

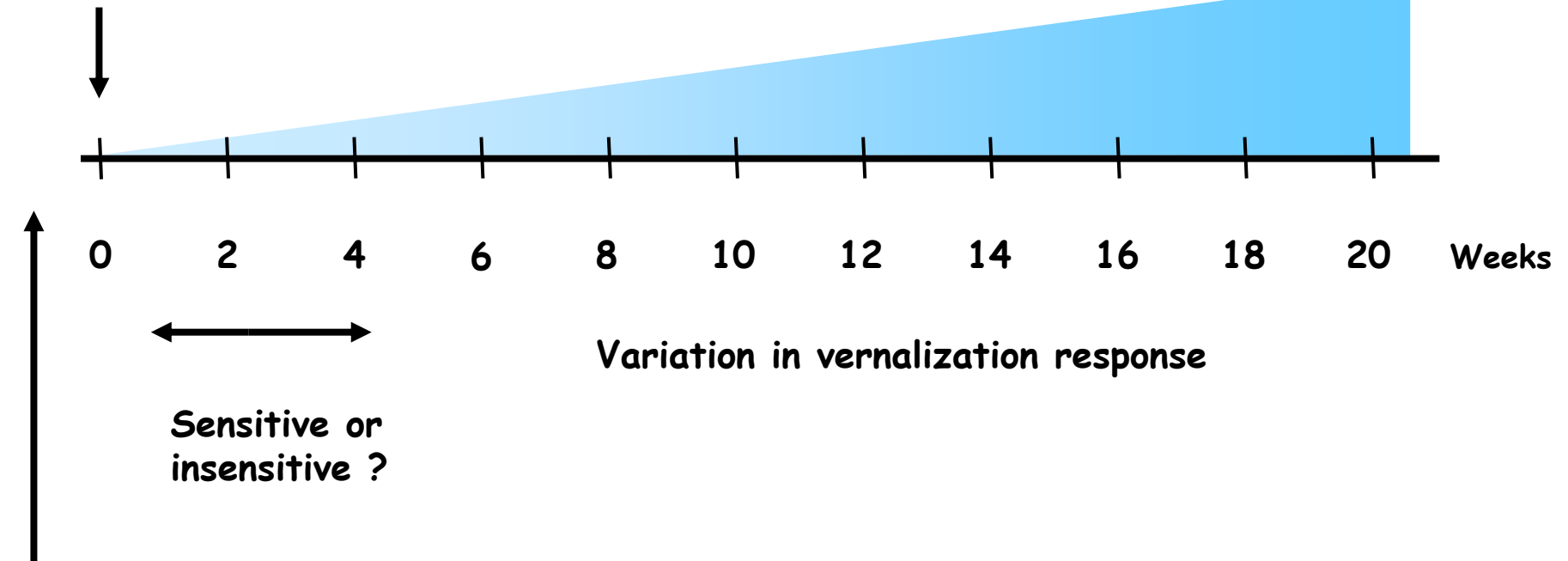


Vernalization in Brassica

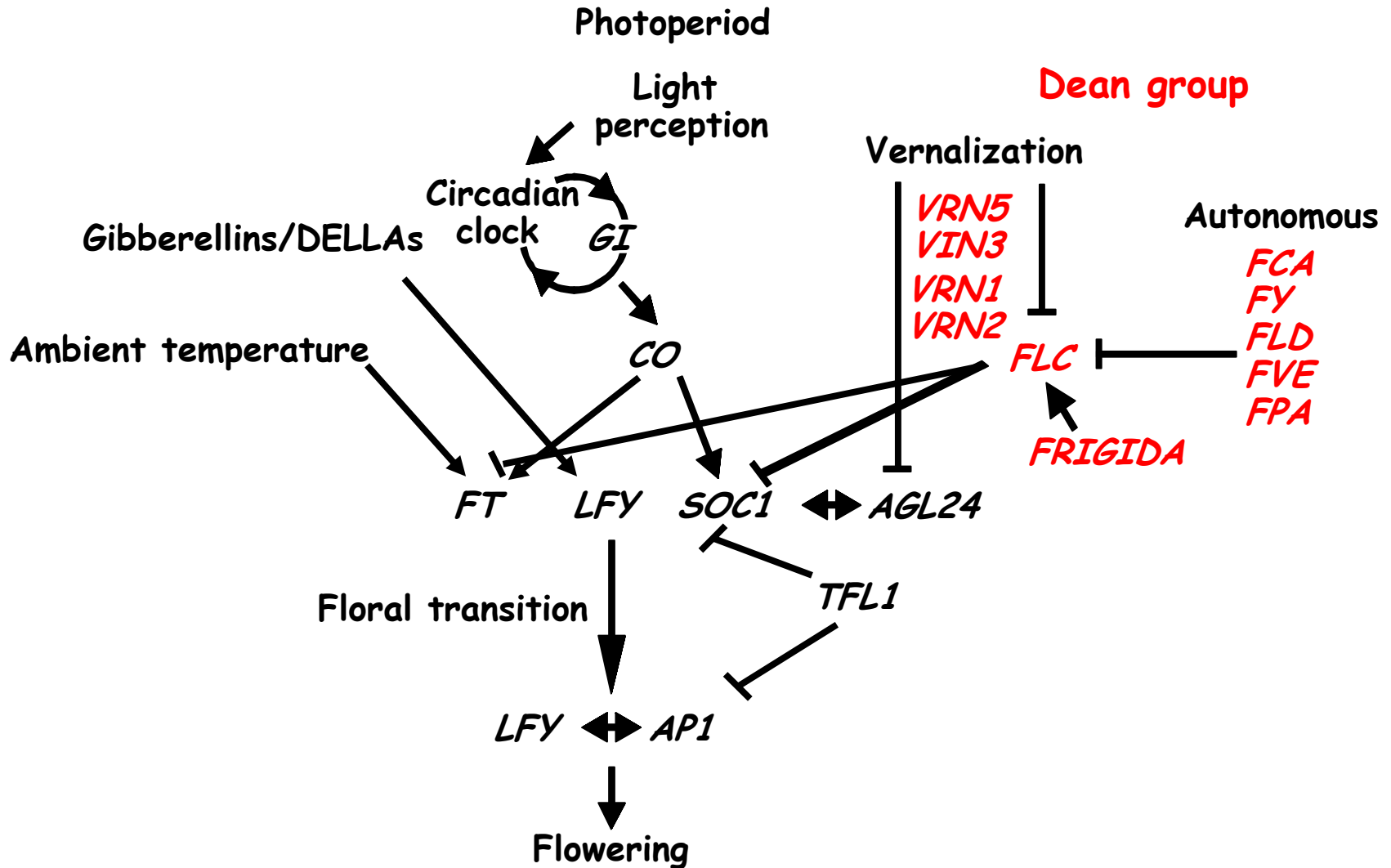
Vernalization requirement and response in Arabidopsis and Brassica

