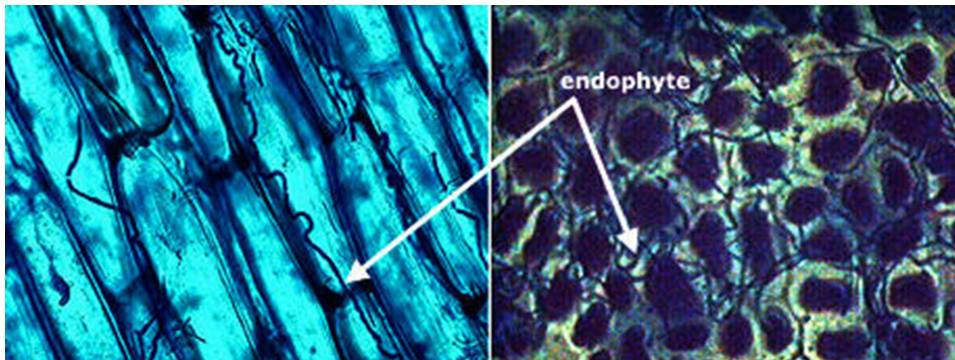
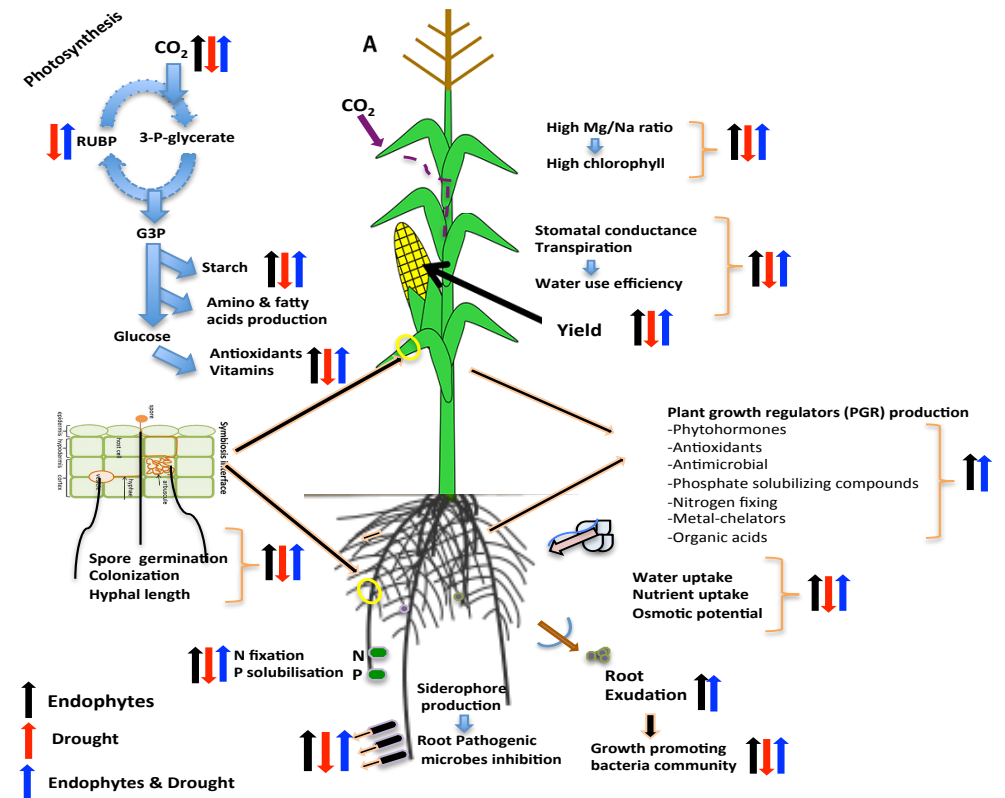


Functional analysis of bacterial endophytes that improve growth of maize leaves under drought stress

Endophytes are bacteria and fungi that colonize plants without causing any negative effects on them



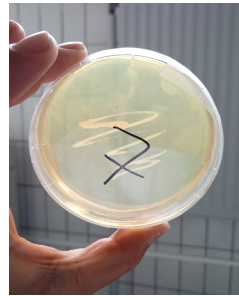
Endophytes use various direct and indirect mechanisms to promote plant growth



