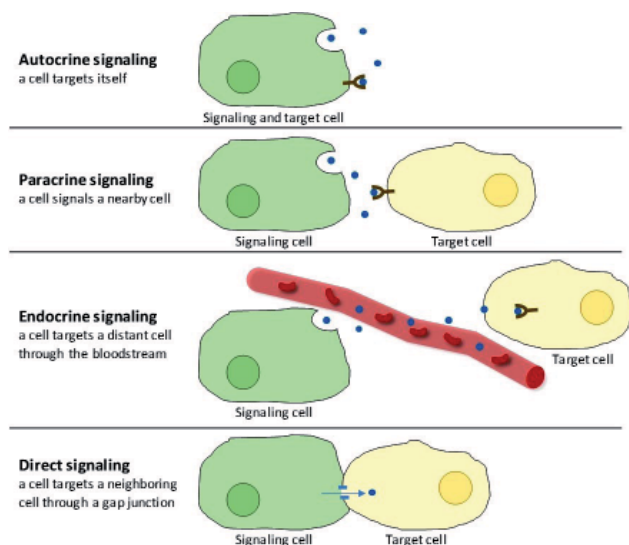


sites. Hormones are secreted from the endocrine glands in the body.



- Communication between neurons at the synapses are not direct, since the pre-synaptic membrane and post-synaptic membrane do not form direct junction together, thus it is not a 'direct signaling' type of communication.
- The presynaptic cell releases the chemical signals called 'neurotransmitters' in the synaptic cleft which diffuse and binds to the receptors present on the postsynaptic membrane, this mode of communication is called **paracrine signaling** where one cell communicates with its neighboring cell using signaling molecules.

44. Correct Option: (c)

Explanation:

- **Statement 1 is incorrect:** CRISPR-Cas9 is a gene-editing technology and not a sequencing technology.

Supplementary notes:

CRISPR-Cas9 Technology

- CRISPR-Cas9 was adapted from a naturally occurring genome editing system in bacteria. The bacteria capture snippets of DNA from invading viruses and use them to create DNA segments known as CRISPR arrays.
- The CRISPR arrays allow the bacteria to "remember" the viruses (or closely related ones). If the viruses attack again, the bacteria produce RNA segments from the CRISPR arrays to target the viruses' DNA. The bacteria then use Cas9 or a similar enzyme to cut the DNA apart, which disables the virus.

- The CRISPR-Cas9 system works similarly in the lab. Researchers create a small piece of RNA with a short "guide" sequence that attaches (binds) to a specific target sequence of DNA in a genome. The RNA also binds to the Cas9 enzyme.
- As in bacteria, the modified RNA is used to recognize the DNA sequence, and the Cas9 enzyme cuts the DNA at the targeted location.
- Although Cas9 is the enzyme that is used most often, other enzymes (for example Cpf1) can also be used. Once the DNA is cut, researchers use the cell's own DNA repair machinery to add or delete pieces of genetic material, or to make changes to the DNA by replacing an existing segment with a customized DNA sequence.
- **Human Genome is made up of 23 chromosome pairs with a total of about 3 billion DNA base pairs. There are 24 distinct human chromosomes: 22 autosomal chromosomes, plus the sex-determining X and Y chromosomes.**
- The main goals of the Human Genome Project were first articulated in 1988 by a special committee of the U.S. National Academy of Sciences, and later adopted through a detailed series of five-year plans jointly written by the National Institutes of Health and the Department of Energy.
- **The Human Genome Project was started in 1990 with the goal of sequencing and identifying all base pairs in the human genetic instruction set, finding the genetic roots of disease and then developing treatments.**

45. Correct Option: (b)

Explanation:

- **Option (b) is correct**

Supplementary notes:

Stealth (Lo-observable) Technologies

- Stealth Technology is not a single technology, but it is a conglomeration of number of technologies employed by the warfare machine designers to achieve following goals.
- The goal of stealth technology is to make an airplane invisible to radar. There are two different ways to create invisibility: