

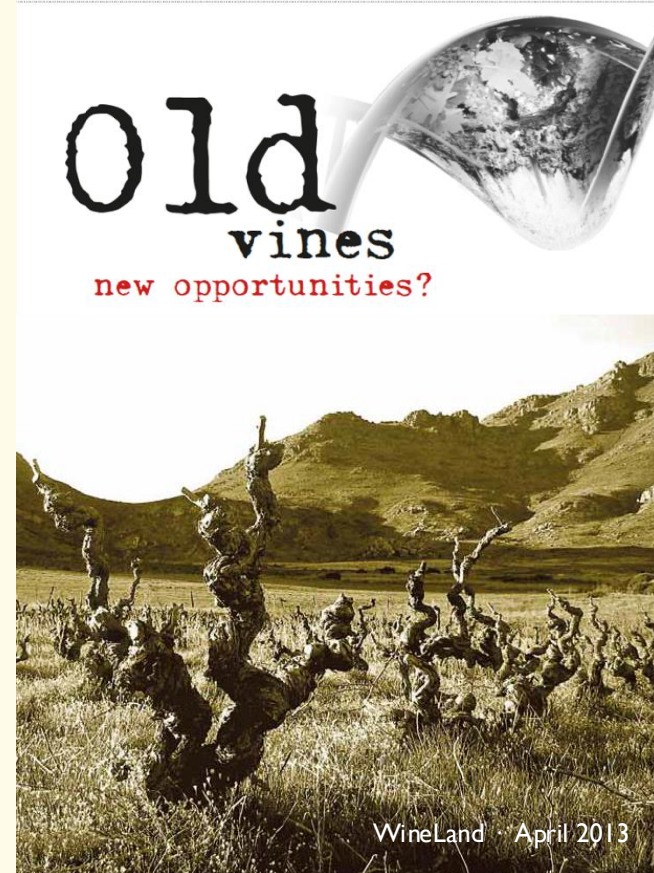
Old vine Pinotage research

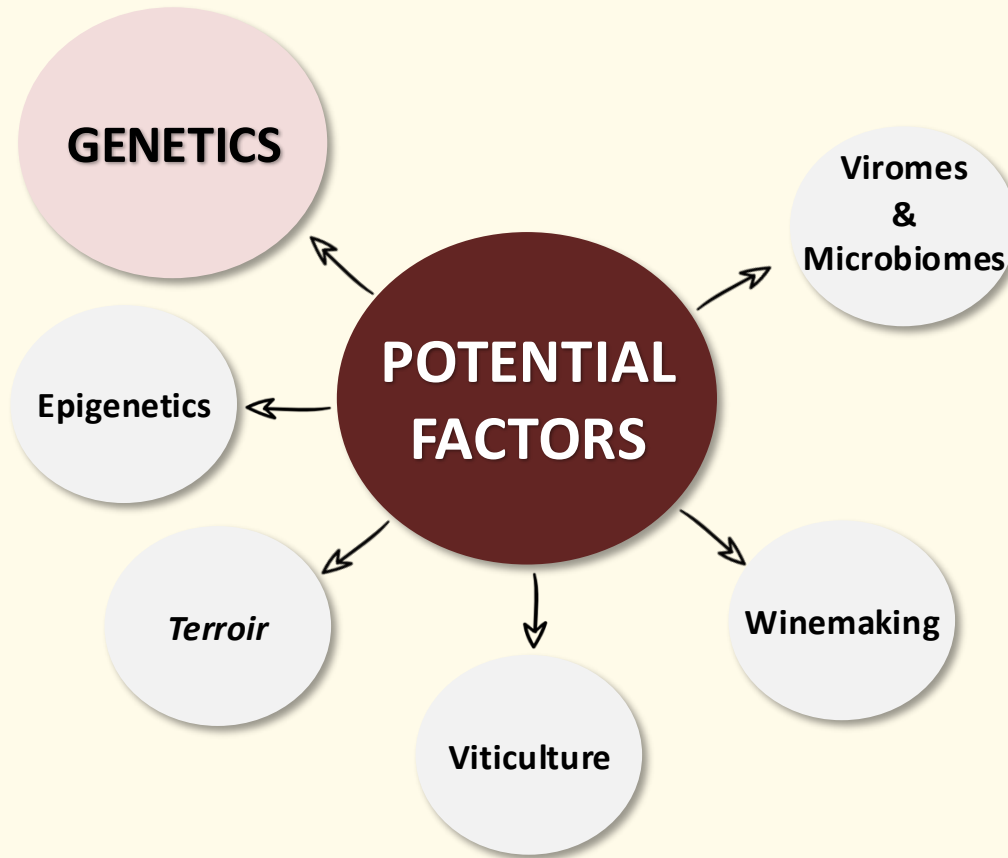
Johan Burger

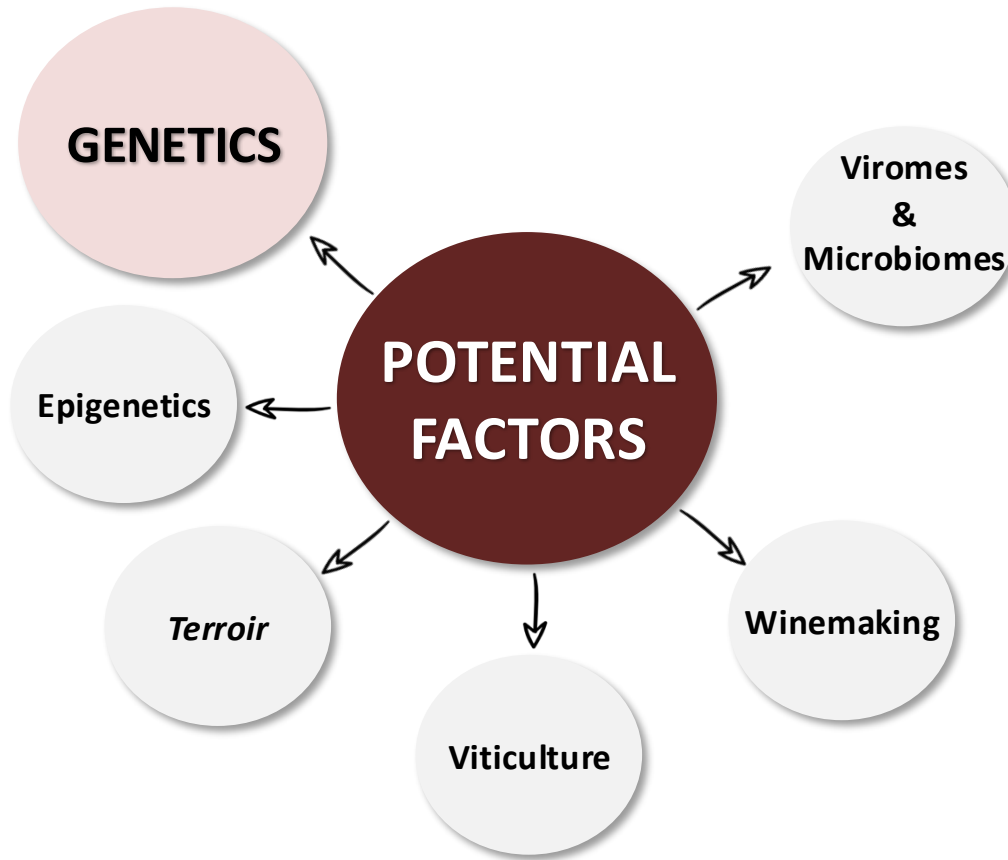


Do old vines make better wines?

- Anecdotal evidence – “Old vines produce wines of greater complexity and depth compared to young vines”
- Is there a genetic basis for this phenomenon?

