GC Content in Yeast

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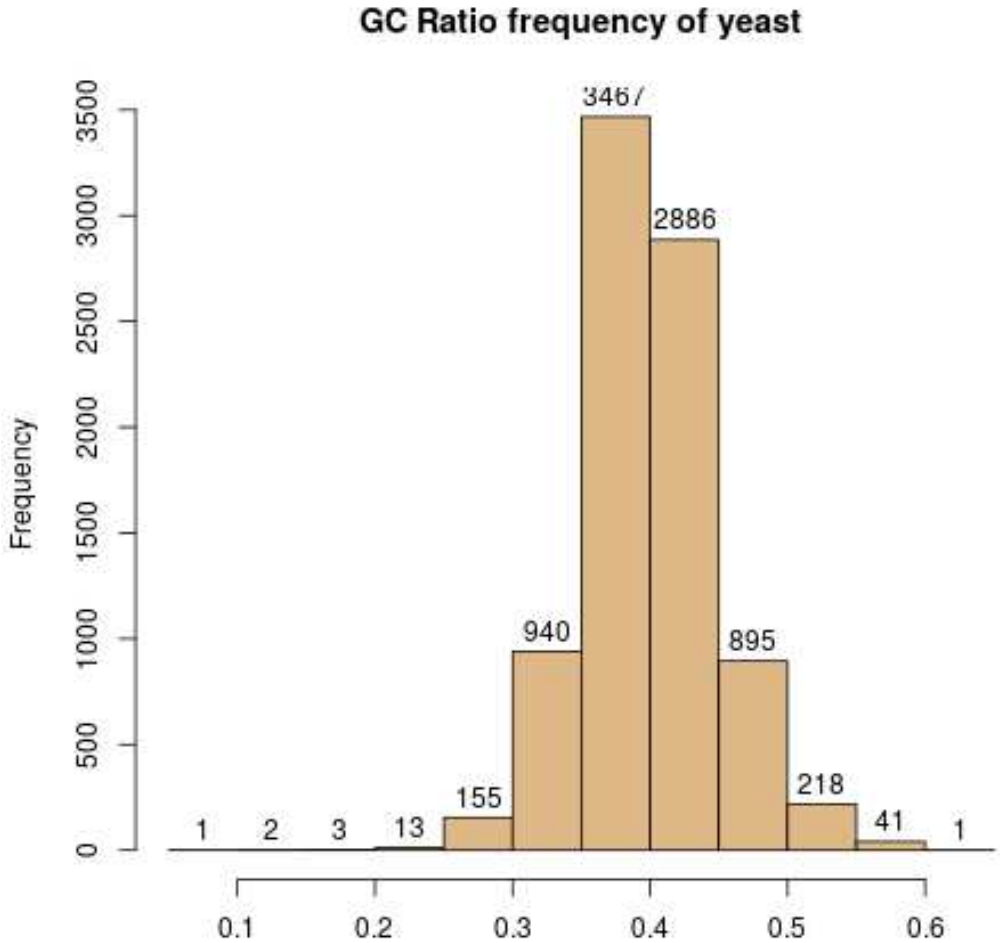
Goal of the study

The purpose of this study is to determine if all yeast genes have the same GC content, and if not, why?
Yeast's genome is approximately 12 Mb.
GC content of *Saccharomyces cerevisiae* should be 38.3%.
3 random yeast strain were selected:

- EC9-8: found 8622 possible ORFS.
- VL3: found 9859 possible ORFS.
- YS9: found 8341 possible ORFS.