Variation in vernalization requirement

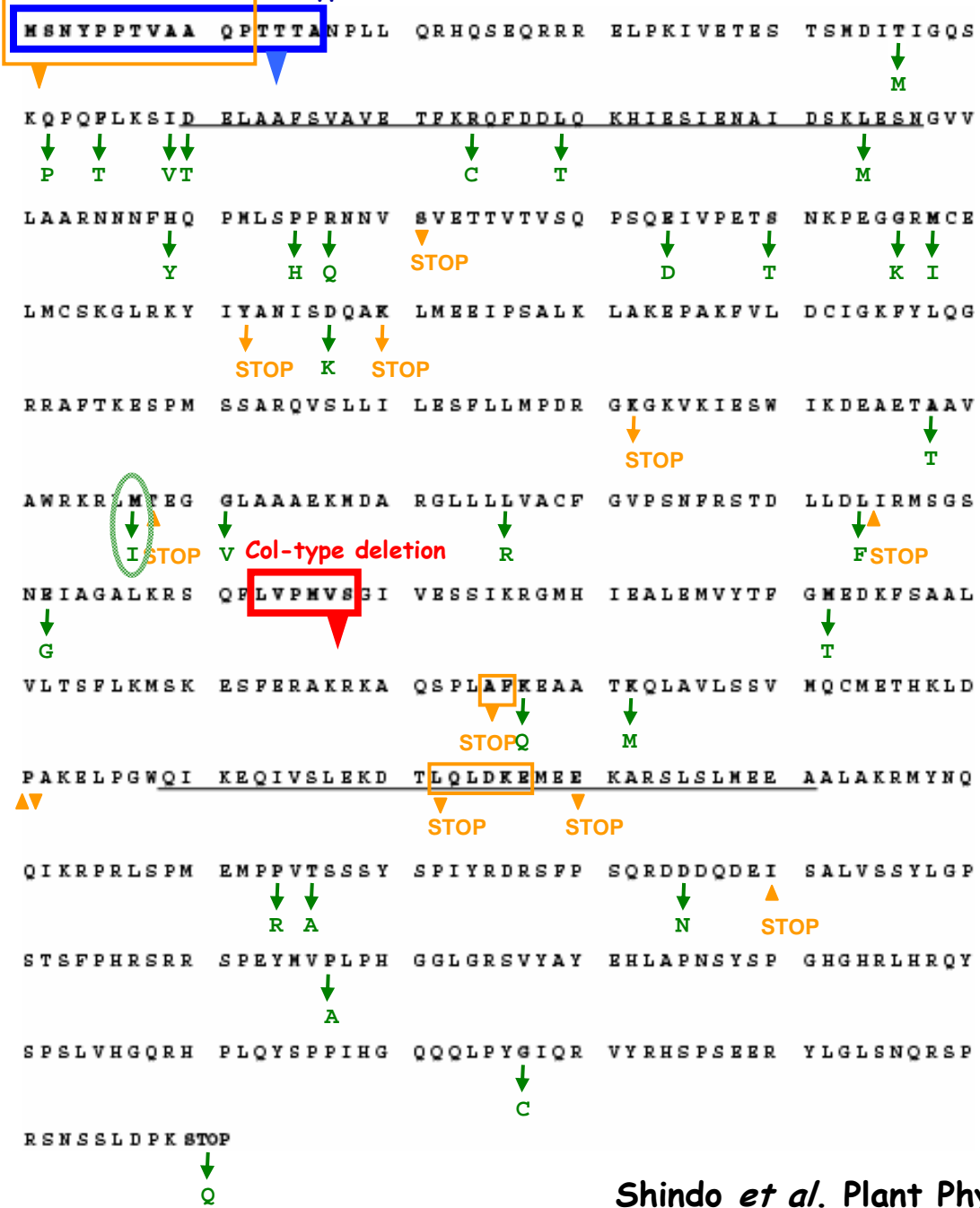
Accumulated cold temperature



A regulatory network controlling flowering has been established using Arabidopsis molecular genetics



Ler-type deletion



