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Yeast Defense Against a Protein Toxin

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Conflict between organisms is a major evolutionary force, both within and between species, and can lead to complex molecular arms races of competing evolutionary adaptation. Secreted protein toxins are a common weapon in biological conflict, encountered across all domains of life. Exposure to these toxins can select for adaptations in targeted organisms that allow them to resist toxic effects. Toxin-secreting yeast strains of *Saccharomyces cerevisiae* are a well-studied example of conflict in the microbial world. We investigated variation in resistance to the toxin K28 across diverse natural isolates of the *Saccharomyces cerevisiae* population and discovered a novel defense factor, which we named *KTD1* that is an important determinant of K28 toxin resistance. *KTD1* is a member of the enigmatic DUP240 gene family, which is recently arisen in the Saccharomycetaceae fungi. DUP240 genes have no previously ascribed function and are evolving rapidly, suggesting the gene family may be engaged in an evolutionary arms race with secreted toxins.

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