Overexpression of grappa encoding a histone methyltransferase enhances stress resistance in Drosophila

Titre	Overexpression of grappa encoding a histone methyltransferase enhances stress resistance in Drosophila
Type de publication	Article de revue
Auteur	List, Olivier [1], Togawa, Toru [2], Tsuda, Manabu [3], Matsuo, Takashi [4], Elard, Loic [5], Aigaki, Toshiro [6]
Pays	Suède
Editeur	Mendelska sällskapet
Ville	Lund
Type	Article scientifique dans une revue à comité de lecture
Année	2009
Langue	Anglais
Date	Jan-02-2009
Numéro	1
Pagination	19-28
Volume	146
Titre de la revue	Hereditas
ISSN	0018-0661
Résumé en anglais	Histone deacetylases, such as silent information regulator 2 (Sir2) and Rpd3 are involved in chromatin silencing and implicated in lifespan determination in several organisms. The yeast Dot1 gene encoding a histone methyltransferase affects localization of silencing proteins including Sir2, and plays an essential role in the repair of damaged DNA. However, it is not known whether an alteration of a histone methyltransferase activity influences lifespan or stress resistance, which is often associated with extended lifespan. Here we investigated whether the Drosophilagrappa (gpp) gene, a Dot1 homolog influences lifespan and stress resistance using transgenic flies overexpressing gpp and those bearing a partial loss-of-function mutation. Overexpression of gpp throughout the adult stage did not extend the lifespan, but significantly enhanced resistances when they were kept on medium containing 1% H(2)O(2), or those with poor nutrients. As well, gpp-overexpressing flies were behaviourally more active than control flies. We investigated whether gpp overexpression induced anti-oxidant genes, Catalase, Sod, Sod2, GstD2, dhd, TrxT and Trx-2. However, none of these genes was induced. A partial loss-of-function mutations in gpp dramatically reduced the lifespan under oxidative and caloric stresses. Taken together, these results demonstrated that gpp is required for normal lifespan and stress resistance, and that its overexpression increases stress resistance in Drosophila, without obvious induction of representative anti-oxidant genes.
URL de la notice	http://okina.univ-angers.fr/publications/ua14120 [7]
DOI	10.1111/j.1601-5223.2008.02080.x [8]

Lien vers le document	http://onlinelibrary.wiley.com/doi/10.1111/j.1601-5223.2008.02080.x/full [9]

Liens
[1] http://okina.univ-angers.fr/olivier.list/publications
[2] http://okina.univ-angers.fr/publications?f[author]=23994
[3] http://okina.univ-angers.fr/publications?f[author]=23995
[4] http://okina.univ-angers.fr/publications?f[author]=23996
[5] http://okina.univ-angers.fr/publications?f[author]=23997
[6] http://okina.univ-angers.fr/publications?f[author]=23998
[7] http://okina.univ-angers.fr/publications/ua14120
[8] http://dx.doi.org/10.1111/j.1601-5223.2008.02080.x
[9] http://onlinelibrary.wiley.com/doi/10.1111/j.1601-5223.2008.02080.x/full