

POSITIVE REGULATION OF FLC EXPRESSION

FRIGIDA COMPLEX

SUF4 CBP20
FILL4 FRI FES1
FRL1 CBP80

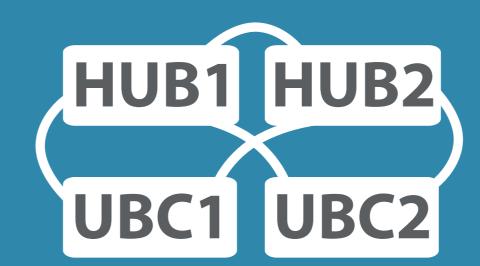
Recruits other complexes at the FLC locus and regulates H3K36me3 deposition.

COMPASS COMPLEX

ASH2R ATX2 ATXR7
WDR5A ATX1

Deposition of H3K4me3 activating marks at the FLC locus. Interacts with the PAF1 complex.

RAD6-BRE1 COMPLEX PAF1



Histone H2B monoubiquitination [acts upstream of H3K4me3 and H3K36me3 activating marks].

Interacts with the PAF1 complex.

PAF1 COMPLEX

ELF7 VIP3
PHP VIP6
VIP5 VIP4

Interacts with elongating RNA polymeravse II and recruits other chromatin modifying complexes.

SWR1 COMPLEX

SUF3 SEF

PIE1 ARP4

YAF9A YAF9B

Deposition of H2A.Z activating marks at the FLC locus. Recruited by the FRI complex.

FACT COMPLEX

Chaperones SL19

Chaperones assisting the progression of the RNA POL II through nucleosome destabilization.

Recruitement of transcriptional activators

† H3K36me3

H3K4me3

H2B monoUb

RNA pol II efficiency

† H2A.Z

† RNA pol II efficiency

H3K27me3

† H3K9me3

H3K9me3

H3K27me3

† H2A monoUb

L H3K4me3

↓ HAC

Involved in the deposition of H3K27me3/H3K9me3 repressive marks. VIN3 is also involved in the vernalization-mediated deacetylation.

MSI1 VIL2 FIS2 MEA
VIN3 VRN2 FIE1
VIL3 VIL1 CLF EMF2 SWN

PRC2 COMPLEX

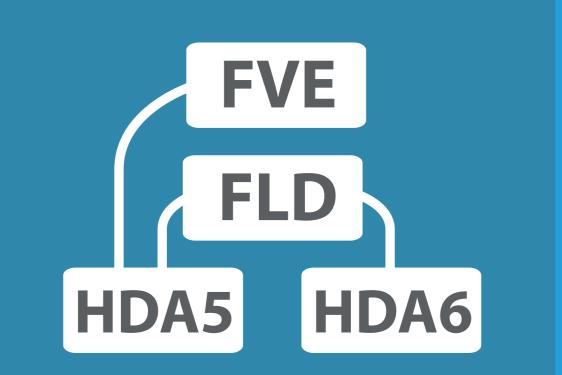
Invovled in the spreading of H3K27me3/H3K9me3 marks at the FLC locus. Also involved in the deposition of repressive H2A monoubiquitination.

BMI1A BMI1B BMI1C

VRN1 EMF1 LHP1 LIF2

PRC1-like COMPLEX

Negative regulation of H3K4 trimethylation levels at the FLC locus and histone deacetylation.



