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Nutrition 101 – Class 5

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Computer Difficulties

- Contact Erin Deichman
  - (574)753-1706
  - edeichman@logansportmemorial.org

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Questions

- You may raise your hand and type your question
- All questions will be answered at the end of the webinar to save time

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Nutrition 101

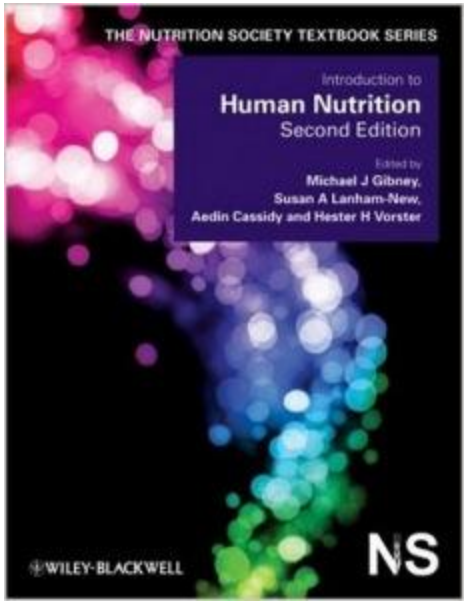
- Introduction to Human Nutrition" second edition

  Edited by Michael J. Gibney, Susan A. Lanham-New, Aedin Cassidy, and Hester H. Vorster

  May be purchased online

  but is not required for

  the class.



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Nutrition and Metabolism of Lipids

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Lipid History

- Mildred and George Burr, 1929

- Absence of fat in the diet
  - Impaired growth
  - Caused hair loss and skin scaling

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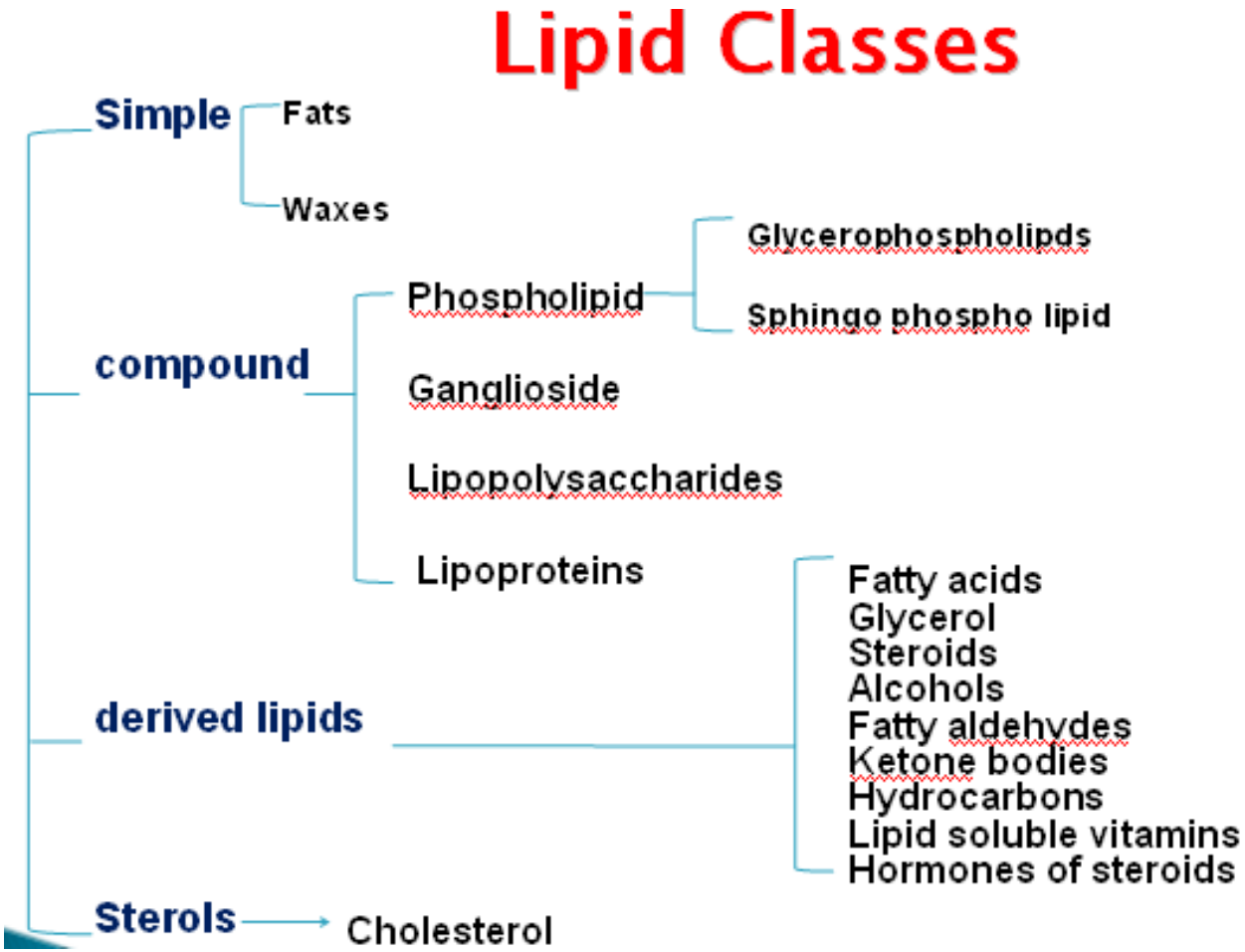
Categories of Lipids



