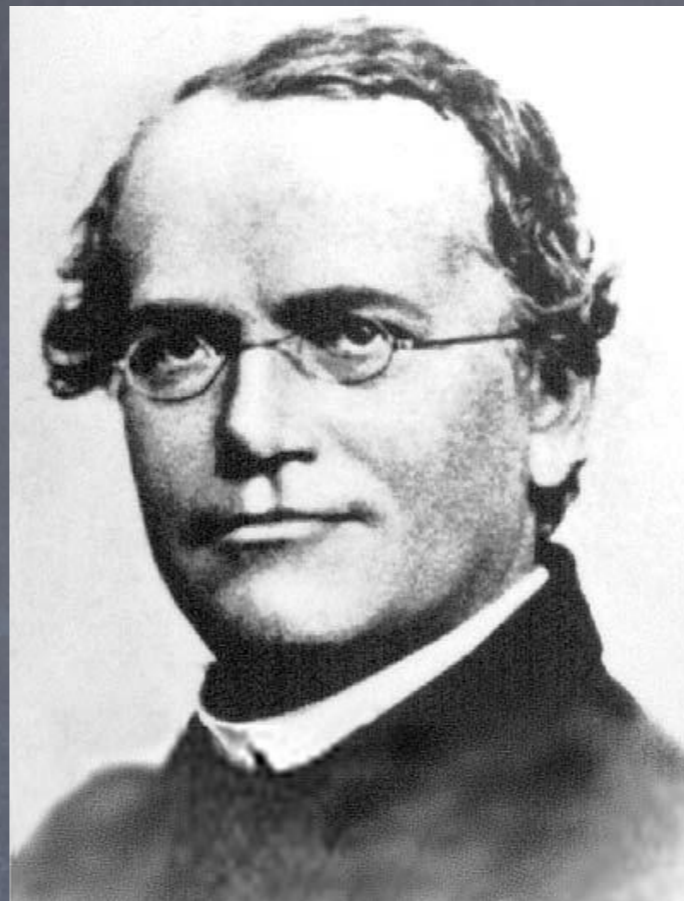


# Exploring genomics in Wine Industry

2010 LIVE Annual Meeting April, 22nd.



Gregory Johann Mendel (1822-1884)

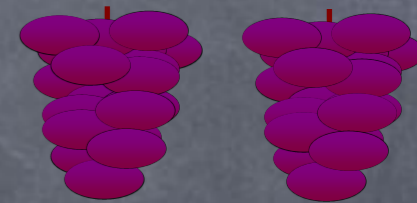
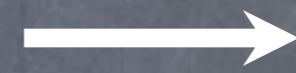
*The Genotype strongly influences the Phenotype*

Genotype: Genetic Constitution of any organism

Phenotype: Observable Characters

# Pigmentation of berry skin is monitored by the expression of two genes

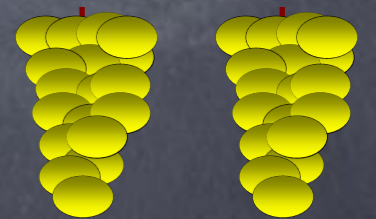
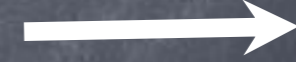
VvMYBA1 and VvMYBA2 expressed



