



HAL
open science

Taking Fly for Understanding the Molecular Role of HLAB27/hB2m in Spondyloarthritis

Nadège Jah, Benjamin Grandon, Aurore Rincheval-Arnold, Isabelle Guéna, Sébastien Gaumer, Claudine André, Maxime Breban, Gilles Chiochia

► **To cite this version:**

Nadège Jah, Benjamin Grandon, Aurore Rincheval-Arnold, Isabelle Guéna, Sébastien Gaumer, et al.. Taking Fly for Understanding the Molecular Role of HLAB27/hB2m in Spondyloarthritis. 2016 ACR/ARHP Annual Meeting, Nov 2016, Washington, D.C., France. hal-04443729

HAL Id: hal-04443729

<https://hal.uvsq.fr/hal-04443729>

Submitted on 16 Feb 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

ABSTRACT NUMBER: 2702

Taking Fly for Understanding the Molecular Role of HLA-B27/hB2m in Spondyloarthritis

Nadège Jah¹, Benjamin Grandon², Aurore Rincheval-Arnold³, Isabelle Guéna³, Sébastien Gaumer³, Claudine André⁴, Maxime A. Breban⁵ and **Gilles Chiochia**^{6,7}, ¹Infection and inflammation, INSERM UMR1173, Montigny-le-Bretonneux, France, ²Inserm UMR 1173 and LGBC, 78180 Saint Quentin en Yvelines, France, ³Laboratory of Genetic and Cellular Biology, Faculty of Health Sciences Simone Veil, Montigny-le-Bretonneux,, 78180 SAINT QUENTIN EN YVELINES, France, ⁴UMR 1173, 78180 Saint-Quentin en Yvelines, France, ⁵Rheumatology Division, Ambroise Paré Hospital (AP-HP), and Versailles Saint Quentin en Yvelines University, Boulogne-Billancourt, France, ⁶Infection and Inflammation, INSERM-U1173, University of Versailles Saint-Quentin-en-Yvelines, France, Montigny-le-Bretonneux, France, ⁷Service d'Immunologie, Ambroise Paré Hospital, University of Versailles Saint-Quentin-en-Yvelines, Boulogne, France, Boulogne-Billancourt, France

Meeting: 2016 ACR/ARHP Annual Meeting

Date of first publication: September 28, 2016

Keywords: Pathophysiology, signal transduction and spondylarthritis

SESSION INFORMATION

Date: Tuesday, November 15, 2016

Session Type: ACR Poster Session C

Title: Spondylarthropathies Psoriatic Arthritis – Pathogenesis, Etiology - Poster II

Session Time: 9:00AM-11:00AM

Background/Purpose: After more than 40 years of researches, the mechanisms underlying the association of HLA-B27 with spondyloarthritis (SpA) remain poorly understood. The *Drosophila* has been demonstrated to be an extremely useful genetic model in numerous systems. We hypothesized that *Drosophila* might be a relevant model to study HLA-B27 and particularly for deciphering the cellular cascade and the genetic pathways affected by HLA-B27 mutation. To do so we developed HLA-B2705, HLA-B0702 (control) and human Beta-2-microglobulin (hB2m) transgenic *Drosophila*.

Methods: Gateway Technology and UAS-Gal4 system was used for developing transgenic HLA-B/human hB2m *Drosophila*. *UAS-hB2m* transgene was inserted in long arm of chromosome 3 and *UAS-HLA-B2705* and *UAS-HLA-B0702* were alternatively inserted at another position in the short arm of the same chromosome. For each construct, various transgenic lines were obtained and crossed with several tissue specific driver strains, to induce the expression of the coding sequence for *HLA-B0702* and *hB2m* or *HLA-B2705* and *hB2m* placed under the control of UAS sequences.

Results: HLA-B2705/hB2m transgenes were first expressed in *Drosophila* by mean of vestigial-Gal4 driver line allowing to produce targeted protein in *Vestigial* domain (dorso-ventral frontier of the wing epithelia). We observed positive staining with HC10 antibodies (class I heavy chain) and W6/32 antibody (HLA-A, HLA-B and HLA-C conformation) for both tested HLA-B/hB2m but only HLA-B27/hB2m was labelled with ME1 (anti-HLA B/C) antibodies, suggesting a different conformation of HLA-

B27 and HLA-B7 with hB2m in the wing epithelia. Furthermore, by mean of the nubbin or engrailed drivers which drive the expression in a larger part of the wing, we observed specific loss of posterior cross-vein following HLA-B27/hB2m expression but not HLA-B7/hB2m.

Conclusion: We have established *Drosophila* lines allowing tissue specific expression of different HLA-B alleles. Our data suggest that the expression of HLA-B/hB2m transgenes in epithelial cells leads to a plasma membrane localization for HLA-B2705/hB2m but not for HLA-B0702/hB2m. Furthermore, we observed that tissue specific expression of HLA-B27/hB2m but not HLA-B7/hB2m induced specific loss of cross-vein suggesting it interferes with developmental pathways involved in differentiation. This is the first time that difference in localization between HLA-B2705, subtype associated with SpA, and HLA-B0702, which is not associated with the disease are reported. These results show that transgenic *Drosophila* might be a pertinent model to decipher molecular mechanisms involved in HLA-B27 trafficking and to better understand potential different behavior of HLA-B subtypes.

Disclosure: N. Jah, None; B. Grandon, None; A. Rincheval-Arnold, None; I. GuénaI, None; S. Gaumer, None; C. André, None; M. A. Breban, None; G. Chiocchia, None.

To cite this abstract in AMA style:

Jah N, Grandon B, Rincheval-Arnold A, GuénaI I, Gaumer S, André C, Breban MA, Chiocchia G. Taking Fly for Understanding the Molecular Role of HLA-B27/hB2m in Spondyloarthritis [abstract]. *Arthritis Rheumatol*. 2016; 68 (suppl 10). <https://acrabstracts.org/abstract/taking-fly-for-understanding-the-molecular-role-of-hla-b27hb2m-in-spondyloarthritis/>. Accessed February 5, 2024.

ACR Meeting Abstracts - <https://acrabstracts.org/abstract/taking-fly-for-understanding-the-molecular-role-of-hla-b27hb2m-in-spondyloarthritis/>