

# Inducible synthetic promoters for the production of gene therapy viral vectors

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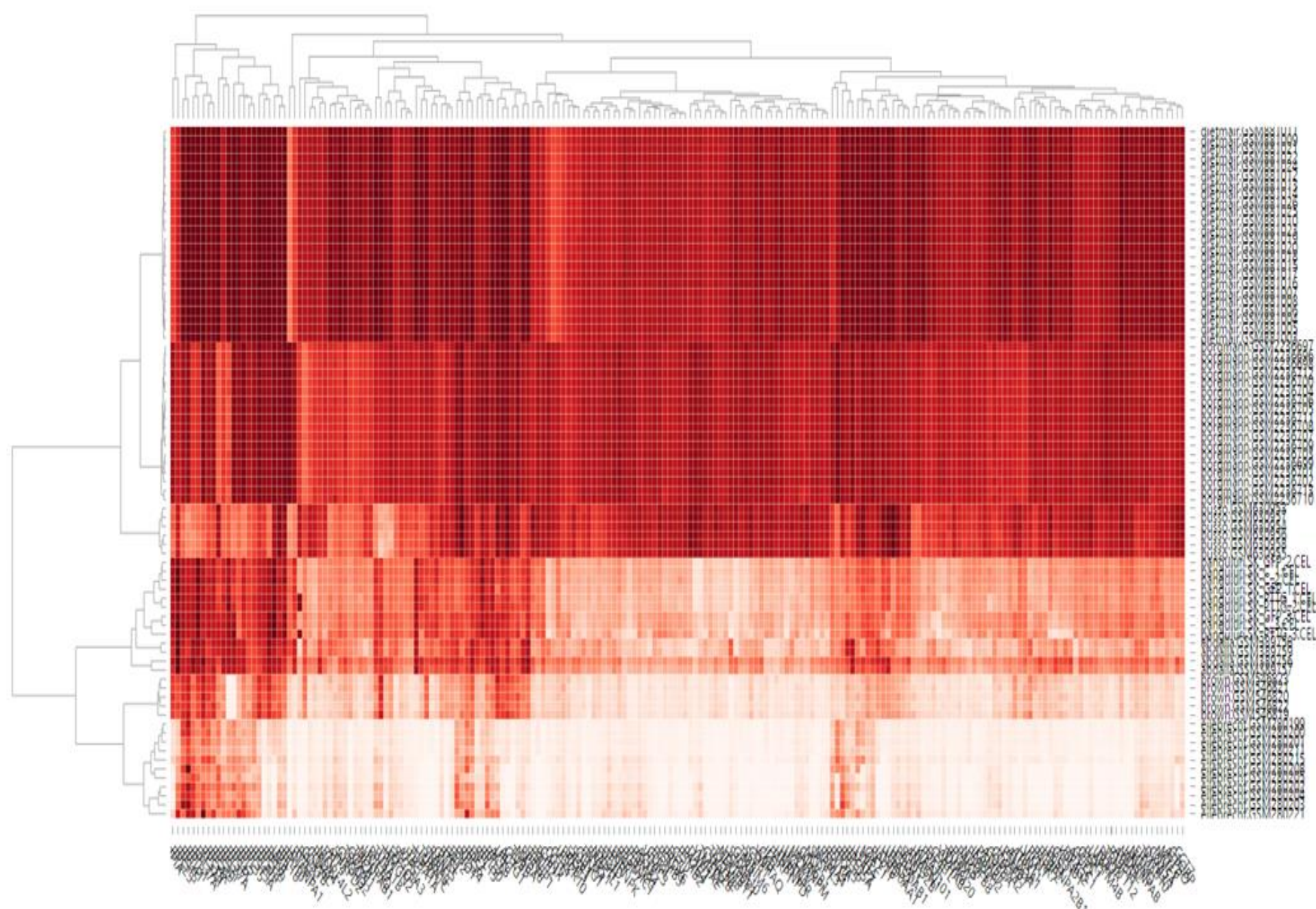