Genotype

Phenotype

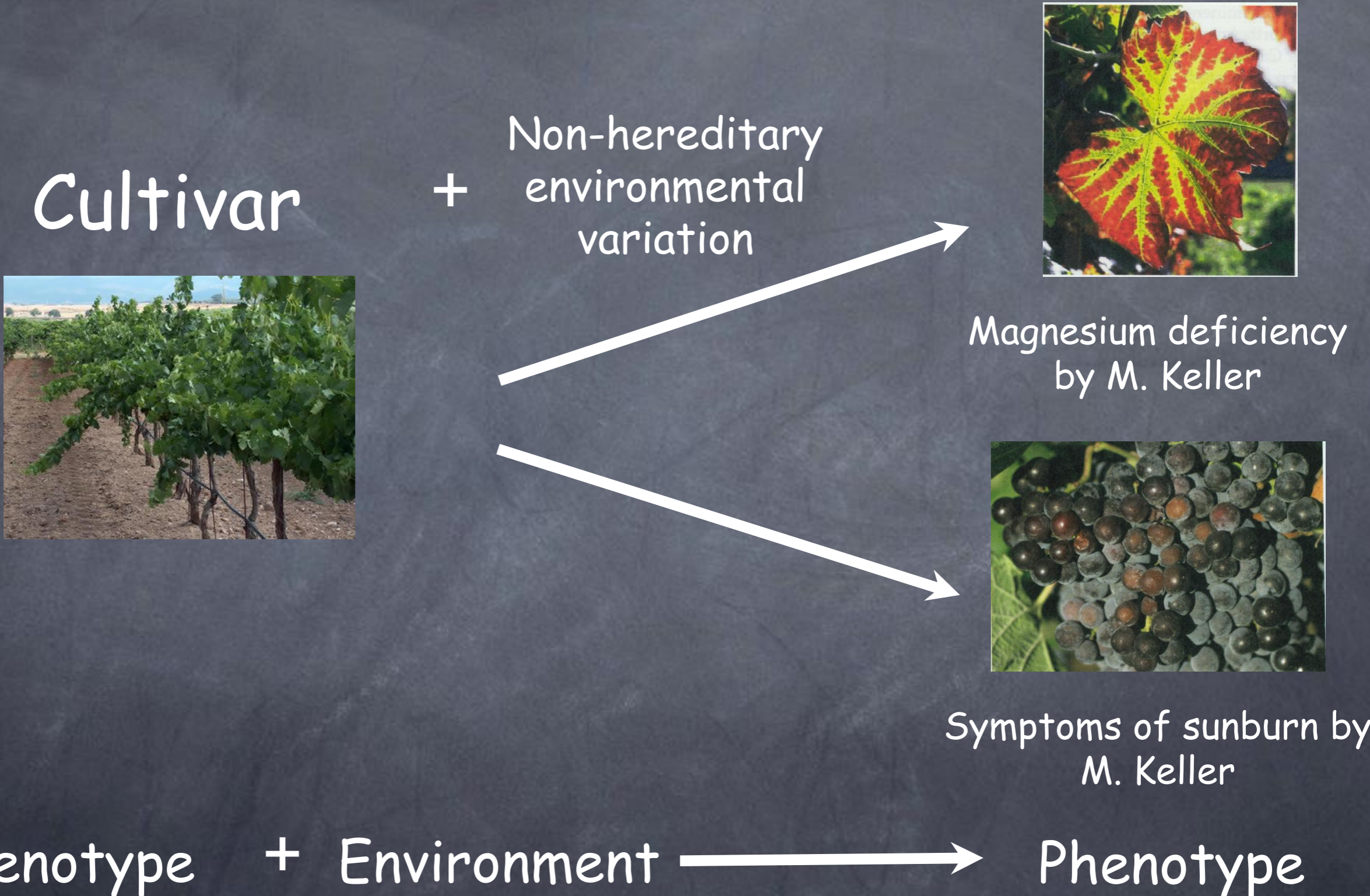
~~VvMYBA1 and VvMYBA2 not expressed~~



~~Genotype~~

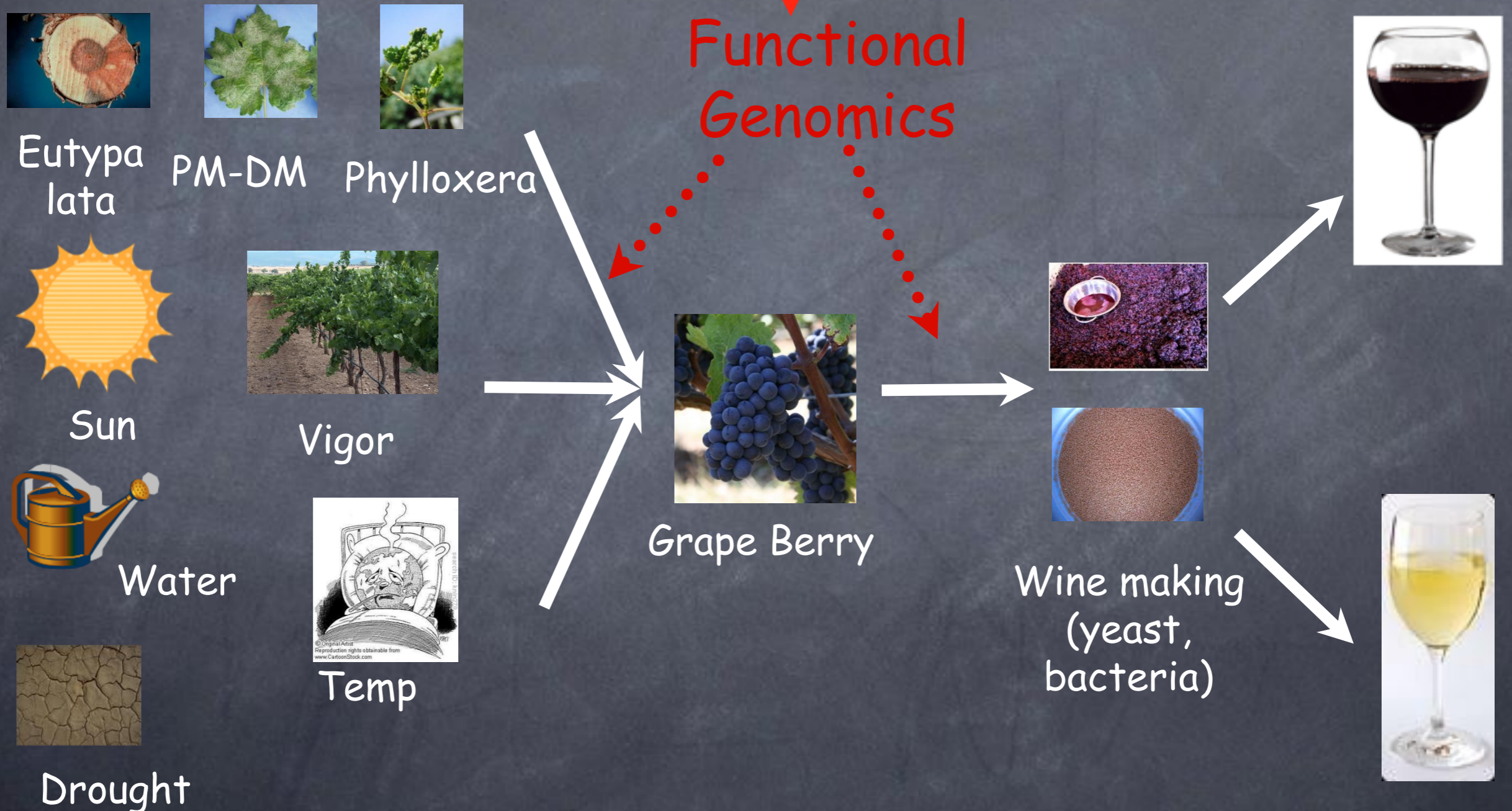
~~Phenotype~~

# But not always like this in the real world...

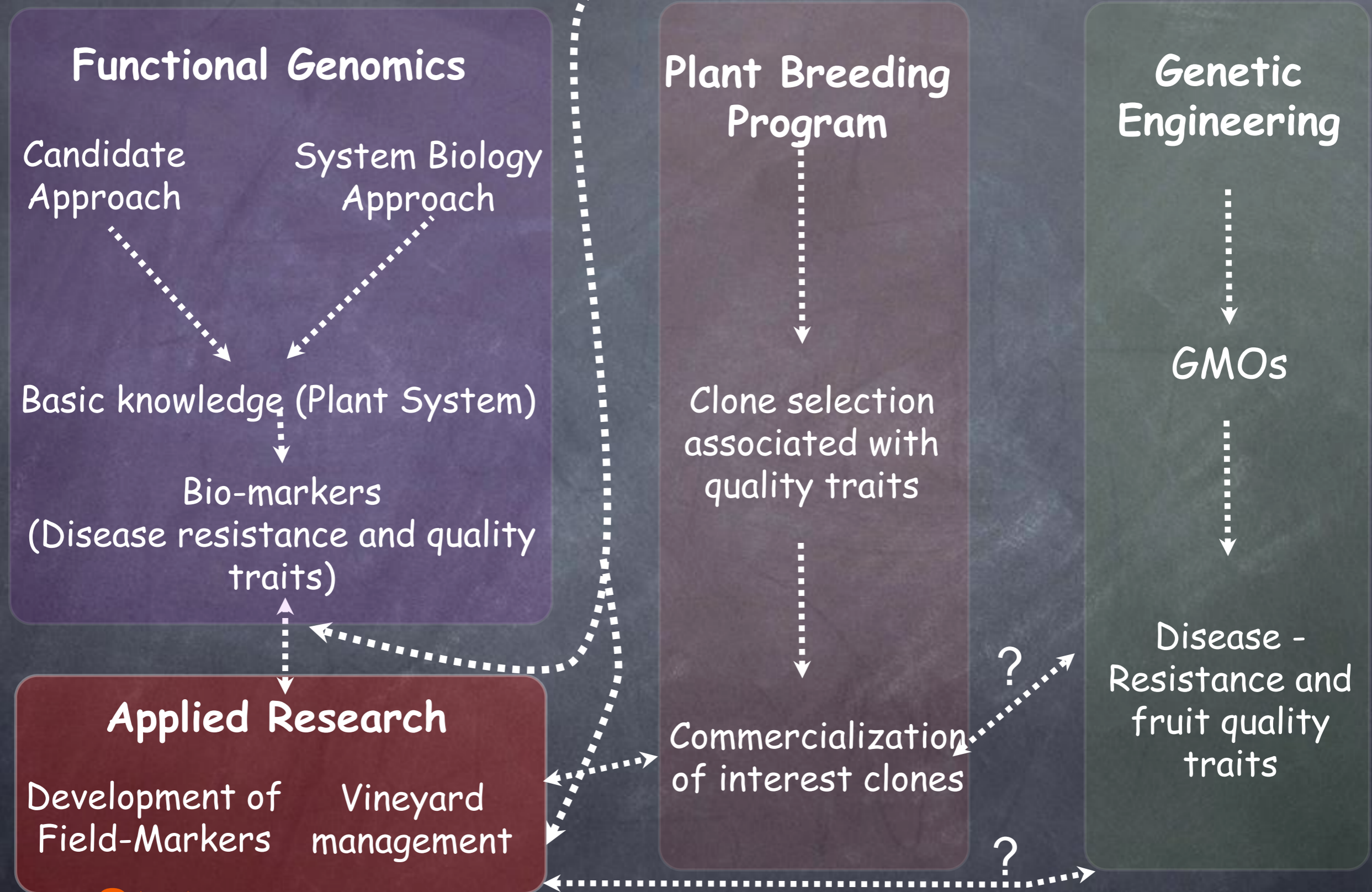


# At which level can basic research help understand the impact of the environment?

Environment → Molecular Mechanisms → Phenotype

