

# Molecular characterization of dehydrin PpDHNC from *Physcomitrium patens*:

Potential as an antimicrobial protein

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Section: Promising antimicrobial leads and mechanisms of action

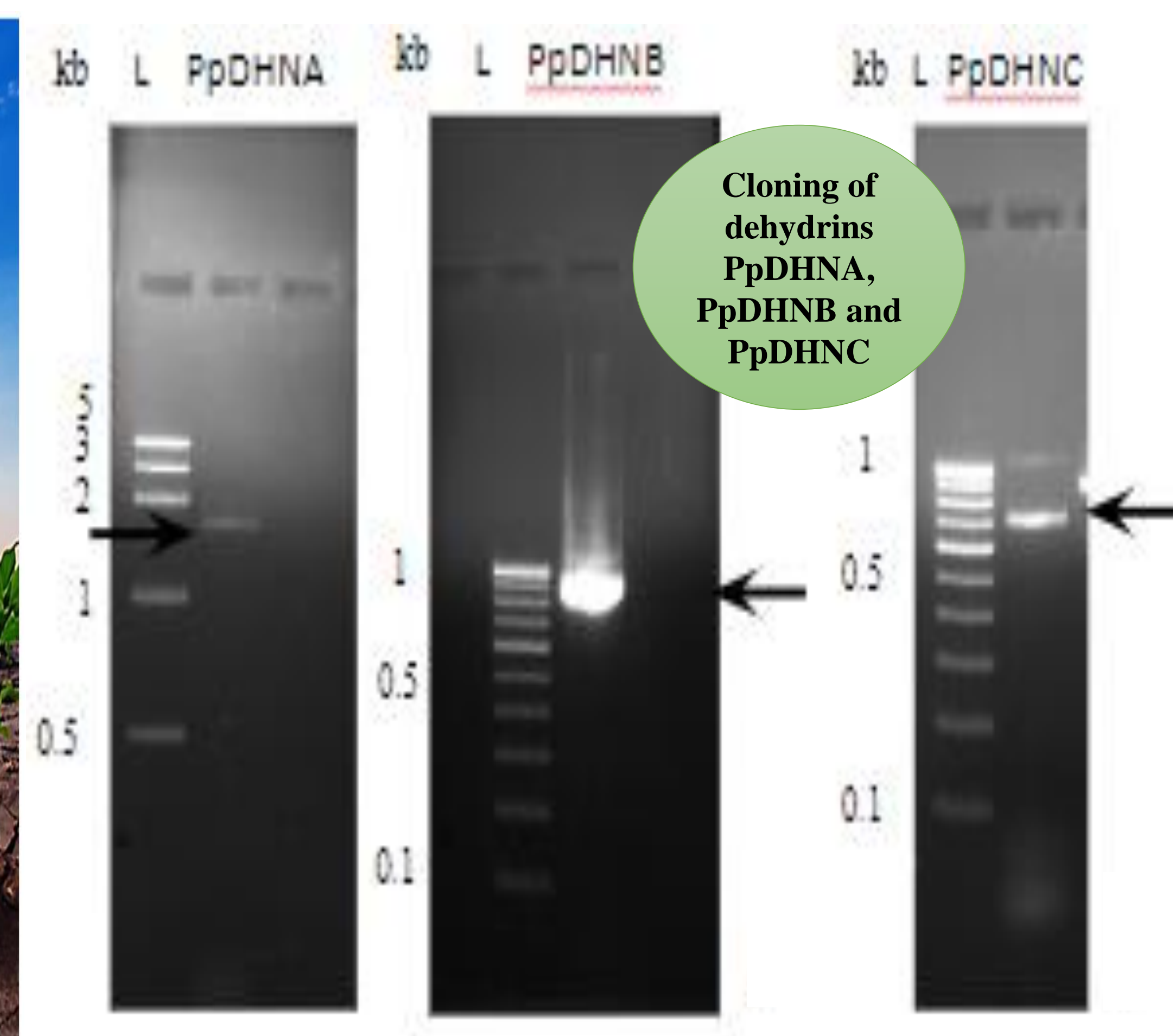
ANTIMICROBIAL PEPTIDES:  
YESTERDAY, TODAY  
AND TOMORROW  
APD20 VIRTUAL SYMPOSIUM



