



IN VITRO 3-D TOTAL CELL GUIDANCE AND FITNESS

PROCEEDINGS OF CellFit MEETING 2017

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**Chlamydia trachomatis infection triggers
Epithelial Mesenchymal Transition in
conjunctiva: involvement of DNA methylation**

Repeated eye infections with *Chlamydia trachomatis* (Ct) usually lead to conjunctival scarring, corneal damage and blindness (trachoma). Considering epithelial to mesenchymal transition (EMT) as unavoidable player in the development of fibrosis and taking into account that EMT is epigenetically regulated process, our intention was to explore whether Ct infection induces EMT *in vitro* and to uncover potential underlying epigenetic mechanisms.

Human conjunctival epithelial cells were infected with 107 IFU of Ct for 72 h. The mRNA and protein expression of EMT markers (E-cadherin and fibronectin) were assessed by RT-qPCR, Immunoblotting and Immunocytochemistry. DNA methylation analysis of selected regions of marker genes were examined by MSP, HRM and Bs-Seq.

The Ct infection induced EMT-related changes in mRNA and protein expression, downregulation of epithelial marker E-cad-

herin and upregulation of mesenchymal marker fibronectin. Increase in DNA methylation of E-cadherin gene promoter was in correlation with its decreased expression, while DNA methylation status of fibronectin gene couldn't be related to its expression level.

We suggest that manipulating the EMT process via modulation of DNA methylation of E-cadherin opens up possibilities to stop or revers the progression of scarring as a new strategy in trachoma treatment.