

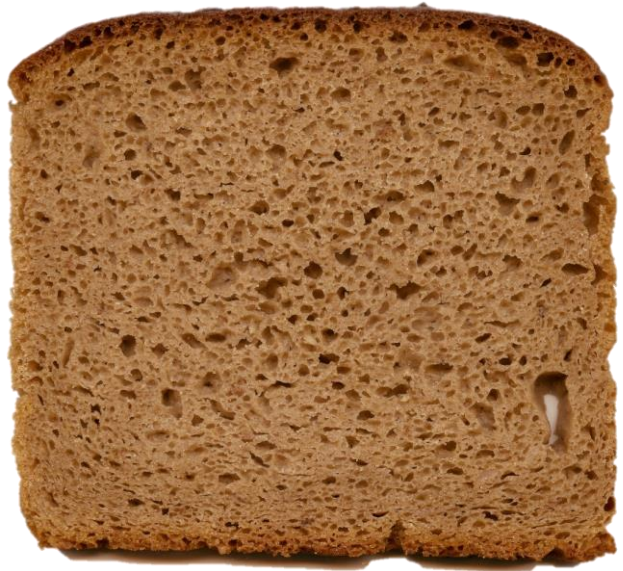
Matters of Life and Death: Why is Ageing Important for Wheat Grain Protein Content?



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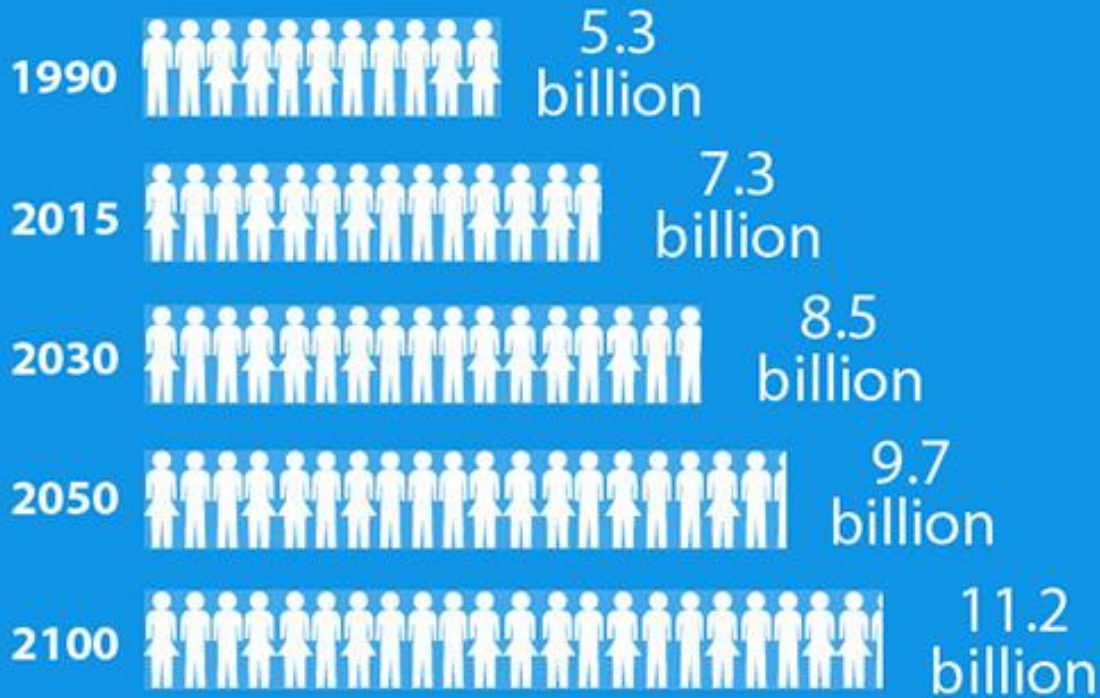