## Viral vector production challenges

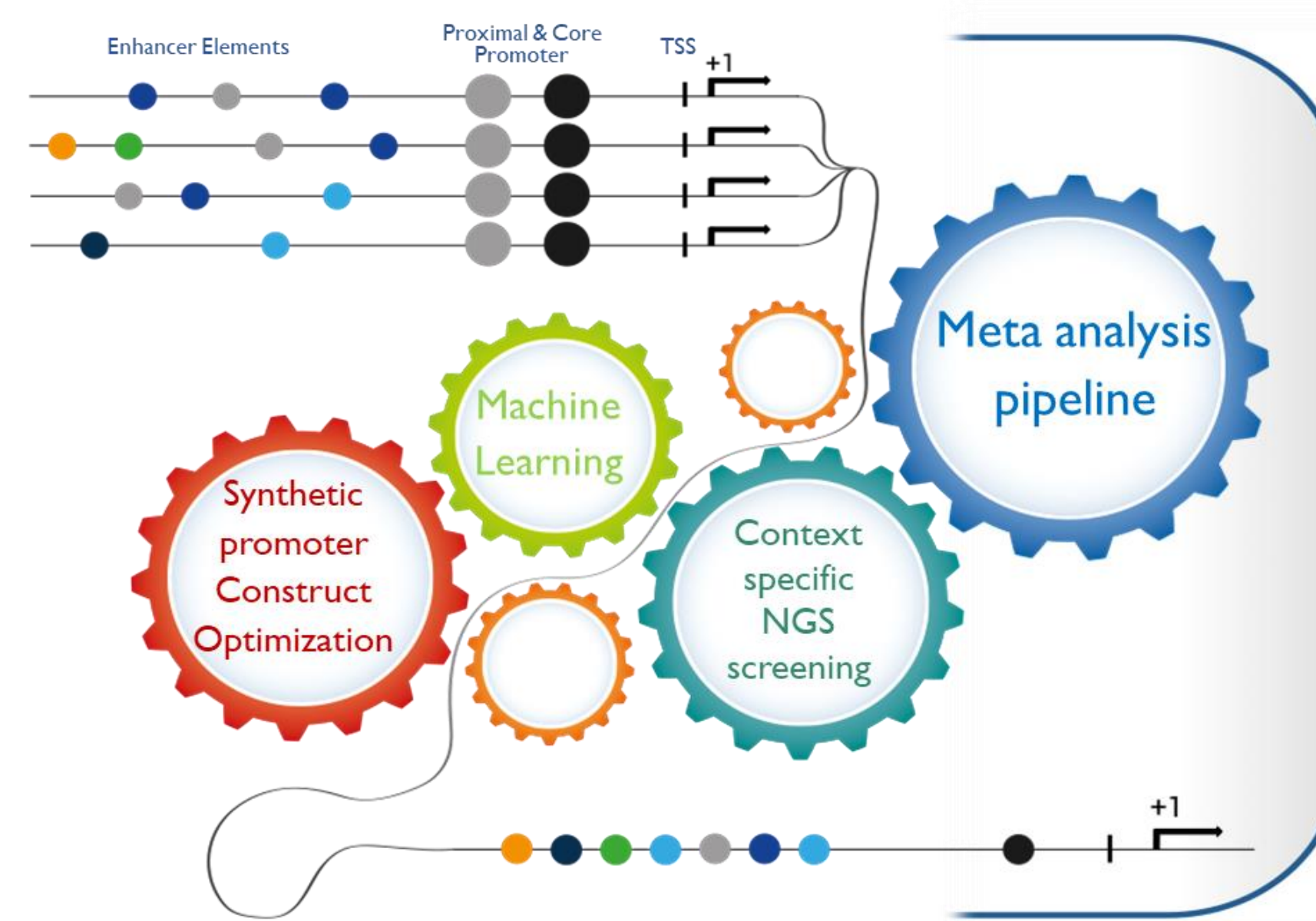
- Transient transfection systems are highly variable
- Insufficient yields and quality
- Expression of multiple plasmids with the correct expression strength, ratio, order and timing
- Suspension cells are inefficient producers; scale up is problematic

Synpromics has designed a suite of expression cassettes to transform viral vector production

