

Thigmotropic responses in the human pathogenic fungus *Candida albicans*

Many obligate fungal pathogens of plants use surface features of the plant leaf and stem to guide the direction of their germ tubes towards infectable sites such as stomata. This form of guidance relative to topographical features of the growth substratum is called contour guidance or thigmotropism. Thigmotropism has never before been demonstrated in human pathogen.

Candida albicans is a fungus that commonly infects the mucosal surface of humans. Hyphal development in this dimorphic pathogenic fungus is thought to facilitate the primary invasion of surface epithelia during superficial infections. Here we demonstrate 3 types of thigmotropic responses in *C. albicans*.

Hyphae followed grooves and ridges of various artificial membranes and penetrated pores of Nuclepore filters. Hyphal re-orientation was influenced by the angle of approach to the inductive surface. The thigmotropic response was attenuated by gadolinium ions and other Ca^{2+} channel blockers therefore suggesting a role for calcium ion transport in the thigmotropic regulation.

Thigmotropism was also observed in three genera of dermatophytic fungi. The implications of these findings are that those invading the human host may also be guided by surface discontinuities, between layers of skin and other points where the integrity of the epithelium is weakest, thereby increasing hyphal invasiveness.