Autosome gene - CORRECT ANSWER-a chromosome that occurs in homozygous pairs in both males and females and that does not bear the genes determining sex

The function of the promoter is to signal the RNA polymerase to do what?

a. where to start transcribing the DNA. b. which strand of the DNA to read.

c. where to start translating the DNA. d. NONE of the above answers - CORRECT ANSWER-A

The genetic material of some viruses, such as HIV, is not normal DNA but is instead what component?

a. RNA.

b. protein.

c. carbohydrate.

d. lipid.

e. single-stranded DNA. - CORRECT ANSWER-A

The sequence of nitrogen-containing bases on one strand of DNA most directly determines the sequence of what?

a. fatty acids in a fat molecule.

b. amino acids in a protein molecule. c. sugars in a polysaccharide molecule. d. bases in a protein molecule.

e. NONE of the above answers - CORRECT ANSWER-B

The nitrogenous base uracil pairs with which base?

a. thymine.

b. adenine.

c. guanine.

d. cytosine.

e. uracil. - CORRECT ANSWER-B

Which of the following is found in RNA but NOT in DNA?

a. temporal isolation.

b. hybrid inviability.

c. hybrid infertility.

d. hybrid vigor.

e. gametic incompatibility. - CORRECT ANSWER-B

The elaborate courtship rituals of many bird species help to preserve their genetic isolation through what process?

a. behavioral isolation.

b. temporal isolation.

c. mechanical incompatibility.

d. hybrid inviability.

e. allopatric separation. - CORRECT ANSWER-A

The biological species concept cannot be applied to what group?

a. extinct organisms.

b. sympatric populations.

c. allopatric populations.

d. polyploid populations.

e. species resulting from adaptive radiation. - CORRECT ANSWER-A

Populations that were once considered separate species are sometimes reassigned to the same species. Why so?

a. it was discovered that they can produce viable and fertile offspring.

b. they have evolved to look different from each other.

c. they are no longer capable of interbreeding.

d. they have evolved to look the same.

sympatric speciation - CORRECT ANSWER-The formation of a new species as a result of a genetic change that produces a reproductive barrier between the changed population (mutants) and the parent population. No geographic barrier is present.

parapatric speciation - CORRECT ANSWER-the evolution of new species within a spatially extended population that still has some gene flow

what sort of condition is haemophilia? - CORRECT ANSWER-sex-lined X chromosome recessive

what does the term carrier mean in the context of diseases by comparison to affected? - CORRECT ANSWER-carrier means that they are likely carrying one copy of a gene, though they might not be expressing the disease/phenotypical outcome, likely recessive allele.

provide a definition and example of a post-zygotic barrier, or post-zygotic isolation mechanism - CORRECT ANSWER-post-zygotic isolation mechanisms that can result in speciation or be a result of speciation furthermore, is when the act of fertilisation can occur, but the hybrids fail, meaning ususally that they are infertile/sterile/unable to produce fertile offspring e.g. horses, donkeys and their offspring the mule.

provide a definition and example of a pre-zygotic barrier, or pre-zygotic isolation mechanism - CORRECT ANSWER-pre-zygotic isolation mechanisms are when there is no way for the fertilisation event to occur, e.g. when different frog species have different breeding seasons/times of year - temporal isolation.

what are the different classifications of pre-zygotic barriers? - CORRECT ANSWER-mechanistic, ecological and behavioural

What is a chromosome? - CORRECT ANSWER-

when are chromosomes present cells, what are they doing otherwise? - CORRECT ANSWER-

what are the parts of a chromosome - CORRECT ANSWER-

meiosis 2 is only fully complete - CORRECT ANSWER-at fertilisation

between the different types of cell division, what would be the evolutionary advantage of one over another? - CORRECT ANSWER-consider that meiosis involves recombination of allele combinations during crossing over and recombination events through chiasma formation, resulting in genetic exchange and therefore more variation

does having lots of genes = more efficient as chaisma formation? - CORRECT ANSWER-no, consider that perhaps an organism has lots of genes so that there can be the most opportunities for recombination events to occur, perhaps needed because the chiasma formation is really innefficient.

how do we figure out the maximum number of combinations of chromosomes that can be incorporated into a gamete? - CORRECT ANSWER-2 to the power of n, where n= the number of chromosome pairs. e.g. humans have 23 pairs of chromosomes, 46 total, 2 to the power of 23 accounts for one individiual, but when it takes 2ppl to mate, then the different combinations (without considering crossover events) is 2 to the power of 23 x 2 to the power of 23

Mendellian Genetics - CORRECT ANSWER-the understanding of how characteristics are transmitted form parent to off spring

mendels 3:1 ratio - CORRECT ANSWER-what happens when 2 heterozygotes are crossed together, 3 dominant phenotypes and 1 recessive phenotype

what are 3 examples of recessive disorders in humans - CORRECT ANSWER-albinism, phenylketonuria and beta thalassemia

describe inheritance patterns observed in autosomal recessive traits - CORRECT ANSWER-generations are skipped

sexes are affected equally

most often seen in offspring of consanguineous marriages

dominant disorders in humans e.g. - CORRECT ANSWER-achondroplasia (type of dwarfism)

