1. Why can’t a cell survive without a Nucleus?
2. What would the central vacuole of a plant cell look like if a plant didn’t get enough water? What effect would this have on the plant?
3. What would the central vacuole of a plant cell look like if a plant had plenty of water? What effect would this have on the plant?
4. If an animal was a strict carnivore and ate nothing but meat, what would be its source of glucose?
5. Where in the human body would we find cells with a large number of mitochondria? Why?

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1. Why can’t a cell survive without a Nucleus?

Without a nucleus there is no DNA and therefore no information to make proteins.

* Without proteins cells couldn’t do any chemical reactions (b/c enzymes are required for chemical reactions and Enzymes are a type of protein).
* There would also be no pigments, so if a cell relied on pigments (like a plant cell does to do photosynthesis) a cell couldn’t survive.
* There would be no support proteins, so a cell would just be a disorganized blob.
* There would also be no membrane channels, so cells would be able to let certain materials in and out.

1. What would the central vacuole of a plant cell look like if a plant didn’t get enough water? What effect would this have on the plant?

The vacuole would shrink. It would no longer be pushing on the cell wall. There would be no turgor pressure to help support the cell walls and the plant would wilt.

1. What would the central vacuole of a plant cell look like if a plant had plenty of water? What effect would this have on the plant?

The vacuole would be pushing against the cell wall. This turgor pressure that is created helps support the cell walls and allows the plant to stand up straight.

1. If an animal was a strict carnivore and ate nothing but meat, what would be its source of glucose?

The glycogen that is stored in muscle cells get broken down (through hydrolysis) to provide glucose for the animal.

1. Where in the human body would we find cells with a large number of mitochondria? Why?

The brain. The brain is the organ that controls ALL body functions so it never stops working and needing energy. You need lots of mitochondria to convert the energy stored in glucose to a form the cells can use (ATP)