What are the Functions of DCL1 and MYB33?

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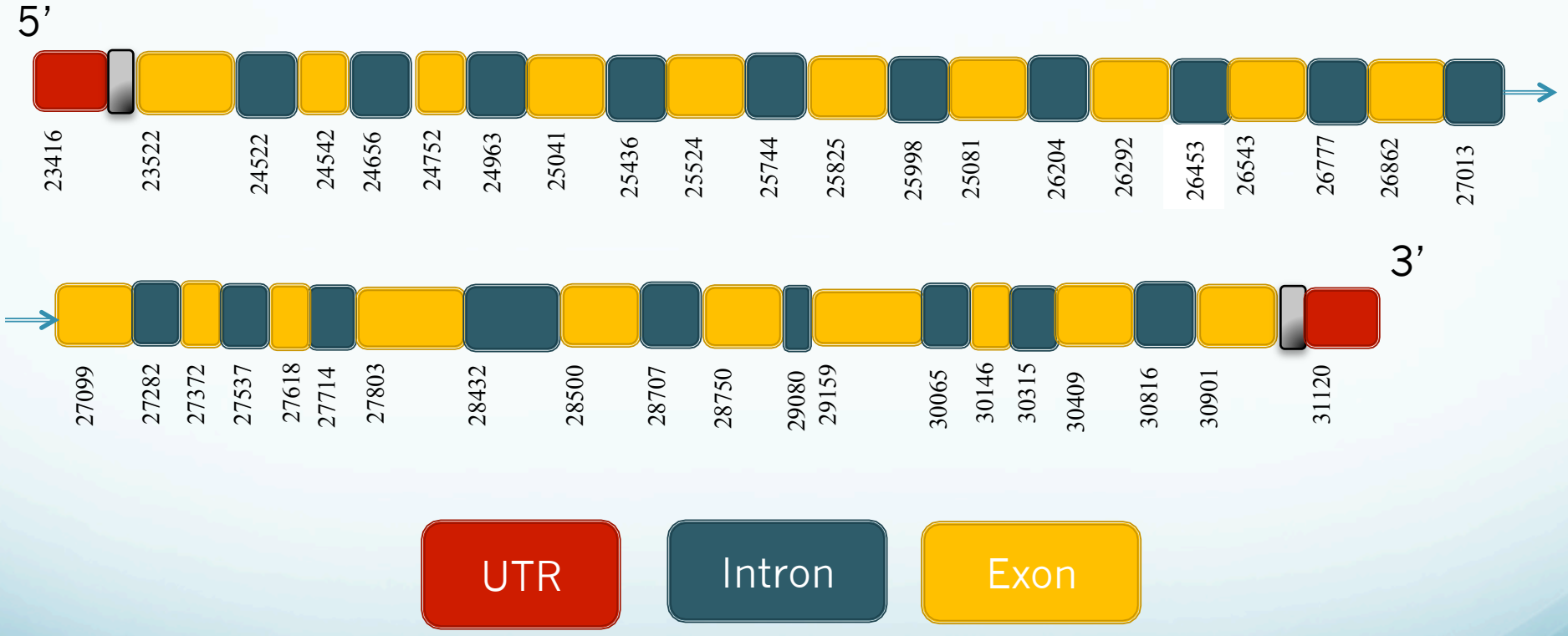
HC70AL 2014

What is AT1G01040?

