



## Complete genome sequence and comparative genomics of the probiotic yeast *Saccharomyces boulardii*

Khatri, I., Tomar, R., Ganesan, K., Prasad G. S., Subramanian S. Complete genome sequence and comparative genomics of the probiotic yeast *Saccharomyces boulardii* . Sci Rep 7, 371 (2017).

---

### Summary:

### Background:

The probiotic yeast, *Saccharomyces boulardii* (Sb) is known to be effective against many gastrointestinal disorders and antibiotic-associated diarrhea.

### Materials and Methods:

To understand molecular basis of probiotic-properties ascribed to Sb we determined the complete genomes of two strains of Sb i.e. Biocodex and unique28 and the draft genomes for three other Sb strains that are marketed as probiotics in India. We compared these genomes with 145 strains of *S. cerevisiae* (Sc) to understand genome-level similarities and differences between these yeasts. A distinctive feature of Sb from other Sc is absence of Ty elements Ty1, Ty3, Ty4 and associated LTR. However, we could identify complete Ty2 and Ty5 elements in Sb. The genes for hexose transporters HXT11 and HXT9, and asparagine-utilization are absent in all Sb strains.

### Results:

We find differences in repeat periods and copy numbers of repeats in flocculin genes that are likely related to the differential adhesion of Sb as compared to Sc. Core-proteome based taxonomy places Sb strains along with wine strains of Sc.

### Conclusion:

We find the introgression of five genes from *Z. bailii* into the chromosome IV of Sb and wine strains of Sc. Intriguingly, genes involved in conferring known probiotic properties to Sb are conserved in most Sc strains.

---