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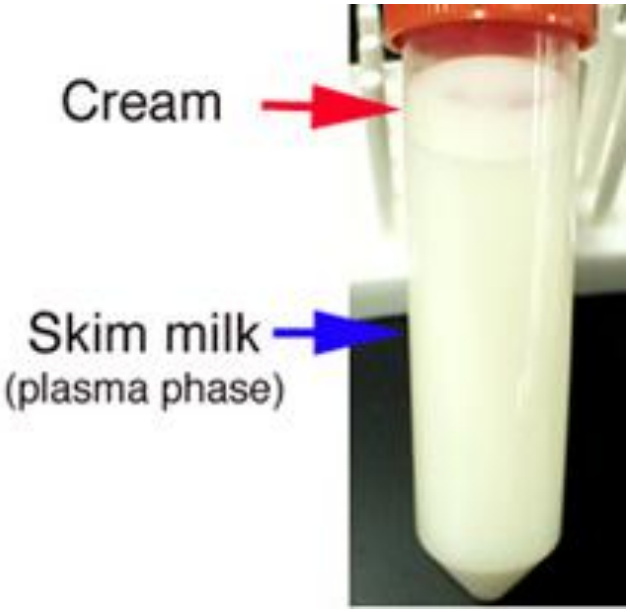
Short-Chain Fatty Acids

- Soluble in water
- Found in food with milk fat
- Do not become part of body lipid pools



