

Interferon- γ induction of GBP5 in HeLa cells

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The principle of Interferon- γ induced transcriptional memory

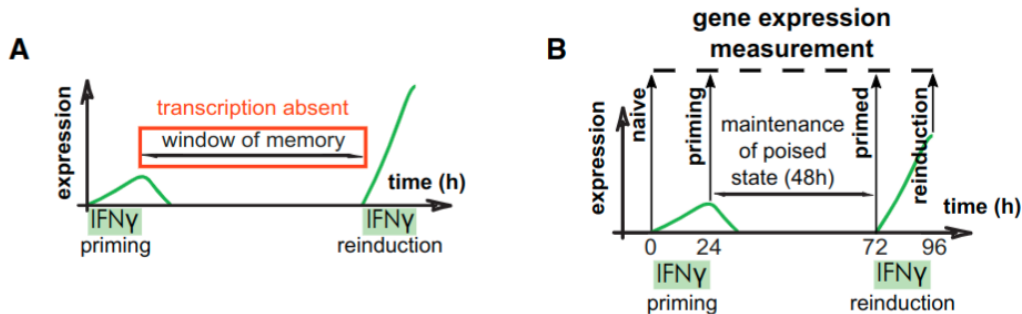


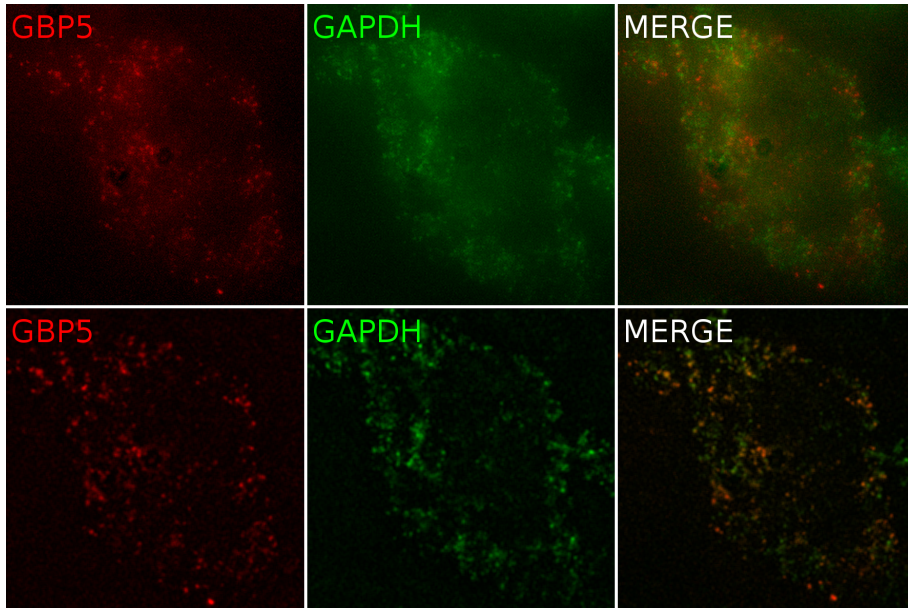
Figure 1

Siwek et al. *Activation of Clustered IFN γ Target Genes Drives Cohesin-Controlled Transcriptional Memory*. Molecular Cell 2020

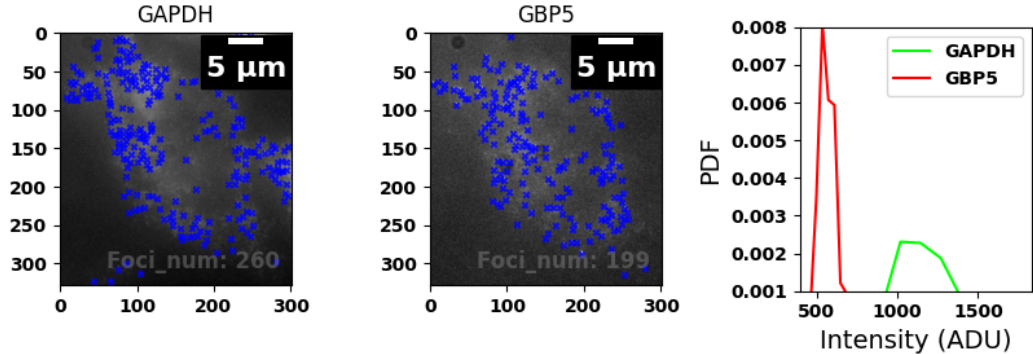
Rare HeLa cell GBP5 expression @ 24h after reinduction with IFN- γ

