

The kinetics of Interferon- γ induced RNA flow

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Summary

Attempting to cover everything from imaging strategy to analysis method

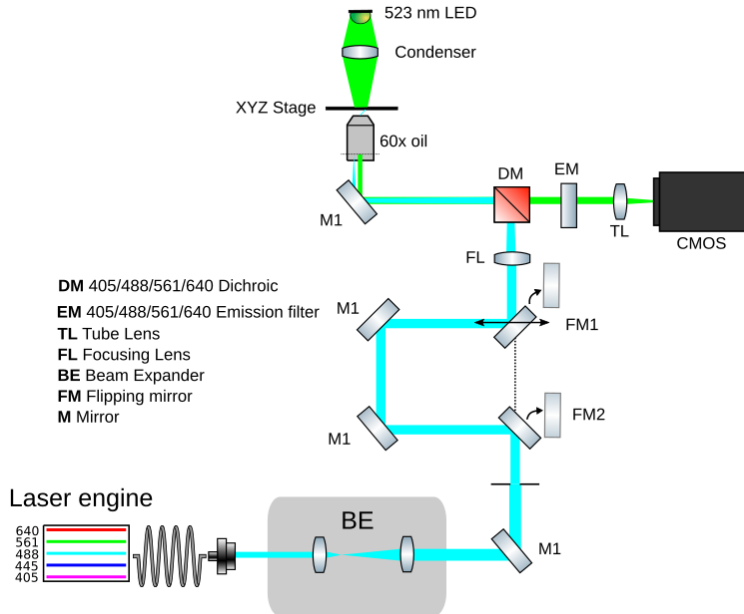
Part 1: Methods

- ▶ Multiplexed imaging strategy
- ▶ Image stitching and registration
- ▶ Recap of the compartment model for RNA flow