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Medium-Chain Fatty Acids

- Rare in diet
- Found in coconut oil and milk fat

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Long-Chain Fatty Acids

- Main sources of dietary fat
- Saturated
- Monounsaturated

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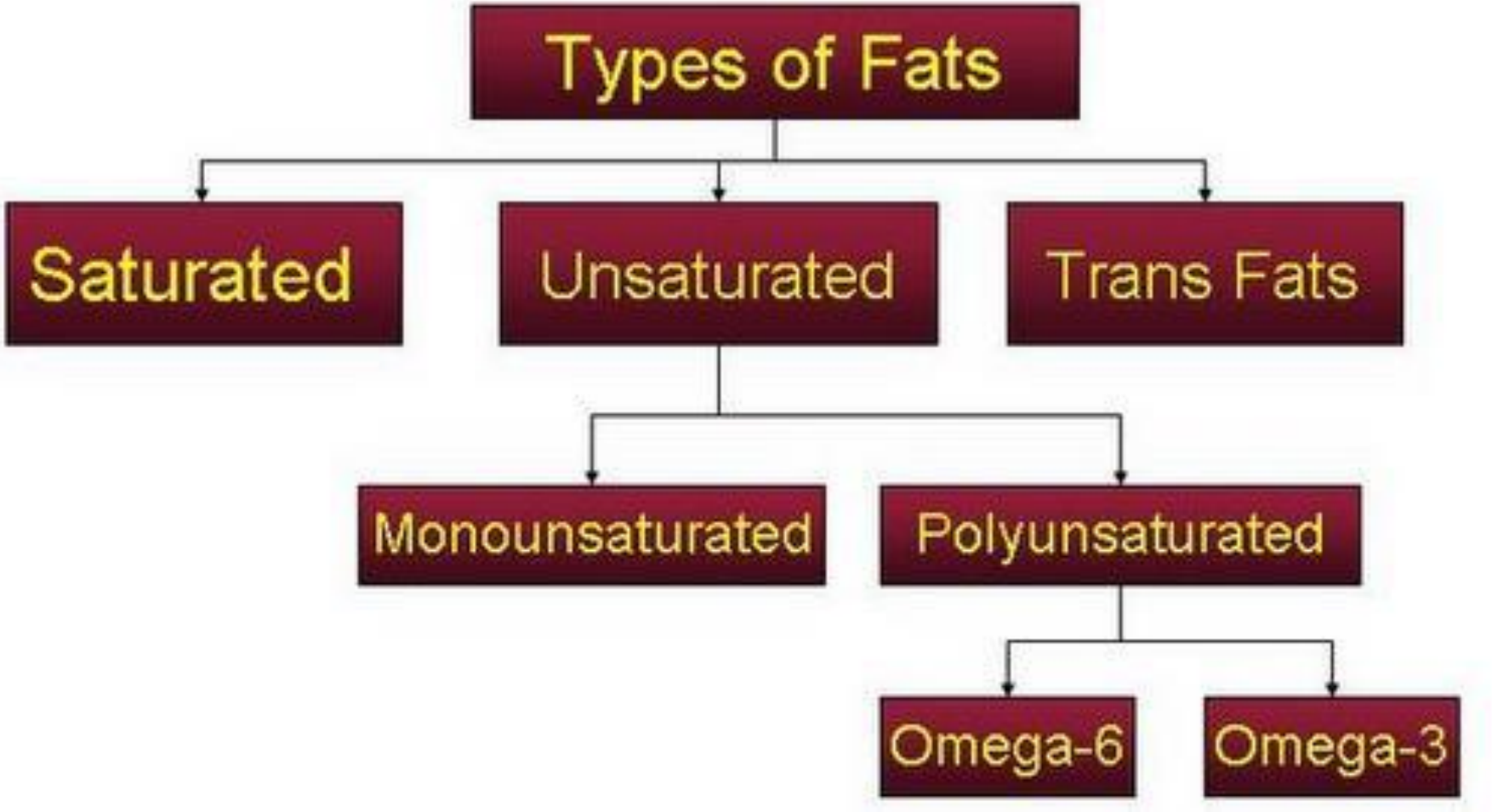
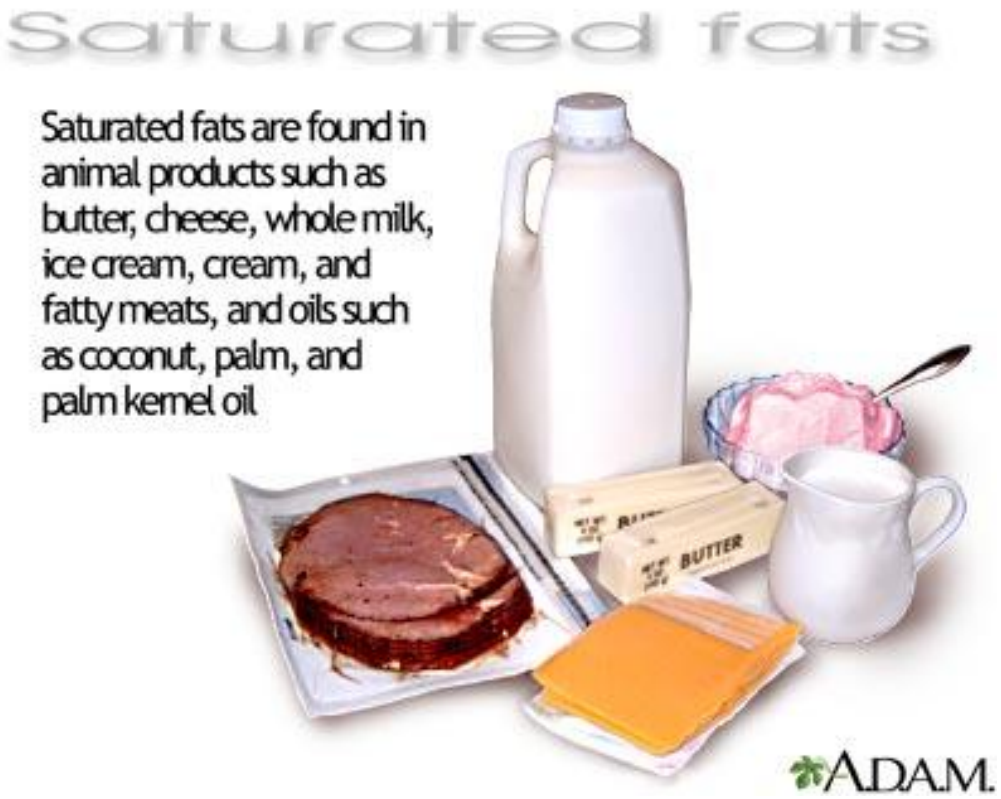


