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Computational, biochemical, and NMR-driven structural studies on histone variant H2A.B

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Citation

Zhang, H. (2020, August 25). *Computational, biochemical, and NMR-driven structural studies on histone variant H2A.B*. Retrieved from <https://hdl.handle.net/1887/135944>

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Cover Page



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Author: Zhang, H.

Title: Computational, biochemical, and NMR-driven structural studies on histone variant H2A.B

Issue Date: 2020-08-25

Computational, biochemical, and NMR-driven structural studies on histone variant H2A.B

Proefschrift

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van Rector Magnificus prof.mr. C.J.J.M. Stolker,
volgens besluit van het College voor Promoties
te verdedigen op dinsdag 25 augustus 2020
klokke 10:00 uur

door
Heyi Zhang
geboren te Wuxi, China
in 1990

**Computational, biochemical, and NMR-driven structural studies
on histone variant H2A.B**

Doctoral thesis, Leiden University, 2020

Cover design: Heyi Zhang

ISBN number: 978-94-91546-17-4

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Printed by Boekdrukken.com, the Netherlands

Promotor: Prof.dr. M. Ubbink
Co-promotor: Dr. H. van Ingen
Promotiecommissie: Prof.dr. H.S. Overkleeft (voorzitter)
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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.

To my grandfather (1928-2018)

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Abbreviations

AEP	Asparaginyl endopeptidases
AFM	Atomic force microscopy
AP	Acidic patch
ATP	Adenosine triphosphate
Bp	Base pairs
BME	β -mercapto-ethanol
BMRB	Biological magnetic resonance data bank
CHES	N-Cyclohexyl-2-aminoethanesulfonic acid
ChIP	Chromatin immunoprecipitation
ChIP-seq	ChIP sequencing
CPMG	Carr-Purcell-Meiboom-Gill sequence
CS	Chemical shift
CSI	Chemical shift indices
CSP	Chemical shift perturbation
DNA	Deoxyribonucleic acid
DTT	Dithiothreitol
EDTA	Ethylenediaminetetraacetic acid
EPL	Expressed protein ligation
FRET	Fluorescence resonance energy transfer
GFP	Green fluorescent protein
HAC	Acetic acid
HDAC	Histone deacetylase
HSQC	Heteronuclear single quantum coherence spectroscopy
IPTG	Isopropyl β -D-1-thiogalactopyranosid
LB	Lysogeny broth
LEGO	Label, express and generate oligomers
MD	Molecular dynamics
MES	2-ethanesulfonic acid
MNase	Micrococcal nuclease
MQ	Multiple quantum
mRNA	Messenger RNA
NCP	Nucleosome core particle
NMR	Nuclear magnetic resonance
NOE	Nuclear overhauser effect
NOESY	Nuclear overhauser effect spectroscopy

NTD	N-terminal domain
PCR	Polymerase chain reaction
PDB	Protein data bank
Pi	Inorganic phosphate
PMSF	Phenylmethylsulfonyl fluoride
PTM	Post translational modification
PTS	Protein trans-splicing
R2	Transverse relaxation rate
RMSD	Root mean square deviation
RNA	Ribonucleic acid
RNA Pol II	RNA polymerase II
RDC	Residual dipolar coupling
SAXS	Small angle X-ray scattering
SAIL	Stereo-array isotope libeling
SDS-PAGE	Sodium dodecyl sulfate polyacrylamide gel electrophoresis
SHL	Super helix location
SrtA	Sortase A
S/N	Signal to noise ratio
T _m	Melting temperature
TROSY	Transverse relaxation optimized spectroscopy
TSA	Thermal shift assay
tc	Rotational correlation time
wt	Wild type
Xi	Inactive X chromosome