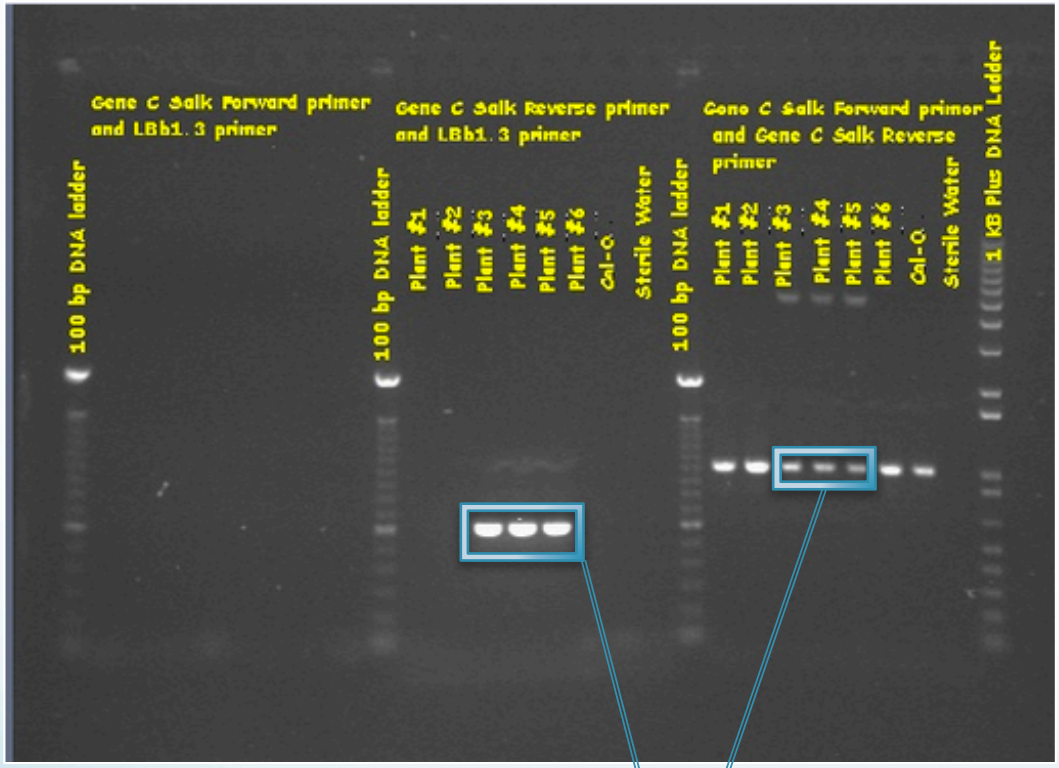
- Known as Dicer Like 1 (DCL1)
- Located in Chromosome 1
- Forward Orientation
- 7,704 bp
- 1910 AA
- Codes for a Dicer Homologous Protein
  - Involved in miRNA processing

What is the Structure of AT1G01040?

- 20 exons and 19 introns



What are the Genotypes of my Plants?