Saturated Fats

- Most common are stearate and palmitate
- Excessive intake → increased risk of CVD



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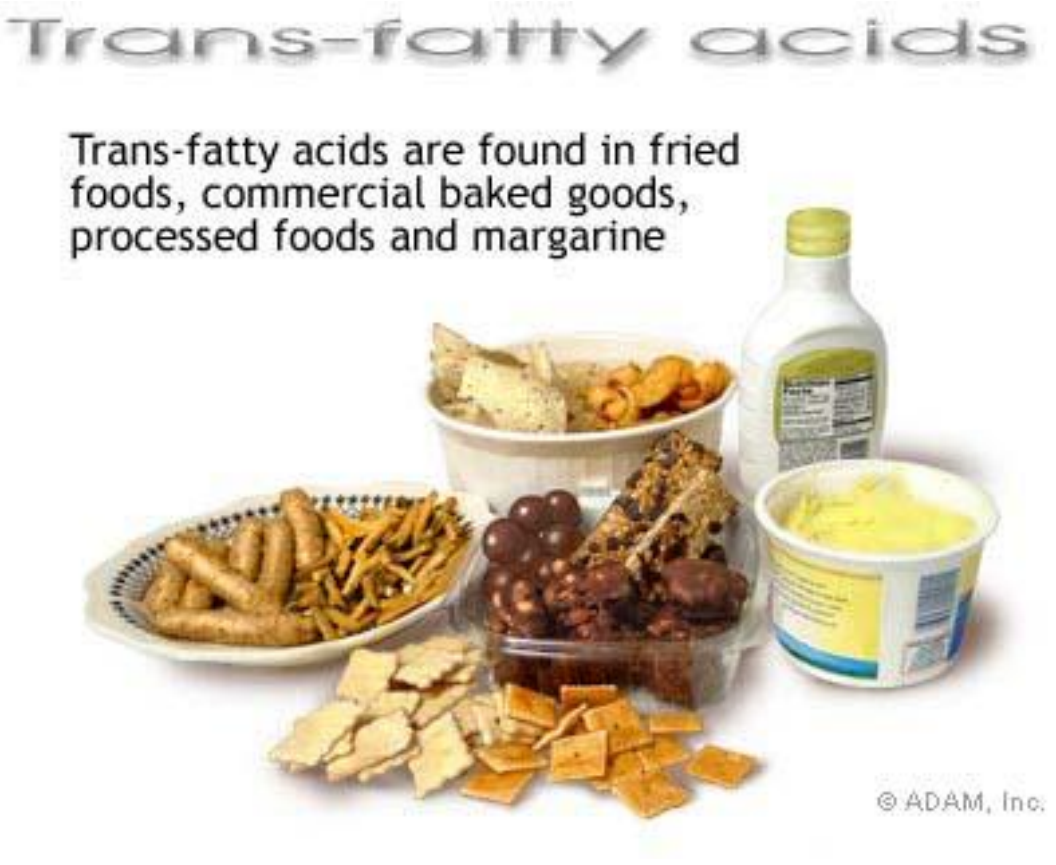
Trans Fat

- Partially hydrogenated fatty acids
- Not naturally occurring
- Directly from food processing
- Raise LDL and lower HDL cholesterol



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Monounsaturated Fats

- Most common are oleate and palmitoleate
- Lowers serum cholesterol
- Source of omega-9

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Polyunsaturated Fats

- Primary sources are linoleate and a-linolenate
- Source of omega-3 and omega-6

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Omega-6 and Omega-3

- Necessary for normal growth and development
- Omega-3 deficiency is often caused from excess of omega-6
- Ratio of 2:1 – 4:1

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Comparing Omega-3 and Omega-6

	Omega-3	Omega-6
Salmon, 3 oz	1900 mg	500 mg
Flaxseeds, 1 tbsp	2200 mg	500 mg
Olive oil, 2 tbsp	300 mg	3000 mg
Almonds, 1 ounce	-	3800 mg
Peanut butter, 2 tbsp	100 mg	3900 mg
Tofu, ½ cup	800 mg	5700 mg
Walnuts, 1 oz	3000 mg	11,000 mg
Shrimp, 3 oz	400 mg	-
Tuna in water, 3 oz	500 mg	-

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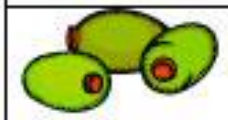
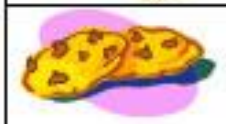
Effect on Heart

