PU M Sc Bio Chemistry and Molecular Biology

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100 PU_2015_368
The chromosomes responsible for characteristics other than sex are known by which of the following terms?

- ribosomes
- lysosomes
- spermatocytes
- autosomes

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Eukaryotic cells with DNA damage often cease progression through the cell cycle until the damage is repaired. This type of control over the cell cycle is referred to as:-

- checkpoint control
- proteosome control
- anticyclin control
- damage control

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Mucopolysaccharides are also known as:-

- Glycoproteins
- Mucoproteins
- Homopolysaccharides
- Glycosaminoglycans

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201 PU_2015_368
Essential fatty acids are the precursors for:-

- Phosphadidate
- Platelet activating factor
- Cardiolipin
- Arachidonate

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Whenever the pathogenic microflora establishes in the body, the normal microflora in our body:-

- remains unaffected
- no correlation between the microflora

- Decreases
- Increases

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Transcription initiation can be determined by:-

- Foot printing
- Nick Translation
- Primer Extension
- Northern Blotting

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Ovule is attached to placenta by a slender stalk called:-

- Petiole
- Pedicel
- Placenta
- Funicle

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Into which of the following acids is glucose broken down in the first stage of carbohydrate metabolism?

- citric acid
- pyruvic acid
- hydrochloric acid
- lactic acid

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After formation of the initiation complex in eukaryotes:-

- Poly-A tail is split off
- Methionyl tRNA occupies the A site on the ribosome
- 7-Methylguanosine triphosphate cap is split off
- None of the above

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Cyclins and cyclin dependent kinases are involved in the regulation of:-

- membrane circulation via exocytosis and endocytosis
- circadian rhythms

- cell-cycle
- synthesis of cAMP

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Molting is caused by the hormone:-

- Alloecydysone
- Morpisone
- Phenoxyecdysone
- Hydroxyecdysone

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One-celled algae enclosed in minute two-part silic shells are called:-

- diatoms
- dinoflagellates
- annelids
- coelenterates

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A specific inhibitor of Succinate dehydrogenase is:-

- Cyanide
- Citrate
- Arsenate
- Malonate

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Examples for triple antigen vaccines included in the immunization schedule of newborns are:-

- MMR and BCG
- BCG and OPV
- MMR and OPV
- MMR and DPT

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From the pentapeptide, phe-ala-leu-lys-arg, phenylalanine residue is split off by:-

- Trypsin
- Carboxypeptidase

- Aminopeptidase
- Chymotrypsin

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In the first stage of photosynthesis, light energy is used to:-
- move water molecules
- produce carbohydrates
- split water
- denature chlorophyll

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Fight, fright and flight reactions during emergency are brought about by:-
- Pituitary
- parasympathetic nervous system
- sympathetic nervous system
- central nervous system

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Insulin promotes:-
- Ketogenesis
- Lipolysis
- Gluconeogenesis
- Fatty acid biosynthesis

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Hem synthetase is congenitally deficient in:-
- Hereditary coproporphyria
- Protoporphyria
- Variegate porphyria
- Congenital erythropoietic porphyria

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Because penicillin prevents peptidoglycan synthesis, it is more effective on:-
- Gram negative bacteria
- Gram positive bacteria

- Mycobacterium
- Microsporum

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Each of the following is a cell organelle except one. Which one of these is NOT a cell organelle?

- mitochondrion
- lysosome
- cytoplasm
- endoplasmic reticulum

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The class of antibiotics known as the quinolones is bactericidal. Its mode of action on growing bacteria is thought to be:-

- Inhibition of DNA gyrase
- Inactivation of penicillin-binding protein II
- Prevention of the cross-linking of glycine
- Inhibition of β-lactamase

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C1 component of the classical complement pathway is made up of:-

- Complements 1q and 1s
- Complements 1r and 1s
- Complements 1q, 1r and 1s
- Complements 1q and 1r

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Thromboxanes are involved in:-

- Platelet formation
- Uterine contraction
- Mucin secretion
- Platelet aggregation

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The first DNA molecule to be completely sequenced was:-

- SV40 virus

- bacteriophage Φ X174
- human mitochondrial genome
- *E. coli*

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The mitochondrial Superoxide dismutase contains:-

- $Mg+^{2}$
- $Co+^{2}$
- $Zn+^{2}$
- $Mn+^{2}$

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Which of these connective tissue types has proteoglycans in its matrix?

- Bone
- Ligaments
- Tendons
- Cartilage

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Which of the following is not an arachnid?