Show tiled images Needs validation in another cell line

Rare HeLa cell GBP5 expression @ 24h after reinduction with IFN- γ



Intensity histogram for rare GBP5 expression



- ▶ Very few ($\sim 1\%$) reinduced cells express GBP5, but those that do express at high levels (relative to GAPDH)
- ▶ Control sample shows little to no GBP5 expression

Comments on ergodicity of transcription

1. Priming leads to more transcription



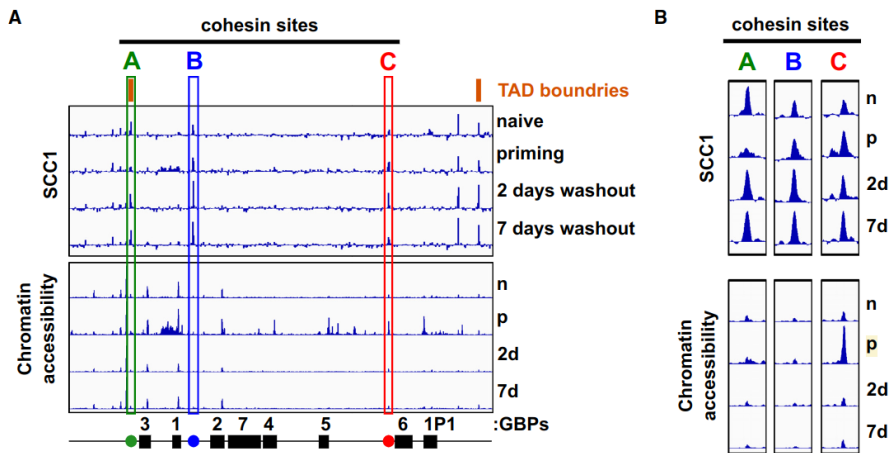
2. Priming leads to more cells transcribing



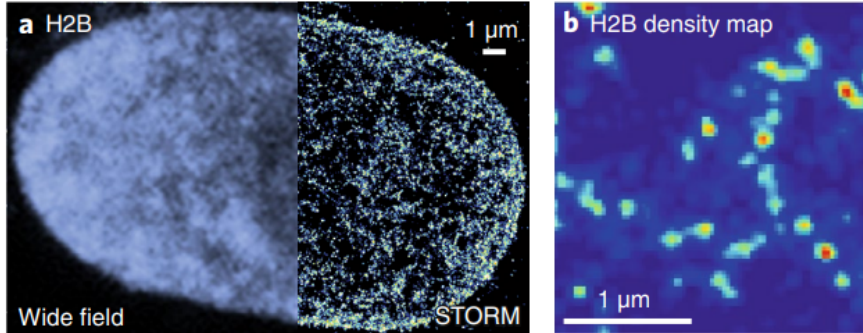
- ▶ RNA flow cannot apply to non-ergodic systems (yet ergodicity is often assumed)
- ▶ Previous work suggests that IFN- γ induces epigenetic changes at the GBP5 locus
- ▶ What is the epigenetic change? Is the epigenetic change all or nothing?

