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How electrostatic interactions drive nucleosome binding of RNF168 & PSIP : structural studies and their implications for rational drug design

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The research described in this thesis was performed in the Macromolecular Biochemistry Department of the Leiden Institute of Chemistry in Leiden, the Netherlands and the NMR Spectroscopy Research Group of the Bijvoet Center for Biomolecular Research in Utrecht, the Netherlands.

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List of Abbreviations

6-FAM	5,6-carboxyfluoresceine
AIR	ambiguous interaction restraints
ATP	adenosine triphosphate
Bp	basepairs
BS	binding sequence
CPMG	Carr-Purcell-Meiboom-Gill sequence
Cryo-EM	cryogenic electron microscopy
CSP	chemical shift perturbation
DCM	dichloromethane
DIC	N,N'-Diisopropylcarbodiimide
DSB	double-strand break
DTT	dithiothreitol
EDTA	ethylenediaminetetraacetic acid
EMSA	electrophoretic mobility shift assay
EPR	electron paramagnetic resonance
FMOC	fluorenylmethyloxycarbonyl
FRET	Förster resonance energy transfer
HEPES	4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid
HOAt	1-Hydroxy-7-azabenzotriazole
HSQC	heteronuclear single quantum coherence
IEX	ion exchange
IM-MS	ion-mobility spectrometry–mass spectrometry
IPTG	isopropyl β-D-1-thiogalactopyranoside
KAc	acetylated lysine
Kme	methylated lysine
LC-MS	liquid chromatography–mass spectrometry
MD	Molecular dynamics
Mmt	monomethoxytrityl

MST	microscale thermophoresis
NCP	nucleosome core particle
NMR	nuclear magnetic resonance
NOE	nuclear Overhauser effect
PCS	pseudocontact chemical shift
PPI	protein-protein interactions
PRE	paramagnetic relaxation enhancement
PMSF	phenylmethylsulfonyl fluoride
PTM	post translational modification
SANS	small-angle neutron scattering
SASD	surface accessible distance
SAXS	small-angle X-ray scattering
SDS	sodium dodecyl sulfate
Sph	phosphorylated serine
ssNMR	solid-state NMR
TCEP	tris(2-carboxyethyl)phosphine
TFA	trifluoroacetic acid
TIPS	triisopropylsilane
TOCSY	total correlation spectroscopy
TROSY	transverse relaxation optimized spectroscopy
TSP	trimethylsilylpropanoic acid
Ub	ubiquitin
UPLC	ultra performance liquid chromatography
XL-MS	cross-link-based mass spectrometry