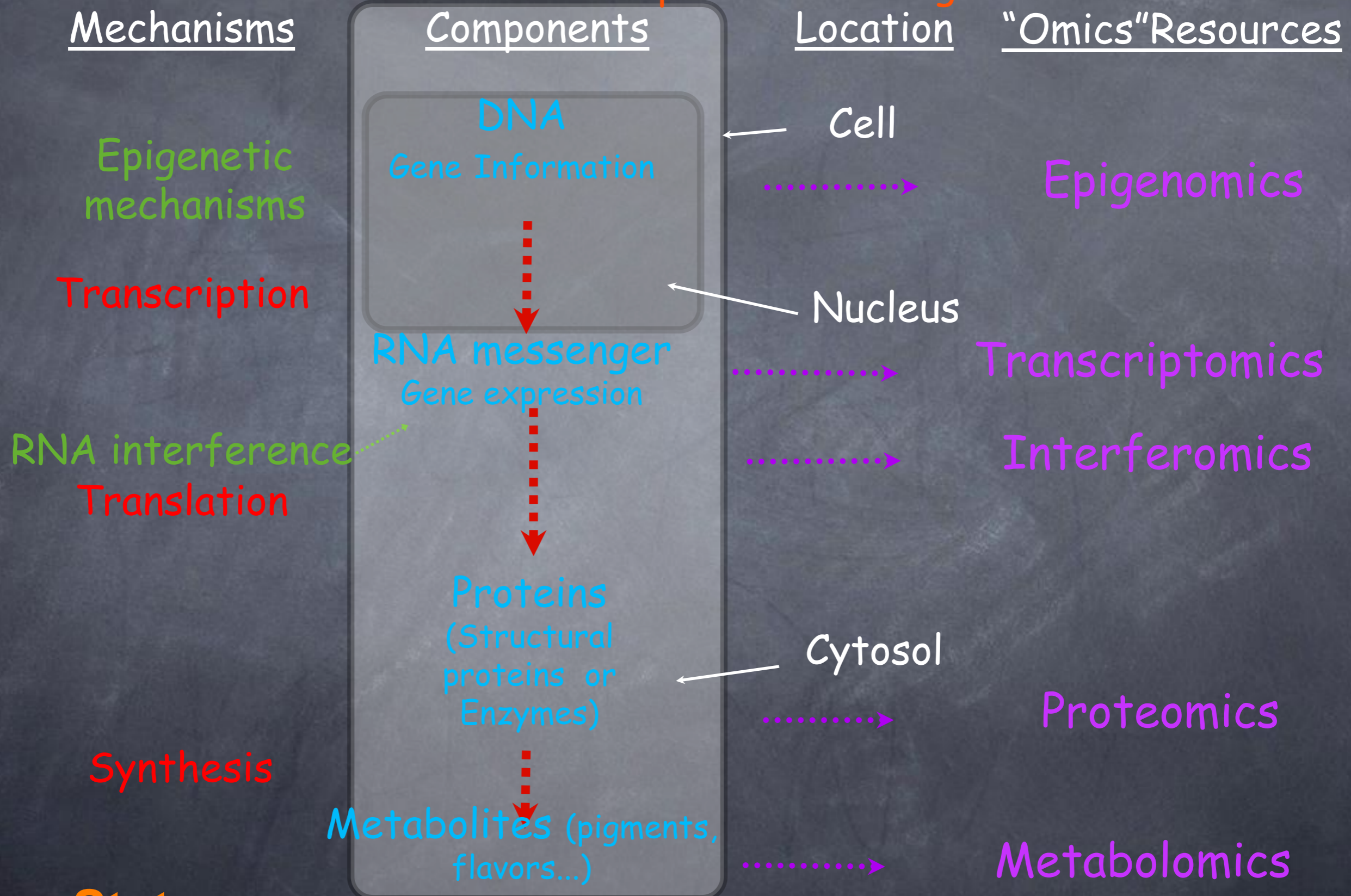


# Integration of Functional Genomics within the model



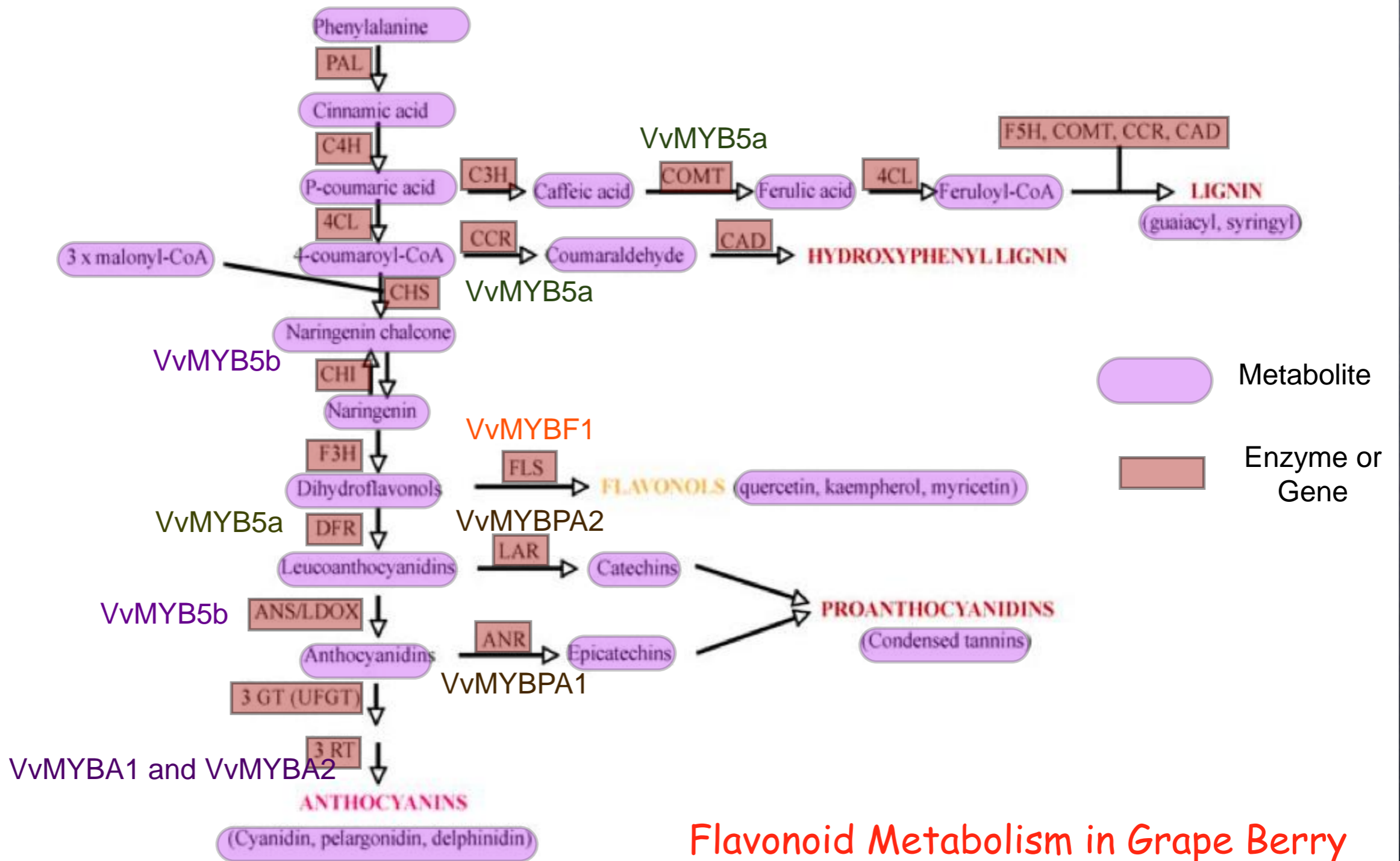
# What do you study in Functional Genomics?

The 4 main active components in living cells



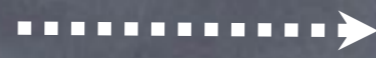