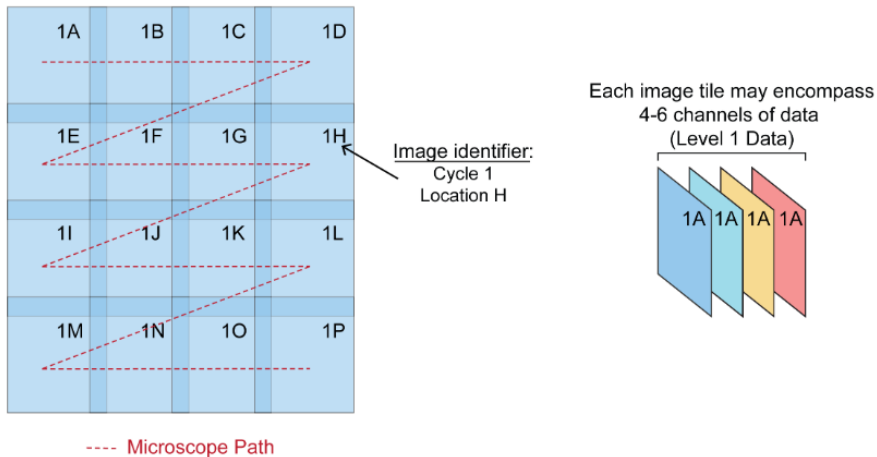
Part 2: Application

- ▶ Gene selection based on RNA flow model
- ▶ Brief comments on probe design

Imaging setup

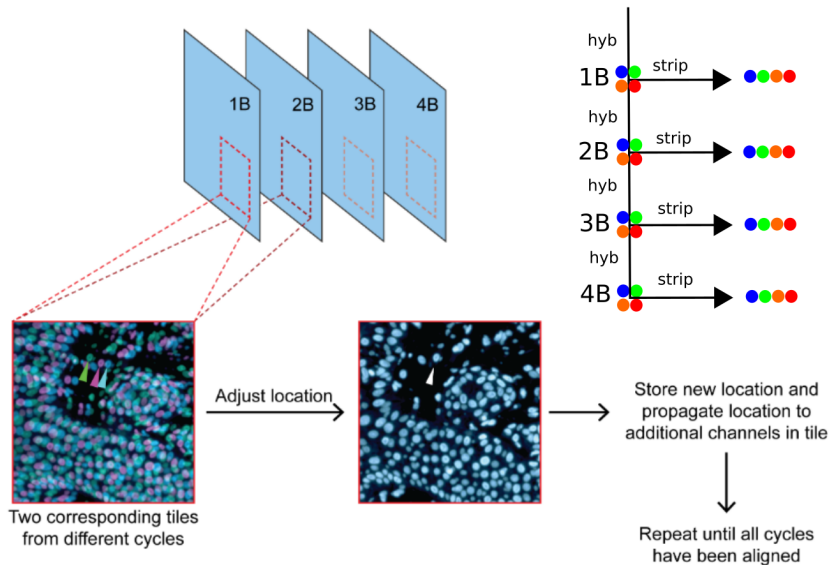


4-channel acquisition

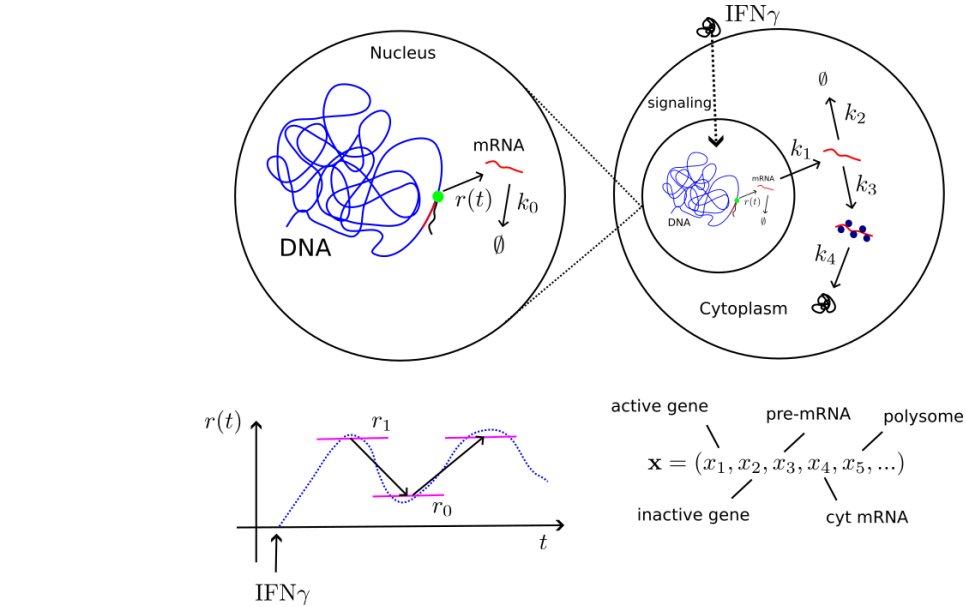


Courtesy of the Laboratory of Systems Pharmacology at Harvard

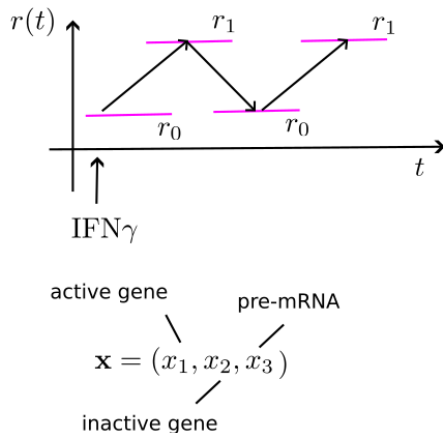
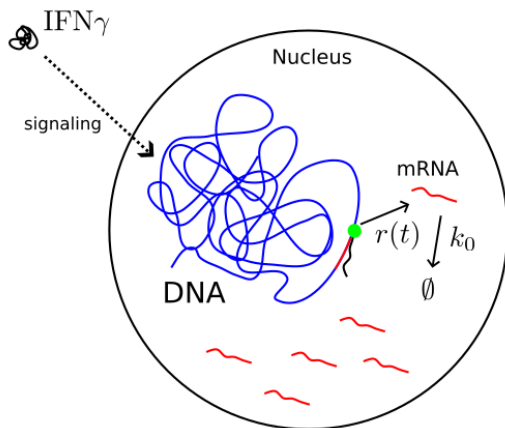
16-channel acquisition and registration



A model for RNA Flow



Starting small: telegraph model of gene expression



Does the model fit improve when you add more states?