HDAC COMPLEX

Main scheme

The FLC family genes

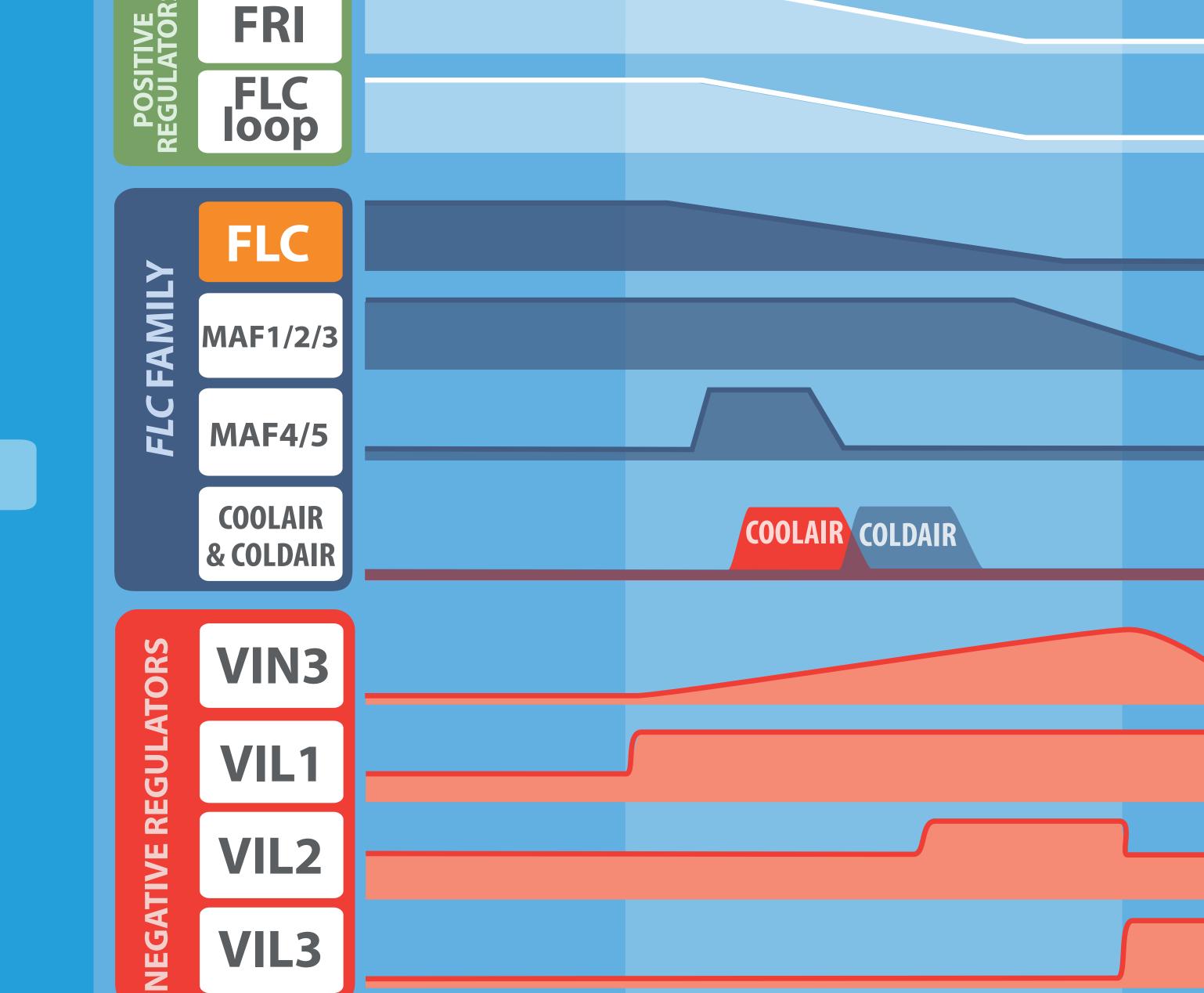
Time-course of the effect of cold

NEGATIVE REGULATION OF FLC EXPRESSION

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H3K36me3 deposition and recruitment of different other complexes Recruitments of different protein complexes Deposition of H3K4me3 H2Ub monoubiquitination H2BUb1 H2A.Z H3K36me3 RAD6-BRE1 COMPLEX COMPASS COMPLEX FRI COMPLEX PAF1 COMPLEX RNA POL II SUF4 **FLC LOCUS SWR1 COMPLEX** ACT COMPLEX H2A.Z H2A.Z FLC is expressed Deposition of H2A.Z acilitation of RNA pol II

