

## Propositions/Stellingen

Belonging to the thesis/Behorende bij de proefschrift

### **'Structural Dynamics of a Nanomachine: Investigating Structure-to-Function Properties of Large, Flexible DNA-Associating Proteins'**

1. Proteins are tools, pretty much like pry bars and nutcrackers, and should be viewed as such. *This thesis*
2. A stuck tool is a broken tool. *This thesis*
3. We are not asking what a protein does, but rather how it does it; the answer will lie in its structure. *This thesis*
4. Rapid and short-lived conformation changes, stabilised by a specific ligand, are the key to multi-functionality of the Mre11-Rad50 complex. *This thesis*
5. Oligomerization interfaces are present all over BRCA2 molecules; they can be stabilized or disrupted by temperature changes and ligand binding. *This thesis*
6. DNA double strand break repair (DSBR) naturally requires many proteins to be involved in a complex choreography of dynamic events. *Lafrance-Vanasse, J., Williams, G.J., and Tainer, J.A. (2015), Prog Biophys Mol Biol 117, 182-193.*
7. Mre11-Rad50-Nbs1 complex is an enzyme assembly and all its activities are necessary for properly functioning DNA damage response. *Paull, T. T. and Deshpande, R. A. (2014), Exp Cell Res 329(1), 139-147*

8. It is the amino-acid sequence that determines the state of protein disorder. *Uversky, V. N. (2016), J Biol Chem 291(13), 6681–6688*
9. Structure and disorder are not binary states, but a continuum of perhaps countless possibilities. *DeForte, S. and Uversky, V. N. (2016), Molecules 21(8), 1090*
10. BRCA2 favouring certain interaction partners is determined by progress in the cell cycle. *Lee, H. (2014), Exp Cell Res 329(1), 78-84*
11. Never a failure, always a lesson. *A 50¢ motivational postcard*