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PII: S1357-2725(17)30149-8
DOI: http://dx.doi.org/doi:10.1016/j.biocel.2017.06.011
Reference: BC 5159

To appear in: *The International Journal of Biochemistry & Cell Biology*

Received date: 14-3-2017
Revised date: 5-6-2017
Accepted date: 22-6-2017

Please cite this article as: Galper, Jasmin., Rayner, Stephanie L., Hogan, Alison L., Fifita, Jennifer A., Lee, Albert., Chung, Roger S., Blair, Ian P., & Yang, Shu., Cyclin F: A component of an E3 ubiquitin ligase complex with roles in neurodegeneration and cancer.*International Journal of Biochemistry and Cell Biology* http://dx.doi.org/10.1016/j.biocel.2017.06.011

Cyclin F: A component of an E3 ubiquitin ligase complex with roles in neurodegeneration and cancer.

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Abstract

Cyclin F, encoded by *CCNF*, is the substrate recognition component of the Skp1-Cul1-F-box E3 ubiquitin ligase complex, $SCF^{cyclin\ F}$. E3 ubiquitin ligases play a key role in ubiquitin-proteasome mediated protein degradation, an essential component of protein homeostatic mechanisms within the cell. By recognising and regulating the availability of several protein substrates, $SCF^{cyclin\ F}$ plays a role in regulating various cellular processes including replication and repair of DNA and cell cycle checkpoint control. Cyclin F dysfunction has been implicated in various forms of cancer and *CCNF* mutations were recently linked to familial and sporadic amyotrophic lateral sclerosis and frontotemporal dementia, offering a new lead to understanding the pathogenic mechanisms underlying neurodegeneration. In this review, we evaluate the current literature on the function of cyclin F with an emphasis on its roles in cancer and neurodegeneration.

Key facts

- Cyclin F is the substrate recognition component of an E3 ubiquitin ligase complex that mediates substrate degradation through the ubiquitin-proteasome system.