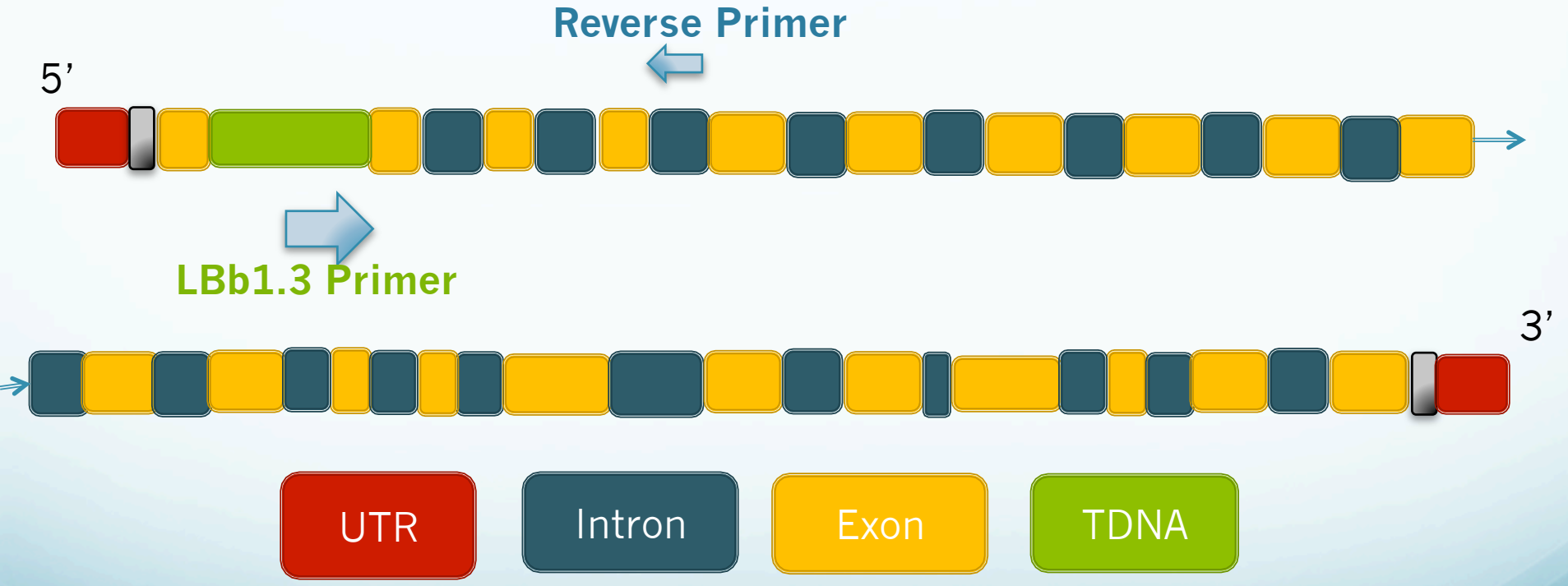


Heterozygous TDNA insert

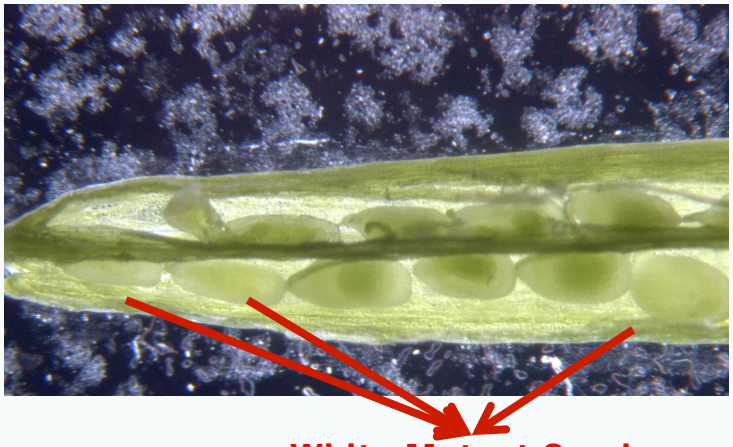
- Plants 3-5 are heterozygous for the TDNA insert.
- 5KB bands formed from the forward and reverse primers which made a product through the TDNA.

Where is the TDNA inserted?

- TDNA inserted at nucleotide 23866 in Exon 1

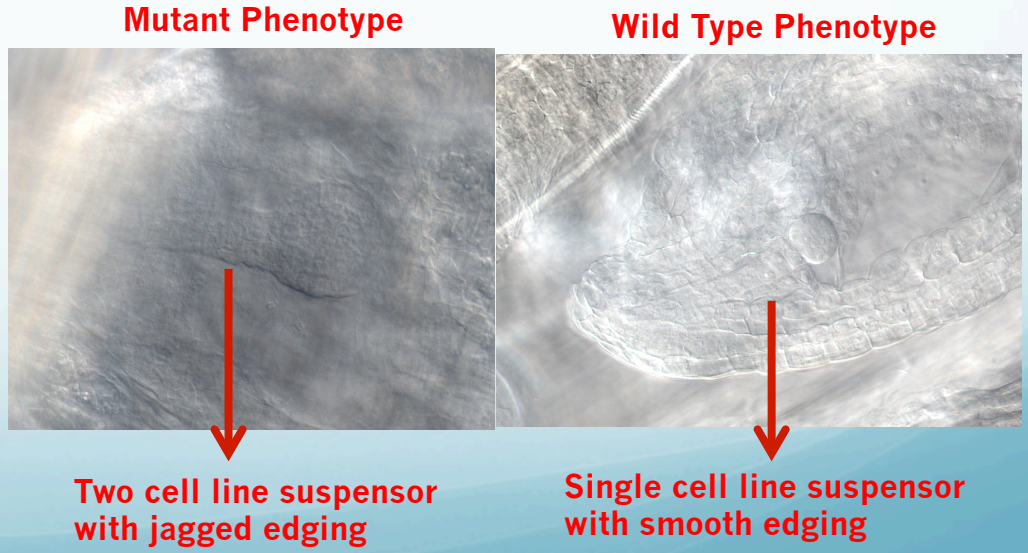


What effect does the TDNA insert have?