## 20<sup>th</sup> Anniversary of Antimicrobial Peptide Database

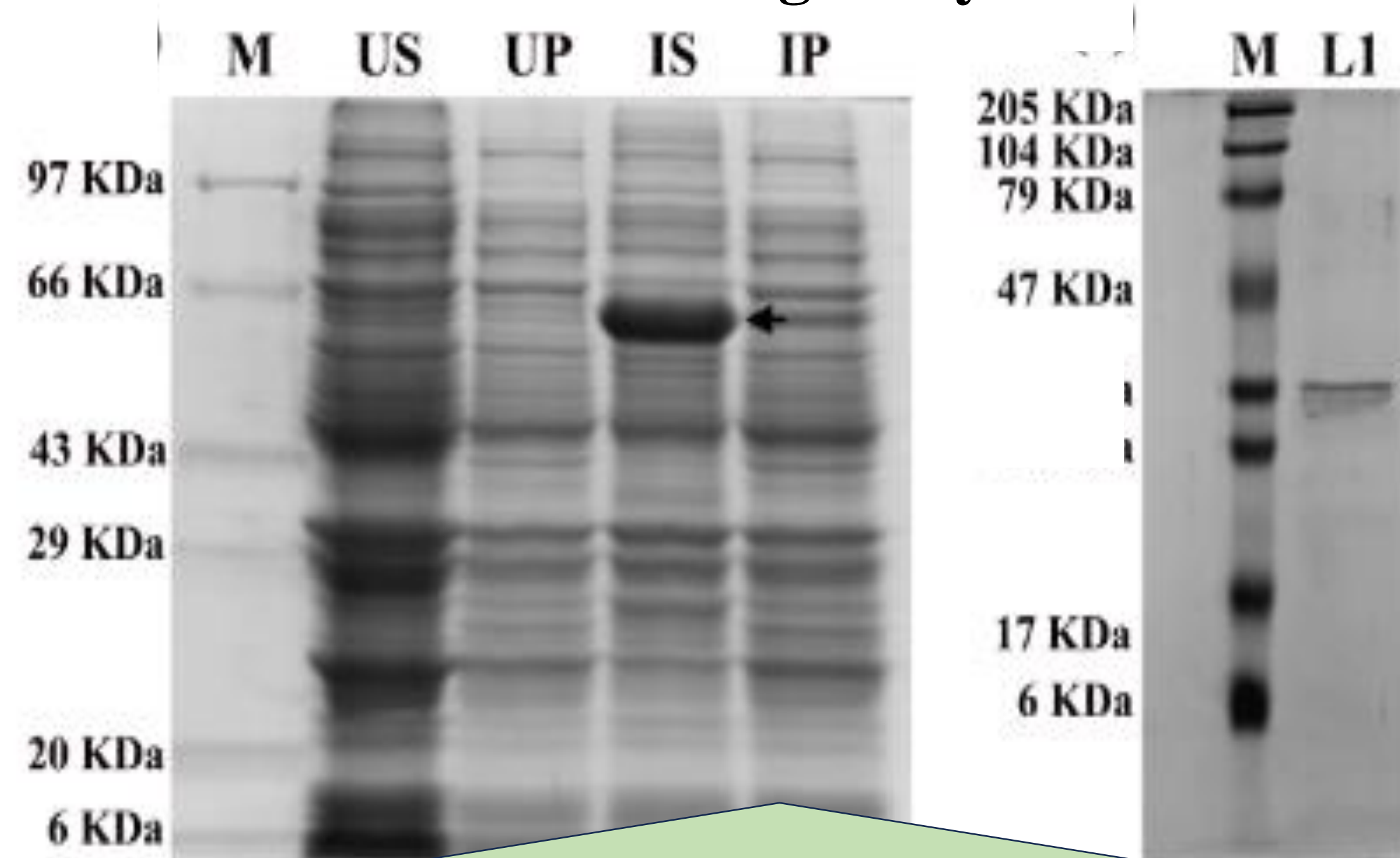


Plants are subjected to