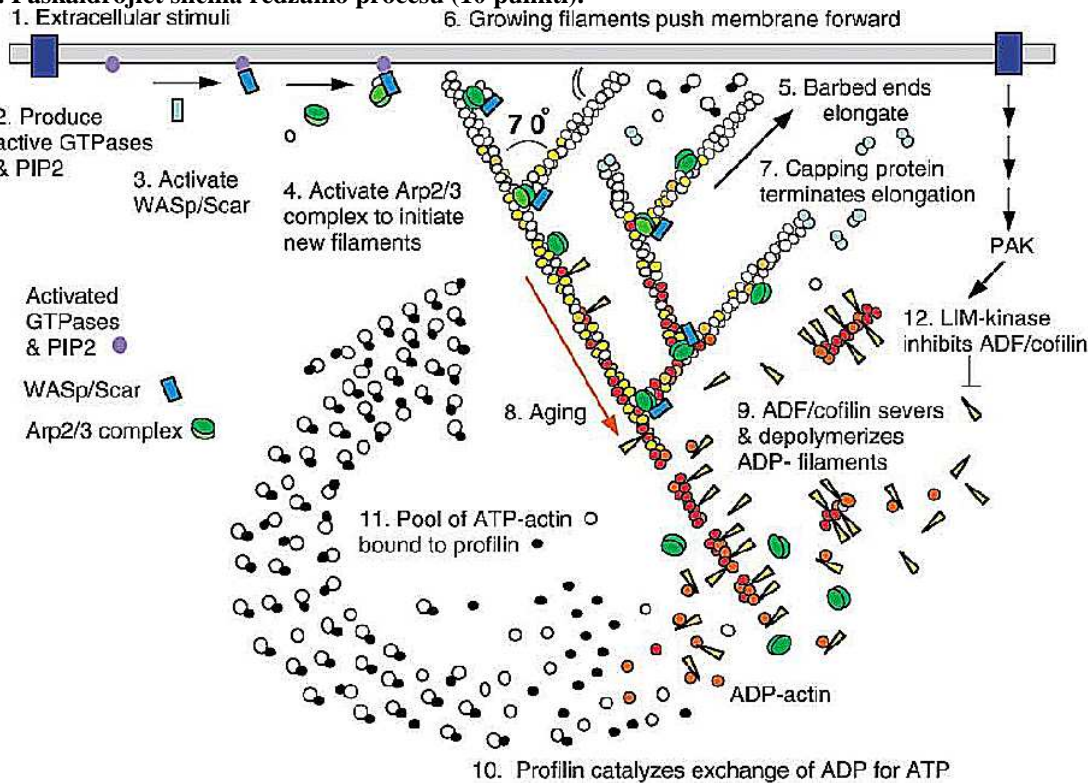


Eksāmens šūnu bioloģijas problēmas.

Jautājumos viens punkts nozīmē vienu pareizu apgalvojumu (atslēgas frāzi)!

1. Paskaidrojiet shēmā redzamo procesu (10 punkti).



2. Aprakstiet eksperimentu, kas ļautu pierādīt, ka mitohondriji ir mantoti pa mātes līniju (10 punkti).

3. Aprakstiet eksperimentu, kurā būtu iespējams novērtēt ovocītos un olšūnā ekspresēto/uzkrāto RNS ietekmi uz šūnu molekulāro daudzveidību sekojošās drostalošanās beigās (10 punkti).

4. Paskaidrojiet sekojošos 3 attēlos redzamo eksperimentu. Tā veikšanas metodes un no rezultātiem izrietošos secinājumu (10 punkti).

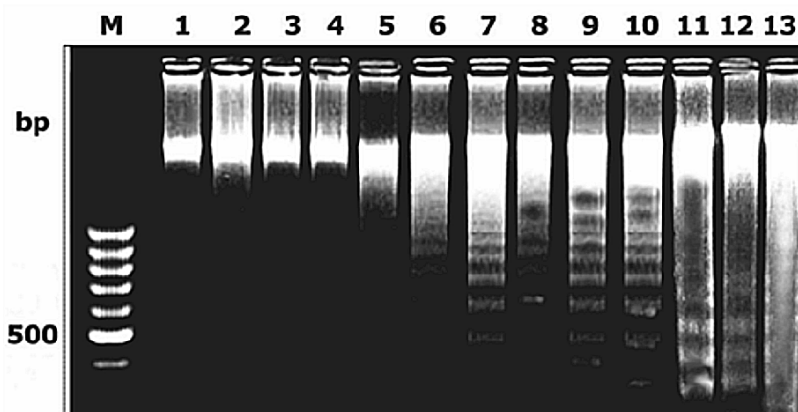


Fig. 1. Agrobacterium-induced nuclear DNA fragmentation in banana embryogenic cell suspensions. DNA isolated after 12 (lanes 2 through 4), 24 (lanes 5 through 7), 48 (lanes 8 through 10) and 72 (lanes 11 through 13) hours of Agrobacterium infection; lane 1: unexposed control. Agrobacterium inoculum densities used were optical density at 600 nm = 0.1: lanes 2, 5, 8, and 11; 0.5: lanes 3, 6, 9, and 12; and 1.0: lanes 4, 7, 10, and 13.