Maize seeds



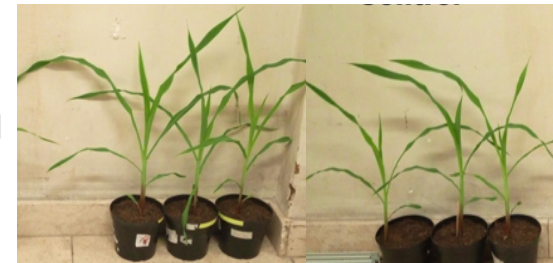
Endophytic Bacteria



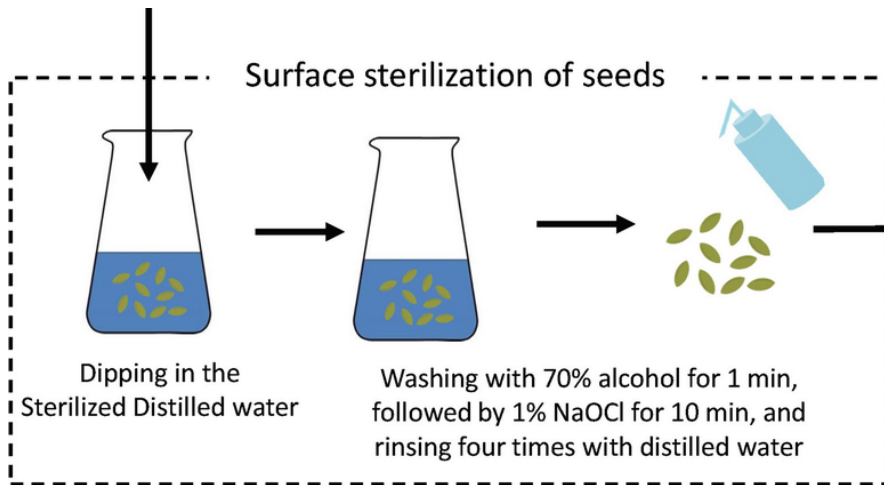
Endophyte E7 improved maize leaf growth

Treated Untreated

Control



Drought



Transferring the seeds to bacterial inoculated plats

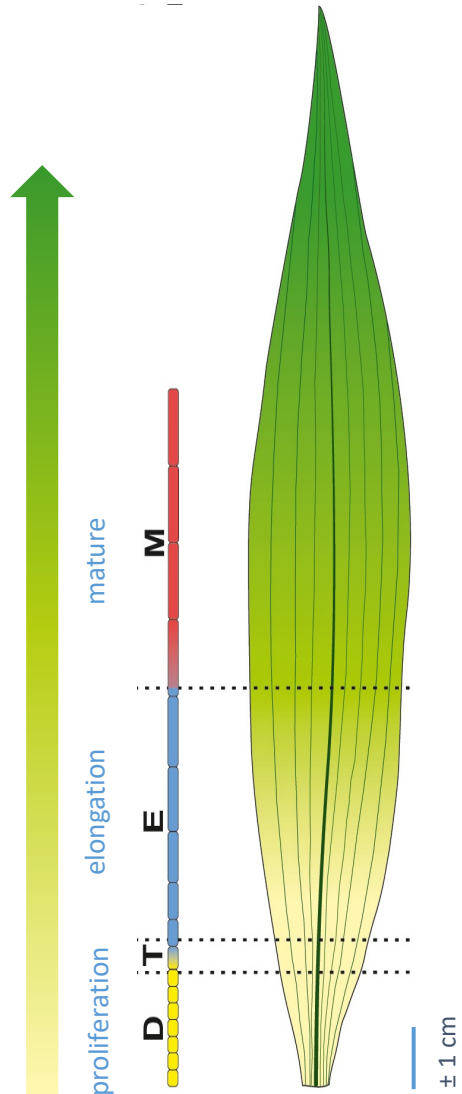


Co-cultivation



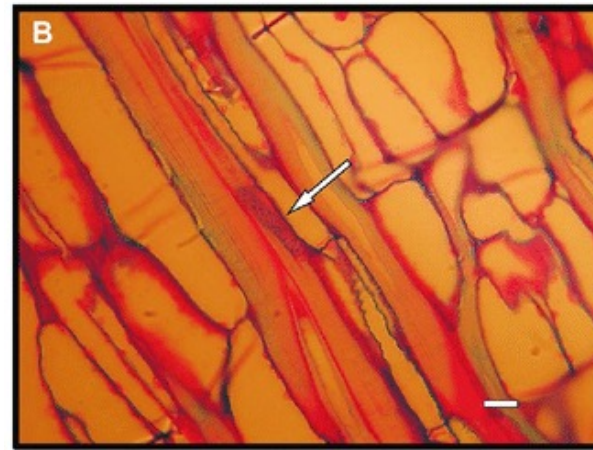
Where do the endophytes live?

Maize leaf growth zones

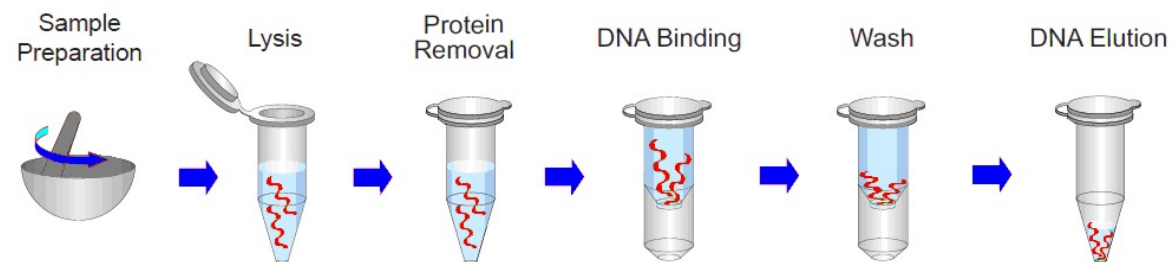


Localization of the endophytes in the growth zone of the maize leaf and determine the effect of drought stress on their abundance