@PhilippaBorrill

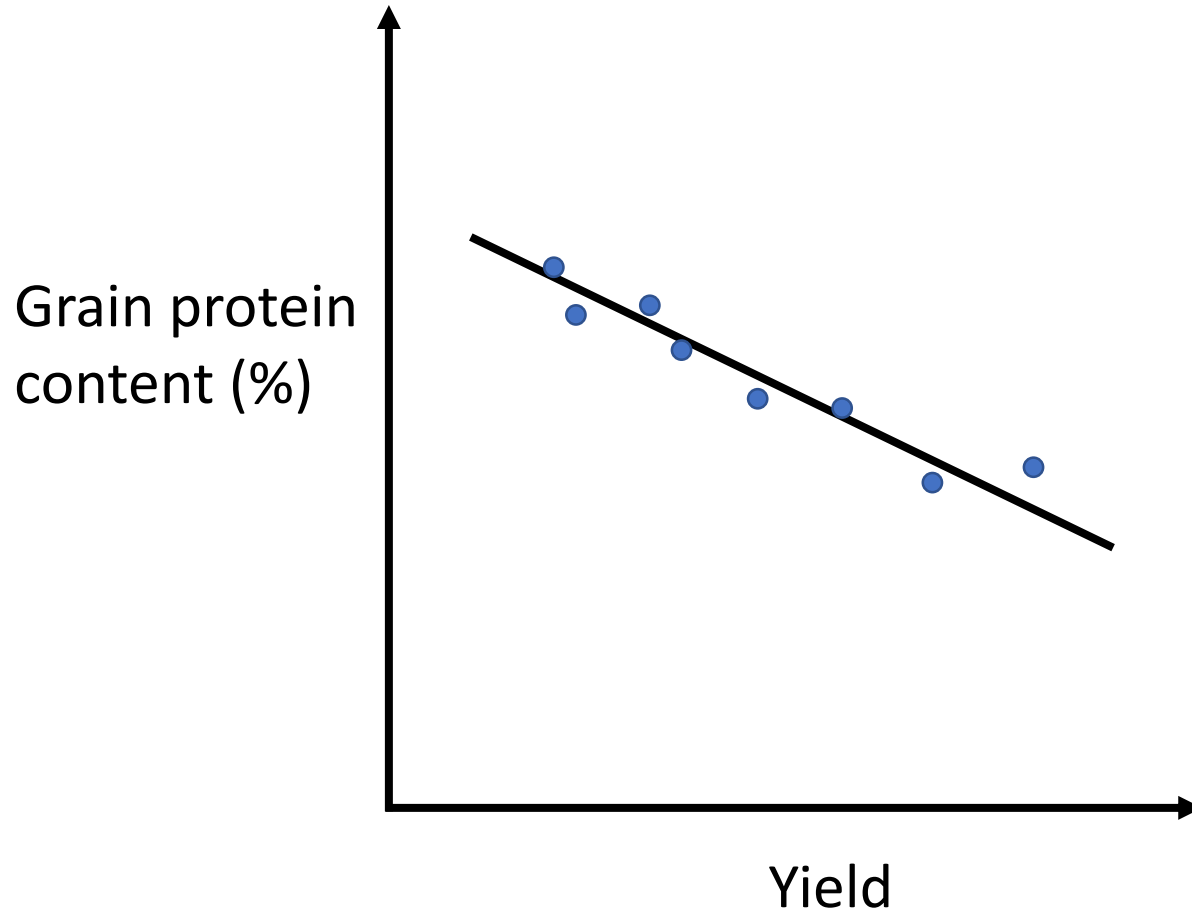


World Population

Projected world population until 2100



Grain protein content is inversely correlated with yield







28th June



15th July



22nd July



29th July

Senescence



28th June



15th July

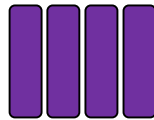
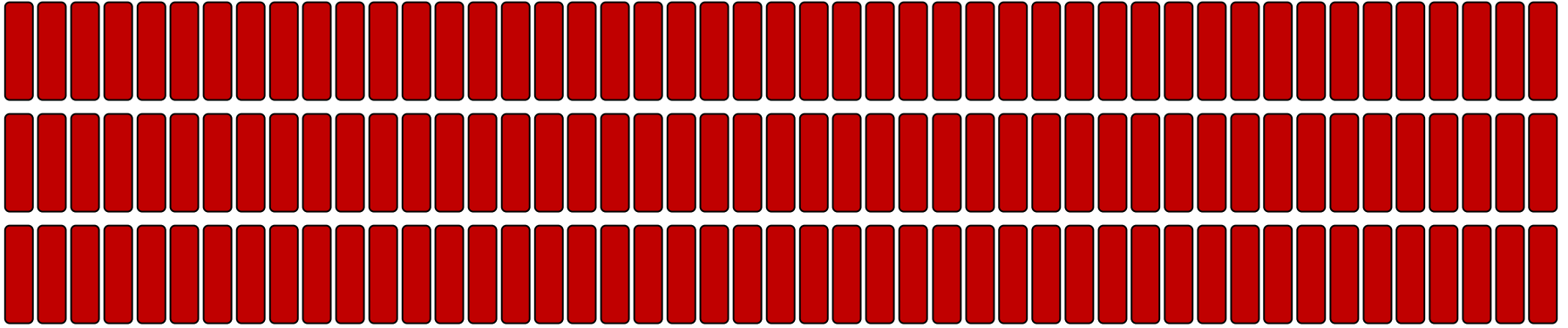