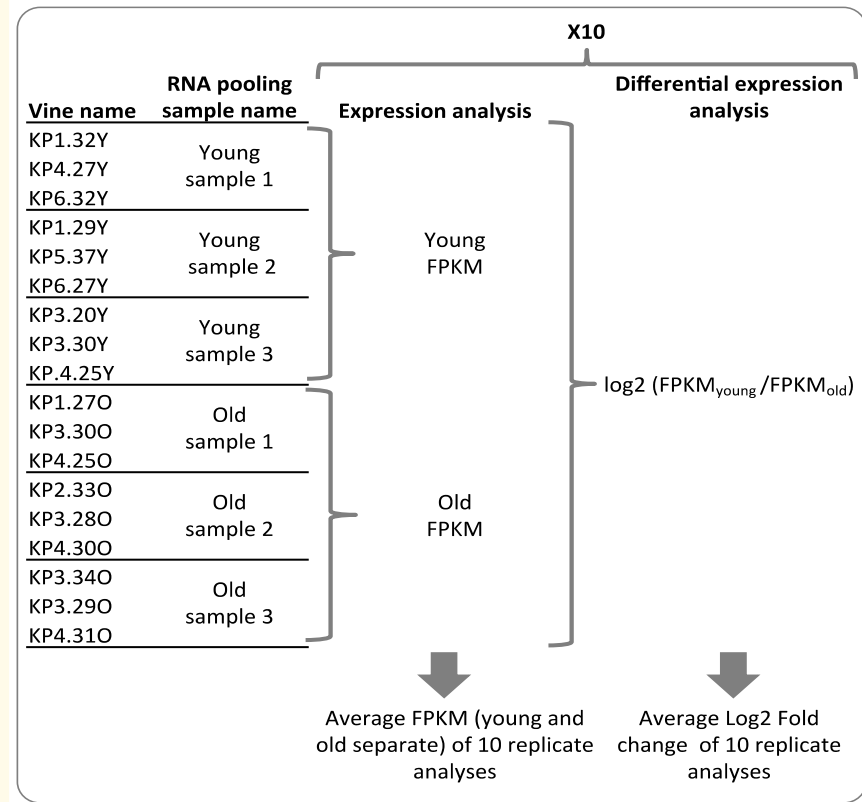




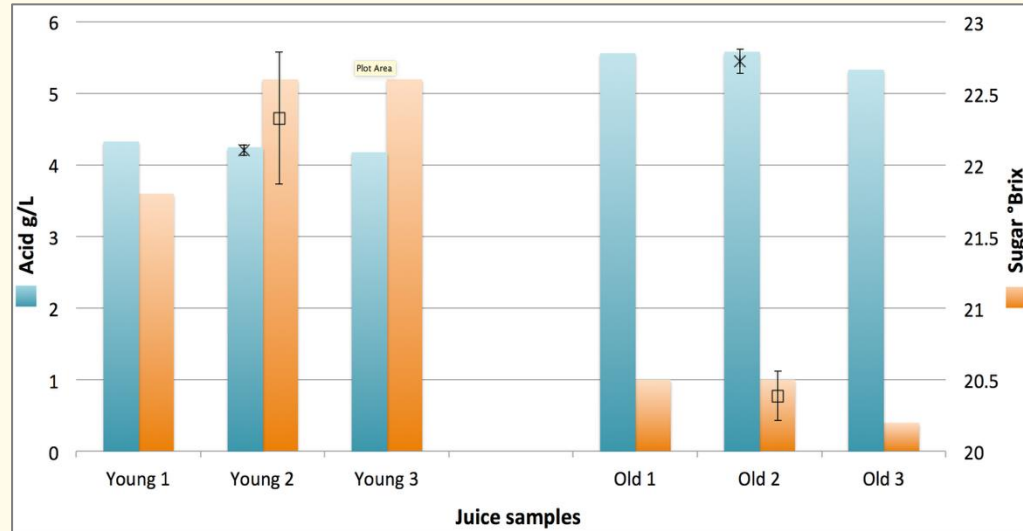


What did we do...

- Samples from a commercial Pinotage young (7) and old (53) inter-planted vineyard in Stellenbosch
- Berry and leaf material sampled from nine young and nine old vines at harvest time in Jan 2016
- RNA from 18 vines separately extracted, pooled to yield three young and three old plant biological replicates
- Sequencing library prep and RNA-Seq on an Illumina platform was outsourced to a commercial service provider



Sugar & Acid concentration in grape juice



- Juice from 18 vines pooled the same as for RNA
- Titratable acid and sugar measured
- Young: sugar 22.33°Brix and acid 4.24g/L
- Old: sugar 20.4°Brix and acid 5.48g/L



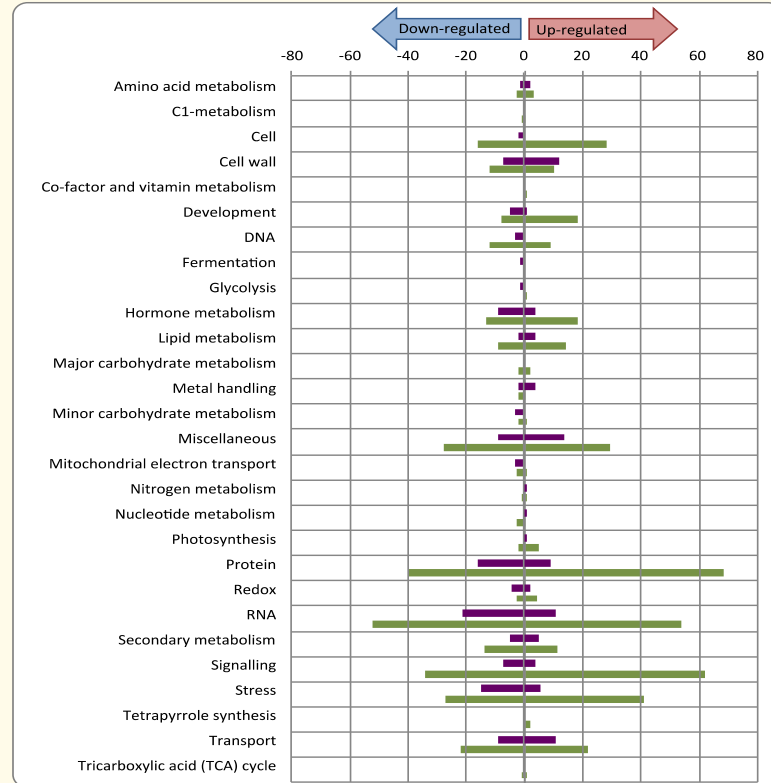
Differentially Expressed Genes (DEGs)