- black widow spider
- tick
- lobster
- scorpion

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Enhancer elements:-

- Are present between promoters and the structural genes
- Are *trans*-acting factors
- Encode specific enhancer proteins
- Increase the expression of some structural genes

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When both ovaries are removed from rat then which hormone is decreased in blood?

- estrogen

- gonadotropin releasing factor
- prolactin
- Oxytocin

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A fatty acid with 14 carbon atoms will undergo how many cycles of β oxidation:-

- 4
- 7
- 5
- 6

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A homopolysaccharide made up of fructose is:-

- Dextrin
- Glycogen
- Inulin
- Cellulose

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Consider the average *in vivo* turnover rates for proteins, DNA, and mRNA. Which of the following order best describes the turnover rate from fastest (shortest average lifetime) to slowest (longest average lifetime)?

- mRNA > DNA > proteins
- mRNA > proteins > DNA
- Proteins > mRNA > DNA
- Proteins > DNA > mRNA

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Primary interactions between antigens and antibodies involve all of the following Except:-

- electrostatic forces
- covalent bonds
- van der Waals forces
- hydrophobic forces

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When a surgeon conducts a bypass surgery by transplanting a piece of vein from the patient's leg to the same patient's heart, this is:-

- A xenograft
- An autograft
- An allograft
- An isograft

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Cortisol is the most potent of the neutrally occurring glycocorticoids. They are produced by the cells of:-

A) Zona glomerulosa
B) zona fasiculata
C) zona reticularis

- A only
- A & B
- A, B & C
- B & C

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Normal blood calcium levels range between:-

- 10.5-12 mg/dL
- 6-8 mg/dL
- 8-10.5 mg/dL
- 1-2 mg/dL

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Cholera toxin has AB subunits, A_1 subunit enters cytosol to become active, and activates a protein which stimulates adenylate cyclase to produce cAMP, high cAMP levels activate _____ leading to efflux of ions and water from entrocytes causing diarrhea.

- Sodium – glucose cotransporter
- CFTR – cystic fibrosis transmembrane receptor
- PPAR – peroxisome Proliferator Activated Receptor
- adhesion GPCR

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It is the part of forebrain and regulates the pituitary glands and maintains body temperature:-

- Hypothalamus
- thalamus

- Cerebrum
- medulla oblongata

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Monooxygenases are found in:-

- Microsomes
- Mitochondria
- Crystae
- Nucleus

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In antibodies, the variable region of light chains has:-

- Two hypervariable regions
- Three hypervariable regions
- One hypervariable region
- Four hypervariable regions

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When a color blind man marries a woman pure for normal color vision, it is probable that one of the following situations may result. Is it probable that:-

- half the grandsons will be color blind
- all the grandchildren will be color blind
- all the children will be color blind
- only the sons will be colorblind

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Green fluorescent protein (GFP) is derived from:-

- Aquaria Victoria
- Enterococcus hirae
- Streptococcus pneumonia
- Listeria monocytogenes

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Suppressor mutations occur in:-

- Structural genes

- Silencer elements
- Promoter genes
- Anticodons

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BRCA-1 is associated with which cancer?

- Thyroid
- Leukemia
- Nerve
- Breast

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The half-life of a protein depends upon its:-

- C-terminus amino acid
- N-terminus amino acid
- Prosthetic group
- Signal sequence

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Osmoregulation is concerned with:-

- ionic regulation
- carbon dioxide regulation
- excretion
- control of the body's water content

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In sticky ends produced by restriction endonucleases:-

- The ends of a double-stranded fragment are overlapping
- The ends of a double-stranded fragment are non-overlapping
- The DNA strands stick to the restriction endonuclease
- The two strands of DNA are joined to each other

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The voltage gated potassium channel opens due to:-

- Change in pH

- Change in electromagnetic field
- Increase in potassium
- Change in protein concentration

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Which of the following pair of diseases is caused by virus?

- Cholera, Tuberculosis
- Elephantiasis, Syphilis
- Trypanosomiasis, giardiasis
- Rabies, mumps

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The SI unit of molar extinction coefficient is:-

- m^2/mol
- M cm
- $M\ cm^{-1}$
- $M^{-1}cm^{-1}$

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Agent affecting translation:-

- Quinolone
- Chloramphenicol
- Streptovaricin B
- Streptovaricin A

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Dr. John Snow, a physician saw the devastating effects and rapid spread of the disease called as:-

- Malaria
- Jaundice
- Cholera
- Flu

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You want to purify a protein by ion – exchange chromatography. But, you did not know the nature of charge on the protein at a certain p^H. Determine the nature of charge of a given protein sequence at p^H 3.0 so that you know whether to purify by cation or anion exchange chromatography.

