The architects of crenarchaeal chromatin : A biophysical characterization of chromatin proteins from Sulfolobus solfataricus

Driessen, R.P.C.

The architects of crenarchaeal chromatin

A biophysical characterization
of chromatin proteins from
Sulfolobus solfataricus

R. P. C. Driessen

The architects of crenarchaeal chromatin

A biophysical characterization of chromatin proteins from *Sulfolobus solfataricus*

PROEFSCHRIFT

ter verkrijging van

de graad van Doctor aan de Universiteit Leiden,

op gezag van Rector Magnificus prof. mr. dr. C.J.J.M. Stolker

volgens besluit van het College van Promoties

te verdedigen op dinsdag 6 mei 2014

klokke 15:00 uur

door

Rosalie Paula Catharina Driessen

geboren te Utrecht, Nederland

16 juni 1983

PROMOTIECOMMISSIE

Promotor	Prof. dr. Jaap Brouwer
Copromotor	dr. Remus Th. Dame
Overige leden	Prof. dr. Malcolm White (St Andrews University, UK)
	Prof. dr. John van der Oost (Universiteit Wageningen)
	dr. John van Noort
	Prof. dr. Mathieu Noteborn

Cover image and book design by Marcel Schouwenaar

Cover image inspired by the work of Joan Miró and Sirvan Ugur

Published by: Uitgeverij BOXPress, 's-Hertogenbosch

ISBN: 978-90-8891-866-7

TABLE OF CONTENTS

1. Introduction 7

2. Crenarchaeal chromatin proteins Cren7 and Sul7 compact DNA by inducing rigid bends 39

3. Tethered Particle Motion reveals how temperature affects DNA flexibility and protein-DNA interactions..... 67

4. Alba shapes the archaeal genome using a delicate balance of bridging and stiffening the DNA..... 89

5. Diverse architectural properties of Sso10a proteins: evidence for a role in chromatin compaction and organization..... 115

6. Summary and Conclusions 143

Nederlandse samenvatting..... 149

References 155

Curriculum Vitae..... 181

List of publications 183