a plethora of biotic and abiotic stress conditions

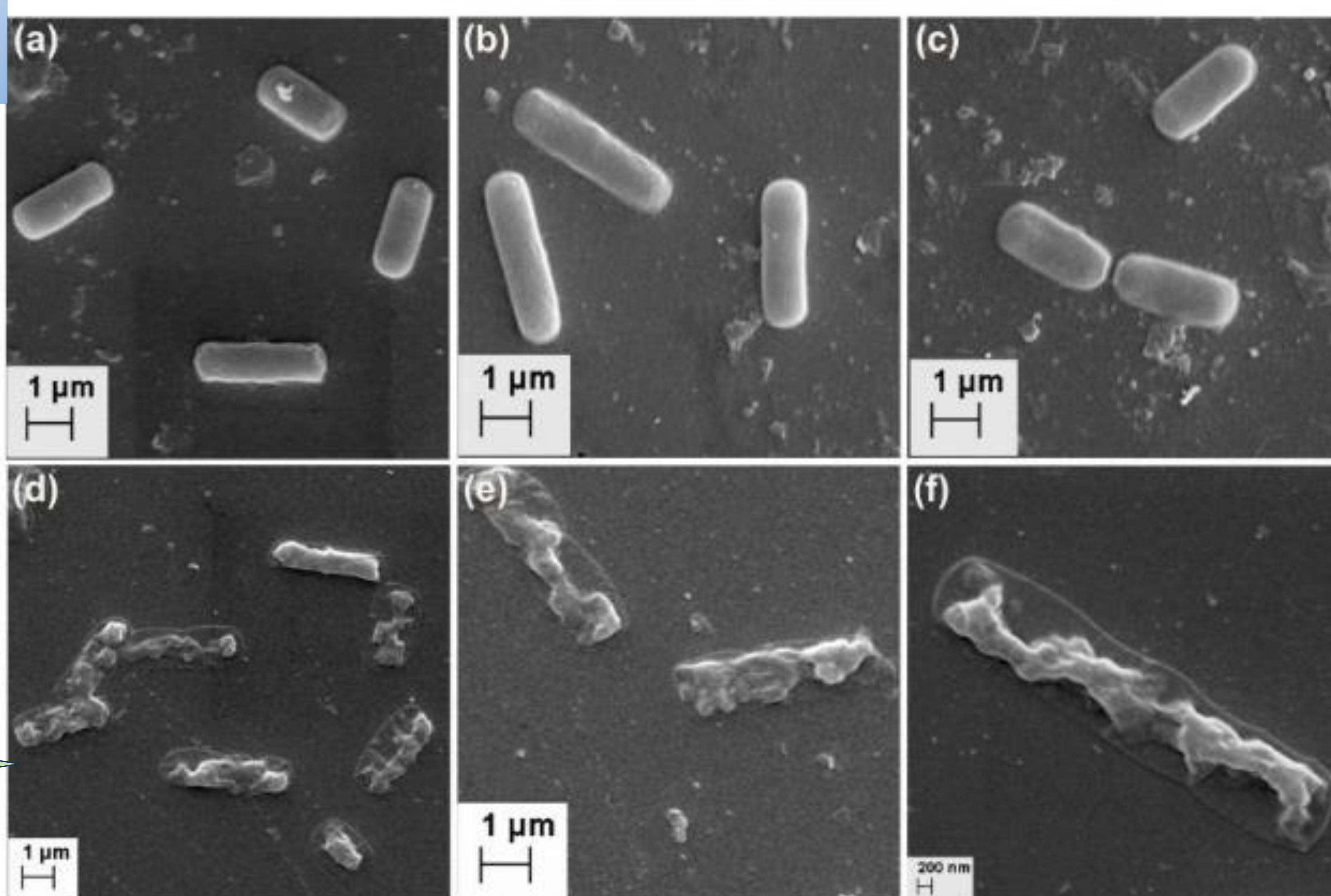


Cloning of dehydrins PpDHNA, PpDHNB and PpDHNC

