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Gene, regulate thyself

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The stochastic nature of every chemical event in the cell generates noise that can lead to large fluctuations in protein and mRNA levels. Autoregulatory negative feedback loops in gene circuits have been proposed, but never shown, to be one way of limiting this variation. With a simple experiment, in the 1 June Nature Becskei and Serrano demonstrate that negative feedback can decrease the inherent variability of gene expression more than threefold. They direct expression of a hybrid protein (green fluorescent protein, GFP, plus the tetracycline repressor, TetR) from a TetR-regulated promoter. The stability of the resultant expression (as compared to expression from constructs that lack TetR control) may explain why about 40% of known transcription factors in *Escherichia coli* negatively regulate themselves.

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