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Short Communication

Terrestrial Plants Rigid Cell Wall and Its Functions

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DESCRIPTION

In terrestrial plants, the process of cell division causes a structure called the cell plate to form in the cells. A disc that develops in the phragmoplast of a plant cell undergoing division and ultimately forms the middle lamella of the wall separating the daughter cells. Small vesicles from the golgi that condense in a plane across the late telophase spindle's equator to create a disk-shaped structure make up the cell plate. Unlike animal cells, the cells of terrestrial plants have a rigid cell wall that encircles their cell membranes. A temporary framework created during plant cell division that develops into a new cell wall. These Golgi vesicles move across microtubules during telophase to assemble at the metaphase plate [1]. A cell plate is the structure created when the vesicles fuse there, moving from the centre toward the cell walls. In plant cells a plate that forms at the intersection of the two chromosome groups during cell division and is responsible for constructing the wall separating the two new daughter cells. The transfer of endosome and golgi-derived vesicles containing cell wall and membrane components to the plane of cell division is required for this process, as is the subsequent fusion of these vesicles inside of this plate. The initially labile cell plate consolidates into a tubular network and ultimately a fenestrated sheet after forming an early tubule-vesicular network at the centre of the cell. To complete cell division, the cell plate expands from the cell's centre toward the parental plasma membrane, where it will fuse [2]. The phragmoplast is necessary for the appropriate targeting of vesicles derived from the golgi to the cell plate, which is necessary for the formation and expansion of the cell plate. The phragmoplast disassembles in this area of the cell as the cell plate grows, and new components are introduced to its outside.

Functions of cell plates (cell wall)

Plant cell walls serve the dual purposes of safeguarding their contents, including their nuclei, and allowing a plant to have rigid structure. It is crucial for the individual parts of plants, like stems and leaves, to be able to stand straight against the force of gravity on their own because they do not have skeletons like mammals and are continually expanding and changing in an effort to get more sunlight [3]. For plants, cell division can be a little challenging because of cell walls. Cells without cell walls split in two to form daughter cells, a process known as "cytokinesis," by simply pinching their cell membrane in half in the middle [4]. The cell membrane resembles a stretchy sack that can be pinched and re-formed as needed when a cell needs to change shape. However, the rigid cell wall cannot be twisted or compressed in the same way. During reproduction, it restricts the form of a cell and cannot simply be pinched in the middle. Instead, to ensure that their daughter cells will have the structural integrity that the plant needs to keep its shape, plants must construct a new portion of cell wall before they can engage in cytokinesis.

CONCLUSION

The phragmoplast grows steadily as a result of this process, and golgi-derived vesicles are continuously redirected to the cell plate's increasing edge. Phragmoplast disappears once the cell plate connects with and unites with the plasma membrane. The separation of the two daughter cells is indicated by this event, which also starts a series of metabolic changes that change the calluses-rich, flexible cell plate into a cellulose-rich, stiff main cell wall. Plant cells do not destroy their secretion apparatus during cell division, in contrast to animal cells, because cell plate formation heavily depends on functioning of golgi stacks.

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