

The Incredible Plant Stem Cells

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Plant stem cells provide new pools of differentiated cells that form organs and rejuvenate or replace damaged tissues. Protein homeostasis (proteostasis) is required for cell function and viability. However, the link between proteostasis and plant stem cells remained unknown.

In contrast to their differentiated counterparts, we found that root stem cells can prevent the accumulation of aggregated proteins even under proteotoxic stress conditions such as elevated temperatures.

We also found that root stem cells express high levels of distinct chaperones that maintain proteome integrity. By mimicking this proteostasis network in other cells, we could prevent protein aggregation in differentiated cells and confer resistance to heat stress in plants.

Taken together, we think that enhanced proteostasis mechanisms in stem cells could be an important requirement for plants to persist under extreme environmental conditions and reach extreme long ages ([Llamas et al., 2021](#)).

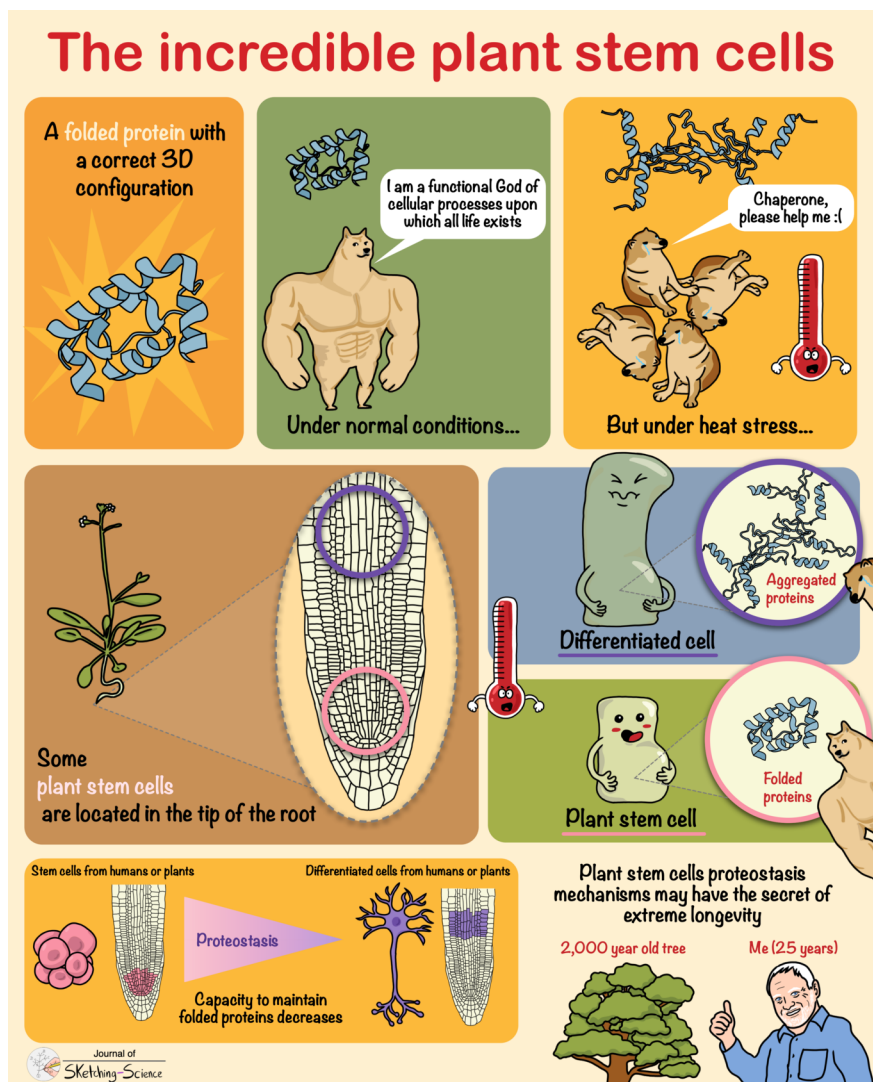


Figure 1: The intrinsic chaperone network of Arabidopsis stem cells confers protection against proteotoxic stress

References

The intrinsic chaperone network of Arabidopsis stem cells confers protection against proteotoxic stress.. (2021). *Aging Cell*, 20, e13446.