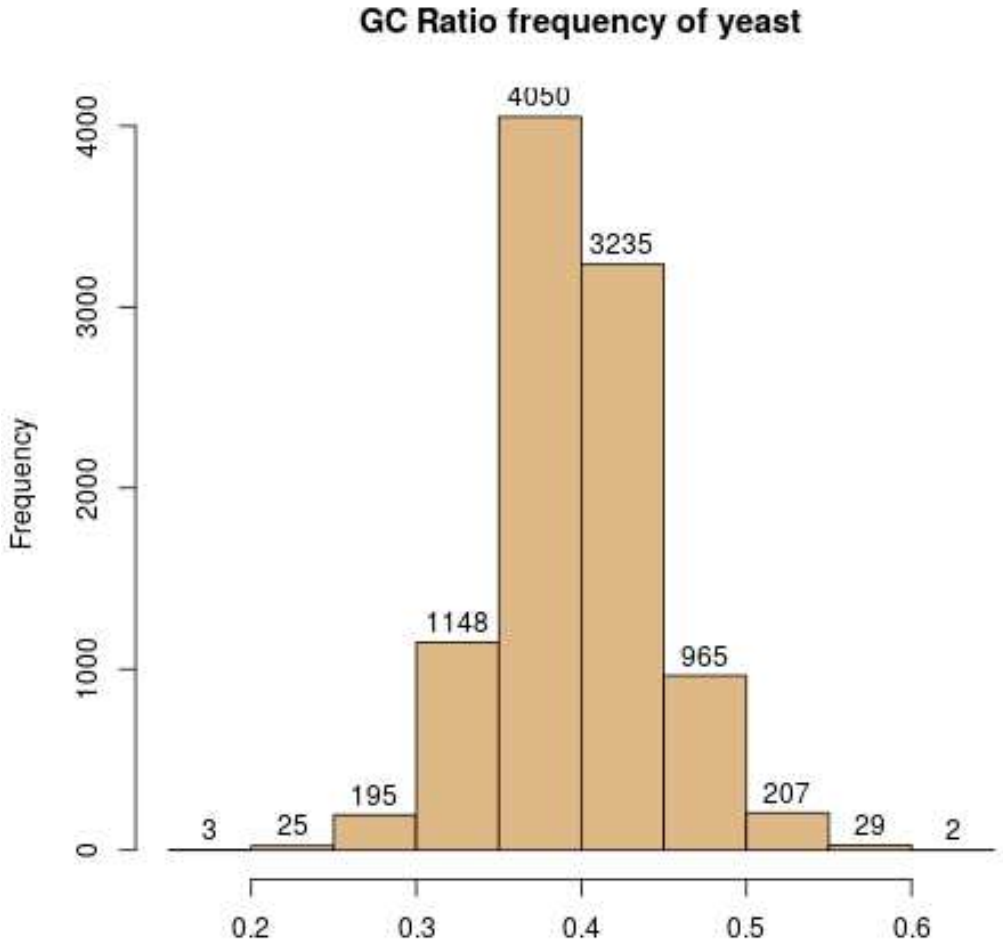
Results - EC9-8

EC9-8 is a haploid cadmium-resistant derivative of a yeast. This yeast strain (EC9-8) had the highest number of outliers in GC ratio. But on the average of G and C nucleotides in EC9-8 yeast strain's possible ORFS was approximately 39.94%.