	Type of fat	Food sources	Recommended Percent of total fat	Effect on 
	Monounsaturated	# 1 choice  Canola oil	Up to 20%	Linked to lower risk of heart disease
	Polyunsaturated	Liquid Vegetable oils, Fish oils	Up to 10%	Linked to lower risk of heart disease
	Saturated	Animal foods, Coconut oil, Palm oil	Less than 7%	Linked to increased risk of heart disease
	"Trans"	Shortening, Margarine, Crackers, Cookies	Less than 3%	Linked to increased risk of heart disease

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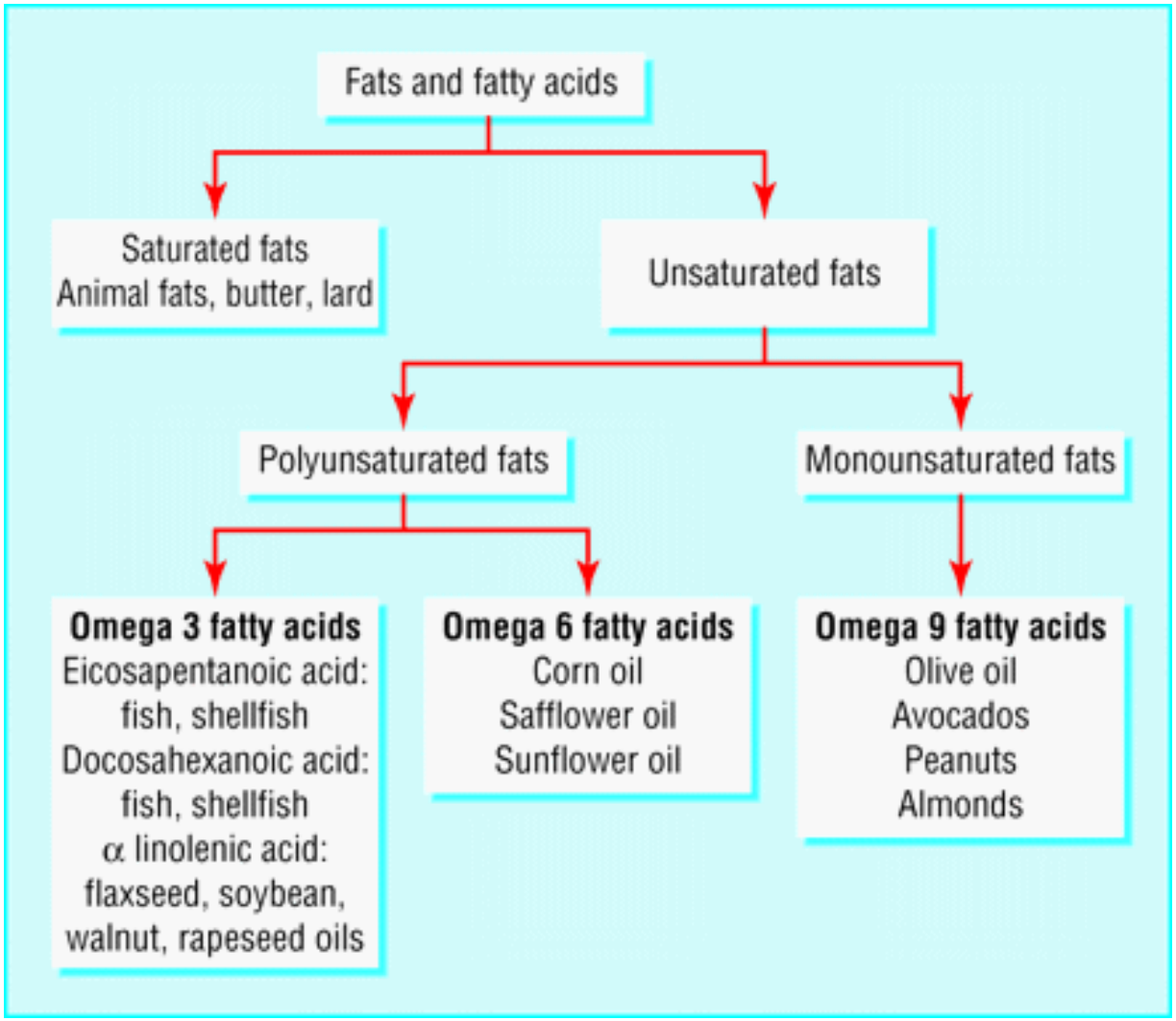
Fats and Fatty Acids