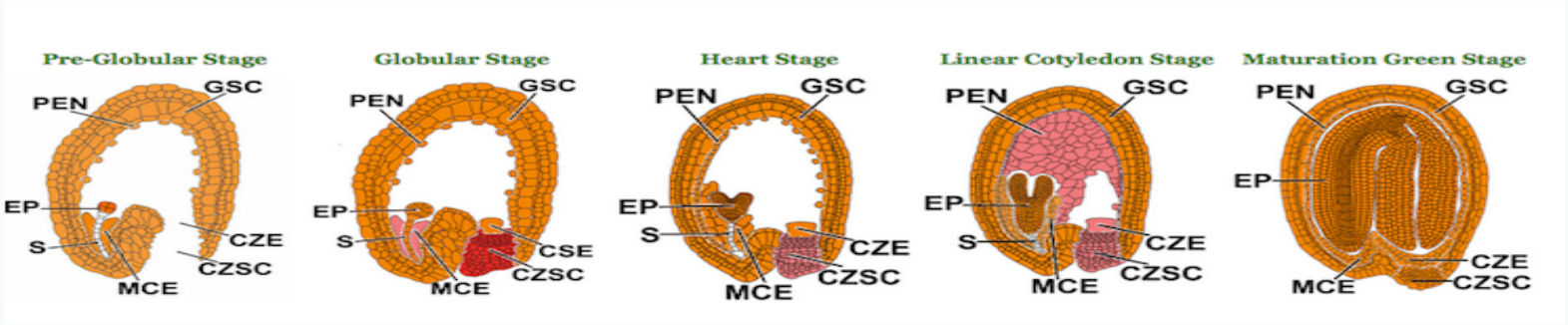


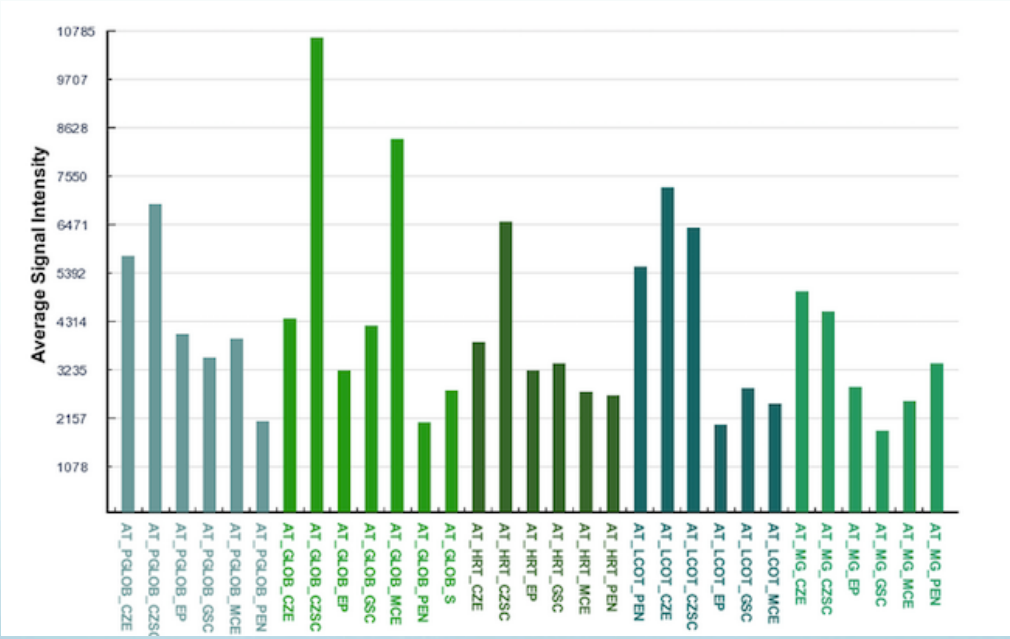
- Light Microscopy revealed a 1:3 ratio of white (mutant) seeds to mature green seeds.

- Nomarski Microscopy reveals white (mutant) seeds to be in globular stage with abnormal suspensor.



When and Where is DCL1 expressed during Seed Development?



