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Peroxisomes

Exam — Cell Organelles

Pre-Med practice questions about peroxisomal structure, metabolism, and targeting

6 items — Printable Exam

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1 **Which of the following is a primary function of peroxisomes in animal cells?**

A ATP production via oxidative phosphorylation.

B Digestion of phagocytosed bacteria.

C Beta-oxidation of very-long-chain fatty acids and detoxification using hydrogen peroxide.

D Synthesis of ribosomal RNA.

E Packaging of proteins for secretion.

2 **Which enzyme is characteristically abundant in peroxisomes and breaks down hydrogen peroxide?**

A Catalase.

B DNA polymerase.

C ATP synthase.

D Pepsin.

E Hexokinase.

3 **How do most matrix proteins reach the interior of peroxisomes?**

A They are synthesized in the ER lumen and transported in vesicles.

B They are synthesized on mitochondrial ribosomes and imported.

C They are synthesized on free cytosolic ribosomes and imported post-translationally via targeting signals.

D They diffuse directly through the peroxisomal membrane.

E They are encoded by the peroxisomal genome.

4 **A defect that completely eliminates functional peroxisomes in human cells would most directly lead to:**

A Loss of electron transport and oxidative phosphorylation.

B Accumulation of very-long-chain fatty acids and certain toxins.

C Inability to perform phagocytosis.

D Failure of mitotic spindle formation.

E Inability to synthesize ribosomes.

5 **A mutant cell has normal mitochondria but completely lacks functional peroxisomes. Which metabolic defect is most specifically due to the absence of peroxisomes (rather than mitochondrial dysfunction)?**

A Inability to complete beta-oxidation of very-long-chain fatty acids (e.g. C26:0).

B Inability to oxidize acetyl-CoA in the citric acid cycle.

C Inability to carry out glycolysis.

D Inability to perform oxidative phosphorylation.

E Inability to digest proteins internalized by endocytosis.

6 **In germinating oil-rich seeds of some plants, specialized peroxisomes called glyoxysomes convert stored lipids into sugars. Which metabolic pathway is especially associated with these organelles?**

A Glycolysis.

B The glyoxylate cycle, allowing conversion of acetyl-CoA to four-carbon acids used for gluconeogenesis.

C Fermentation.

D Oxidative phosphorylation.

E The urea cycle.

Answer Key

#	Ans	Answer Text
1	C	Beta-oxidation of very-long-chain fatty acids and detoxification using h...
2	A	Catalase.
3	C	They are synthesized on free cytosolic ribosomes and imported post-trans...
4	B	Accumulation of very-long-chain fatty acids and certain toxins.
5	A	Inability to complete beta-oxidation of very-long-chain fatty acids (e.g...
6	B	The glyoxylate cycle, allowing conversion of acetyl-CoA to four-carbon a...