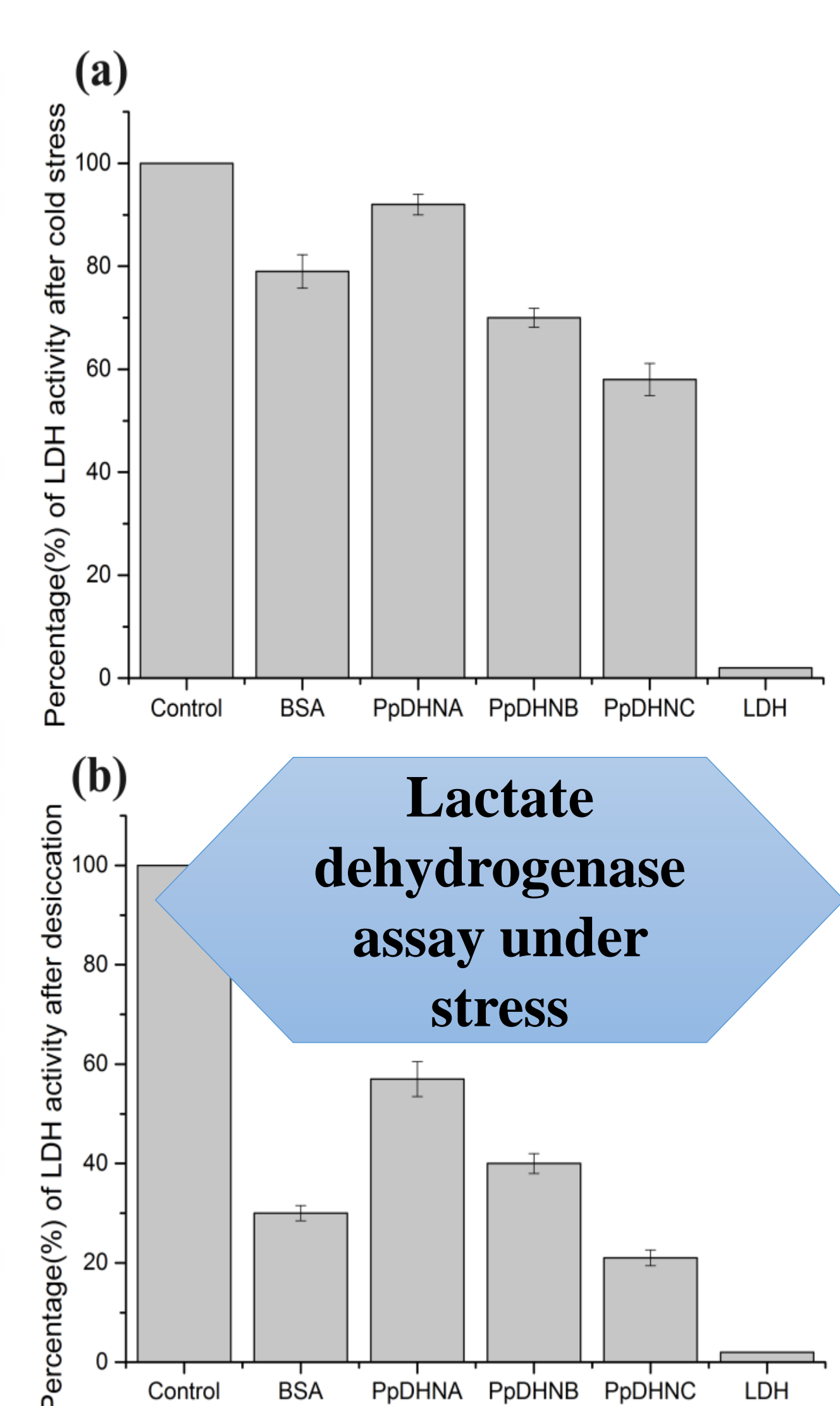
*Physcomitrium patens*: so-called *Arabidopsis* of the moss world or green yeast