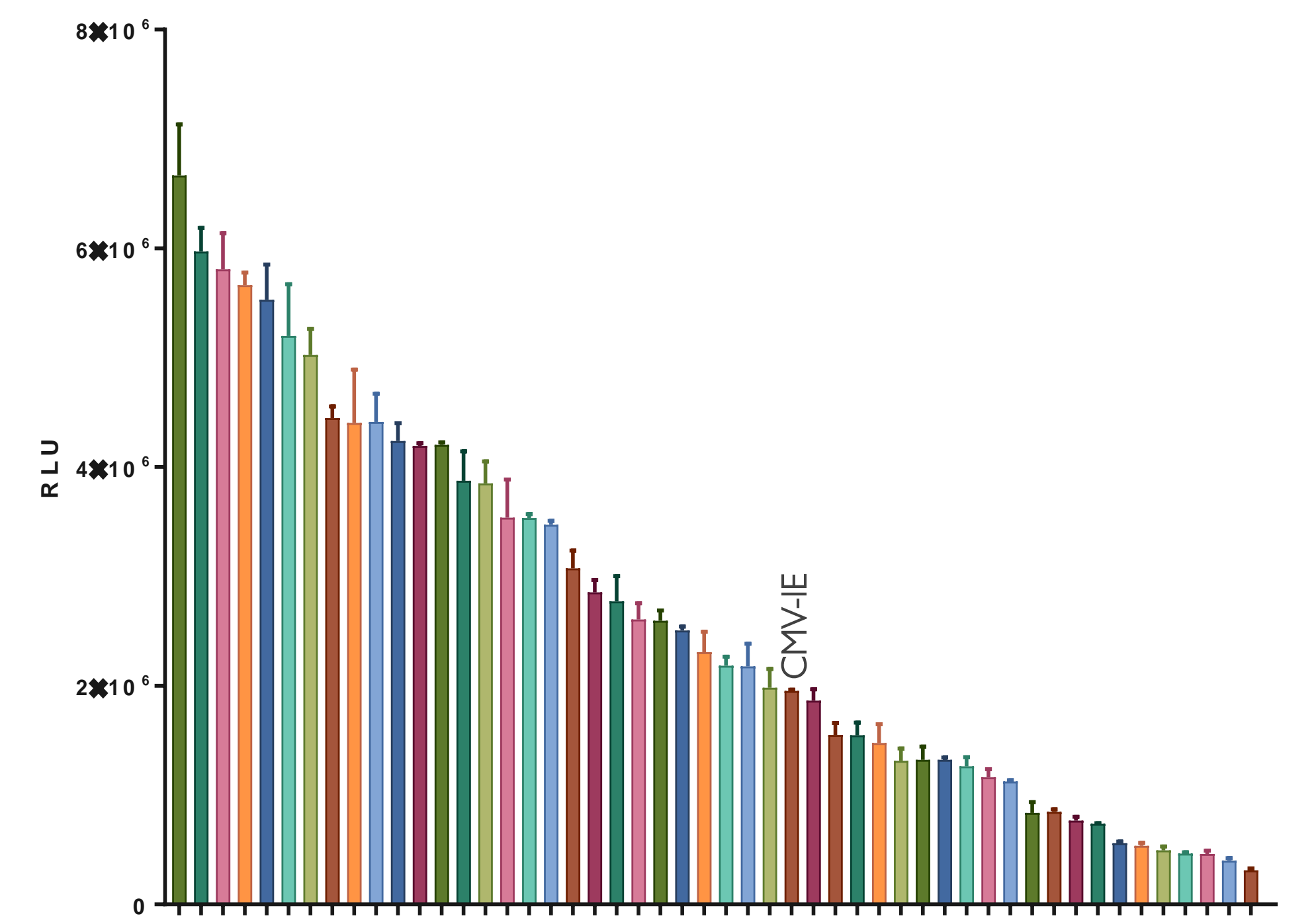
## Constitutive promoters for viral vector production



Meta-analysis of HEK293 transcriptome data to create a comprehensive expression profile