Fluorescence microscopy

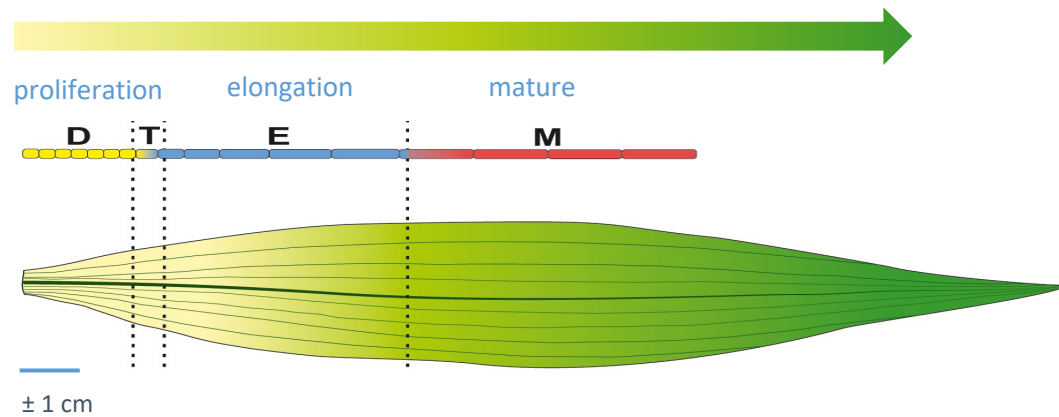


Analysis of endophytic DNA in the maize leaf growth zone



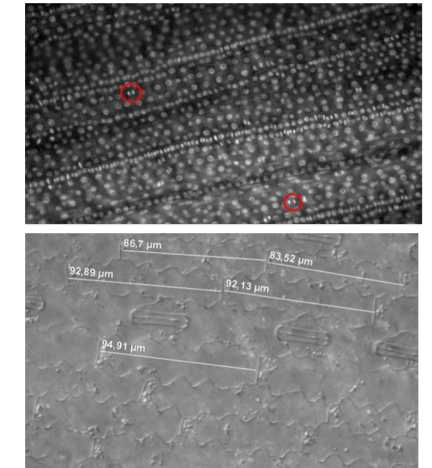
Determining the **cellular** and molecular basis of the interaction between plant and endophytes in the leaf growth zone

The maize leaf as a model system



Cells are organized in files running along the length of the leaf with cell division in the leaf meristem and cell expansion in elongation zone.

