

Clinical challenges and pathogenesis of *C. auris* skin colonization

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The recently emergent fungal pathogen *Candidozyma (Candida) auris* has produced numerous outbreaks of invasive disease in hospitals worldwide. It is the first fungal pathogen categorized as a global public health threat due to its ability to readily colonize skin, spread efficiently person-to-person, and cause invasive infection with high mortality. Skin colonization not only promotes healthcare spread but also leads to invasive infection via the insertion of medical devices through skin. However, many of the mechanisms underlying *C. auris* survival in the skin niche remain poorly understood. We summarize the clinical challenges of *C. auris* skin colonization and highlight in vitro, ex vivo and in vivo modeling of skin colonization. We identify potassium (K⁺) as a crucial nutrient for efficient growth in the skin environment and show that putative high-affinity K⁺ transporter Trk1 is required for *C. auris* growth on human skin ex vivo. Disruption of *TRK1* significantly impairs K⁺ uptake and leads to plasma membrane hyperpolarization, a lower intracellular pH, and sensitivity to cationic stress. These findings demonstrate that *TRK1* is necessary for maintaining K⁺ homeostasis during *C. auris* colonization of human skin, shedding light on pathogenesis for this emerging threat. Given that *TRK1* has no known human homologs, the gene product may serve as a promising therapeutic target for development of novel strategies directed at *C. auris* propagating on skin.

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