Protein Expression and purification of PpDHNC

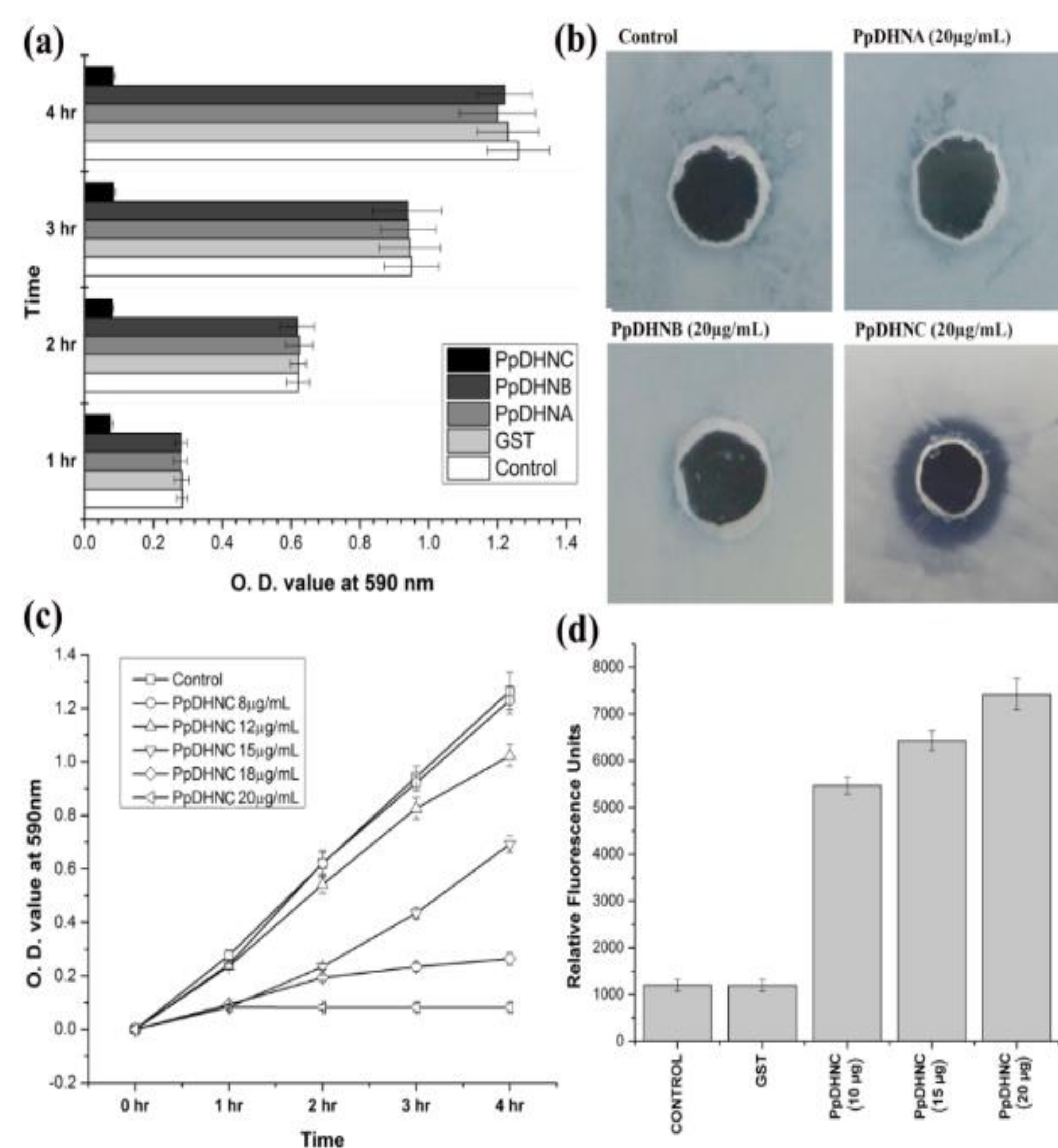


Scanning Electron Microscopy analysis shows membrane disruption of *Bacillus subtilis* and *Rhodococcus fascians*