$-NH_3^+$ - Pro – Tyr –Ser – Gly – Val – Ile – Phe – Tyr – Leu – Glu – Asp – COOH

- no charge
- negative (-) charge
- Positive (+) charge
- cannot be determined

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Which of the following is not found in blood?

- fibrinogen
- glucose
- glycogen
- urea

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Glaucoma is an eye-disease arising from:-

- elongation of eye ball
- stiffness in iris
- increased pressure of fluid in eye ball
- shortening of eye ball

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MSH is secreted by:-

- middle lobe of pituitary
- Anterior lobe of pituitary
- endostyle
- posterior lobe of pituitary

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A light microscope has an objective lens with a magnification of 100x and an ocular lens with a magnification of 10x. What is the total magnification of the image?

- 10x
- 100x
- 1000x
- 400x

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Jawless fishes belong to the class:-

- Agnathans
- Pandakans
- Branchiostoma
- Osteichthyes

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An individual with three X chromosomes is likely to be:-

- a Turner's individual
- an abnormal female
- a clinically normal female
- a Kleinfelter's individual

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Histones are:-

- Insoluble in water and very dilute acids
- Identical to protamine
- Proteins with high molecular weight
- Proteins rich in lysine and arginine

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248 PU_2015_368
What is the general formula for carbohydrates?

- (COOH)
- (C2HO)n
- (CHCHCH)
- (CH2O)n

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246 PU_2015_368
A hormone used for detection of pregnancy is:-

- Progesterone
- Estrogen
- Oxytocin
- Chorionic gonadotropin

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Cholesterol is a precursor for:-

- Bile acid
- ATP synthesis
- Bilirubin
- Phospholipid

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Molecular weight of human albumin is about:-

- 54,000
- 90,000
- 69,000
- 156,000

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In Drosophila, sex is determined by:-

- The ratio of X chromosomes to autosomes
- The ratio of Y chromosomes to autosomes
- Environment
- Y chromosome

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The power house of the cell is:-

- Mitochondria
- Nucleus
- Lysosomes
- Cell membrane

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In anaerobic glycolysis, energy yield from each molecule of glucose is:-

- 38 ATP equivalents
- 30 ATP equivalents
- 8 ATP equivalents
- 2 ATP equivalents

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The major function of PTH appears to be the maintenance of a normal level of extracellular fluid:-

- Albumin
- Globulin
- Calcium
- Ferritin

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Stearic acid has:-

- 16 carbon atoms
- One unsaturated bond
- Two unsaturated bond
- 18 carbon atoms

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Vitamin B12 is:-

- Stored in liver
- Stored in RE cells
- Stored in bone marrow
- Not stored in the body

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In normal resting state, most of the blood glucose burnt as fuel in humans is consumed by:-

- Adipose tissue
- Brain
- Liver
- Kidneys

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Immunoglobulins are classified on the basis of their:-

- Type of light chains
- Molecular weight
- Type of heavy chains
- Types of light and heavy chains

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Plants store energy as:-

- Lipids
- Lactose
- Protein
- Starch

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The following air pollutant is responsible for acid rain:-

- CO
- SO_2
- H_2S
- CO_2

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225 PU_2015_368
Which of the following hormones is not involved in carbohydrate metabolism?

- Vasopressin
- ACTH
- Insulin
- Glucagon

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Ergosterol is a precursor of:-

- Lanosterol
- Coenzyme A
- Acyl protein
- Vitamin D

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At isoelectric pH, an amino acid exists as:-

- Cation
- Anion
- Zwitterion
- Polar amino acid

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245 PU_2015_368
The most rapid method to re synthesise ATP during exercise is through:-

- Tricarboxylic acid cycle (Krebs' cycle)
- Gluconeogenesis
- Phosphocreatine breakdown
- Glycolysis

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Amino acid with a nonpolar side chain is:-

- Serine
- Threonine
- Valine
- Asparagine

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The carbon chain of fatty acids is shortened by 2 carbon atoms at a time. This involves successive reactions catalyzed by 4-enzymes. These acts on the following order:-

- Enoyl-CoA hydrase, β-OH acyl CoA dehydrogenase, acyl CoA dehydrogenase, thiolase,
- Acyl CoA dehydrogenase, enoyl- CoA hydrase, β-OH acyl CoA dehydrogenase, thiolase
- Acetyl CoA dehydrogenase, β-OH acyl CoA dehydrogenase, enoyl hydrase, thiolase
- Acyl CoA dehydrogenase, thiolase, enoyl-CoA hydrase, β-OH acyl CoA dehydrogenase

