1. As a cell gets larger, what happens the the Surface Area to Volume ratio?
2. Do cells “want” a small or large SA:V ?
3. Why?
4. Are there any exceptions to this rule?

Answers on next page

1. As a cell gets larger, what happens the the Surface Area to Volume ratio?

The ratio gets smaller for example a cell that is 1cmX1cmX1cm has a 6:1 ratio and a cell that is 3cmX3cmX3cm has a 1.5:1 ratio

1. Do cells “want” a small or large SA:V ?

A large ratio

1. Why?

it helps ensure nutrients can enter and waste can leave the cell more effectively/ quickly

1. Are there any exceptions to this rule?

Yes, if a cell needs to be large (for example muscle or nerve cells) the shape of the cell maximizes SA:V. For example long cells are cylindrical instead of spherical or cube shaped. Another example is when the cells main function is for storage. If it is simply storing materials, they won’t need as many nutrients or produce lots of waste so a cell can be large and spherical or cube shaped (we used the example of an egg in class)