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ePoster Session

Interesting stories about virulence and pathogenesis

Human natural killer cells and *Aspergillus fumigatus* differentially influence their gene expression profile

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Background: Natural Killer (NK) cells are active against a variety of pathogens including *Aspergillus fumigatus*, which, in turn produces proteins to impair host defense and to facilitate tissue invasion. However, little is known on the interaction of NK cells and *A. fumigatus*.

Material/methods: We investigated the mutual influence of gene expression profiles of human NK cells and *A. fumigatus*. Freshly isolated and interleukin-2 prestimulated human NK cells were coincubated with *A. fumigatus* and the gene expression of selected genes of both NK cells and the fungus was assessed at several time points by quantitative real-time PCR.

Results: Our data demonstrate that *A. fumigatus* down-regulates mRNA levels of cytotoxic molecules such as perforin or granzyme B in human NK cells, but increases the gene expression of pro-inflammatory molecules such as interferon-gamma, tumor-necrosis factor α , and macrophage inflammatory proteins 1 α /1 β . In contrast, NK cells did not exhibit major impact on fungal gene expression of molecules such as superoxide dismutases, catalases, and mycotoxins, but moderately up-regulates mRNA levels of stress related molecules such as heat shock protein90 and alkaline phosphatase 1.

Conclusions: Our results significantly differ from the reported findings using a setting of *A. fumigatus* coincubated with neutrophils, which suggests that the fungus differentially regulates its gene expression depending on the mechanism of the fungal damage (e.g., reactive oxygen species by neutrophils or perforin by NK cells). This, in turn, gives further insight into the complex interaction of host immune cells and *A. fumigatus* and might have important implications for immunotherapeutic approaches using neutrophils or NK cells.