

# Candidalysin is a fungal peptide toxin critical for mucosal infection.

Moyes DL\*, Wilson D\*, Richardson JP\*, Mogavero S\*, Tang SX, Wernecke J, Höfs S, Gratacap RL, Robbins J, Runglall M, Murciano C, Blagojevic M, Thavaraj S, Förster TM, Hebecker B, Kasper L, Vizcay G, Iancu SI, Kichik N, Häder A, Kurzai O, Luo T, Krüger T, Kniemeyer O, Cota E, Bader O, Wheeler RT, Gutschmann T, Hube B, Naglik JR (2016) Candidalysin is a fungal peptide toxin critical for mucosal infection. *Nature* 532(7597), 64-68.

[Details](#)

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## Abstract

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Cytolytic proteins and peptide toxins are classical virulence factors of several bacterial pathogens which disrupt epithelial barrier function, damage cells and activate or modulate host immune responses. Such toxins have not been identified previously in human pathogenic fungi. Here we identify the first, to our knowledge, fungal cytolytic peptide toxin in the opportunistic pathogen *Candida albicans*. This secreted toxin directly damages epithelial membranes, triggers a danger

response signalling pathway and activates epithelial immunity. Membrane permeabilization is enhanced by a positive charge at the carboxy terminus of the peptide, which triggers an inward current concomitant with calcium influx. *C. albicans* strains lacking this toxin do not activate or damage epithelial cells and are avirulent in animal models of mucosal infection. We propose the name 'Candidalysin' for this cytolytic peptide toxin; a newly identified, critical molecular determinant of epithelial damage and host recognition of the clinically important fungus, *C. albicans*.

## Involved units

[Microbial Pathogenicity Mechanisms Bernhard Hube](#) [Read more](#)

[Molecular and Applied Microbiology Axel Brakhage](#) [Read more](#)

[Fungal Septomics Oliver Kurzai](#) [Read more](#)

[Microbial Immunology Ilse Jacobsen](#) [Read more](#)

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## Topics

[Damage to the host](#)

## Awards

DGHM "Paper of the Months" April 2016; Recommended by Faculty 1000 as exapntional (4x); Comments in Nature and Nature Reviews Microbiology; Publication Award 2016 of the German Speaking Mycology Society; Medac Research Award 2016

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