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The glyoxylate cycle is found in plants and bacteria but not in animals. The lack of this cycle in animals results in the inability to:-

- Synthesize glutamate from malate
- Synthesize oxaloacetate from isocitrate
- Perform gluconeogenesis from fatty acids
- Perform gluconeogenesis from amino acids

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Enzymes that are secreted in their inactive forms are called as:-

- zymogen
- clastogen
- methanogen

- mutagen

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The glycosaminoglycan which does not contain uronic acid is:-

- Keratan sulphate
- Chondroitin sulphate
- Heparan sulphate
- Dermatan sulphate

85 of 100

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This amino acid has a profound effect in the secondary structure of proteins, because when present in the amino acid sequence, it disrupts the α-helix structure:-

- Serine
- Glycine
- Proline
- Alanine

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Enzyme that cuts within a DNA molecule is called:-

- DNA ligase
- DNA methylase
- endonuclease
- exonuclease

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Ligand-gated ion channel receptor is best illustrated with:-

- Insulin receptor
- Erythropoietin type receptor
- Muscarinic acetylcholine receptor
- Nicotinic acetylcholine receptor

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Trypsinogen is converted to trypsin by:-

- proteolytic cleavage
- reduction of a disulfide bond

- binding an essential metal ion
- phosphorylation of amino acid side chain

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An example of a thermostable enzyme is:-

- ribonuclease
- chymotrypsin
- pepsin
- Taq polymerase

90 of 100

290 PU_2015_368

α-D-glucose + 1120 → + 52.50 ← + 190 β- D- glucose.

Changes for glucose above represent:-

- Mutarotation
- Epimerisation
- Optical isomerism
- D and L isomerism

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Which of the following is not a covalent modification?

- dephosphorylation
- activation by divalent cation
- phosphporylation
- proteolytic cleavage

92 of 100

292 PU_2015_368

Both α-helix and β-pleated sheet conformation of proteins were proposed by:-

- Pauling and Corey
- Y.S. Rao
- Waugh and King
- Watson and Crick

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An increase in the osmolality of extracellular compartment will:-

- Stimulate the volume and osmoreceptor and inhibit ADH secretion

- Inhibit ADH secretion
- Cause no change in ADH secretion
- Stimulate ADH secretion

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During strenuous exercise, the NADH formed in the glyceraldehyde 3-phosphate dehydrogenase reaction in skeletal muscle must be reoxidized to NAD+ if glycolysis is going to continue. The most important reaction involved in the reoxidation of NADH in anaerobic conditions is:-

- Dihydroxyacetone phosphate to glycerol 3-phosphate
- Glucose 6 (P) to Phosphogluconate
- Isocitrate to α-ketoglutarate
- Pyruvate to lactate

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Binding of catecholamines to α_2− adrenergic receptors results in:-

- Increases the intracellular concentration of cGMP
- Decreases the intracellular concentration of cGMP
- Decreases the intracellular concentration of cAMP
- Increases the intracellular concentration of cAMP

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The sequence of the redox carrier in respiratory chain is:-

- NAD—FMN—Q—cyt c_1—cyt c—cyt b—cyt $aa_3 \rightarrow O_2$
- FMN—Q—NAD—cyt b—cyt aa_3—cyt c_1— cyt c→ O_2
- NAD—FMN—Q—cyt b—cyt c_1—cyt c—cyt $aa_3 \rightarrow O_2$
- NAD—FMN—Q—cyt b—cyt aa_3—cyt c—cyt $c_1 \rightarrow O_2$

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Which of the following nucleus of hypothalamus is mainly responsible for circadian rhythm?

- ARC
- SON
- SCN
- PVN

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Collagen presents in its structure modified amino acids as hydroxyproline and hydroxylysine. The formation of these amino acids from their precursors, is post-trancriptional, and occurs in enzymatic reactions that require as cofactor the following compound:-

- Ascorbic acid
- Citric Acid
- Folic Acid
- Lipoic acid

99 of 100

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The largest class of enzymes based on the classification by Enzyme Commission is:-

- Lyase
- Oxidoreductase
- Isomerase
- Ligase

100 of 100

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Several thousands of tons of aspirin (acetylsalicilate) are consumed each year all over the world for the relief of headaches, inflammed joint and pain, and in general fever. Also, at low doses it is used in the prevention of heart attacks. The relief caused by aspirin in these conditions is based mainly in aspirin effects on eicosanoid metabolism. Aspirin binds covalently (and so act as an irreversible inhibitor) to this enzyme of eicosanoid metabolism:-

- Phospholipase A_2
- Thromboxane Synthase
- PGH_2 Synthase
- Lipoxygenase