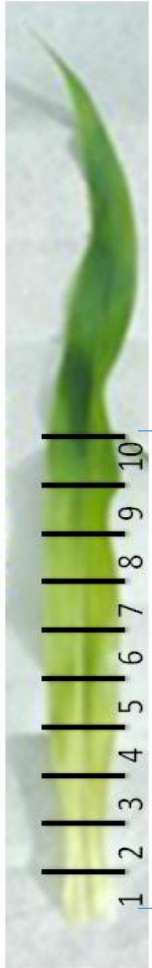
This linear organization allows us to quantify cell division and expansion rates by means of **kinematic analysis**



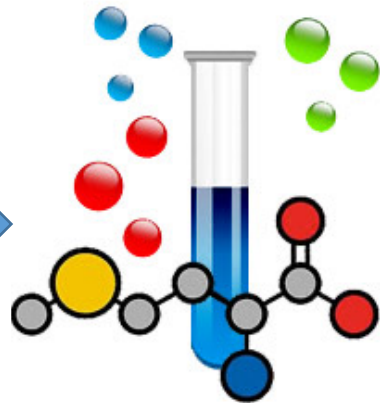
- Meristem size
- Cell cycle duration
- Cell size
- Cell elongation
- Cell division

Determining the cellular, **biochemical** and molecular basis of the interaction between plant and endophytes in the leaf growth zone

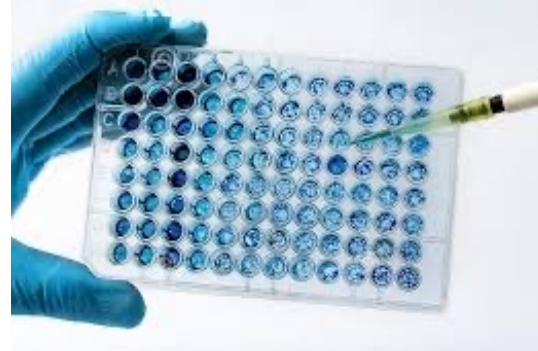
Maize growth zone



Metabolites extractions



Colorimetric assay



Spectrometry



Metabolomics

ROS

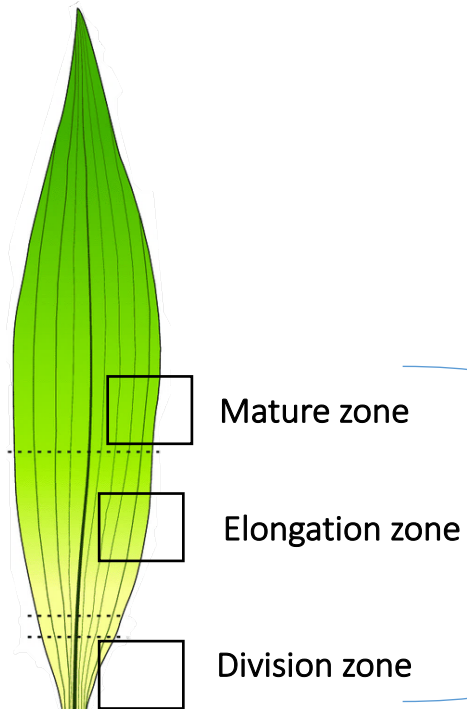
Antioxidants

Osmolytes

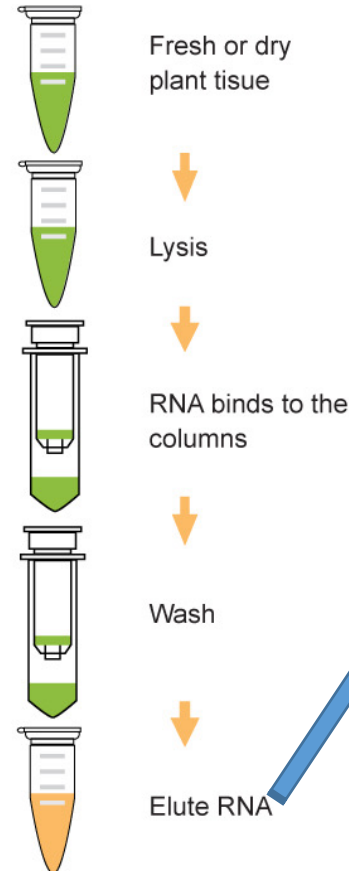
Hormones

Determining the cellular, biochemical and **molecular** basis of the interaction between plant and endophytes in the leaf growth zone