- Of the 16 027 total genes expressed in berries and leaves, **956 genes were differentially expressed** between young and old vines.
- Five DEGs were present in both berries and leaves.

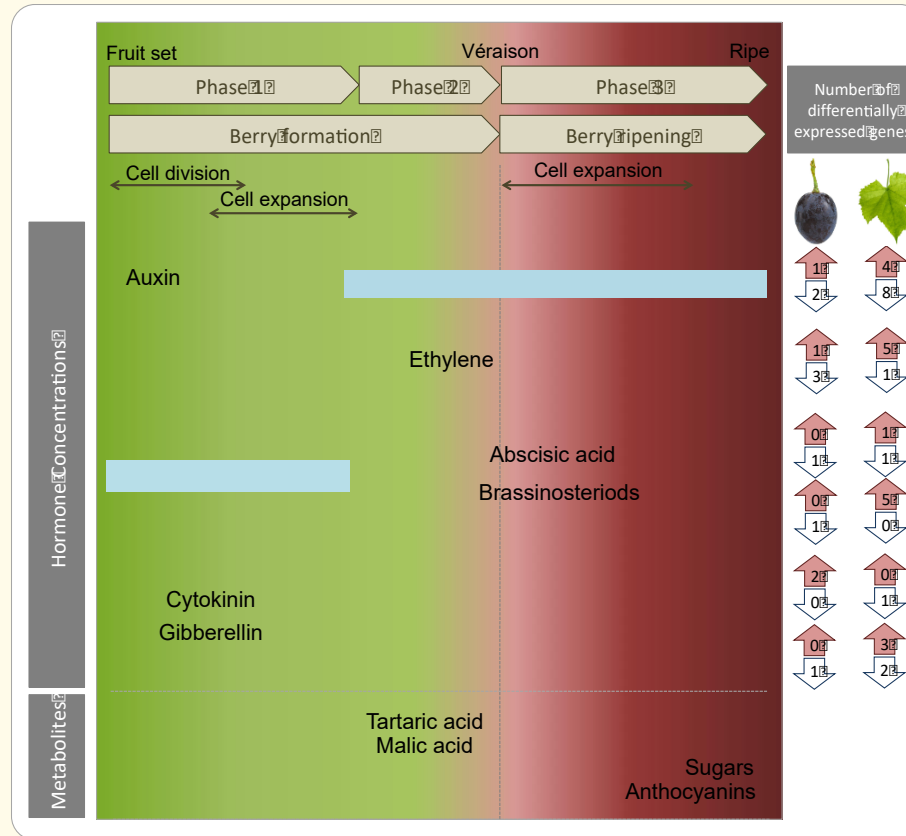
What are these DEGs?

- Functional bins are an indication of roles in metabolism
- DEGs involved in **fruit ripening as an indicator of wine quality**
- Focus on genes involved in:
 - “ripening” hormone signalling
 - biochemical changes associated with berry ripening



