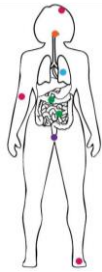


Tetraploid *Candida albicans* adapt rapidly and robustly to caspofungin drug stress

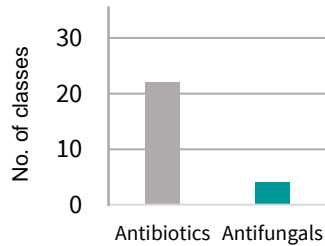
O Avramovska and MA Hickman

Genetics & Molecular Biology, Emory University, Atlanta, Georgia

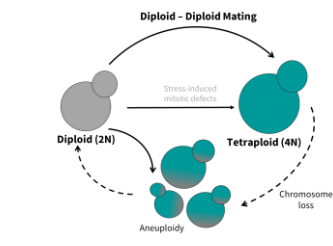
C. albicans, an opportunistic fungal pathogen



Colonizes oral cavity, skin and urogenital tract but can lead to serious infection in immunocompromised individuals¹.

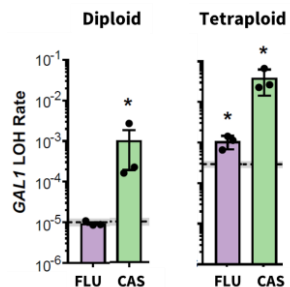


Increasingly difficult to treat, with only 3 types of antifungal classes available, and resistance on the rise^{1,2}. Caspofungin and fluconazole are most frequently used².

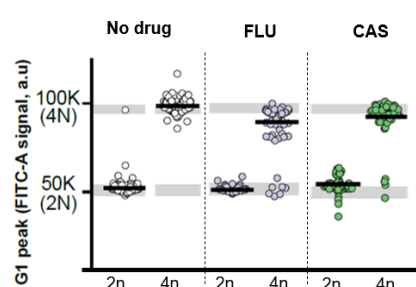


Commonly diploid but undergoes non-meiotic (parasexual) cycle to generate unstable tetraploid and aneuploid states and generate population variation³.

Short term antifungal drug exposure increases genome instability and drives ploidy changes in tetraploids⁴

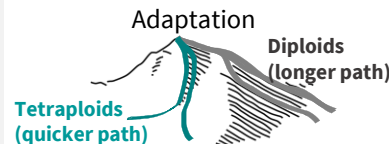


Genome Instability



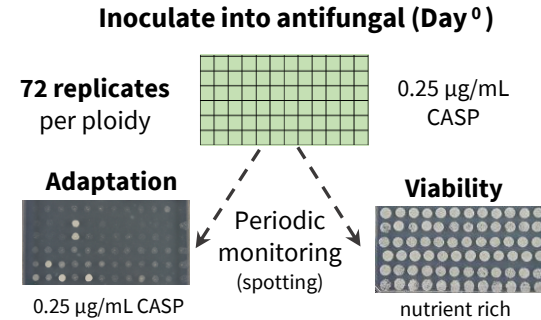
Ploidy changes

Hypothesis



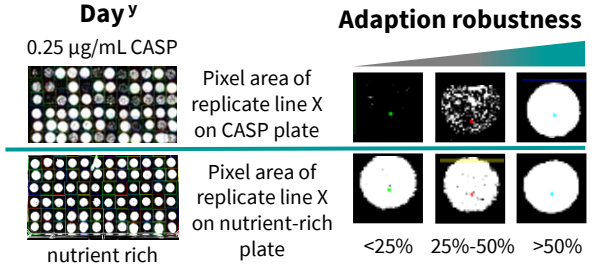
C. albicans tetraploid lines will adapt more rapidly than the diploids lines due to their ability to access a greater evolutionary landscape⁵.

In-vitro experimental evolution design

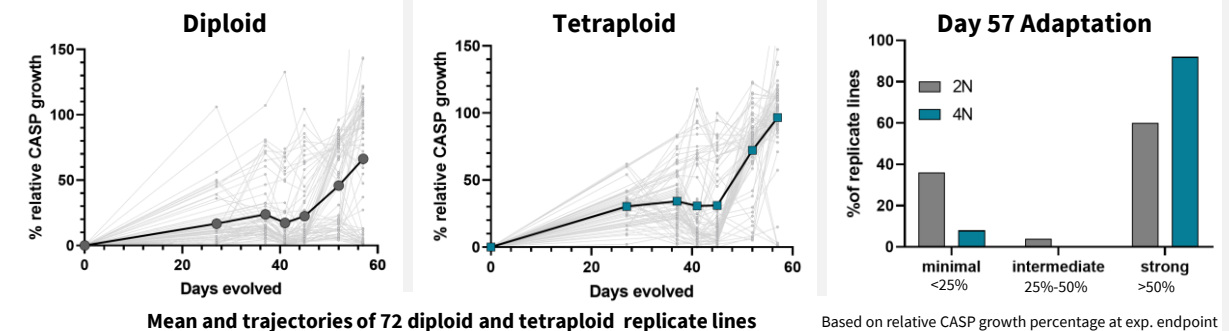


Quantification

Pixel area ratios (% Relative CASP growth)⁶



Results



Based on relative CASP growth percentage at exp. endpoint

Future Directions

Have evolved isolates reached clinical resistance thresholds?



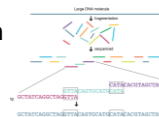
E-test phenotyping

What are the ploidy changes associated with long-term drug exposure?



Flow cytometry (total DNA staining)

What are the mutations associated with caspofungin resistance? Do they differ between diploids and tetraploids?



Whole-genome sequencing

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