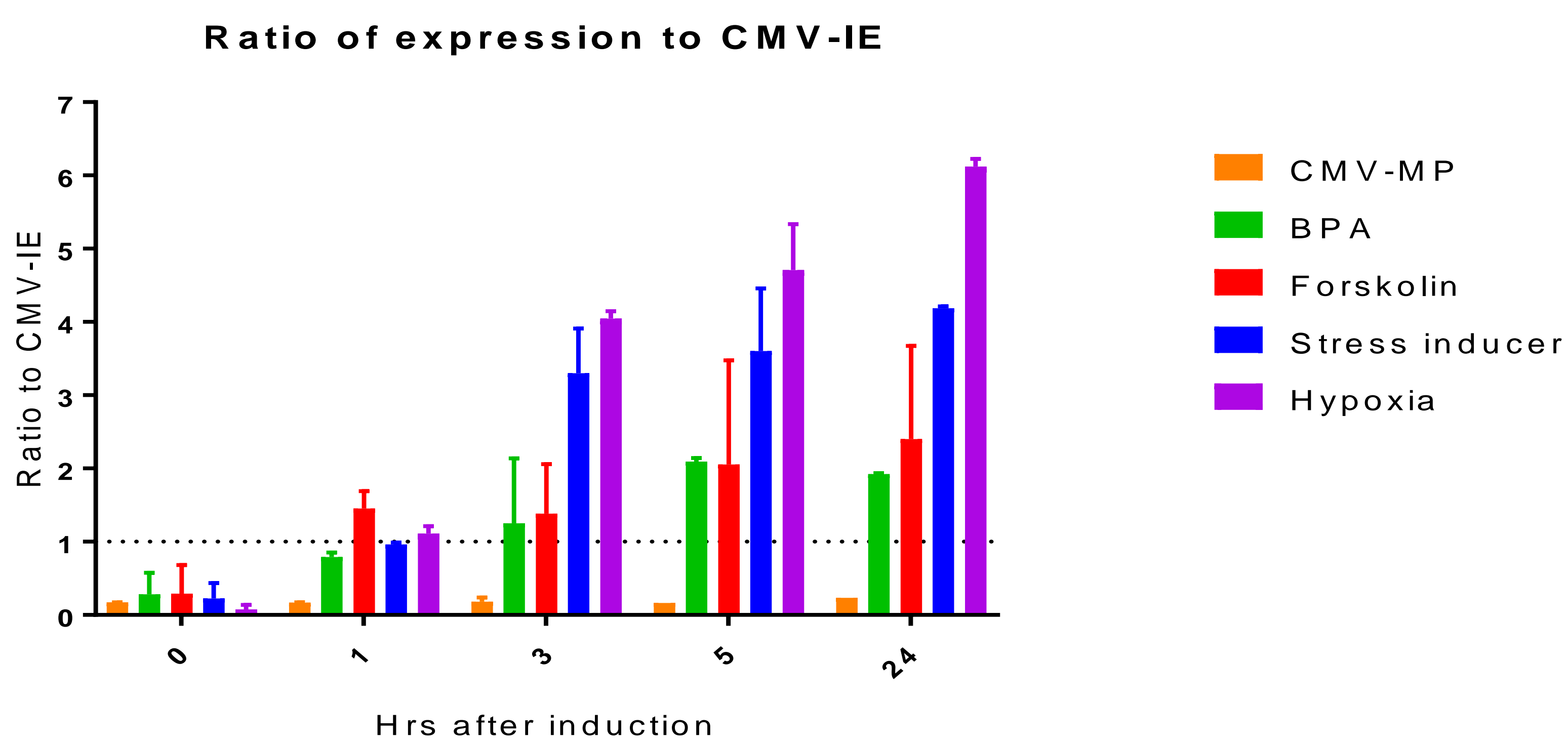


Enhancer elements identified; construction of synthetic promoters

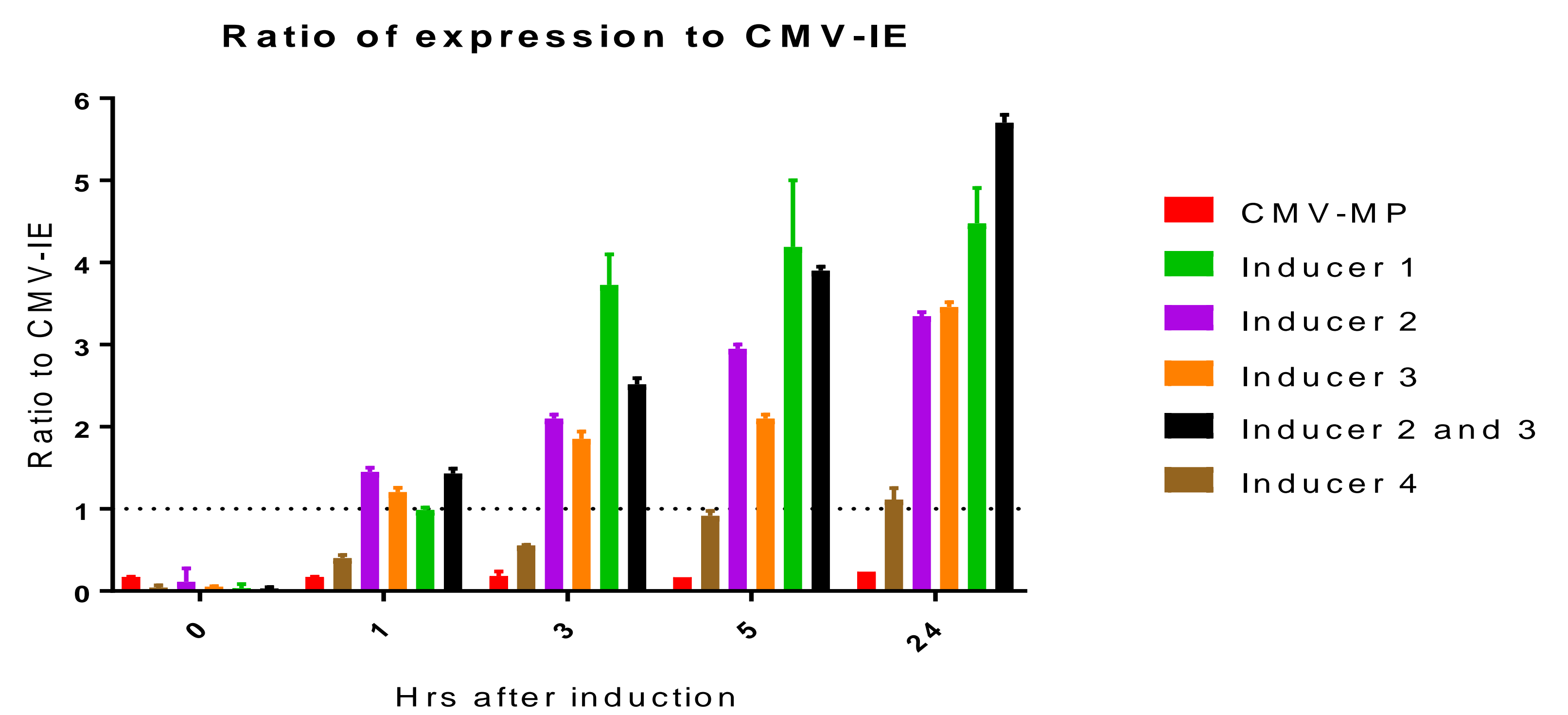


50+ candidates with a 50-fold dynamic range; 180-600bp size range

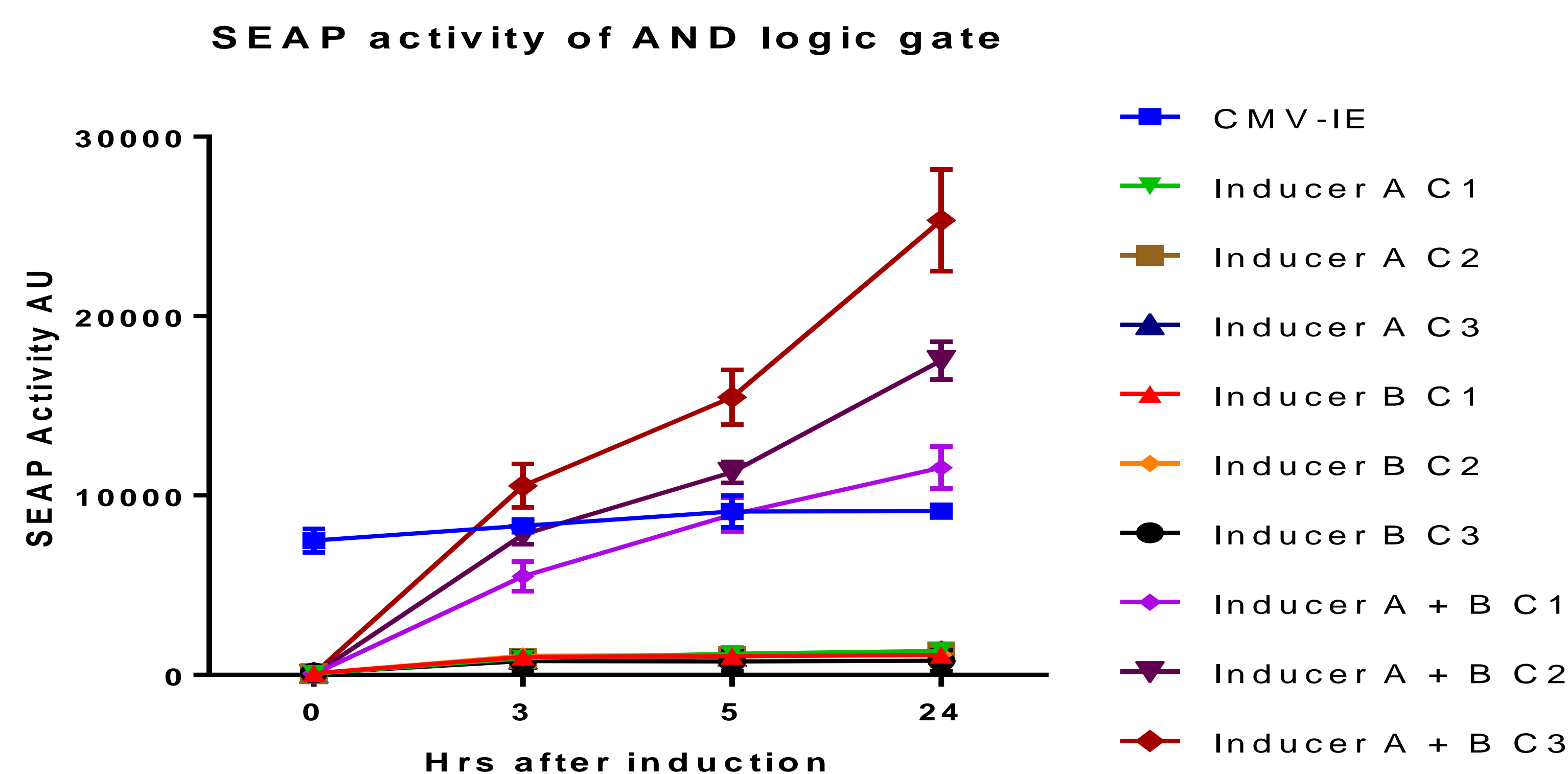
## Inducible systems for viral vector production



Rational design of promoters responsive to defined stimuli → Tightly controlled with a 3 fold dynamic range



Novel inducible system → Tightly controlled with multiple inducers for fine tuned inducible expression



AND logic gate using an inducible promoter and novel inducible system → Exquisite, dose responsive control of gene expression



Synpromics have developed the following tools to transform viral vector production:

- 50+ constitutive promoters with a large dynamic range
- Inducible promoters with tight control of gene expression
- A novel, tuneable and inducible expression system
- Logic gates with exquisite control and fine tuning of gene expression levels

These tools, in combination with the Synpromics cell line development platform, are currently being used to improve the production of AAV, LV and RV viral vectors.