Sampling equivalent zones

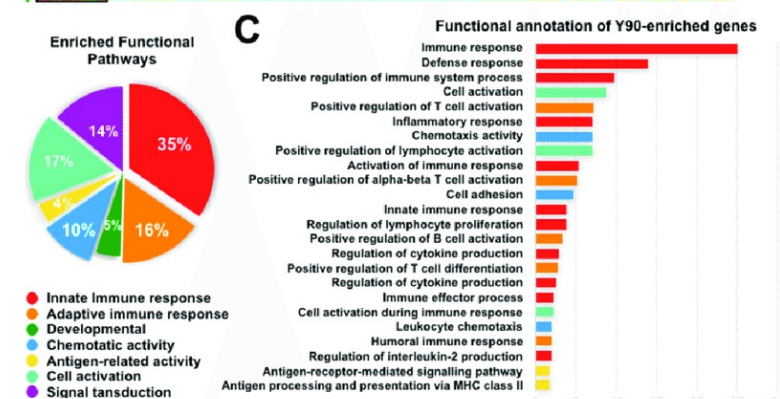
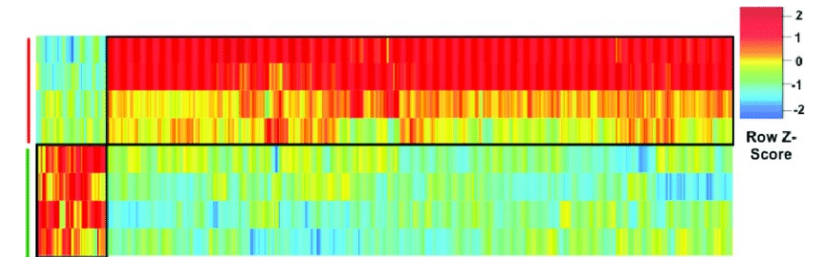


RNA extraction



RNA sequencing (NGS)

Genes expression analysis
 Pathway analysis
 Bioinformatics



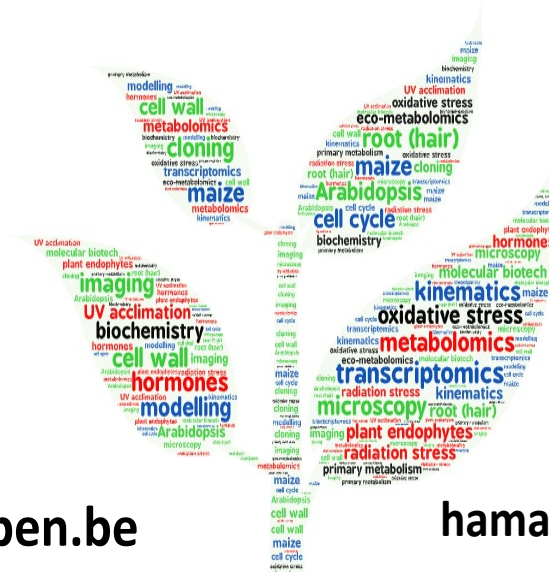
How to find us?



Prof. Gerrit Beemster



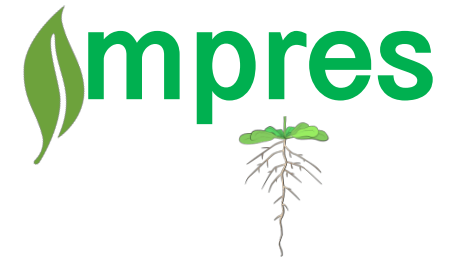
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Integrated Molecular Plant Physiology Research