Diversity and function in the ubiquitylation systems of trypanosomes

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Ubiquitytlation is responsible for modulating protein turnover, and is a system of such complexity that it touches on most cellular functions. In trypanosomes ubiquitylation has roles in cell cycle control, protein trafficking, stress and drug responses, amongst others. Using systematic genomic and proteomic analysis of the cullin family of ubiquitin ligases, we demonstrate both common and unique aspects of cullin composition and function. For specific cullins important connections are established with cell division machinery and drug sensitivity pathways. Further, we demonstrate considerable expansion of cullin component protein families specific to the kinetoplastida as well as novel components. Finally we report identification and characterisation of a novel deubiqutinase complex that modulates the turnover of the surface protein cohort in *Trypanosoma brucei.* These studies demonstrate the power of combined evolutionary, proteomic and gene silencing approaches to uncover mechanisms specific to trypanosome biology.