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The influence of nuclear compartmentalisation on stochastic dynamics of self-repressing gene expression

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**Highlights**

- Negative feedback decreases protein noise but can increase mRNA noise
- Nuclear compartmentalisation decreases mRNA noise but can increase protein noise
- Negative feedback or nuclear compartmentalisation can be more effective in reducing protein noise depending on nuclear translocation rates
- Nuclear compartmentalisation and negative feedback can increase or decrease noise levels depending on nuclear translocation rates
- Nuclear compartmentalisation can increase regularity of protein spiking for a self-repressing gene

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