

BIOLOGY IN ENGLISH

Pulse-labeling focuses the secretory pathway

The pathway of protein secretion was observed by George Palade and his associates using a radioactive technique. The rough endoplasmic reticulum was radio-labeled by letting cells metabolize for a very short time with radioactive amino acids. Then the cells were given an

excess of nonradioactive amino acids. This chased the labeled amino acids out of the endoplasmic reticulum into transport vesicles.

Electron microscopy techniques allowed these researchers to trace the fate of the labeled amino acids, as shown in **figure 1**:

1 The labeled amino acids were found in the endoplasmic reticulum, then in 2 transport vesicles, and then in 3 the Golgi apparatus, before appearing in 4 vesicles at the plasma membrane and finally being released.

ANSWER

In the pulse-labeling procedure, radioactive atoms were used as

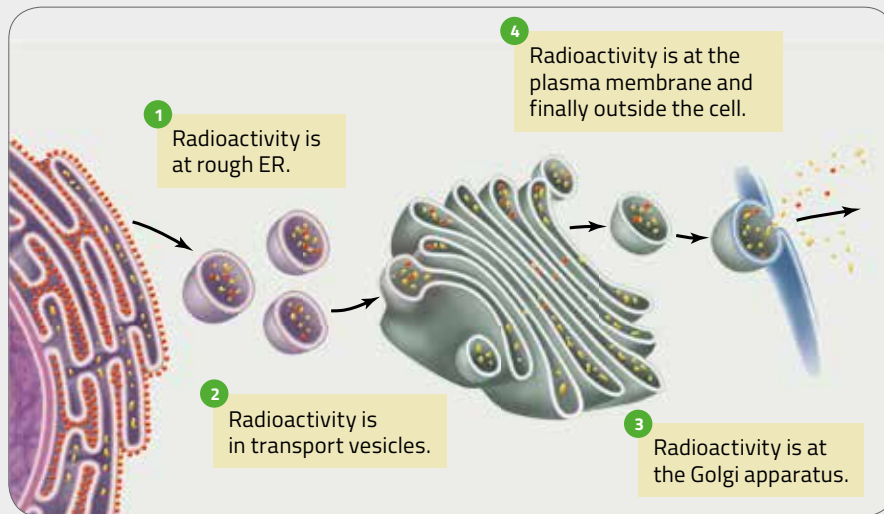


Figure 1 Observing the secretory pathway, from rough endoplasmic reticulum to the exterior of the cell.