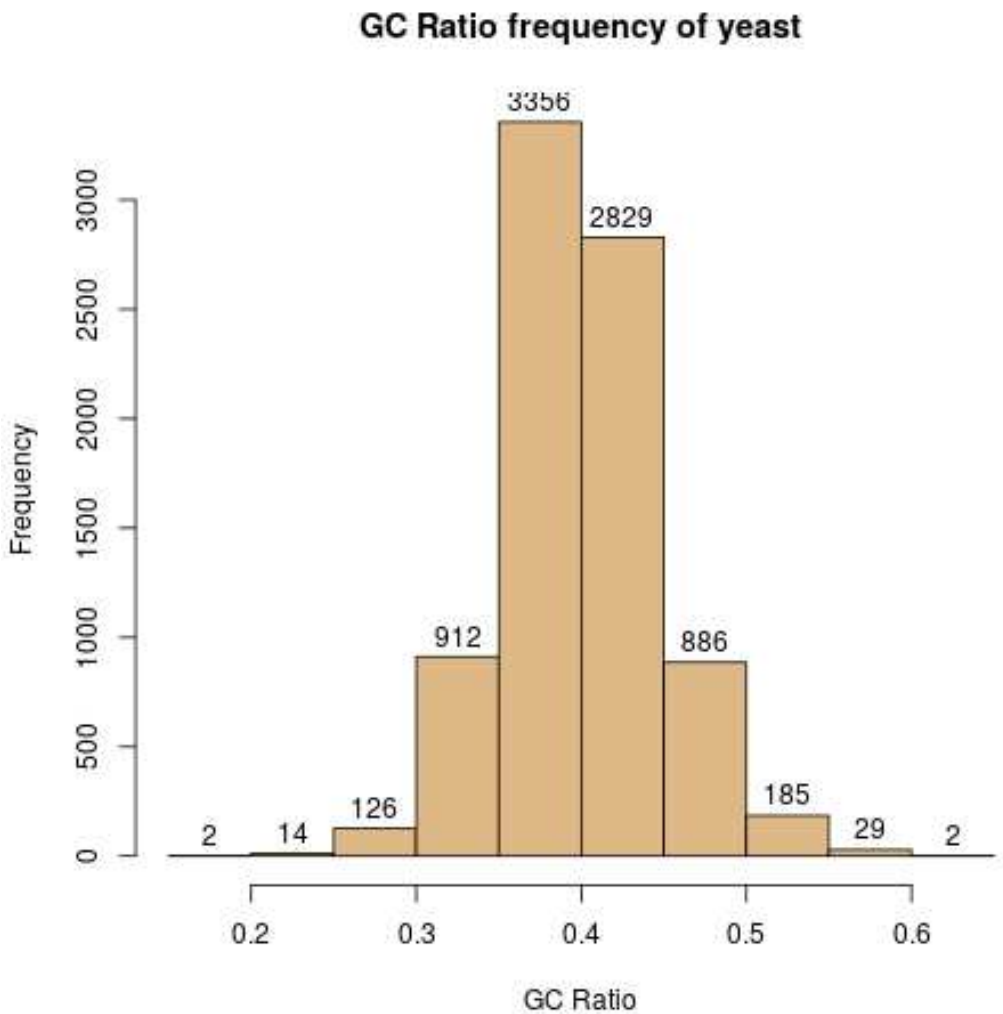
Results - VL3

VL3 strain is most suited to the production of premium white wines.
The average of G and C nucleotides in this yeast strain's possible ORFS was approximately 39.67%.



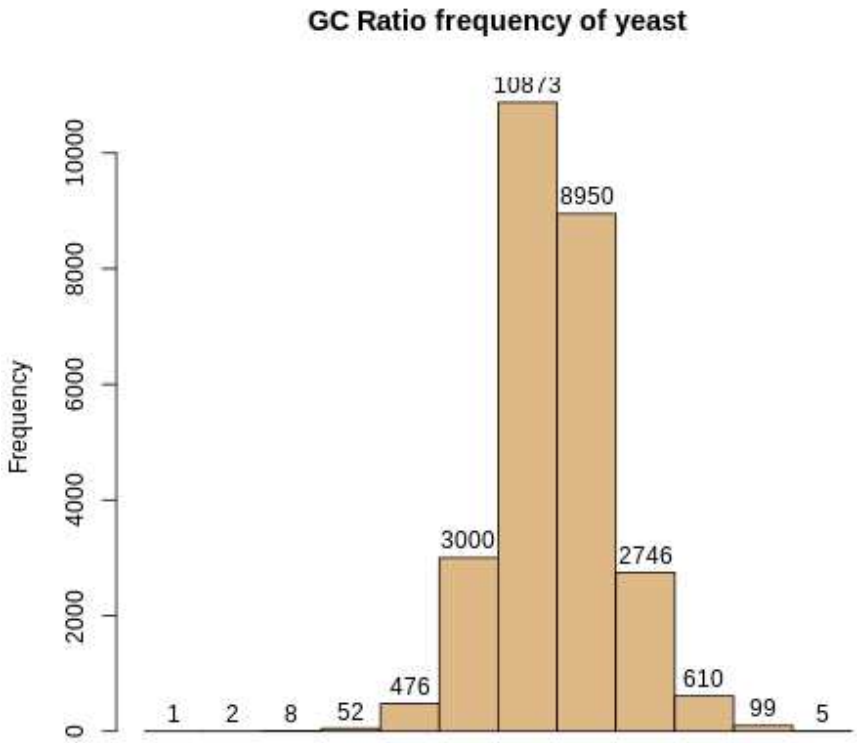
Results - YS9

YS9 is one of the Singapore's baking yeast strains.
The average of G and C nucleotides' ratio in EC9-8 yeast strain's possible ORFS was approximately 39.97%.



Conclusions

Overall in all 3 strains the mean ratio of G and C was 39.86%.
Clearly, not all of yeast's genes contain the same GC number.
The most of possible open reading frames had GC ratios between 0.35 and 0.45.
The GC-content of all three strains was similar, but not perfectly 38.3% as it was predicted. This might be because we didn't analyse reverse complement ORFs.



Thank you for attention