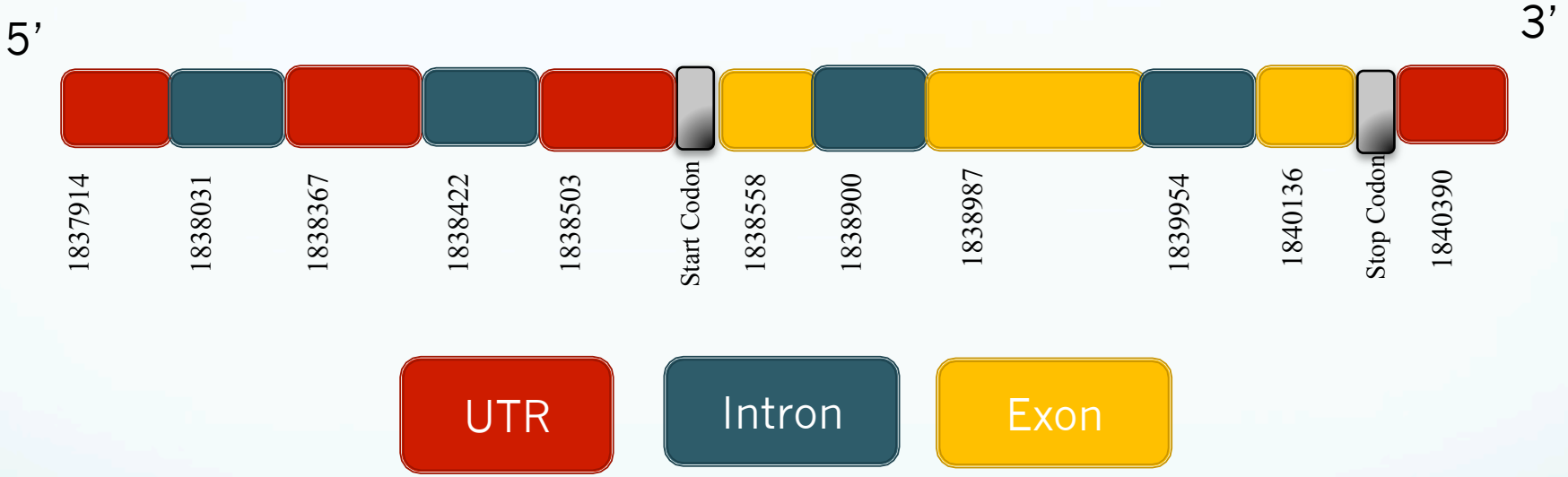


What is AT5G06100?

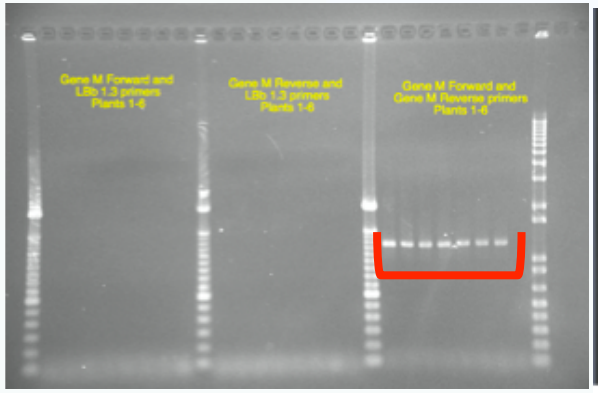
- Known as MYB33
- Located in Chromosome 5
- Forward Orientation
- 2,813 bp
- 520 AA
- Codes for a MYB33 Transcription Factor

What is the structure of AT5G06100?

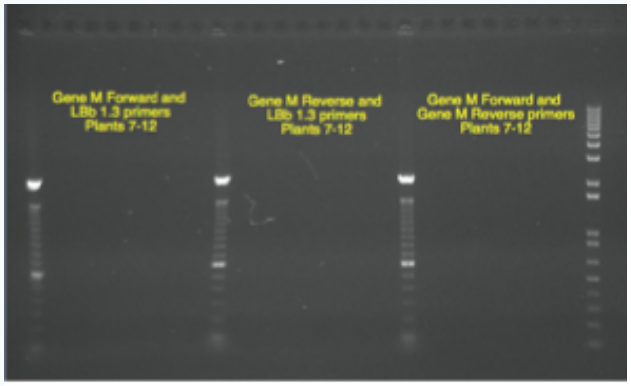
- 3 Exons and 4 Introns



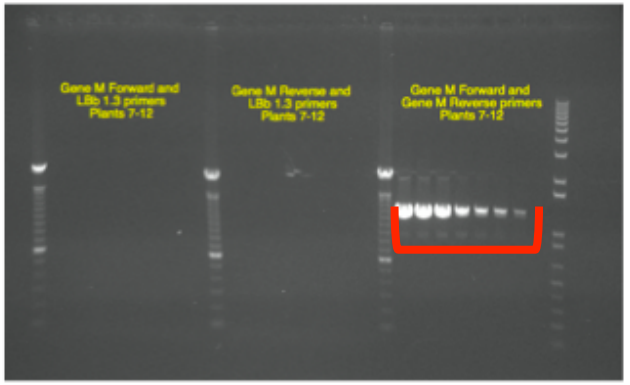
What are the Genotypes of my Plants?



