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Epigenetic Regulation of Virulence Gene Expression in Parasitic Protozoa

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Table 1. Epigenetic regulators with functional evidence

<i>Plasmodium falciparum</i>				
Genes	Epigenetic class	Mutation	Genes affected	Refs
Hda2	Writer, class II HDAC	KD	Var,all; ApiAP2-G	(Coleman <i>et al.</i>, 2014)
HP1	Reader, chromodomain	KD	Var,all; ApiAP2-G	(Brancucci <i>et al.</i>, 2014)
SET2	Writer, KMT	KO	Var, all	(Jiang <i>et al.</i>, 2013)
SET10	Writer, KMT	DN	Single var overexpression	(Volz <i>et al.</i>, 2012)
SET10	Writer, KMT	DN	var2csa	(Volz <i>et al.</i>, 2012)
PfRNase II	Exonuclease	KD	Var, upsA	(Zhang <i>et al.</i>, 2014)
Sir2a	Writer, class III HDAC	KO	Var, upsA (3D7, not FCR3)	(Duraisingh <i>et al.</i>, 2005)
Sir2b	Writer, class III HDAC	KO	Var, upsB (3D7, not FCR3)	(Tonkin <i>et al.</i>, 2009)
BDP1	Reader, bromodomain	KD	Invasion	(Josling <i>et al.</i>, 2015)
<i>Trypanosoma brucei</i>				
BDF2	Reader, bromodomain	KO	VSG genes	Schulz <i>et al.</i>, 2015
BDF3	Reader, bromodomain	RNAi	VSG genes	Schulz <i>et al.</i>, 2015
DOT1B	Writer, KMT	KO	VSG genes	Figueiredo <i>et al.</i>, 2008
FACT	Histone chaperone	RNAi	VSG genes	Denninger <i>et al.</i>, 2010
ISWI	Remodeller	RNAi	VSG genes	Stanne <i>et al.</i>, 2011
MCM-BP	DNA replication	RNAi	VSG genes	Kim <i>et al.</i>, 2013
NLP	Remodeler	RNAi	VSG genes	Narayanan <i>et al.</i>, 2011
NUP1	Nuclear lamin	RNAi	VSG genes	DuBois <i>et al.</i>, 2012
ORC	DNA replication complex	RNAi	VSG genes	Benmerzouga <i>et al.</i>, 2012

PIP5K	Inositol phosphate pathway	RNAi	VSG genes	Cestari & Stuart, 2015
PIP5Pase	Inositol phosphate pathway	RNAi	VSG genes	Cestari & Stuart, 2015
PLC	Inositol phosphate pathway	OverX	VSG genes	Cestari & Stuart, 2015
RAP1	Telomeric protein	RNAi	VSG genes	Yang et al., 2009
Siz1/PIAS1	Writer, SUMOylation	RNAi	VSG genes	Lopez-Farfan et al., 2014
SUMO	SUMOylation	RNAi	VSG genes	Lopez-Farfan et al., 2014
TDP1	Chromatin component	RNAi	VSG genes	Narayanan et al., 2013
H3.V	Chromatin component	KO	VSG genes	Schulz et al., 2016 Reynolds et al., 2016

HDAC- histone deacetylase; KMT- lysine methyltransferase; KO- knockout; KD- knockdown; OverX- overexpression; RNAi- knockdown; DN- dominant negative