Epigenetic changes at GBP genes after IFN- γ treatment

Siwek et al. *Activation of Clustered IFN γ Target Genes Drives Cohesin-Controlled Transcriptional Memory*. Molecular Cell 2020

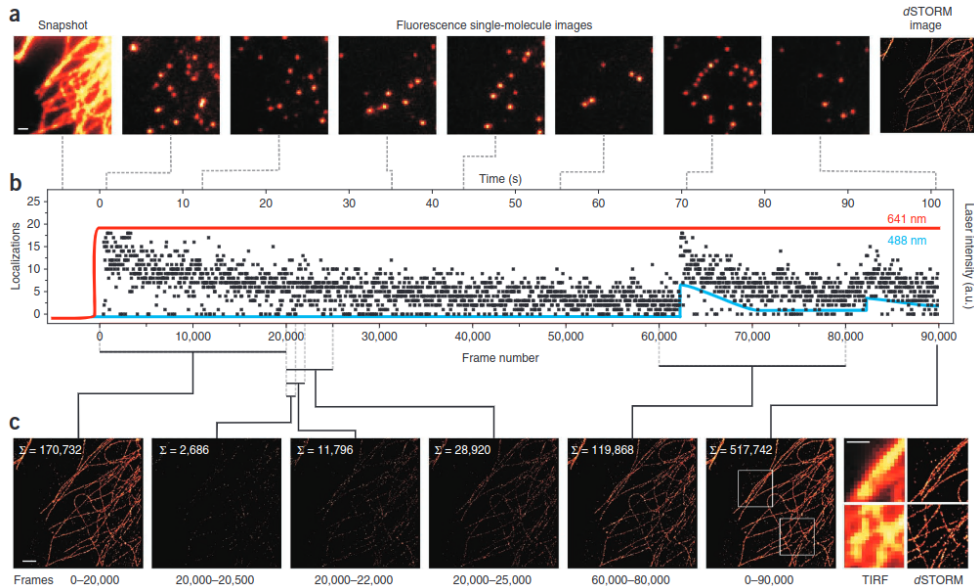


STORM imaging of H2B

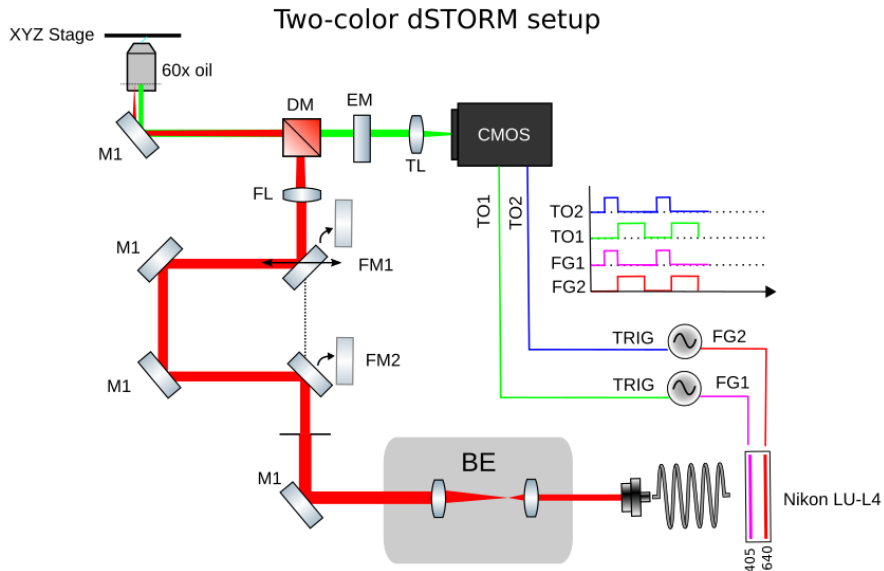


Lakadamyali et al. *Visualizing the genome in high resolution challenges our textbook understanding*. Nature Methods 2020

Working principle of dSTORM



Details on STORM timing setup



Using STORM to measure epigenetic changes

But it is difficult to study epigenetic changes at a single gene, without additional methods e.g., DNA FISH + STORM microscopy. Let's talk about STORM