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# Insights from artificial rewiring of the cell cycle circuit

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## Résumé

Cell cycle control is one of the most fundamental and intricate systems in eukaryotic cells. At the heart of this process are members of the cyclin-dependent protein kinase (Cdk) family, which are organized in an elaborate network to ensure the proper sequence of cell cycle events. While a strong focus has been placed on dissecting the molecular details of the complex regulation of cell proliferation, alternative approaches that rely on simplifying the cell cycle circuit *in vivo* have begun to provide new perspectives into this essential process. Using such a strategy in the fission yeast *Schizosaccharomyces pombe*, we recently demonstrated that the core cell cycle machinery acts as a quantitative platform for coordinating cell cycle progression and periodic transcription. This led us to design a novel synthetic cell cycle system that can be artificially controlled with unprecedented temporal resolution to understand how Cdk activity dynamics shape eukaryotic cell proliferation.

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