22nd July

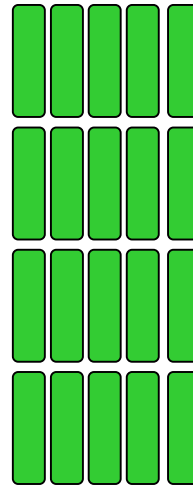


29th July

The Challenge of Wheat



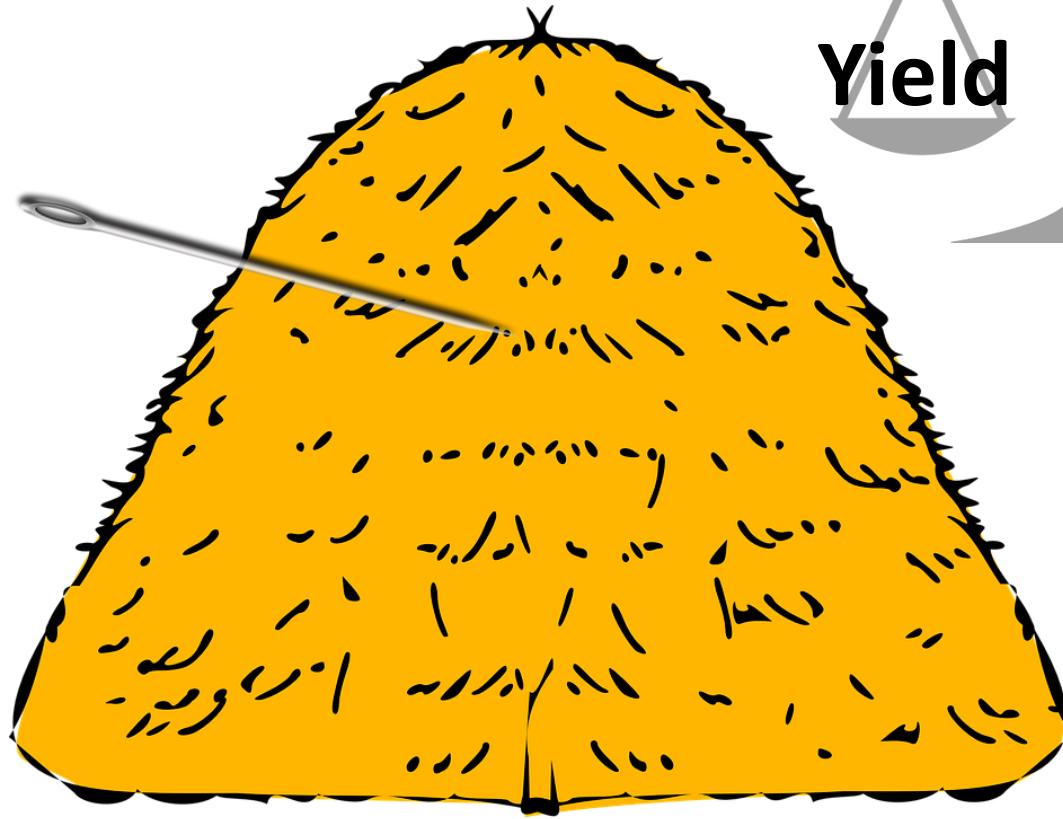
Rice



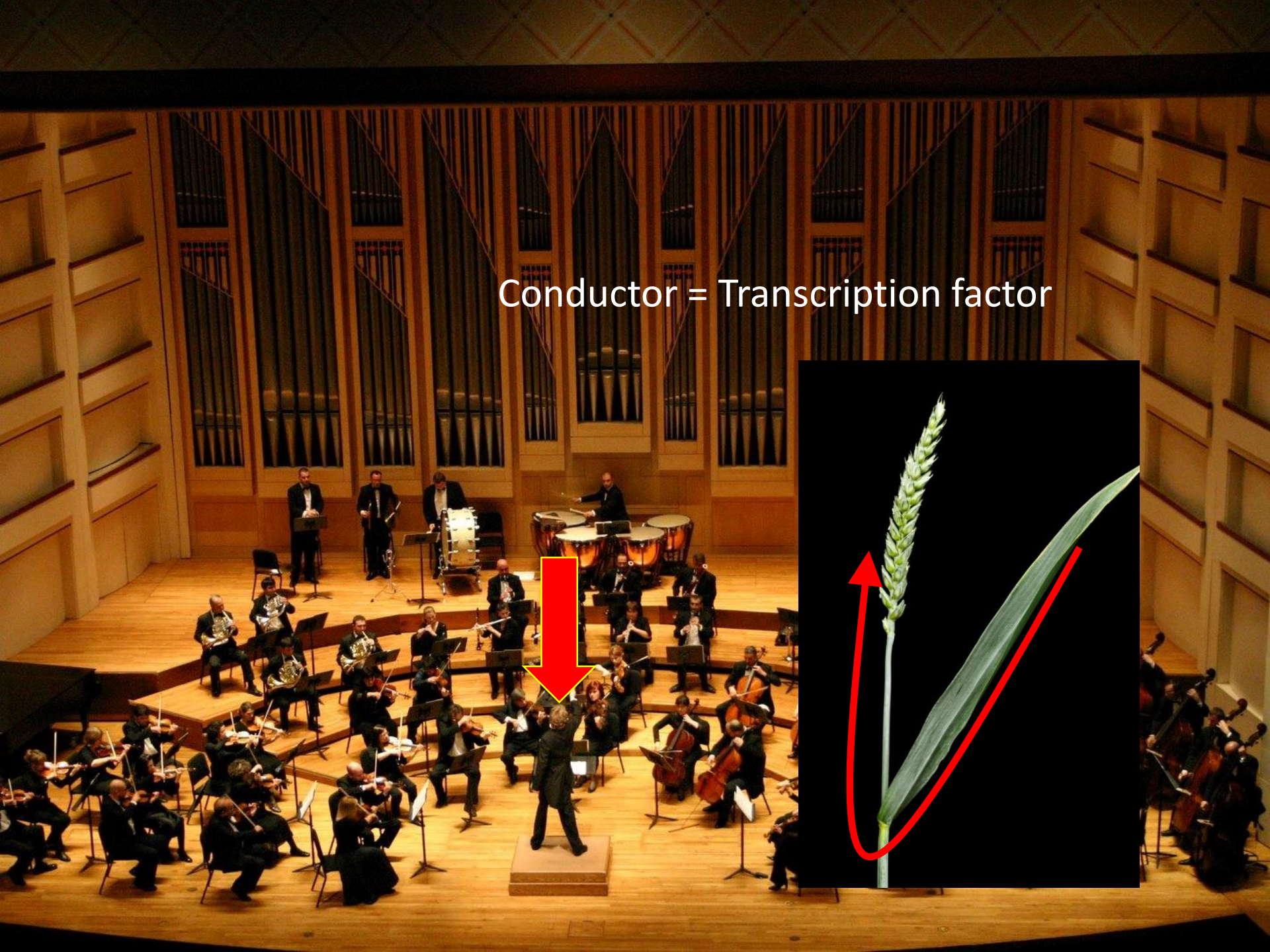
Cow

Senescence

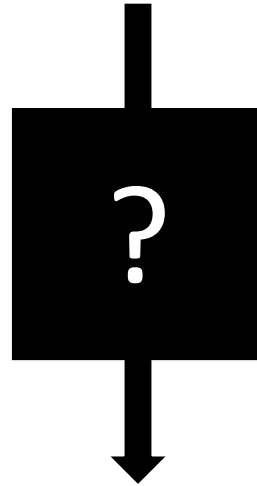
