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## Safeguarding genome integrity with small ubiquitin-like modifiers

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## **Safeguarding genome integrity with small ubiquitin-like modifiers**

1. Both covalent SUMO modification of DNA damage response proteins and noncovalent SUMO-mediated interactions between these proteins are critical in maintaining genome integrity. *This thesis*
2. The SUMO protease SENP6 ensures the timely deconjugation of SUMO chains on DNA damage response proteins, affecting their localization and nuclear condensation state. *This thesis*
3. SUMO-SIM interactions are essential for the recruitment of DNA damage response proteins, such as XRCC4 and SLX4, to sites of DNA damage. *This thesis and González-Prieto et al., EMBO Rep, 2015*
4. The prevalence and relevance of modes of noncovalent SUMO interactions alternative to the classical SUMO-SIM interaction are currently underestimated by the field. *This thesis*
5. Covalent SUMO modification and noncovalent SUMO interactions are highly interconnected. *This thesis and Meulmeester et al., Mol Cell, 2008.*
6. When studying the SUMO enzymatic machinery, one should be aware of the complexity of the system and potential indirect effects. Many components of the system are SUMO targets themselves and participate in noncovalent interactions with SUMOylated proteins. *Hendriks et al., Nat Rev Mol Cell Biol, 2016 and González-Prieto et al., Cell Rep, 2021*
7. Studying the function of the SUMOylation of individual proteins is complicated by the dynamic on-and-off nature of the modification, only a small fraction of the total protein pool being SUMOylated, and protein group modification. *Jentsch and Psakhye, Annu Rev Genet, 2013*
8. Global identification of substrates of SUMO proteases with unbiased mass spectrometry-based approaches will aid in better understanding their molecular function and how dysregulation of deSUMOylation can ultimately contribute to disease. *Liebelt et al., Nat Commun, 2019; Wagner et al., Cell Rep, 2019 and Liczmanska et al., Cell Rep, 2023*
9. Fundamental research that is perhaps seemingly only curiosity-driven and explores the basic concepts of biology can have unprecedented clinical implications and broad applications.
10. Teamwork and outcome are more important than individual recognition.
11. As a researcher, you should always be wary of confirmation bias: the human tendency to interpret or seek evidence in a way that aligns with our ideas, expectations or hypotheses.