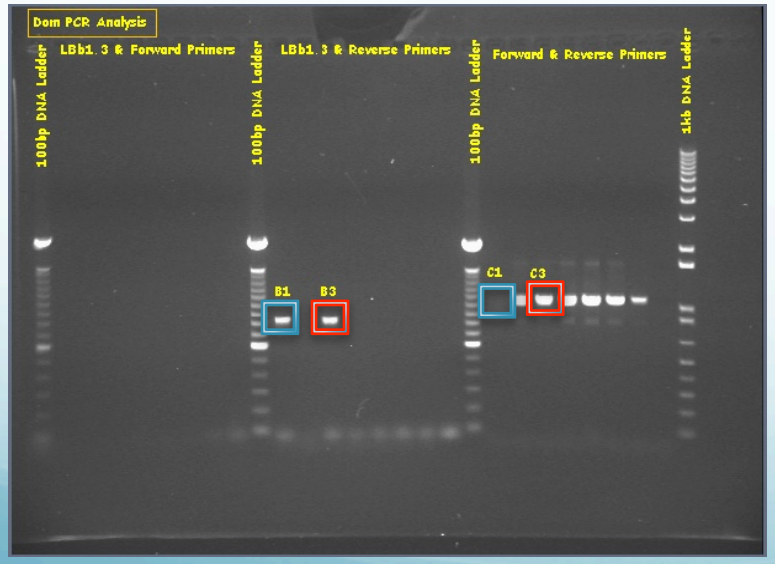
PCR Plants #1-6 Are Wild Type



PCR Plants #7-12 Inconclusive



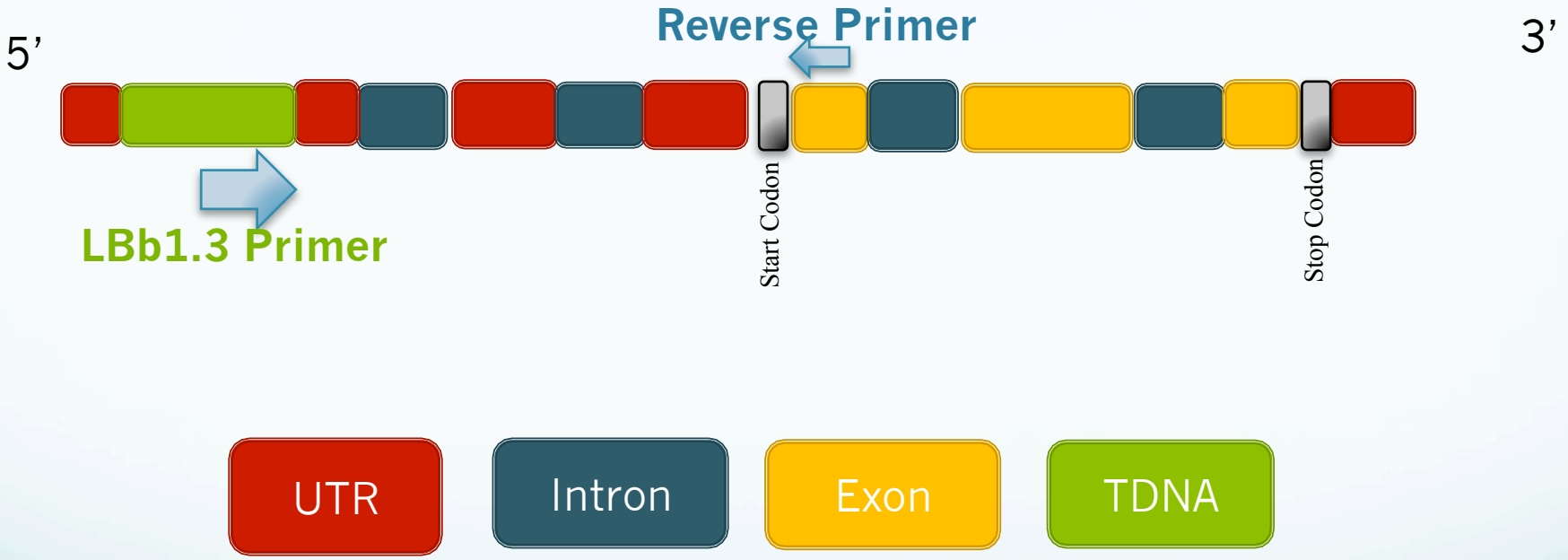
PCR Plants #7-12 Are Wild Type



- Due to limited time frame for more screening of plants, I switched from Plant M to Plant O.
- PCR Results from Saadi, D.
- Results reveal Plant #1 is homozygous for TDNA insert and Plant #3 is Heterozygous for TDNA insert.

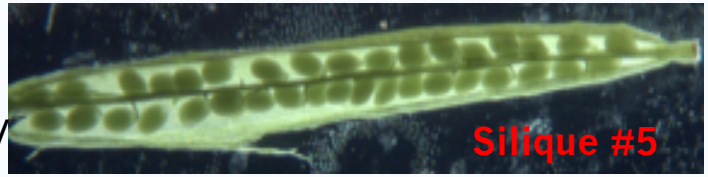
Where is the TDNA Inserted?

