growth hormone for neurons that is anti-inflammatory. This nutrient is mainly provided by the action of sunlight on the skin. **Vit. D Levels have been associated with severity of symptoms in PD and MS.**

- **Exercise regularly.** Walking, tai chi, qigong sitting in chair abdominal exercise directly promotes digestion and blood circulation to internal organs.

- **Posture.** Upright posture in gravity builds bones, bent posture weakens bones.

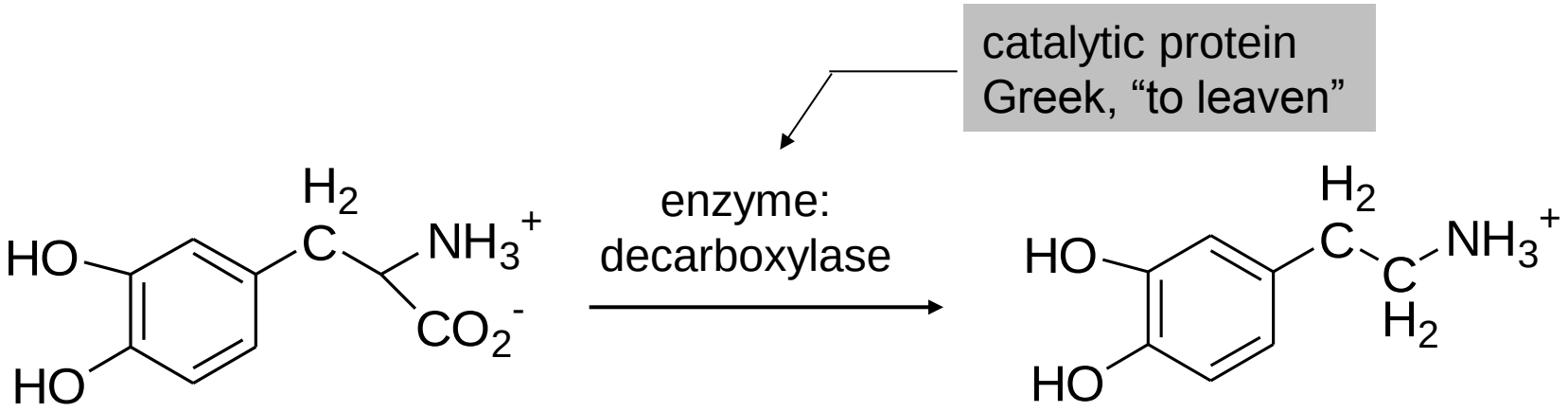
http://www.foodforthebrain.org/nutrition-solutions/parkinsons-disease/about-parkinsons-disease.aspx

Thank You

For more information:

http://www.susanamatthews.com/brain_workshop-programs.htm

Extra: Drugs for neural diseases



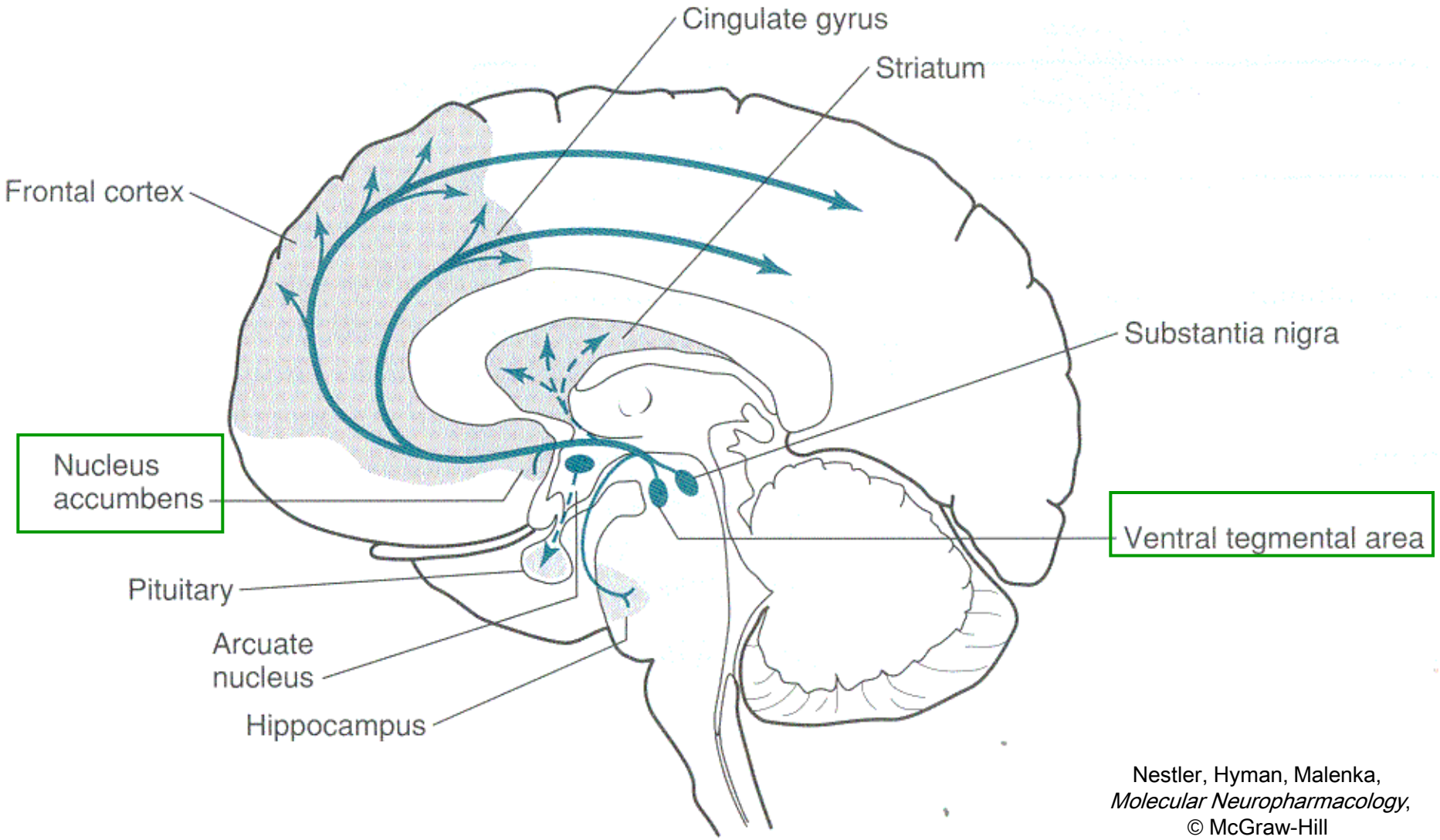
levodopa, “L-dopa”
zwitterionic
permeates into brain

