

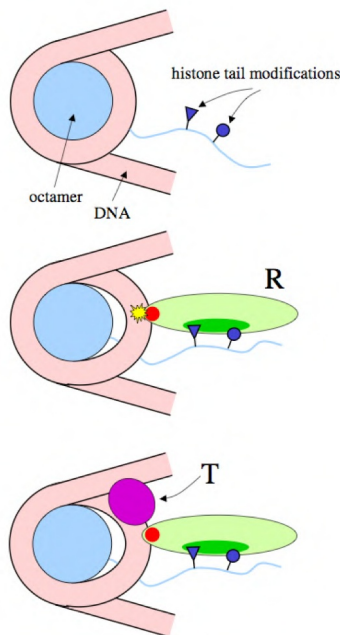
## Kinetic proofreading of chromatin remodeling: the case of ISWI/ACF

Ralf Blossey<sup>1</sup> & Helmut Schiessel<sup>2</sup>

<sup>1</sup>Interdisciplinary Research Institute, Université des Sciences et des Technologies de Lille (USTL), USR CNRS 3078, 50, Avenue Halley, 59568 Villeneuve d'Ascq, France

<sup>2</sup>Instituut Lorentz voor de theoretische natuurkunde, Universiteit Leiden, PO Box 9506, NL-2300 RA Leiden, The Netherlands

**Abstract.** Chromatin remodeling is a mechanism of transcriptional control in all eukaryotic organisms. Chromatin remodelers are protein complexes that modulate chromatin structure at the level of the nucleosome, by repositioning them or removing them from the DNA fiber. Remodeling is an ATP-dependent process since the active displacement is driven by the motor action of the complexes. It has recently been suggested that chromatin remodeling is controlled by a kinetic proofreading mechanism. An exemplary case is the family of ISWI remodelers which are active in organising transcriptionally repressive chromatin states. It is shown that in these systems two proofreading controls are active. The first concerns the target selection which is based on histone tail recognition. The second concerns the positioning of the nucleosomes in regular arrays which is controlled by the length of extranucleosomal DNA.



R. Blossey and H. Schiessel  
Kinetic proofreading of gene activation by chromatin remodeling  
The HFSP Journal 2, 167-170 (2008)

R. Blossey and H. Schiessel  
Kinetic proofreading of chromatin remodeling: the case of ISWI/ACF  
Submitted (2011)