Yield **Quality**



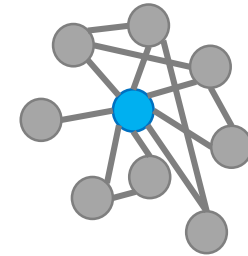
Conductor = Transcription factor



Transcription factors



Gene regulatory network modelling



Senescence

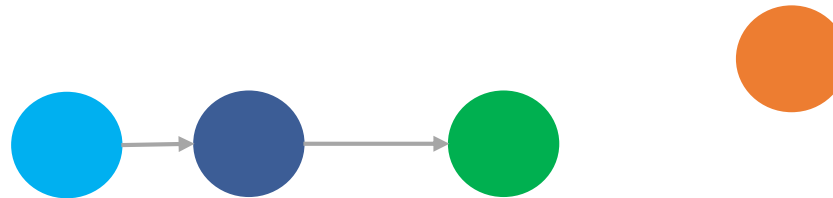
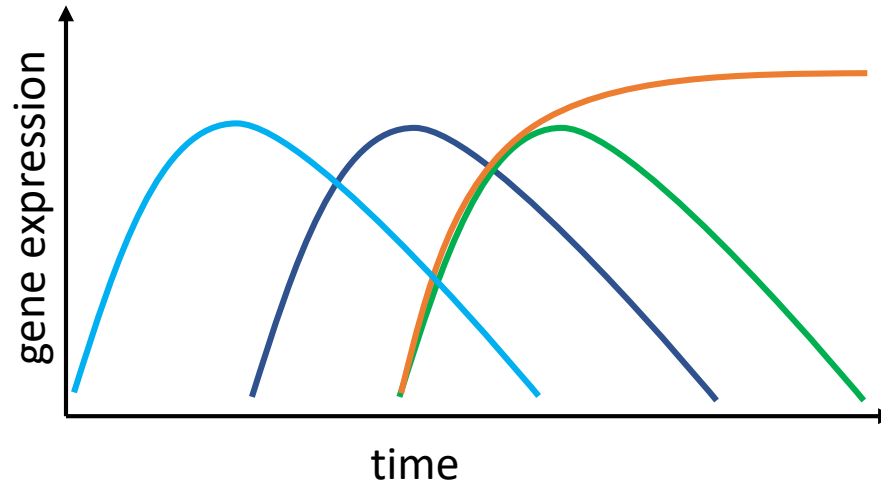




