

# CD56 Is a Pathogen Recognition Receptor on Human Natural Killer Cells.

Ziegler S, Weiss E, Schmitt AL, Schlegel J, Burgert A, Terpitz U, Sauer M, Moretta L, Sivori S, Leonhardt I, Kurzai O, Einsele H, Loeffler J (2017) CD56 Is a Pathogen Recognition Receptor on Human Natural Killer Cells. *Sci Rep* 7(1), 6138.

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## Abstract

*Aspergillus* (A.) *fumigatus* is an opportunistic fungal mold inducing invasive aspergillosis (IA) in immunocompromised patients. Although antifungal activity of human natural killer (NK) cells was shown in previous studies, the underlying cellular mechanisms and pathogen recognition receptors (PRRs) are still unknown. Using flow cytometry we were able to show that the fluorescence positivity of the surface receptor CD56 significantly decreased upon fungal contact. To visualize the interaction site of NK cells and A. *fumigatus* we used SEM, CLSM and dSTORM techniques, which clearly demonstrated that NK cells directly interact with A. *fumigatus* via CD56 and that CD56 is re-organized and accumulated at this interaction site time-dependently. The inhibition of the cytoskeleton showed that the receptor re-organization was an active process dependent on actin re-arrangements. Furthermore, we could show that CD56 plays a role in the fungus mediated NK cell activation, since blocking of CD56 surface receptor reduced fungal mediated NK cell activation and reduced cytokine secretion. These results confirmed the direct interaction of NK

cells and *A. fumigatus*, leading to the conclusion that CD56 is a pathogen recognition receptor. These findings give new insights into the functional role of CD56 in the pathogen recognition during the innate immune response.

## Involved units

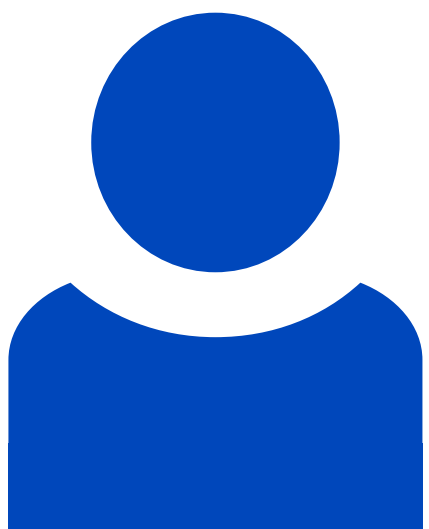
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**Identifier**

**doi:** 10.1038/s41598-017-06238-4

**PMID:** 28733594