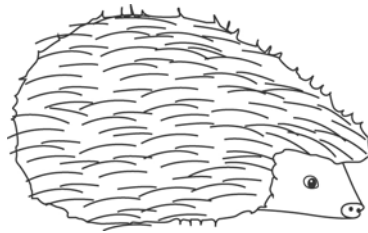
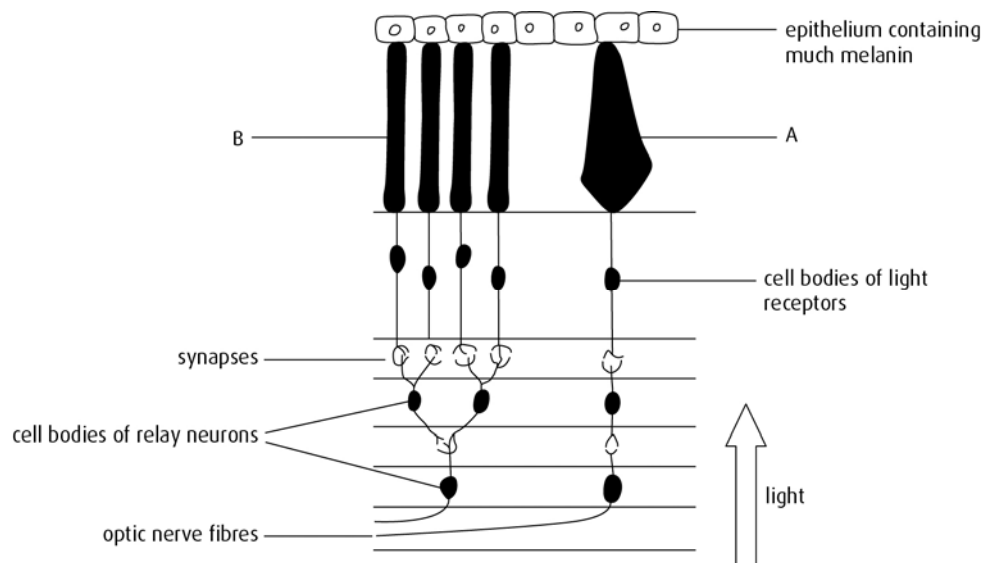


Support worksheet – Option E

- 1** Innate behaviour patterns are genetically inherited and natural selection ensures that they suit the organism to its environment. Hedgehogs generally have the innate behaviour of rolling into a ball when they feel threatened. There is evidence that some hedgehogs have a different behaviour pattern whereby they quickly run away as danger approaches. This behaviour is also thought to be genetic.



- a** How does the original ball-rolling behaviour benefit the hedgehog? (2)
- b** Why could the alternative behaviour be an advantage in an urban environment? (2)
- c** Outline the stages of natural selection that could change the prevalent behaviour pattern in a population of hedgehogs living in a newly urbanised area, over a period of time. (4)
- 2 a** Name the parts of the human ear which:
- i** gather sound (1)
- ii** transmit sound (1)
- iii** amplify sound (1)
- iv** transduce sound. (1)
- b** The diagram below shows the structure of the human retina.





- i** Identify the cells labelled A and B. (2)
 - ii** Give **two** reasons for your identification. (2)
 - iii** State **two** similarities and **two** differences between the cells. (4)
- 3**
 - a** A new psychoactive drug has been discovered that competes with acetylcholine for binding sites on the post-synaptic membrane. If the post-synaptic membrane is a muscle cell, what effect would the drug have on the body and why? (2)
 - b** Name **one** psychoactive drug that works in this way. (1)
 - c** A second drug was found to bind to and activate the acetylcholine receptors on the post-synaptic membrane. What effect will this drug have on the brain and why? (2)
 - d** Why might this drug be useful in the treatment of elderly patients with Alzheimer's disease? (1)