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Omega-3

- ALA – alpha linoleic acid
  - Flaxseed, canola and soybean oils, walnuts
  - Lowers cholesterol and triglyceride levels
- EPA – eicosapentaenoic acid and DHA – docosahexaenoic acid
  - Fatty fishes such as mackerel, herring, salmon, tuna, and trout
  - Helps with brain and eye development, preventing Alzheimer's, and preventing CVD

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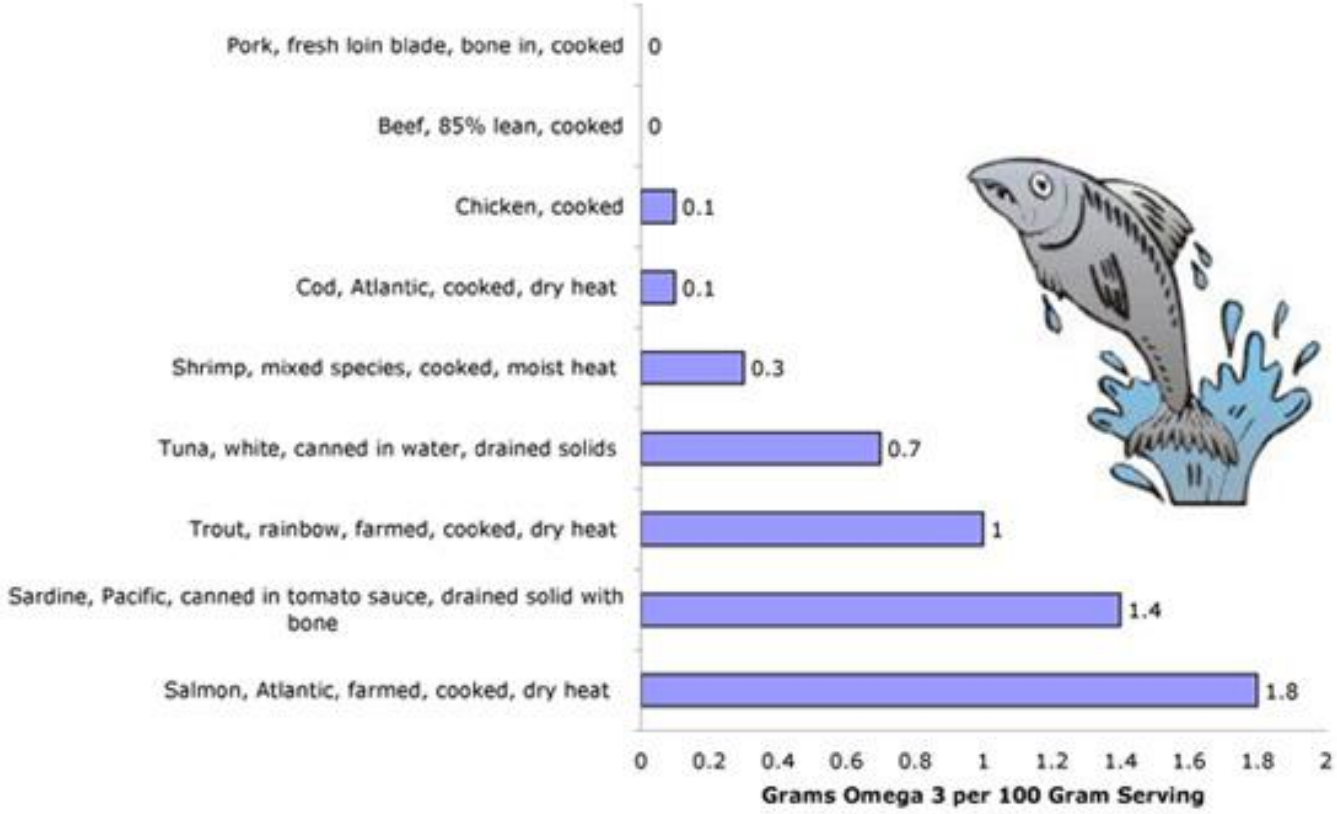
Omega 3 Content of Popular Seafoods, Meats



Source: USDA Nutrient Database for Standard Reference

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Omega 6

- LA-Linoleic Acid
  - Soybean, sunflower, corn, peanut and safflower oils
  - Excessive amounts can contribute to inflammation resulting in heart disease, cancer, asthma, arthritis, and depression
- GLA – Gamma-Linolenic Acid
  - Evening primrose oil
- AA – Arachidonic Acid
  - Red meat, poultry, eggs

