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Citation	Cho, Uhn-Soo, and Stephen C Harrison. 2013. Centromere-specific histone Cse4 by the chaperone Scm3. <i>Epigenetics & Chromatin</i> 6(Suppl 1): P95.
Published Version	doi:10.1186/1756-8935-6-S1-P95
Accessed	February 19, 2015 12:01:09 PM EST
Citable Link	http://nrs.harvard.edu/urn-3:HUL.InstRepos:10609671
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(Article begins on next page)

POSTER PRESENTATION

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Centromere-specific histone Cse4 by the chaperone Scm3

Uhn-Soo Cho^{1*}, Stephen C Harrison²

From *Epigenetics and Chromatin: Interactions and processes*
Boston, MA, USA. 11-13 March 2013

A specialized nucleosome is a component of all eukaryotic kineto-chores. The core of this nucleosome contains a centromere-specific histone, CENP-A (the Cse4 gene product in budding yeast), instead of the usual H3. Assembly of a centromeric nucleosome depends on a specific chaperone, called Scm3 in yeast and HJURP in higher eukaryotes. We describe here the structure of a complex formed by an N-terminal fragment of Scm3 with the histone-fold domains of Cse4, and H4, all prepared as recombinant proteins derived from the budding yeast *Kluyveromyces lactis*. The contacts of Scm3 with Cse4 explain its selectivity for the centromere-specific histone; key residues at the interface are conserved in HJURP, indicating a common mechanism for centromeric histone deposition. We also report the structure of a (Cse4:H4)₂ heterotetramer; comparison with the structure of the Scm3:Cse4:H4 complex shows that tetramer formation and DNA binding require displacement of Scm3 from the nucleosome core. The two structures together suggest that specific contacts between the chaperone and Cse4, rather than an altered overall structure of the nucleosome core, determine the selective presence of Cse4 at centromeres.

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Published: 18 March 2013

doi:10.1186/1756-8935-6-S1-P95

Cite this article as: Cho and Harrison: Centromere-specific histone Cse4 by the chaperone Scm3. *Epigenetics & Chromatin* 2013 **6**(Suppl 1):P95.

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