

Abstract Submitted  
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**Noise propagation in combined cellular control motifs**<sup>1</sup> CHEOL-MIN GHIM, EIVIND ALMAAS, Lawrence Livermore Natl Lab — A cell's ability to respond robustly to noisy stimuli critically depends on the structure of its regulation and control circuitry, as well as kinetic parameters. While kinetic parameters take a wide range of values, there is markedly less variation in the basic network building blocks. We have explored the functional implications of several motif-combinations, investigating their information processing properties. Adopting a spectral-analysis approach, we study how circuit topology affects the propagation or attenuation of intrinsic and extrinsic noise. Finally, we discuss possible fitness benefits of the different circuit topologies, relating design principles to evolutionary selection.

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