

## \* Cis & trans epigenetic signals :-

### → Trans epigenetic signal :-

DNA binding transactivator protein is transcribed from its cognate gene located on particular chromosome



Expressed protein is freely diffusible between nuclear & cytoplasmic compartments.

- Excess transactivator reenter nucleus following cell division & binding to its own gene & activate transcription in both daughter cells

- This cycle reestablish positive feedback loop in effect prior to cell division, & thereby enforces stable expression of this transcriptional activator protein in both cells

### → Cis epigenetic signals :-

a gene located on particular chromosome carries a cis-epigenetic signal within regulatory region upstream of gene transcription unit



In this epigenetic signal is associated with active gene transcription & subsequent gene product production

During DNA replication, newly replicated chromatid serve as template that both elicits & templates introduction of same epigenetic signal or mark, on newly synthesized, unmarked chromatin.



consequently, both daughter cells contain  
gene in a similarly cis-epigenetically  
marked state, which ensure expression in  
identical fashion in both cells

location specific deposition of histone PTM  
cis-epigenetic signal is targeted by  
recognition of marks in pre-existing  
epigenetic landscape

Another example

transmission of histone epigenetic signal  
↓  
signal targeting is mediated through  
action of small ncRNAs that work in  
concert with RNA binding protein (RBP)  
character (A) protein + CMC