Polymorphism in the amino acid sequence of FRI protein

- Ler / Col-type deletion were most frequent (31 and 15 / 179 total accessions, respectively)

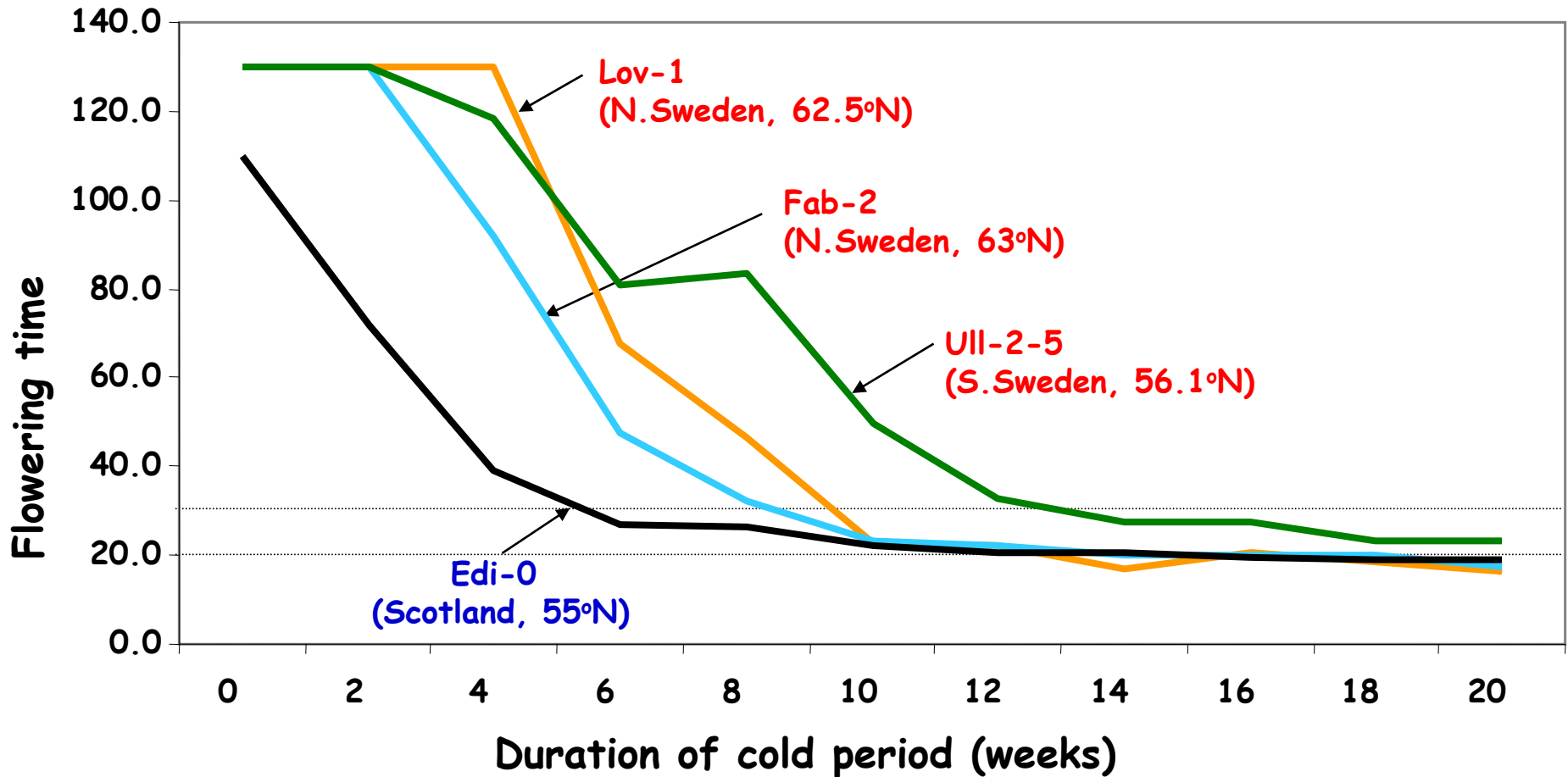
- 15 other changes (In/Del or A.A changes) resulted in a stop codon in the coding region