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Omega 9

- Oleic Acid
  - Olive oil, canola oil, sunflower oil, peanuts, pistachios, almonds, pecans, and avocados
  - Reduce of CVD and stroke
  - Increases HDL
  - Decreases LDL
  - Helps eliminate plaque build-up in the arteries

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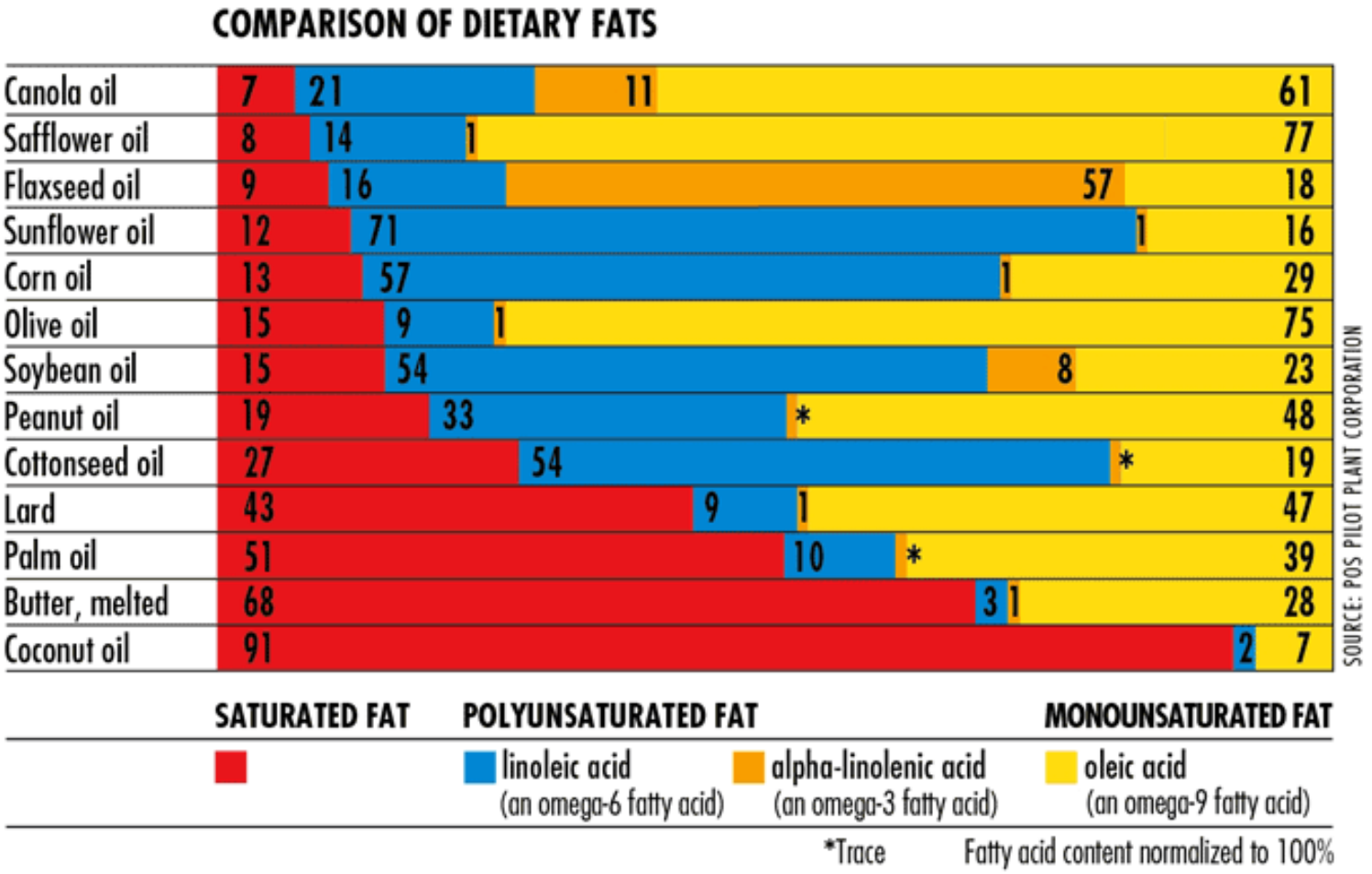
Fat Comparison



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Plant Sterols and Stanol Esters

- Nearly identical in structure to cholesterol
- Poorly absorbed
- Interfere with reabsorption of cholesterol originating from bile and food
- Margarine (30-40g/day) → lower LDL by 14%

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Dietary Cholesterol

- Has very little impact on blood cholesterol
- 1 whole egg/day is safe
- 1 study with 6 eggs/day → minimal LDL increase

