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A multiscale modelling approach for the regulation of the cell cycle by the circadian clock

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**Highlights**

- A multiscale model for the cell cycle-circadian clock coupling is developed
- The model is based on a transport PDE structured by molecular contents
- A particle-based method is used for resolution
- Impacts of inter and intracellular dynamics on cell proliferation are studied
- Discordance of division rhythms between population and single cell levels is observed

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