The principle of Interferon- γ induced transcriptional memory

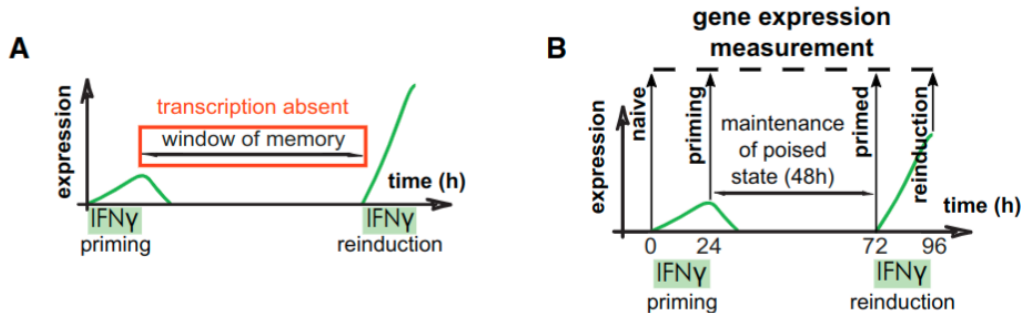
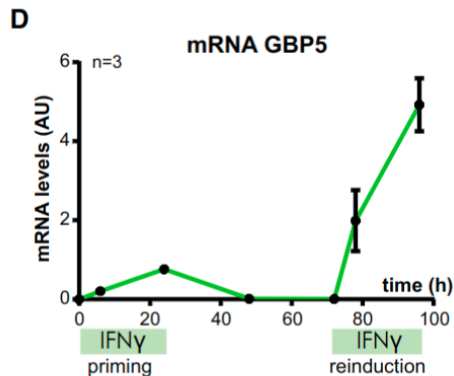
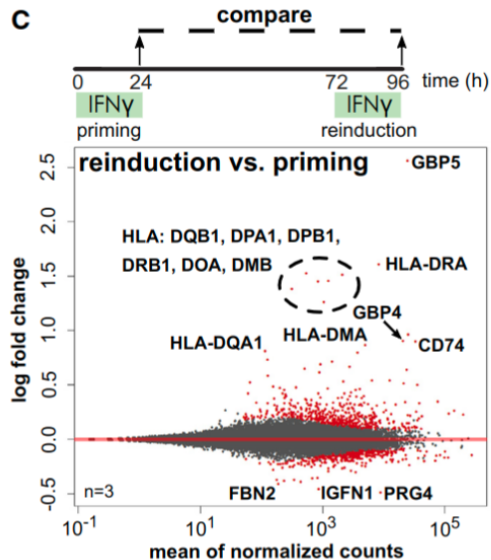


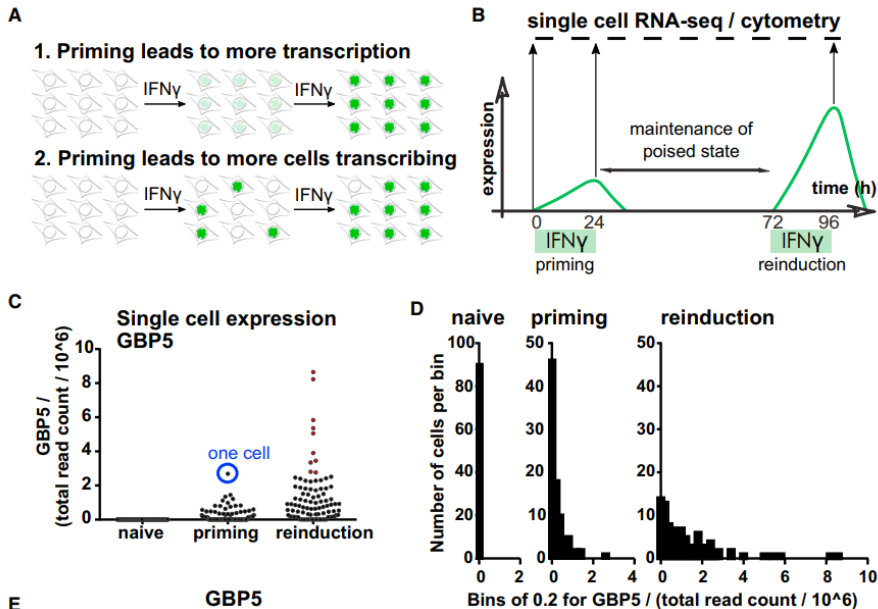
Figure 1

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

Total RNA-seq identifies GBP5 as a memorized gene



Single-cell RNA-seq identifies GBP5 as a memorized gene



BLASTing probes for GPB5 and CD274 (control)

