Poster

Role of Cadherin 86C as a proliferation and metastasis regulator

Daniel Chaves Collantes(1), Mª Dolores Martin Bermudo(2), Beatriz Estrada(3), Jennifer Soler Beatty(4) y Juan Jiménez Martínez(1,*)

Centro Andaluz de Biología del Desarrollo, Universidad Pablo de Olavide, Carretera de Utrera km 1, 41013 Sevilla

Keywords: Cancer; Metastasis; CRISPR Cas9; Cadherin 86C

ABSTRACT

Motivation: Cancer is the second death cause worldwide and its economic impact on the health system is significant and increasing yearly. There are some well known factors, like metastasis and proliferation, that are key in the progression of this disease. Previous loss of function studies performed in Drosophila melanogaster brought to scene some genes that showed to increase proliferation in a Rasv12 tumorogenic background. One of them is CG31393, which codifies for cadherin 86C, Cad 86C. Cadherins are key proteins in cell-to-cell adhesion processes and some studies showed their relevance in cell migration, proliferation and tumor development.

Methods: The role of the Cad 86C during both development and cancer has not been studied. In this work, we have used Drosophila melanogaster as a model system to analyse the consecuences of supressing Cad 86C function on the proliferative and metastatic behaviour of Rasv12 tumor cells, using two specific cell populations: 1) epithelial cells that form the primordium of the wing, the imaginal wing disc, and endodermal cells of the larvae intestine. To knock down Cad 86C, we have utilized two different approaches: 1) expression of specific Cad86C RNAis and 2) isolation of a mutant via targeted mutation through CRISPR Cas9 technology. To analyse the phenoytpe due to Cad 86C knockdown and more specifically its potential as a tumor suppressor, we have used 3D imaging and image analyzing methods, to determine and quantify proliferation or metastaci behaviour of the two cell populations mentioned above.

Results: Expression of RNAis against Cad 86C in RasV12 tumorogenic wing imaginal disc cells and gut endodermal cells seem to increase their proliferative capacity. However, preliminary results suggest it does not seem to increase their metastatic behaviour. The isolation of mutants in Cad 86C, in progress, will allow us to confirm these results, by analysing the behaviour of RasV12 tumor cells in a background mutant for Cad 86C.

Conclusions: Knckdown of Cad 86C seem to increase the proliferative capacity of RasV12 tumor cells but it has not effect on their metastatic behaviour.

REFERENCES

Pećina-Slaus N. (2003). Tumor suppressor gene E-cadherin and its role in normal and malignant cells. Cancer cell international, 3(1), 17. doi:10.1186/1475-2867-3-17

Port, F., Chen, H. M., Lee, T., & Bullock, S. L. (2014). Optimized CRISPR/Cas tools for efficient germline and somatic genome engineering in Drosophila. Proceedings of the National Academy of Sciences of the United States of America, 111(29), E2967-76.

Gratz, S. J., Cummings, A. M., Nguyen, J. N., Hamm, D. C., Donohue, L. K., Harrison, M. M., Wildonger, J., … O'Connor-Giles, K. M. (2013). Genome engineering of Drosophila with the CRISPR RNA-guided Cas9 nuclease. Genetics, 194(4), 1029-35.

Se entrega con el visto bueno de mi tutor interno.