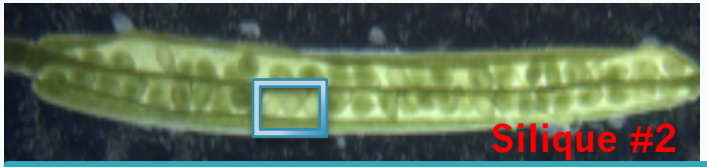
- TDNA inserted in 5’ UTR at nucleotide 1838003



What Effect does the TDNA insert have?

- Light Microscopy reveals few phenotypic Differences



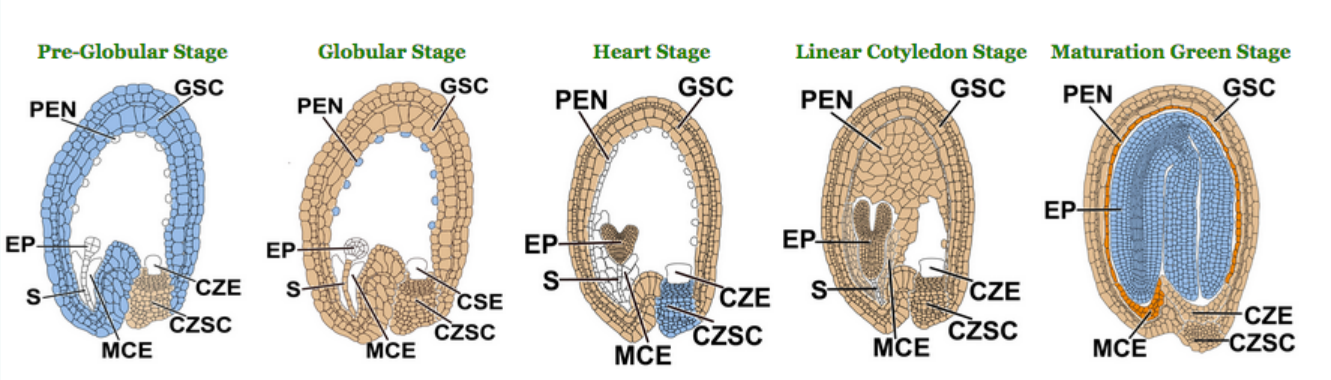


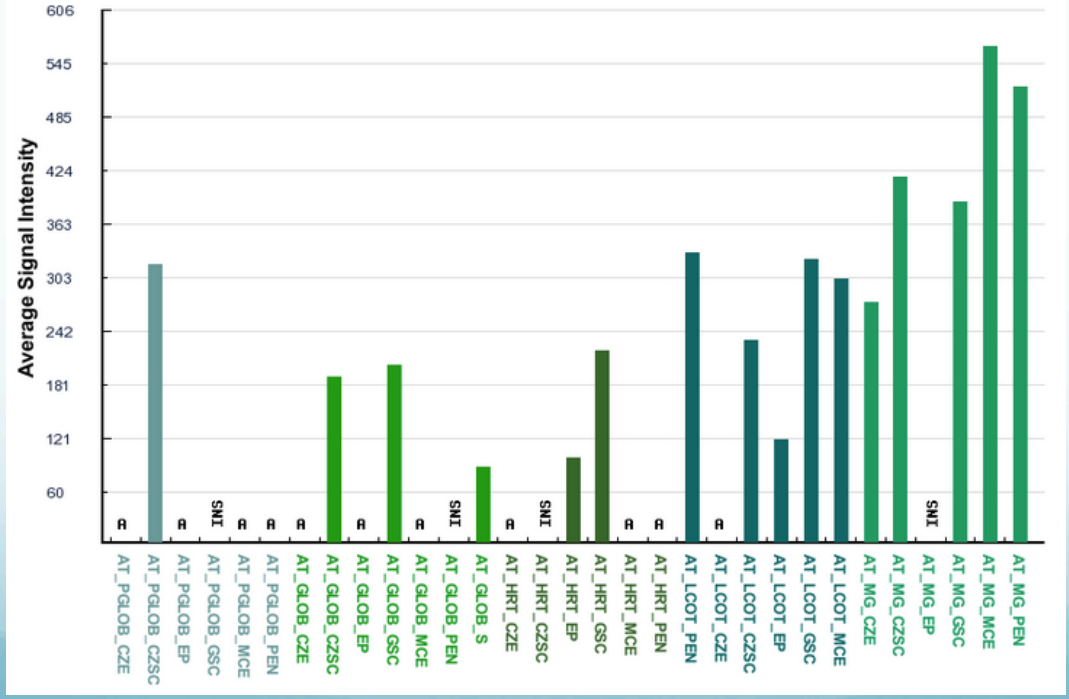
3 of the 10 white/light green seeds in a Mature Green Silique.