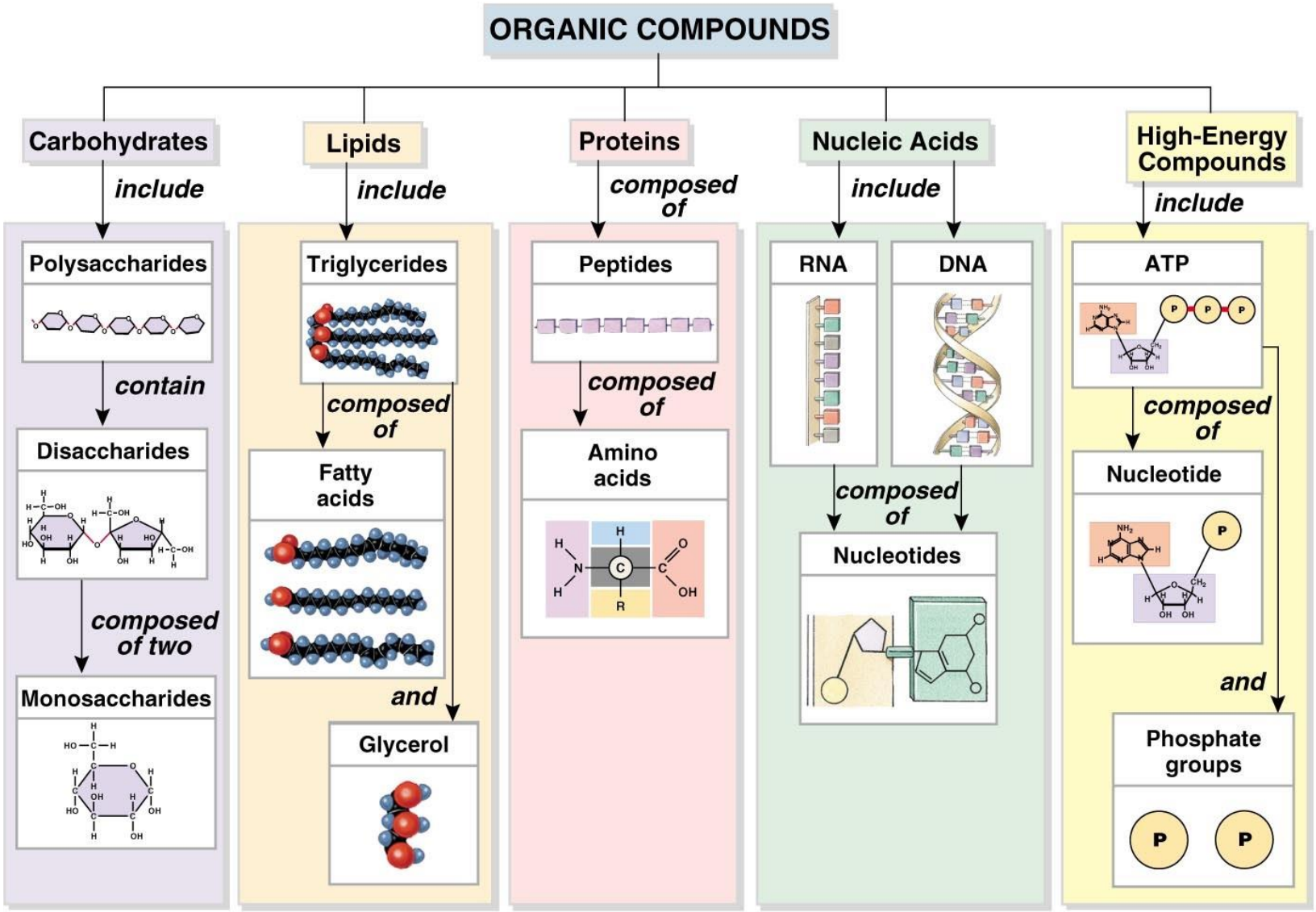
dopamine

does not enter brain

Neurons that Make Dopamine Die in Parkinson's Disease

"pleasure / reward / well-being" system highlighted.
Several recreational drugs affect this system





CHOLESTEROL
PROSTAGLANDINS

ATP CONSIDERED PART OF NUCLEIC ACIDS