Multiple Choice Answers

Q38: C

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Q37: C

4(a)	*any **three** from:* *max 2 for similarities, max 2 for differences* *similarities, both have* phospholipids ; channel / transport, protein ; **A** intrinsic / integral / transmembrane, protein **R** carrier / pump, protein a bilayer / two layers ; *differences* *do not need to have 'outer membrane' 'bacterial' if context is clear* (bacterial outer membrane) has lipopolysaccharides ; **ora** (cell surface membrane / eukaryote) has, phospholipid bilayer / both layers with phospholipids ; **ora** *if ora also given (bacterial) only has outer layer of (outer) membrane with phospholipids, can also award mp1* AVP ;; e.g. cell surface membrane has, glycocalyx / glycolipids / glycoproteins cell surface membrane has cholesterol outer membrane does not have extrinsic proteins
4(b)(i)	*any **one** from:* *formation of O-IMV* involves a more complex process ; e.g. greater variety of, contents / cell structures **R** organelles *ref. to* needing to make a vesicle with two 'membranes' / AW **A** 'layers' peptidoglycan, chains / layer / bonds, need to be broken ; **A** peptidoglycan wall needs to be broken causes, (temporary) weakness in cell wall / risk of lysis ; *idea that* more resources required to form vesicle **or** too great a loss of important cell, components / structures *ref. to* take more time to produce ; uses (more) energy to, break wall / repair wall / make the vesicle ;**I** *ref. to* organelles AVP ; e.g. suggestion that periplasmic proteins need to be released in greater numbers so more OMVs formed
4(b)(ii)	*any **one** suggestion that:* *must be in context of a fully formed O-IMV* function of O-IMVs require, energy / ATP ; **A** suggested function e.g. DNA transcription / metabolic reactions / for active transport **I** cell processes O-IMV (formation) has cytoplasm, which contains ATP ; OMVs formed only from periplasm, which has no ATP ; **A** no ATP in outer membrane space AVP ; e.g. no / few, ATP transporters / transport proteins, for exit of ATP into periplasm (in area where OMV forms)
4(b)(iii)	*ref. to* DNA in O-IMVs being passed on to other bacteria ; e.g. O-IMVs may, fuse with / be taken up by / AW, plasmids / DNA, in (degraded) O-IMVs may enter other bacteria qualified *ref. to* O-IMV DNA and antibiotic resistance ; e.g. O-IMVs have, alleles / genes / plasmid, that, give / confer / AW, antibiotic resistance DNA may mutate to give (a, gene / allele, for) antibiotic resistance DNA, codes for / expresses / AW, a protein involved in antibiotic resistance example of gene conferring resistance e.g. enzyme to breakdown antibiotic change to ribosome structure (to prevent antibiotic attachment) efflux pump for / membrane protein to pump out, antibiotic

5(a)	*any **two** from:* **1** bacteria, have 70S ribosomes and humans have 80S ribosomes / only have 70S ribosomes ; **2** antibiotic, cannot bind to 80S / human ribosomes **or** can only bind to 70S / bacterial ribosomes ; **3** antibiotic, binding site / target site, not present on 80S ribosomes / only present on 70S ribosomes ; **A** *ref. to* complementary / specfic – alternative to second part of the MP **4** antibiotic cannot enter mitochondria to reach 70S ribosomes (in humans) ; **5** AVP ; different combinations of proteins in ribosomes / different rRNAs in ribosomes
5(b)	*any **one** from:* **1** penicillin acts on cell walls and human cells have no, peptidoglycans / cell walls / enzyme(s) that make cell walls; **A** murein *penicillin* **2** prevents formation of peptide / cross, bridges / linkages, (between peptidoglycans) in (bacterial) cell wall ; **3** prevents repair of, gaps / holes / AW, in (bacterial) cell walls caused by autolysins ; **I** *ref. to* penicillinase
5(c)	*any **one** from:* *rifampicin* **1** blocks / fits into / binds to / competes for, the active site of, RNA polymerase / enzyme ; **2** binds, to allosteric site / site away from active site, to, change shape of active site / prevent it forming phosphodiester bonds ; **3** attaches to DNA template blocking RNA polymerase moving along it ; **4** can be incorporated into RNA but no nucleotide can be added to it ; **5** AVP ; e.g. attaches to the promoter to stop RNA polymerase, binding to DNA / moving along DNA / AW