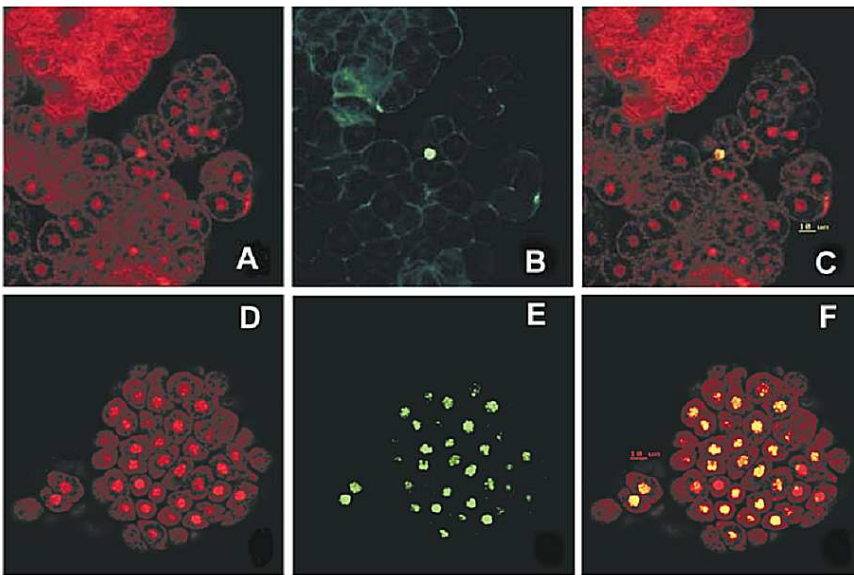


Fig. 2. dUTP nick-end labeling (TUNEL) assay shows that *Agrobacterium tumefaciens* induces DNA fragmentation in banana embryogenic cell suspensions. A, B, and C, Banana suspension cells not exposed to *Agrobacterium* spp. show only an occasional TUNEL-positive nuclei (B), but D, E, and F, cells exposed to *Agrobacterium* for 48 h at an optical density at 600 nm = 0.5 show a large number of TUNEL-positive nuclei (E). A and D, Propidium iodide-stained nuclei; B and E, the same nuclei with TUNEL labeling. C and F, Overlays of propidium iodide-stained and TUNEL-labeled nuclei ([A + B] and [D + E]) showing co-localization of staining. *MPMI Vol. 20, No. 9, 2007, pp. 1048–1054. doi:10.1094/MPMI-20-9-1048.*

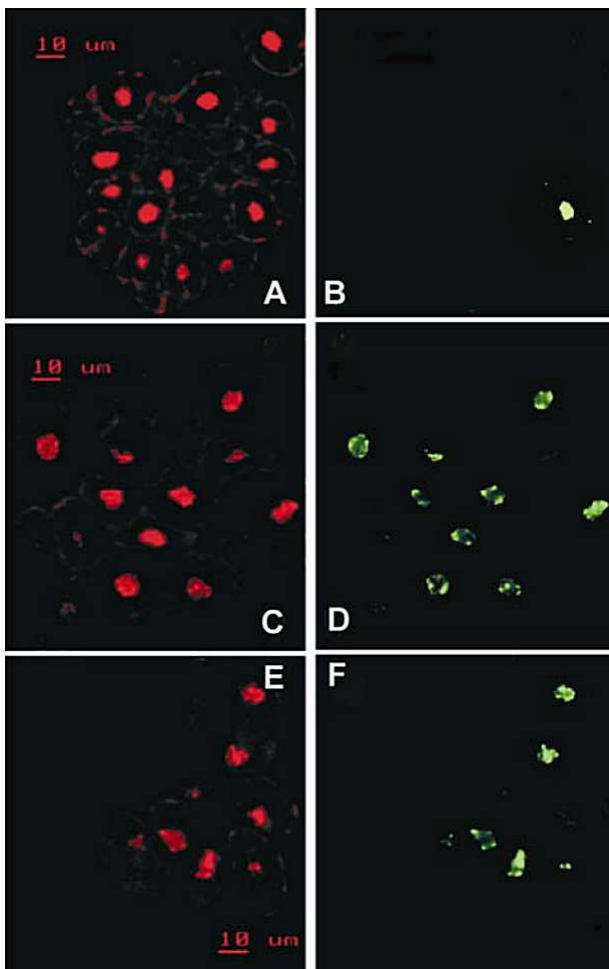


Fig. 3. Banana embryogenic cell suspensions **transformed** after 48 h of exposure to *Agrobacterium* AGL1 at an optical density at 600 nm = 0.5; A, C, and E, propidium iodide-stained nuclei; and B, D, and F, the same nuclei with TUNEL (dUTP nick-end labeling). Suspension cells harbor **Bcl-xL** (A and B), **Bcl-xL** (G138A) (C and D), and **pPTN290** (-glucuronidase) (E and F). *MPMI Vol. 20, No. 9, 2007, pp. 1048–1054. doi:10.1094/MPMI-20-9-1048.*