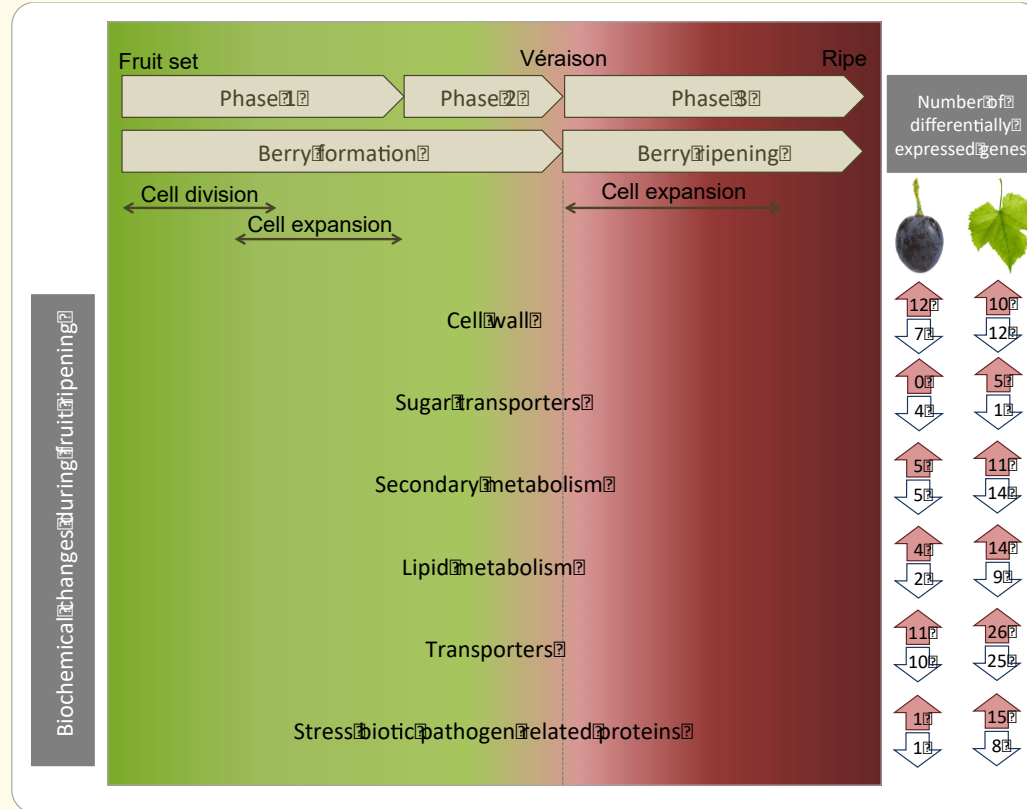
Berry ripening

- “ripening” hormones
- 46 DEGs involved in hormone metabolism and signal transduction identified
- Mostly associated with **auxin** and **ethylene** metabolism

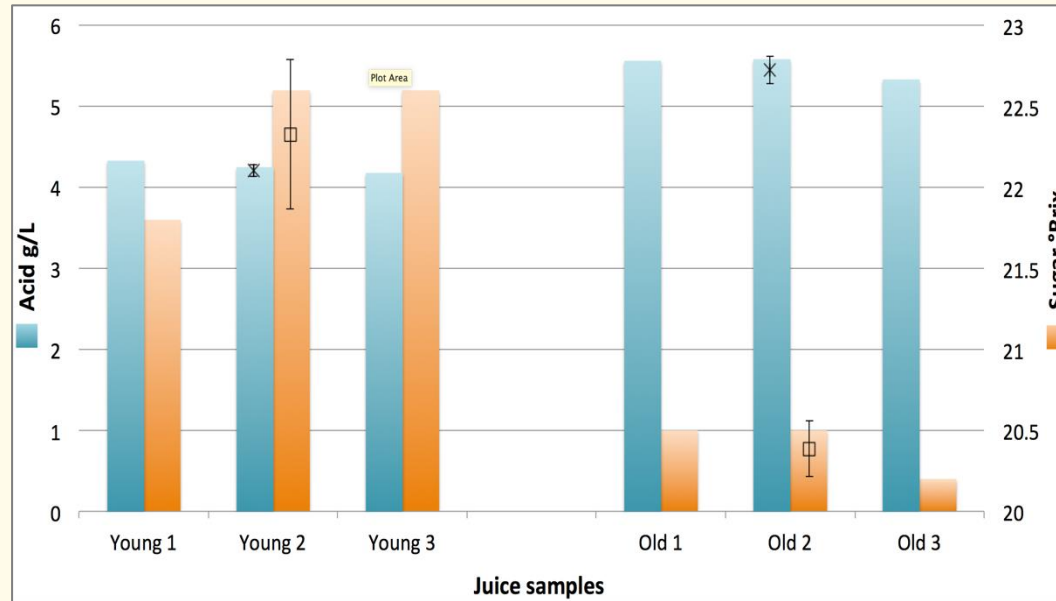


Biochemical changes

- 203 DEGs involved in biochemical changes relevant to ripening



Sugar & Acid concentration in grape juice



- Data suggest that young vines have progressed further along the ripening pathway.



Acknowledgements



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