3 7 10 13 15 17 19 21 23 26

Days after flowering

Building a network model



Need to reduce number of genes

110,790 genes



Expressed

52,905



Differentially expressed

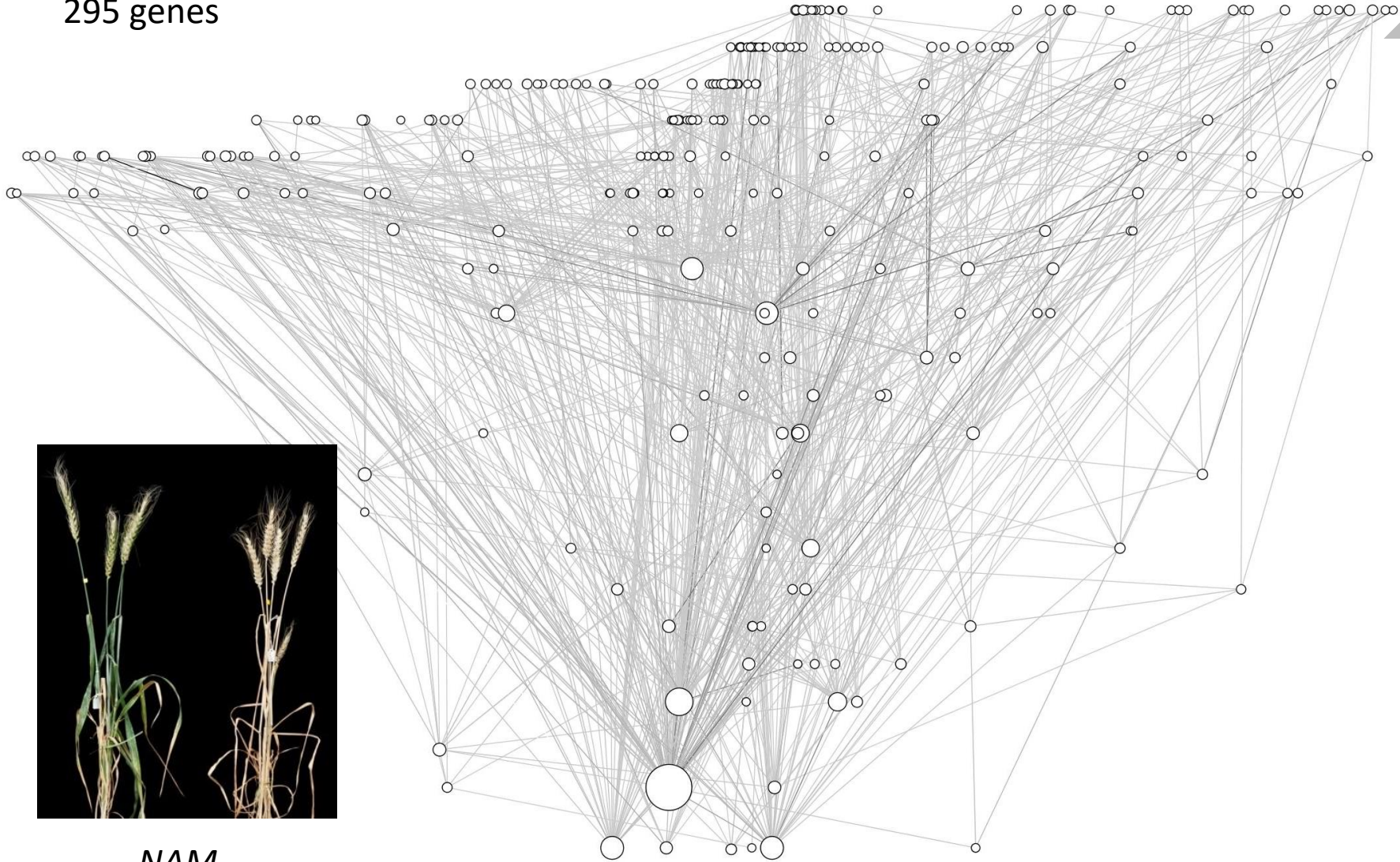
9,533



TFs

314 genes

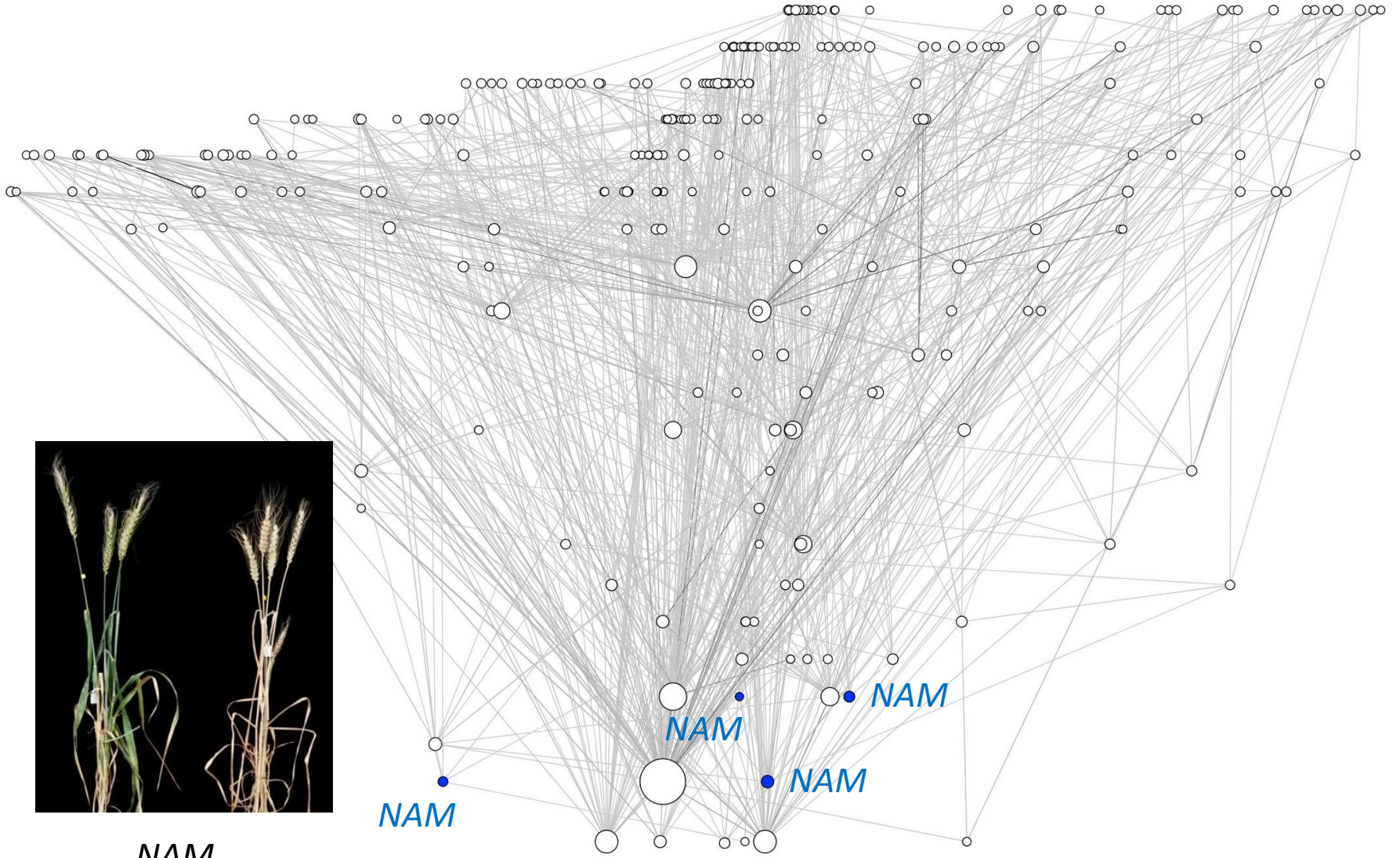
295 genes



NAM