Sil. #	TDNA or WT	Length	Notes (seed count, abnormalities, etc.)
1	TDNA	1.5 cm	57 seeds total; 3 empty spots
2	TDNA	1.4 cm	53 seeds total; 10 white/ light green
3	TDNA	1.2 cm	34 seeds total; 6 aborted
4	WT	1.0 cm	26 seeds total; 3 empty spaces; few seeds
5	WT	1.1cm	36 seeds total; 1 empty space

- Nomarski reveals few phenotypic differences
- Seeds from Silique #5 show synchronized seeds in the mature stage.
- Seeds in Silique #2 also shows synchronized development but has several shriveled seeds.
- Silique # 3 also shows synchronized embryonic development in mature stage.

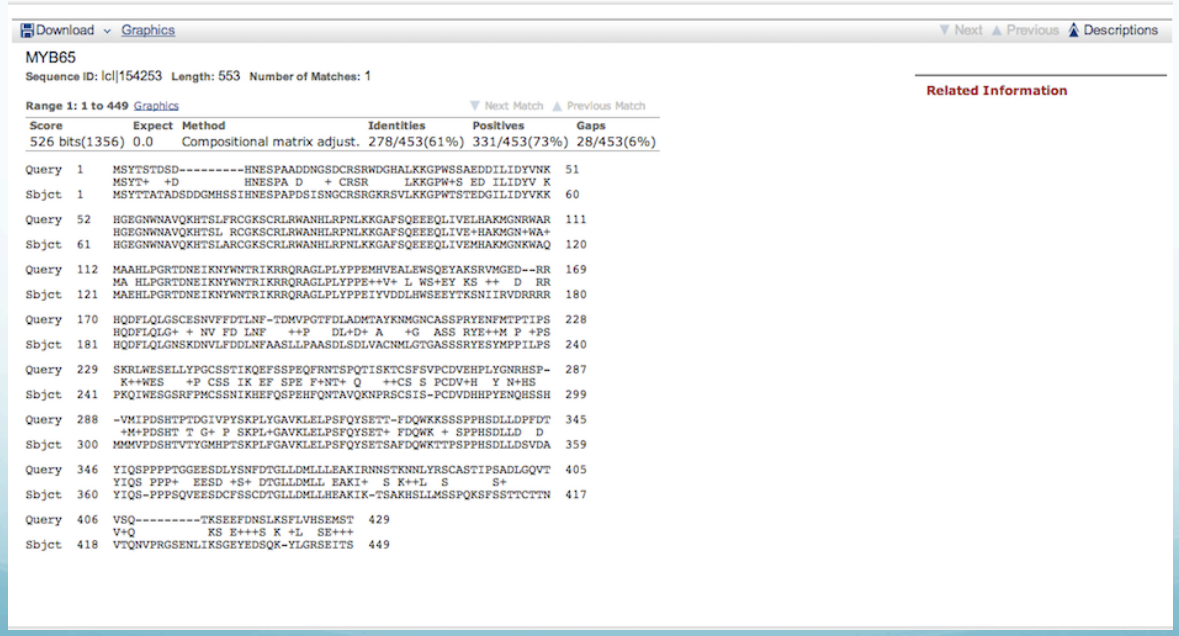
When and Where is MYB33 expressed during Seed Development?





Other Experiments with Double Mutant of MYB33 and MYB65 Show Male Sterility

- The knockout of this gene did not demonstrate seed lethality.
- Currently, it has been noted that the double mutations in MYB33 and MYB65 causes male sterility.
- Therefore more research can be on the causes of male sterility and this may provide insight into the function of these two genes.



Download Graphics

Next Previous Descriptions

MYB65

Sequence ID: lcl|154253 Length: 553 Number of Matches: 1

Related Information

Range 1: 1 to 449 Graphics

Next Match Previous Match

Score	Expect	Method	Identities	Positives	Gaps
526 bits(1356)	0.0	Compositional matrix adjust.	278/453(61%)	331/453(73%)	28/453(6%)

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Sbjct  1    MSYTTATADSDDGMHSSIHNESPAPDSISNGCRSRGKRSVLKKGPWTSTEDGILIDYVKK  60

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Sbjct  61   HGEGNWNAVQKHTSLARCGKSCRLRWANHLRPNLKKGAFSQEEEQLIVEMHAKMGNKWAQ  120

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Sbjct  121  MAEHLPGRTDNEIKNYWNTRIKRRQRAGLPLYPPEIYVDDLHWSEEYTKSNIIRVDRRRR  180

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