- Total 31 differences in amino acid sequence, however, most were common to both early and late flowering lines

- 40% of accessions were estimated to carry non-functional FRI alleles

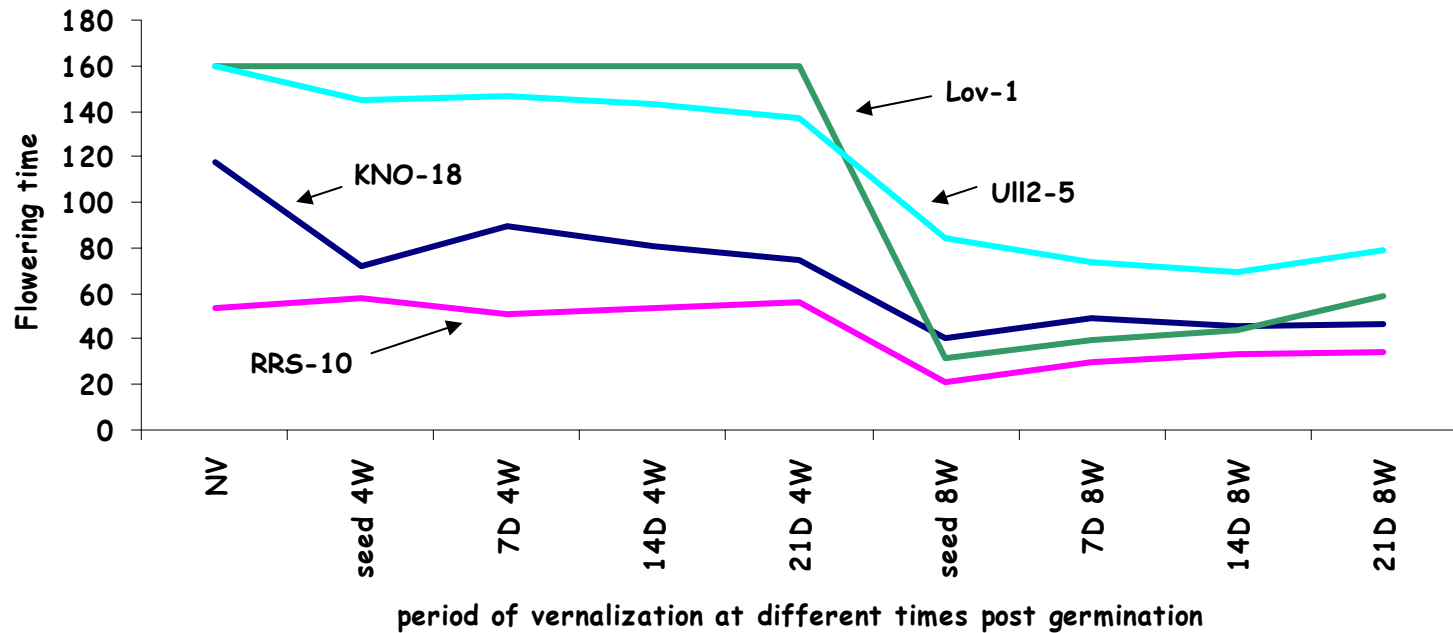
Loss-of function mutations have occurred multiple times

Variation in vernalization response in Arabidopsis



Shindo *et al.* Plant Physiol.(2005) 138:1163-73

Vernalization response at different developmental stages



- no difference in response found
- QTLs for reduced responsiveness following 4 weeks cold now mapped

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