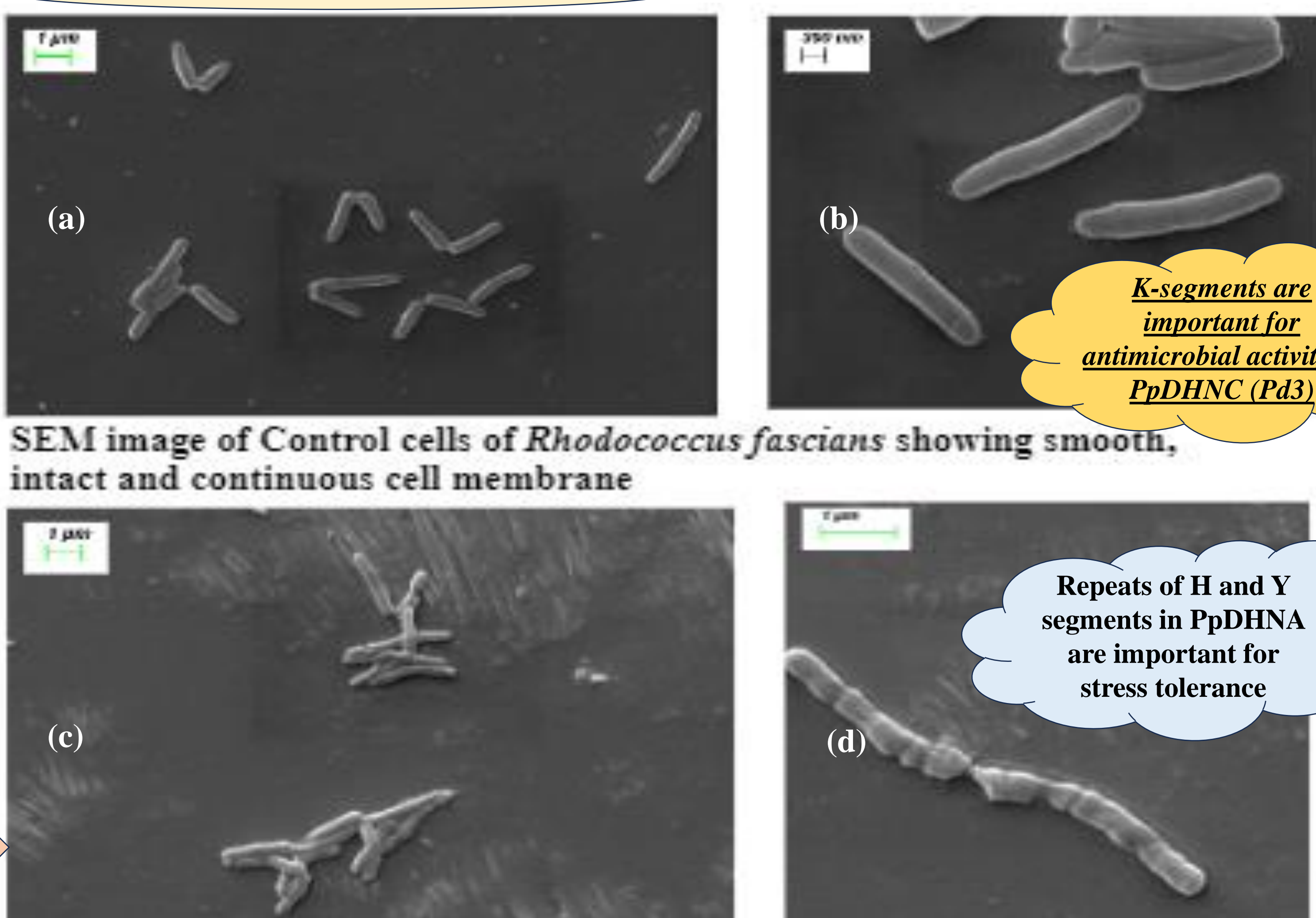


Lactate dehydrogenase assay under stress

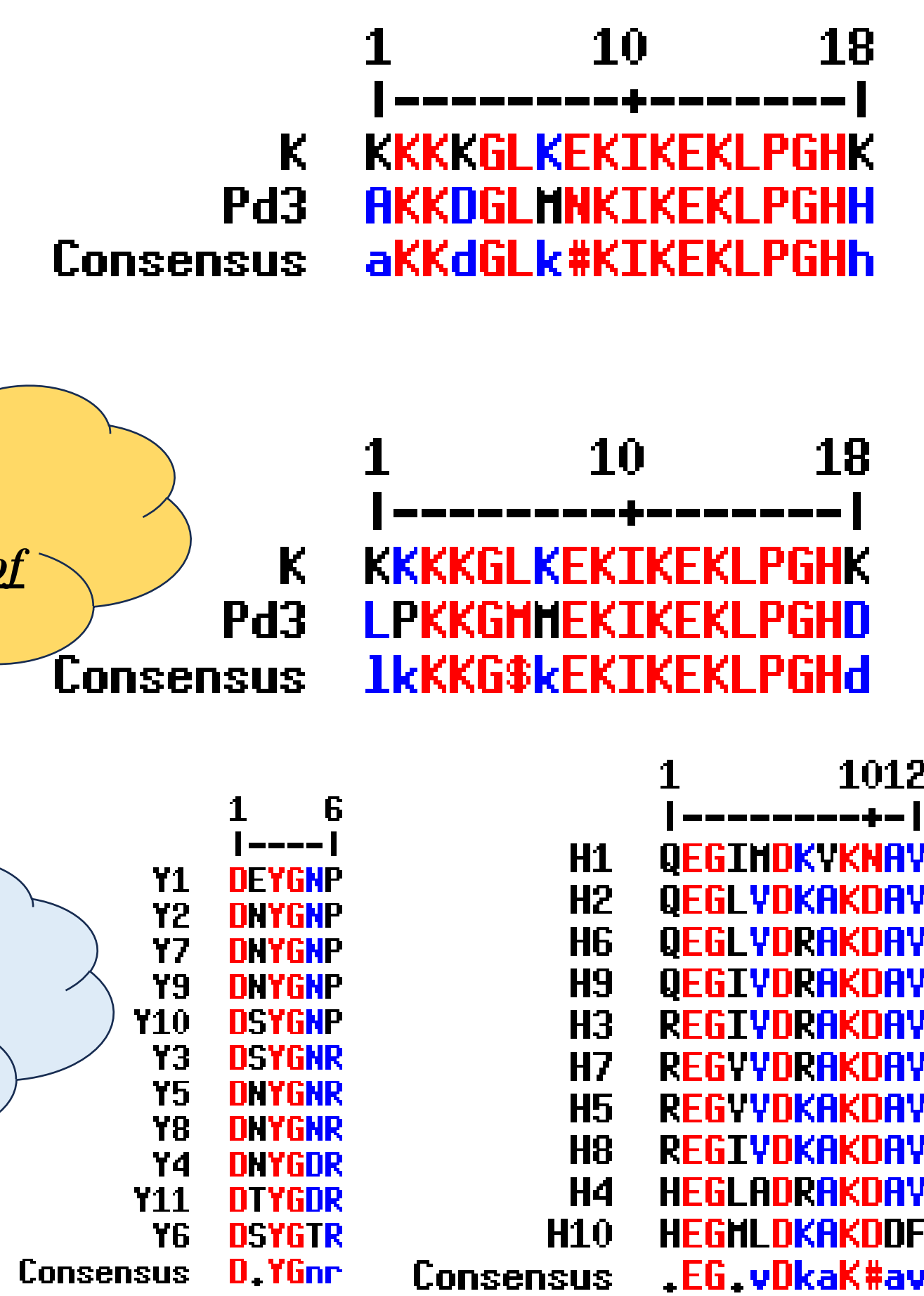
PpDHNC acts with an MIC of 20µg/ml. NPN assay shows that it works in a dose dependent manner