Huntington's disease

crossbreeding directionality

migration tendencies altered/lost across time with the anthropocene - showing real time evolution.

do animals make adaptive decision making? - CORRECT ANSWER-consider the blue tits and consideration of how fat they should be - not heritable changes but decision making occurring

what are some of the benefits of group living? - CORRECT ANSWER-anti-predation/reduced predation

foraging benefits

reproductive benefits

what are some of the costs of group living? - CORRECT ANSWER-diseases,

parasites

competition

preadtion

consider the anti-predator benefits of cooperative living - CORRECT ANSWER-dazzle, confusion, more eyes on the predator and concept of shared vigilance (more ability to eat when not looking up all of the time), faster detection of predators

mobbing

how are we able to identify optimal group sizes? - CORRECT ANSWER-if we take an economic perspective, we can identify that the costs of group living increase as the group size increases, and the benefits also tend to aper off, and this is how we can identify an optimal group size and a maximum group size

optimal size is when the benefits are maximimal and the costs are minimal.

foraging benefits of group living: - CORRECT ANSWER-shared vigilance, lower vigilance meaning more foraging time

consider the information and learning benefit - CORRECT ANSWER-local enhancement: copying where others feed

parent-offspring conflict, how does this relationship maintain trade-offs - CORRECT ANSWER-creates conflict with exhausted parents, and constant crying is also a heavy energy expenditure to the babies themselves

habituation by receiver: false alarm calling example - CORRECT ANSWER-meerkats and drongos - but will stop believing after limited numbers of goes.

punishment as a reason for keeping signals honest - CORRECT ANSWER-potential higher retaliation if found out that the signal was dishonest, potentially worse outcomes

does cognition include all behavioural responses? - CORRECT ANSWER-not all responses, though they may be influenced by cognitive processes, things like fear and aggression we don't include

how does cognitive ecology view cognitive traits? - CORRECT ANSWER-using the phenotypic gambit, whereby cognitive traits are perceived as being adaptations to selective pressures

domain specific and domain-general - CORRECT ANSWER-domain-specific organisms are more specialised to certin niches or knowledge/abilities that are limited to areas or tasks, generalists are opportunists with skills and knowledge that can be broadly applied

in relation to cognitive ecology, how are these domains considered? - CORRECT ANSWER-domain-specific organisms moreso considered to be cognitive adaptations, and domain general cognitioners are moreso those with greater social congitiovn and social intelligence comapred to adaptations.

what are some ways that we are able to measure cognition? - CORRECT ANSWER-relative brain size (brain mass compared to body mass)

brain regions and neuron counts

cognitive performance

all have pros and cons

in the context of cognition, what might be an example of and how do we explain trade-offs in adaptations in evolution - CORRECT ANSWER-trade-offs are essentially when we have to

when we discuss sexual selection based on Direct benefits, what does this mean? - CORRECT ANSWER-female choice increases her immediate fecundity, therefore is reflective of access to resources for direct benefits (for the female and reproduction)

both male-male competition and female choice are examples of what kind of mechanism for sexual selection - CORRECT ANSWER-pre-copulatory (as opposed to postcopulatory of cryptic female choice and sperm compeition)

what is a niche? - CORRECT ANSWER-where an organism can be found, and what roles it fills there

what is a fundamental niche? - CORRECT ANSWER-the full range of environmental conditions under which an organism can live - the *possible* distribution of the organism as determined by its evolutionary history

what is the realised niche? - CORRECT ANSWER-the acutal distribution of the organism as being limited by the interactions with other organisms in the enviornmnet

what does poopulation dynamics tefe t!? - CORRECT ANSWER-shows how well organisms are utilising their niches: are they thriving or dwindling

what sorts of interactions does ecology look at? - CORRECT ANSWER-interactions with: geography and climate, other organisms, within the species itself.

ecology is good for problems of... - CORRECT ANSWER-distribution and abundance

what sort of questions do we see for distribution? - CORRECT ANSWER-why are some organisms not found where they should be? and why are some where they shouldnt be

what sort of questions do we see for abundance? - CORRECT ANSWER-why are some organisms more or less abundant thaan they should be (can be according to the life expectancies with regards to the fundamental niche and the realised niche)

intermediate disturbance hypothesis - CORRECT ANSWER-this is the hypothesis that states that disturbance limits the availability of resources, and because specialists are less resilient to disturbance than generalists because of their restricted fundamental niche.

if we compare images of levels of disturbance of corals in a coral reef - CORRECT ANSWER-we can see that with no disturbance, then it can result in the overgrowth of one species usually the specialist, with an intermediate amount of disturbance, you are going to get an optimal amount of biodiversity due to their being greater variation in the base species that enables a greater number of species that are part of building on that ecosystem to be enabled to grow there as well. various levels of diversity.

