Lee, K.K., MacCallum, D.M., Jacobsen, M.D., Walker, L.A., Odds, F.C., Gow, N.A.R., and Munro, C.A. (2012). Elevated cell wall chitin in *Candida albicans* confers echinocandin resistance *in vivo*. *Antimicrobial Agents and Chemotherapy*. *56*: 208–217.

Candida albicans cells with increased cell wall chitin have reduced echinocandin susceptibility *in vitro*. The aim of this study was to investigate whether C. albicans cells with elevated chitin levels have reduced echinocandin susceptibility *in vivo*. BALB/c mice were infected with C. albicans cells with normal chitin levels and compared to mice infected with high-chitin cells. Caspofungin therapy was initiated at 24 h postinfection. Mice infected with chitin-normal cells were successfully treated with caspofungin, as indicated by reduced kidney fungal burdens, reduced weight loss, and decreased C. albicans density in kidney lesions. In contrast, mice infected with high-chitin C. albicans cells were less susceptible to caspofungin, as they had higher kidney fungal burdens and greater weight loss during early infection. Cells recovered from mouse kidneys at 24 h postinfection with high-chitin cells had 1.6-fold higher chitin levels than cells from mice infected with chitin-normal cells and maintained a significantly reduced susceptibility to caspofungin when tested *in vitro*. At 48 h postinfection, caspofungin treatment induced a further increase in chitin content of C. albicans cells harvested from kidneys compared to saline treatment. Some of the recovered clones had acquired, at a low frequency, a point mutation in *FKS1* resulting in a S645Y amino acid substitution, a mutation known to confer echinocandin resistance. This occurred even in cells that had not been exposed to caspofungin. Our results suggest that the efficacy of caspofungin against C. albicans was reduced *in vivo* due to either elevation of chitin levels in the cell wall or acquisition of *FKS1* point mutations.