**Lesson 11 – Lipid. Digestion. Lipolysis and lipogenesis**

**1. Classification of lipids**

What is fatty acid?

What is the difference between saturated and unsaturated fatty acids?

Fill in the table

|  |  |  |  |
| --- | --- | --- | --- |
| Type | Structure | Type of bonds between components | Function |
| Fats (TAGs) |  |  |  |
| Glycerophospholipids |  |  |  |
| Ceramide |  |  |  |
| Sphingolipids |  |  |  |
| Glycolipids |  |  |  |
| Sterols |  |  |  |
| Eicosanoids |  |  |  |
| Isoprenoids |  |  |  |

**2. Lipids digestion**

What is bile? What is in bile?

Where is bile formed?

What are the functions of bile?

Fill in the table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Enzyme | Enzyme class | Where is the enzyme produced? | Where does the enzyme work? | Substrates | Products | What bond is broken by the enzyme? |
| Lingual lipase |  |  |  |  |  |  |
| Gastric lipase |  |  |  |  |  |  |
| Pancreatic lipase |  |  |  |  |  |  |
| Cholesterol esterase |  |  |  |  |  |  |
| Phospholipase |  |  |  |  |  |  |

**3. Lipolysis and lipogenesis**

What is lipolysis and lipogenesis?

Where do these processes take place?

When do these processes take place?

Fill in the table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Enzyme | Enzyme class | Substrates | Products | What happens in the reaction? | Regulation |
| Lipolysis | | | | | |
| Hormone-sensitive [lipase](https://www.lecturio.com/concepts/malabsorption-and-maldigestion/) |  |  |  |  |  |
| [Diacylglycerol](https://www.lecturio.com/concepts/second-messengers/) [lipase](https://www.lecturio.com/concepts/malabsorption-and-maldigestion/) |  |  |  |  |  |
| Monoacylglycerol [lipase](https://www.lecturio.com/concepts/malabsorption-and-maldigestion/) |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Enzyme | Enzyme class | Substrates | Products | What happens in the reaction? | Regulation |
| Lipogenesis | | | | | |
| Acyl-coenzyme A synthetase |  |  |  |  |  |
| Glycerol kinase |  |  |  |  |  |
| Glycerol-3-phosphate dehydrogenase |  |  |  |  |  |
| Glycerol-3-phosphate acyltransferase |  |  |  |  |  |
| Phosphatidic acid phosphatase |  |  |  |  |  |