BEFORE COLD

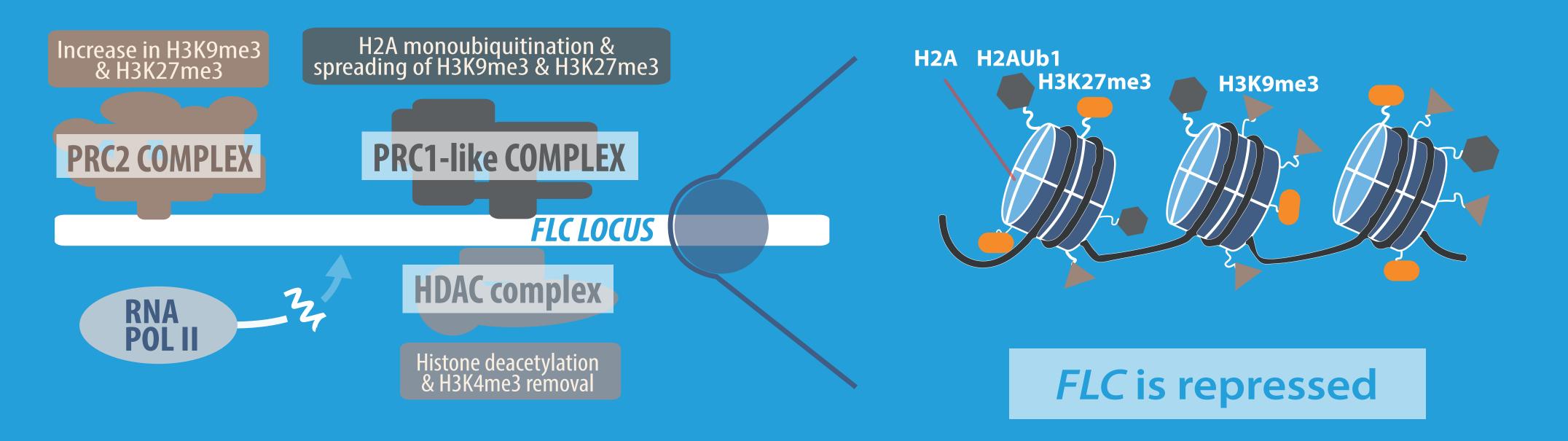


Main

scheme

BEFORE COLD

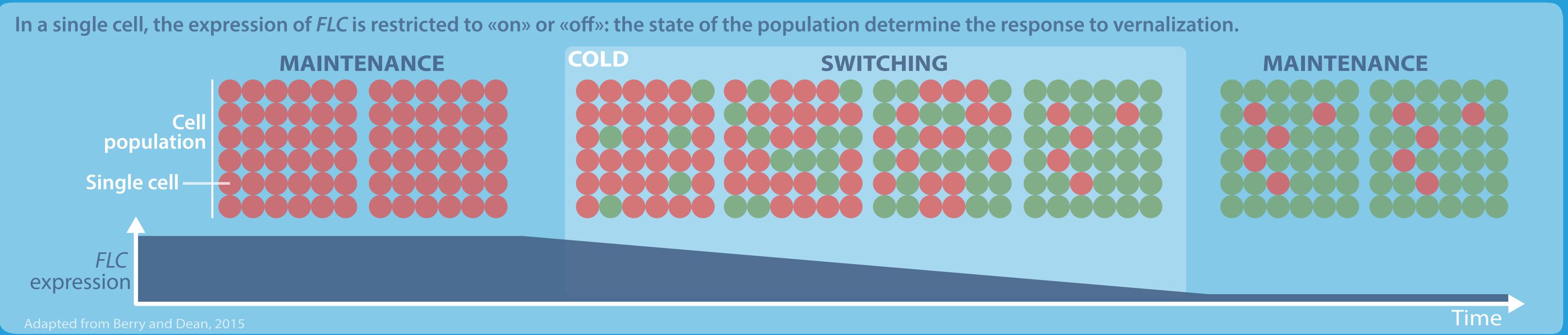
AFTER COLD

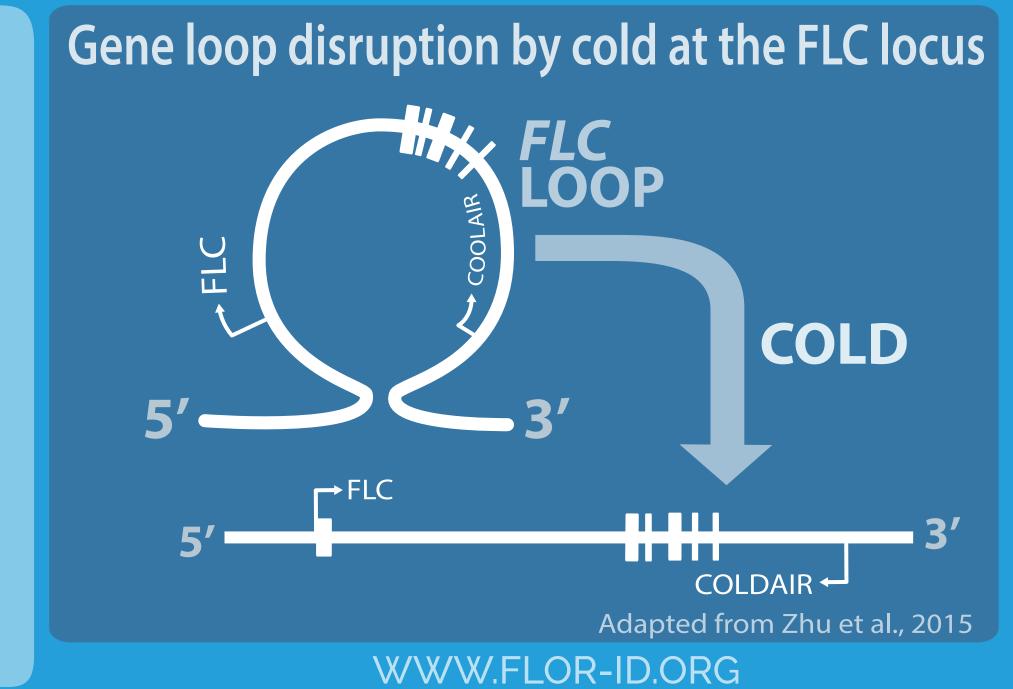


THE MODEL OF DIGITAL FLC REPRESSION

progression

histone variants





Complexes regulating *FLC*

AFTER COLD

The FLC

family genes

COLD