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TITLE

HISTONE CODE OF LOVE: CHROMATIN STRUCTURE AND SEXUAL MATURATION OF SCHISTOSOMA MANSONI

AUTHORS

Grunau, C.*[1]; Lu, Z.[2]; Coghlan; A.[3]; Moescheid, M.[2]; Quack, T.[2]; Mourao, M.M.[4]; Chaparro, C.[1]; Aunin, E.[3]; Allienne, J.F.[1]; Reid, A.[3]; Holroyd, N.[3]; Berriman, M.[5]; Padalino, G.[6]; Hoffmann, K.F.[6]; Grevelding, C.G.[2]; Augusto, R.C.[1]

AFFILIATIONS

[1] IHPE University of Perpignan Via Domitia/CNRS, France; [2] University of Giessen, Germany; [3] Welcome Trust Sanger Institute, UK; [4]FIOCRUZ, Brazil; [5]University of Glasgow, UK; [6] Aberystwyth University, UK

ABSTRACT

We analyzed histone modifications, chromatin accessibility, transcription, and genome features to decode the histone code in mature and immature ovaries and testes of the human parasite Schistosoma mansoni. Our findings reveal: (i) two classes of protein-coding genes in schistosome gonads—H3K4me3-positive genes with canonical histone features and H3K4me3-negative genes, suggesting possible schistosome-specific histone marks; (ii) distinct "chromatin colors" associated with gene function, particularly in H3K4me3-positive genes; (iii) significant chromatin structure changes during gonadal maturation, varying by sex; and (iv) the potential of targeting histone demethylation as a drug strategy, as shown by the effect of an inhibitor of histone modifying enzymes on schistosome pairing. These insights advance our understanding of histone codes and chromatin dynamics in S. mansoni reproductive development.

KEYWORDS

Epigenetics; Sexual Development; Histones; Histone Modifications; Epidrugs

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