Uauy *et al.*, 2006, *Science*

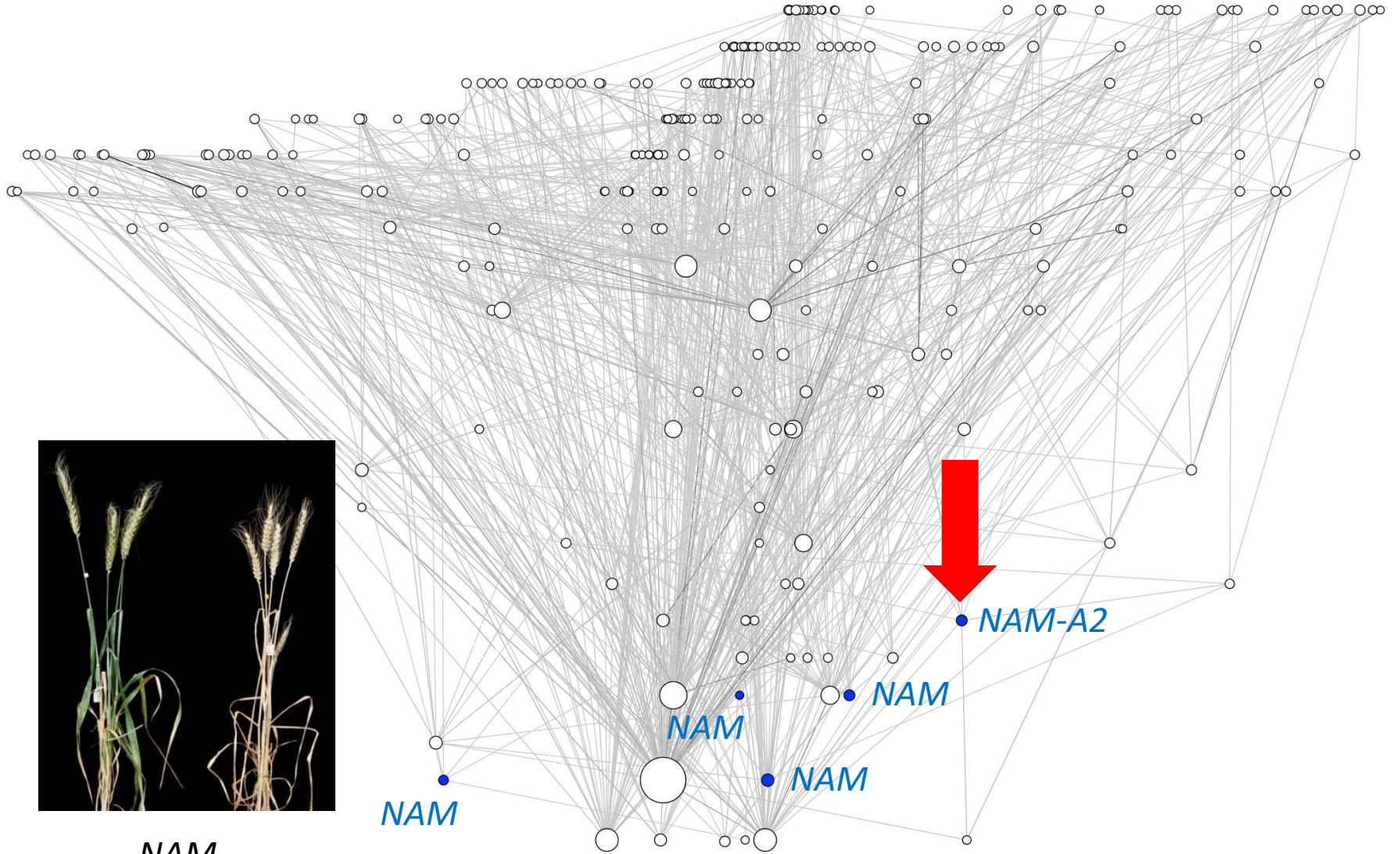
Borrill *et al.*, 2019, *Plant Physiol.*



NAM

Uauy *et al.*, 2006, *Science*

Borrill *et al.*, 2019, *Plant Physiol.*



NAM

Uauy *et al.*, 2006, *Science*

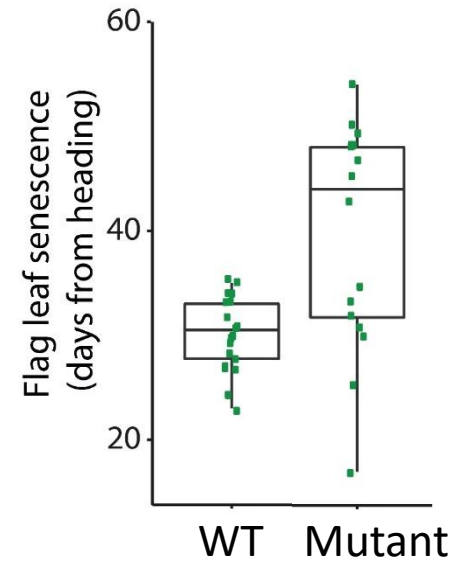
Borrill *et al.*, 2019, *Plant Physiol.*