# Candidate Approach-Quality

The MYB transcription Factor family is associated with the control of the polyphenol in grape



# System Biology Approach-Water Deficit

External Factors



Functional Genomics



Wine



Eutypa lata



PM



Phylloxera



Sun



Vigor



Water



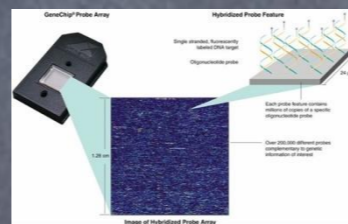
Drought



Temp



Grape Berry



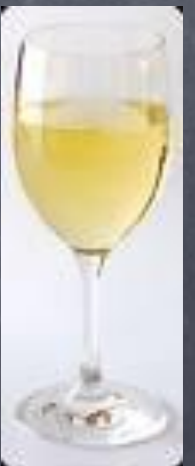
Transcriptomics



Metabolomics



Wine making



Water Deficit alters differentially metabolism affecting important flavor and quality traits in CS and Chard. Deluc et al., 2009

# Challenges in Plant Genomics

- Cost of Genomics (it is basic research )
- Working on Genomics takes time...
- Integration of mathematical and computational sciences with life sciences
- Transfer to "real world" may take time
- Contribution in building the bridge between science community and industrial partners

# Applied Grape Genomics

- Identification of new field-markers
- Development of molecular diagnostic tools
- Assist grape grower in the way to manage his vineyard
- Transfer technology approach

# Thank you !!!!!

