Unknown facts about cells

Science, Biology

The Secret Behind the Size of Cells

For the Surface Area to Radius and the Volume to Radius graphs, the relation of the two components seemed to grow while the graph for the Surface Area to Volume ratio graph, the relations seemed to decline. The Surface Area to Radius and Volume to Radius graphs are very similar in their activity and growth. The first 3, smaller spheres are closer together in value and does not show a lot of growth. The two larger spheres, the beach ball and the hand ball's measurements are placed far apart from the other three spehres and each other. After the steady growths of the first three spheres on the far left side of the graphs while the other two spheres have a sudden, drastic growth in surface area, volume or radius. The Surface Area to Volume ratio to Radius graph is almost the exact opposite. There is a drastic change from the smallest sphere to the second smallest sphere and then the values of the spheres gradually become consistent.

If a chemical placed at the center of circle B, it would diffuse to the edge of circle faster than it would to circle A. This is the case because if a molecule was placed in the center of a cell, it would only have to travel the radius to reach the edge of the circle. This can be applied to this situation with a chemical being placed in the two circles, the chemical only has to travel the radius to move to the edge of the circle. Assuming that the chemicals are the same and will travel at the same rate, the circle with the smaller radius would have the chemical reach its edge faster because it needs to cover less distance.

The cell measured in the previous problem is a great amount of times smaller than the size of the other spheres I measured in the lab. The surface area to volume ratio for the animal cell is a great deal more than the other spheres. From that, it can be observed that the result of the surface area to volume ratio is larger the smaller the sphere is. This is the case because when the sphere is smaller, the volume is smaller than the surface area therefore increasing the value of the ratio of the two.

The ratio of a cell’s surface area to its volume places a restriction on the cell’s size because the larger the cell, the more waste it produces. There is no need for unnecessary waste to be produced so with a smaller cell, the intake and demand glucose can be better controlled and isn’t producing as much waste. Since cells need to work very fast, the time it takes for a molecule to reach the center of the cell needs to be quick. The smaller the radius of a cell, the quicker a molecule can reach the center. Therefore, as proved in analysis question number two, the smaller the cell, the smaller the cell, allowing a molecule to travel to the center quicker than it would travel in a larger cell.