Senescence is delayed in *NAM-2* mutant

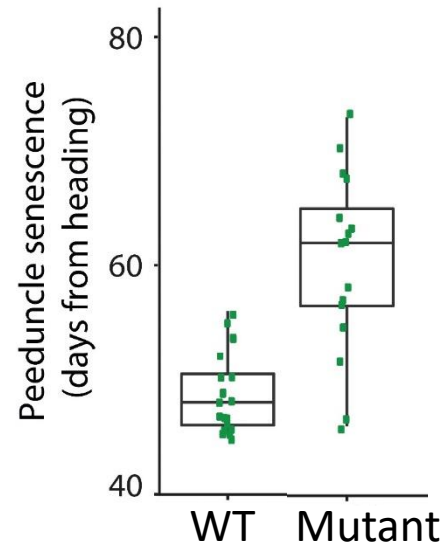


WT

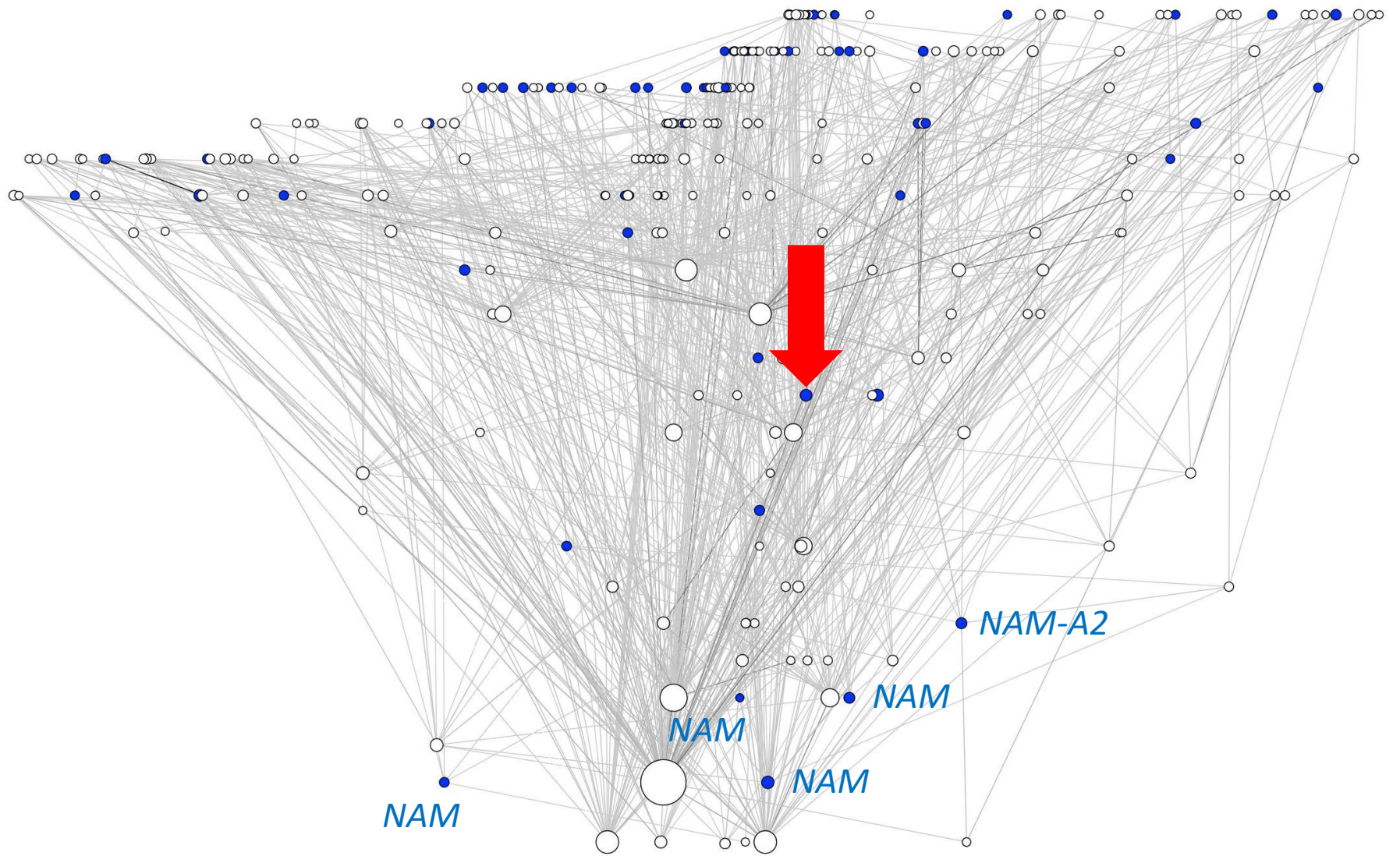
Mutant



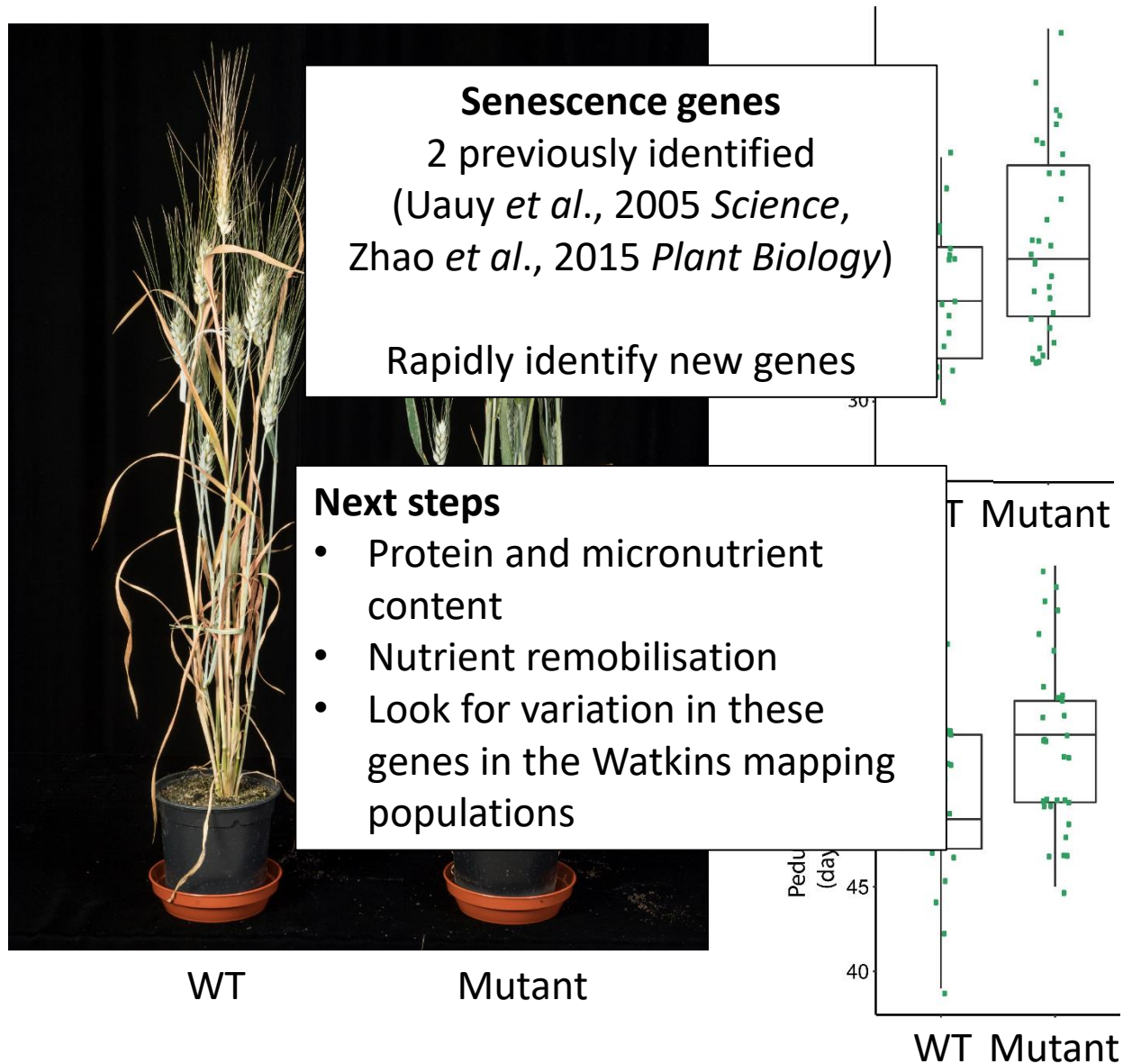
WT Mutant

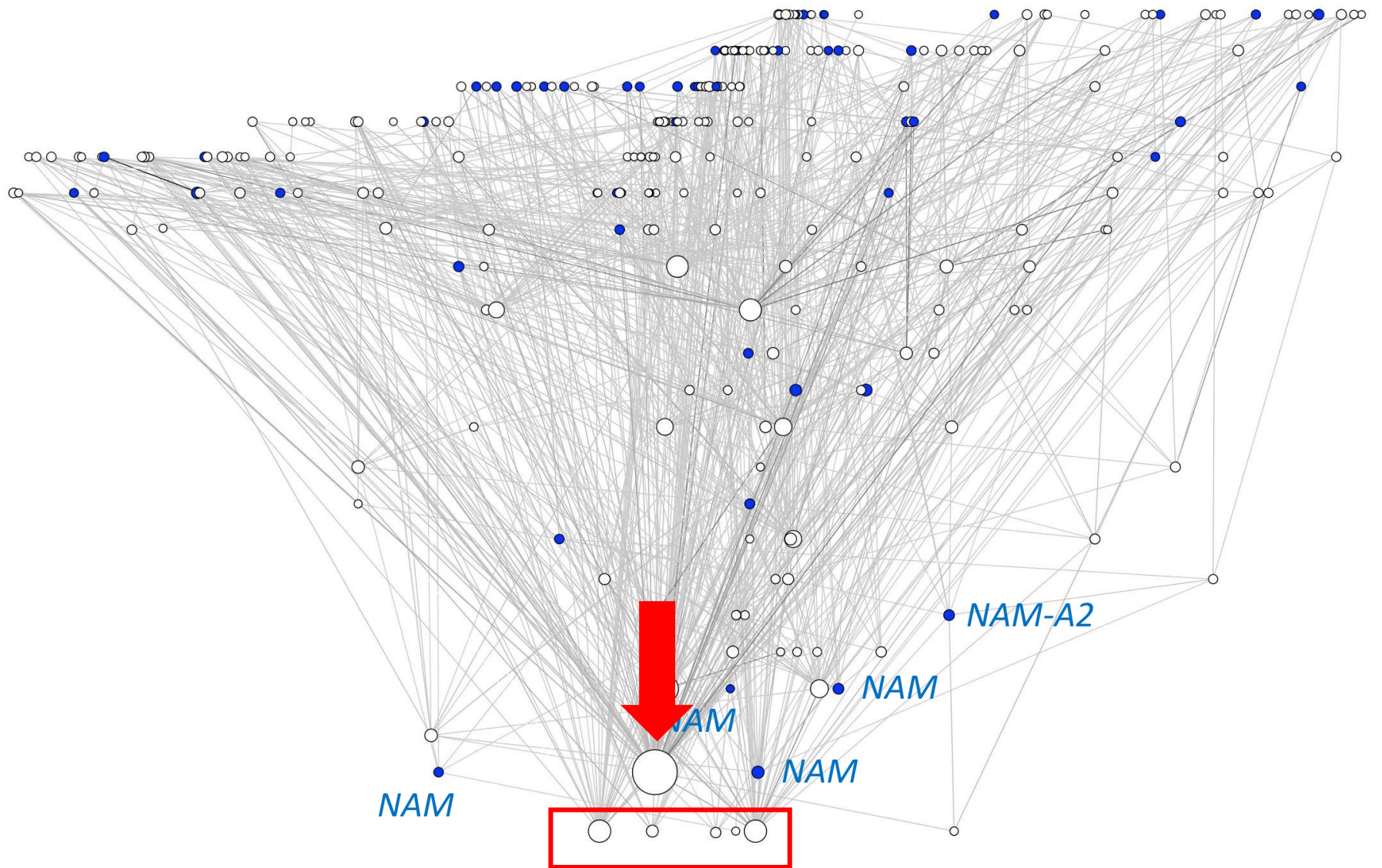


WT Mutant



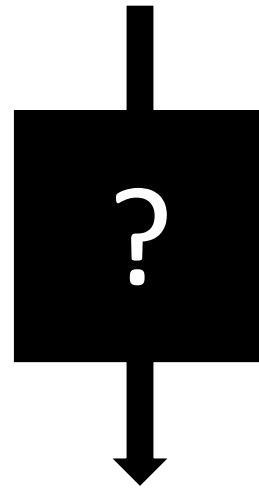
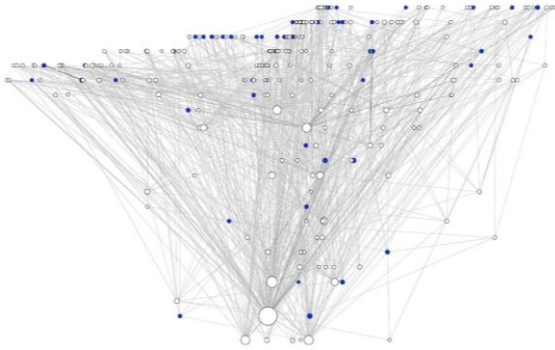
Senescence is delayed in another NAC



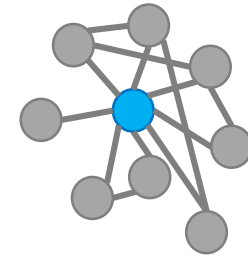


Transcription factors

Identified 2 transcription factors



Gene regulatory network modelling



Acknowledgements

Lab members

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