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Blood Cholesterol Goals

Total Cholesterol	**Under 200**	Desirable
	200 - 239	Borderline High
	Over 240	High
HDL Cholesterol The GOOD kind	**Over 60**	Optimal
	Under 40	Low for Men
	Under 50	Low for Women
LDL Cholesterol The BAD kind - a lower number is better	**Under 70**	Optimal for those with heart or blood vessel disease
	Under 100	Optimal (also for diabetics & those with risk factors for heart disease)
	100 - 129	Near Optimal
	130 - 159	Borderline High
	160 - 189	High
	Over 190	Very High
Triglycerides	**Under 150**	Normal
	150 - 199	Borderline High
	200 - 499	High
	Over 500	Very High

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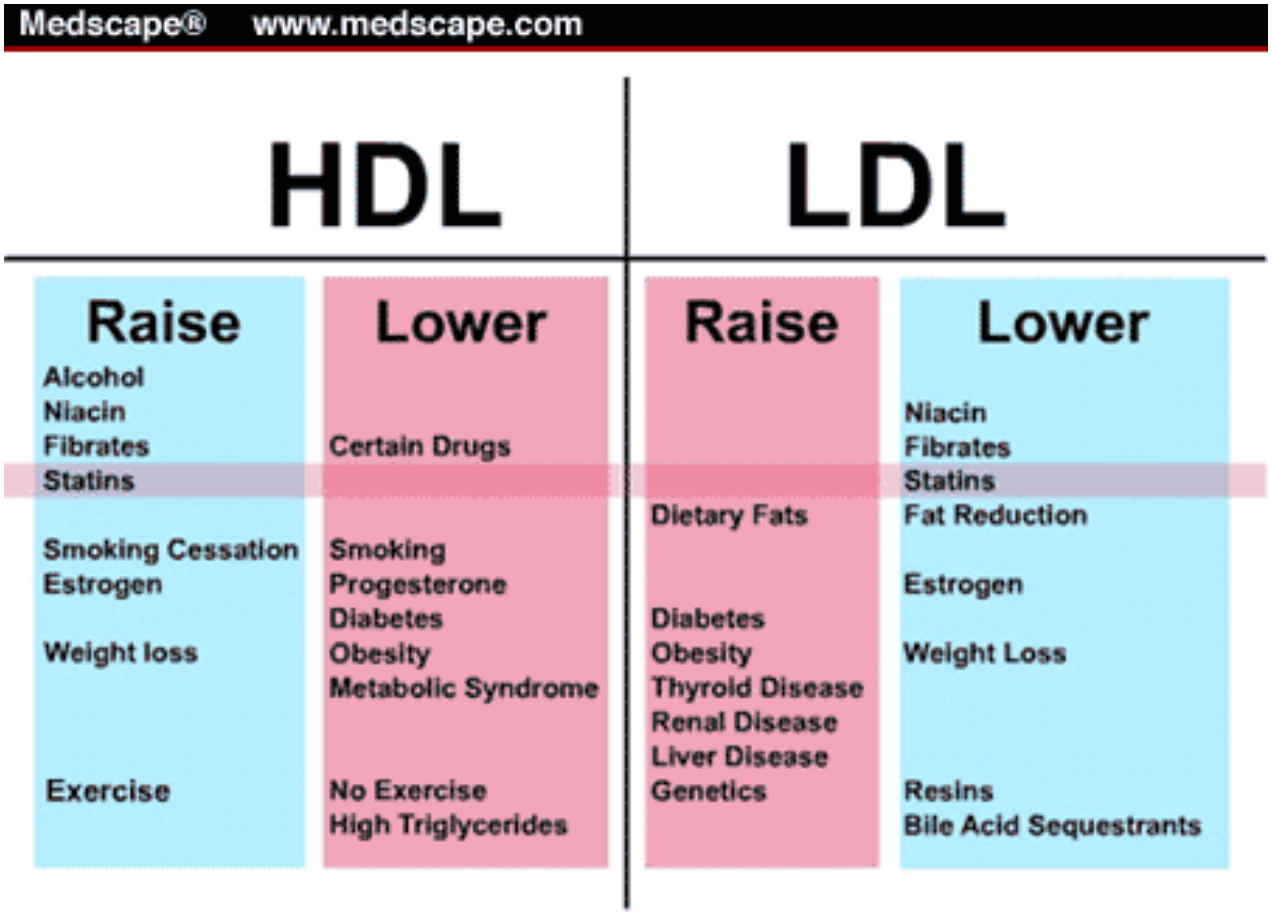
Effects on Cholesterol



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Questions, Comments

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