PpDHNA and PpDHNB act under osmotic stress

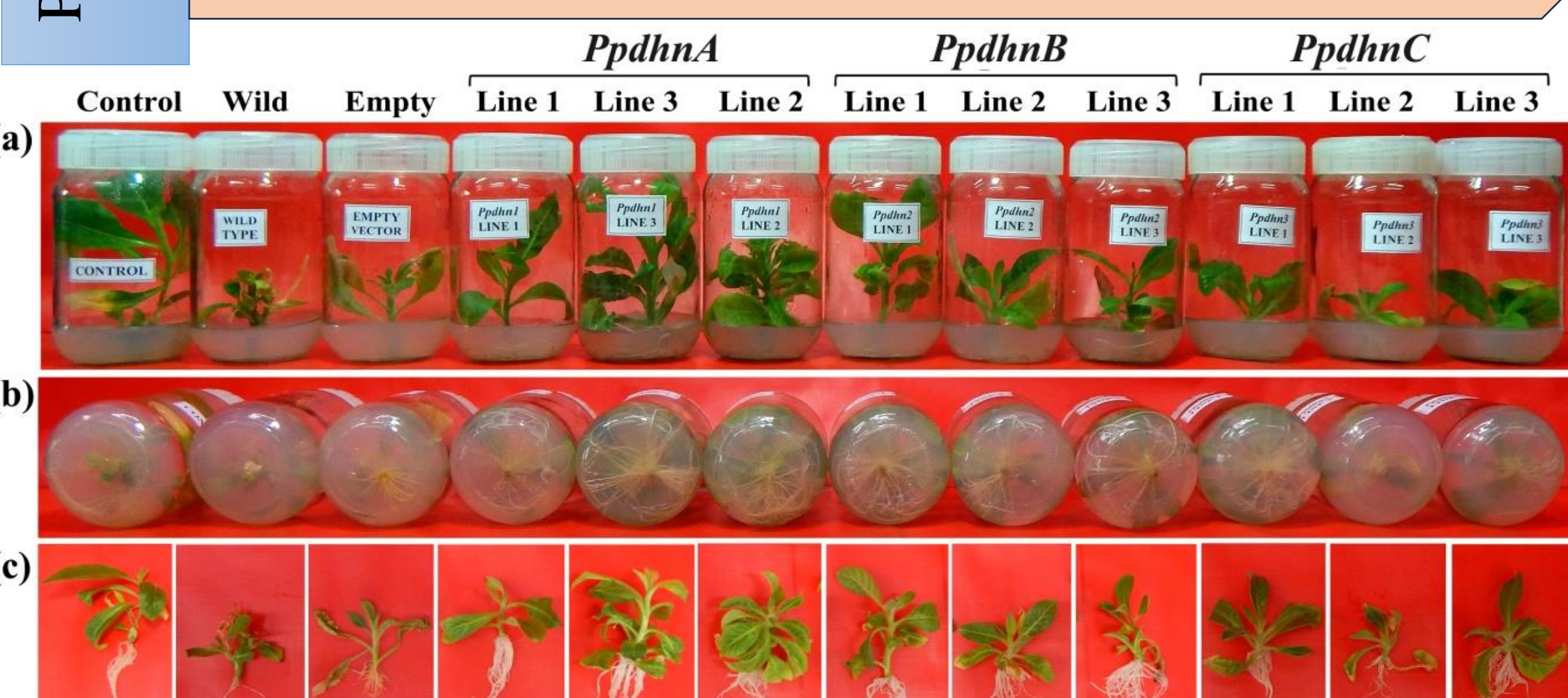


SEM image of cells of *Rhodococcus fascians* incubated with PpDHNC showing disruption of membrane



K-segments are important for antimicrobial activity of PpDHNC (Pp3)

Repeats of H and Y segments in PpDHNA are important for stress tolerance



Genetic engineering of crop plants with the segments to develop **multi-stress tolerant crops**