what are examples of forms of disturbance - CORRECT ANSWER-wind, cyclones and climatic and weather events, predation, can also see purposeful interventions by snorklers paid to sweep and disturb the ecosystem. balancing of rpedators, ensuring that there is not an overpowering of the food webs by predators in order to maintain all of the other e.g. sea urchins.

seasonality is another form of disturbance that is important to consider.

why would seasonality be considered as a disturbance on biodiversity - CORRECT ANSWER-if we consider evolution random effects on genetic diversity, events such as bottlenecks that can be caused through extremes in seasons can create a significant drop in genetic diversity, similar can occur for biodiversity.

what is the sort of diversity that we call when there is basiclly nodisturbance? - CORRECT ANSWER-a monoculture of aspecies

if you have zero predation - CORRECT ANSWER-also not good compared to having too much predation because it will also result in a monoculture and huge biomass, but compared to biodiversity it will be little.

biomass does not equal biodiversity - CORRECT ANSWER-

diversity will be at its highest when - CORRECT ANSWER-the level of interference prevents competitive exclusion, but is low enough in intensity such that it allows many species to prosper. i.e. when there is a balance between specialists and generalists

biodiversity primarily regards - CORRECT ANSWER-the abundance of species

tertiary structures - CORRECT ANSWER-secondary structures fold together in order to form 3D structures

quarternary structures - CORRECT ANSWER-when proteins need to join to others in order to make a functional molecular machine - not always necessary

consider the impact of a single base mutation giving rise to a single different amino acid in the primary structure - CORRECT ANSWER-

where does translation occur? - CORRECT ANSWER-ribosomes (cytoplasm or rough ER)

ribosomes are composed - CORRECT ANSWER-2 parts that clamp together, 3 total active sites, and one place for binding to messenger RNA.

A, P and E sites of the ribosomes - CORRECT ANSWER-A and P site each take tRNA, they conect at these sites, meaning that they come to the A site, join the growing strand and the ribosome moves along so that one then moves to the P site, and then moves onto the E exit site.

the ribosome catalyses... - CORRECT ANSWER-the formation of amino acid primary seqeucne formation through the formation of covalent bonds.

within the ribosome, - CORRECT ANSWER-each base strand of mRNA is exposed, each tRNA has an anticodon that recognises a particular 3 base codon- specificity

C and N terminus - CORRECT ANSWER-C terminus is at the carboxyl end of the polypeptide, and the N terminus is at the amino acid end of the polypeptide

in the elongation part of the protein synthesis, involves a 3 step catalytic cycle - CORRECT ANSWER-entry of tRNA into the A site

formation of a peptide bond

translocation: movement of the ribosome by one codon.

Overspecialized adaptations are examples of what?

a. promote survival in a wide range of habitats.

b. are the result of natural selection.

c. enable a species to be more adaptable to environmental changes. d. enable a species to be more independent of other species.

e. are found only in species with very wide geographic ranges. - CORRECT ANSWER-B

What is temporal isolation an example of?

a. a premating isolating mechanism.

b. a postmating isolating mechanism.

c. both a premating and a postmating isolation mechanism.

d. neither a premating nor a postmating isolation mechanism. - CORRECT ANSWER-A

Exon - CORRECT ANSWER-codes for something 10%

Intron - CORRECT ANSWER-spacer regions 90%

allopatric isolation - CORRECT ANSWER-physically separated from each other

sympatric isolation - CORRECT ANSWER-physically not separate but little interaction

Turner syndrome - CORRECT ANSWER-(XO) in females with only one X chromosome. No breast, no periods, no babies. short with heart, hearing and kidney problems.

Trisomy X - CORRECT ANSWER-(XXX) female with extra X chromosome. no real symptoms except learning disabilities and tallness. Have normal children

Klinefelter syndrome - CORRECT ANSWER-(XXY) male with and extra X chromosome. small balls, partial breasts, protruding hips, infertile.

Buffon/LeClear - CORRECT ANSWER-1707-1788. founding species and evolve

Smith - CORRECT ANSWER-1769-1839. sequence of fossils

Cuvier - CORRECT ANSWER-1769-1832. catastrophism

Hutton - CORRECT ANSWER-1726-1797. Gradual geographic change

Lyell - CORRECT ANSWER-1797-1875. very old earth

Lamarak - CORRECT ANSWER-1744-1829. mechanism of specie change

Wallace - CORRECT ANSWER-1840ish-1920ish. evolution/natural selection

Premating isolation mechanism - CORRECT ANSWER-prevent mating between species

postmating isolation mechanism - CORRECT ANSWER-prevent mating between species differently

Geographical Isolation - CORRECT ANSWER-prevents breeding because they physically live in different places. EX: Kaibab and Abert squirrels

Ecological isolation - CORRECT ANSWER-don't mate because they occupy different habitats EX: fig wasps, different species breed in different species of figs

Temporal isolations - CORRECT ANSWER-when species can't mate because they breed at different times. EX: Bishop pines breed in the summer and Monterey pines breed in early spring