

Essential Gene Controlling Cell Viability CDC28

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Research Scholarship

Arda Deniz Tugrul
170715490, a.tugrul@newcastle.ac.uk
Supervisor: Dr Peter Banks



Introduction

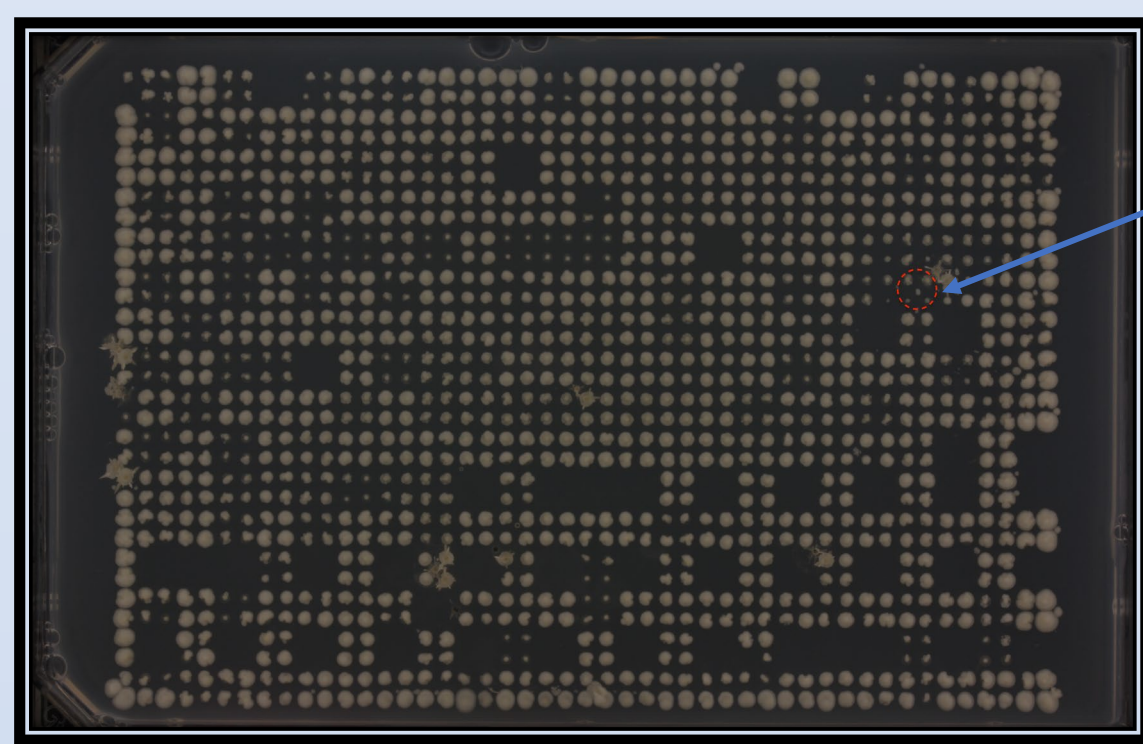
- CDC28 gene is essential for cell growth and survival
- Interaction with other proteins, forming complexes with different biological processes (75 targets identified)

Importance

- Cell cycle regulation is extremely important in terms of understanding the diseases like cancer

Aim

- To investigate the effects of CDC28 deletion on cell growth and fitness



SAC6



THP1

Figure 2 - images of the final culture plates

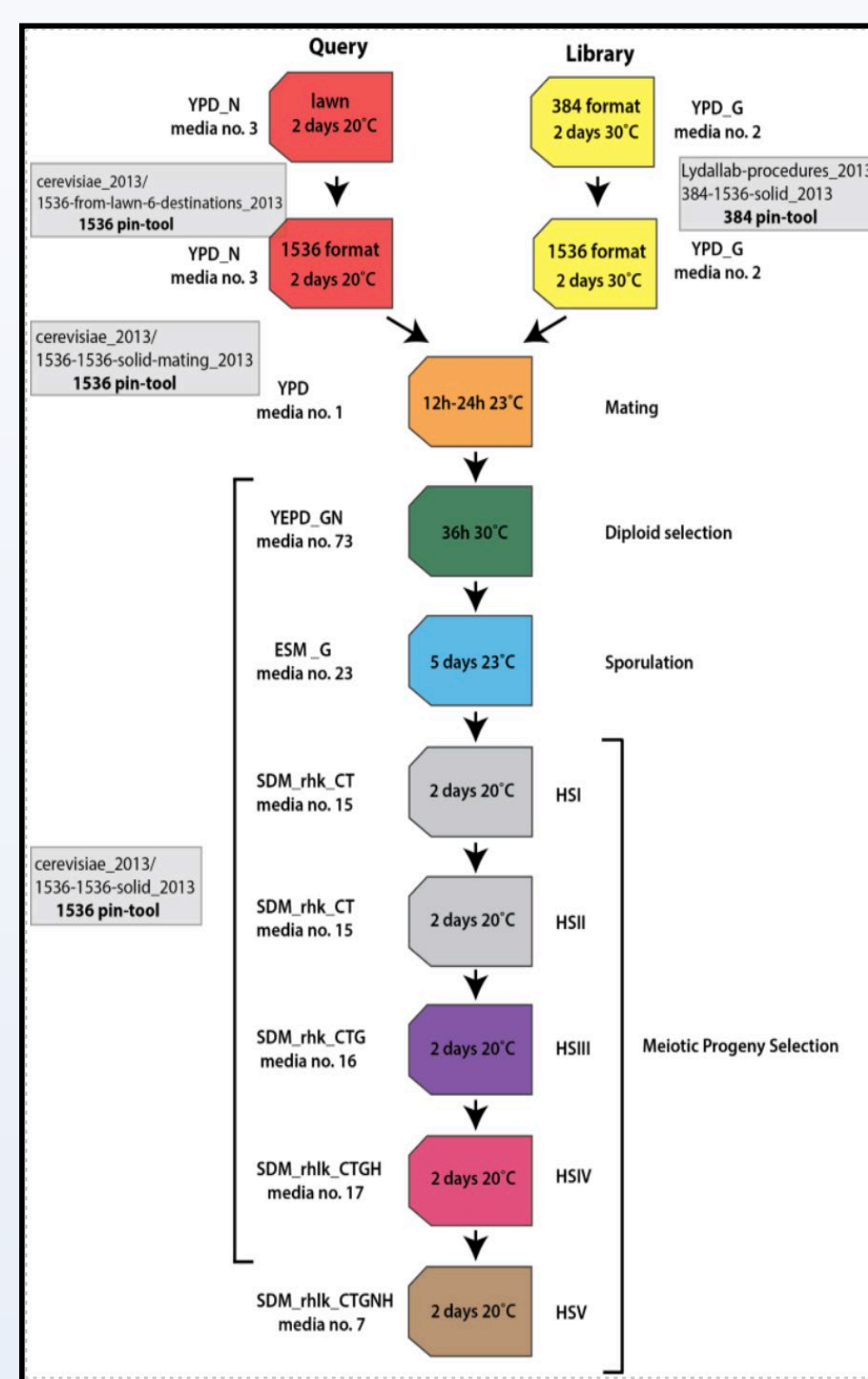


Figure 1 – steps involved in culturing the query and library strains and meiotic progeny selection

Methods

- Acquiring 1536 format from the query as well as from the library
- Culturing CDC28 strain
- Mating on YPD rich media (our CDC28 strain with the library of gene knockout)
- Sporulation (formation of haploids)
- Eukaryotic selective markers for our haploids selection

Results

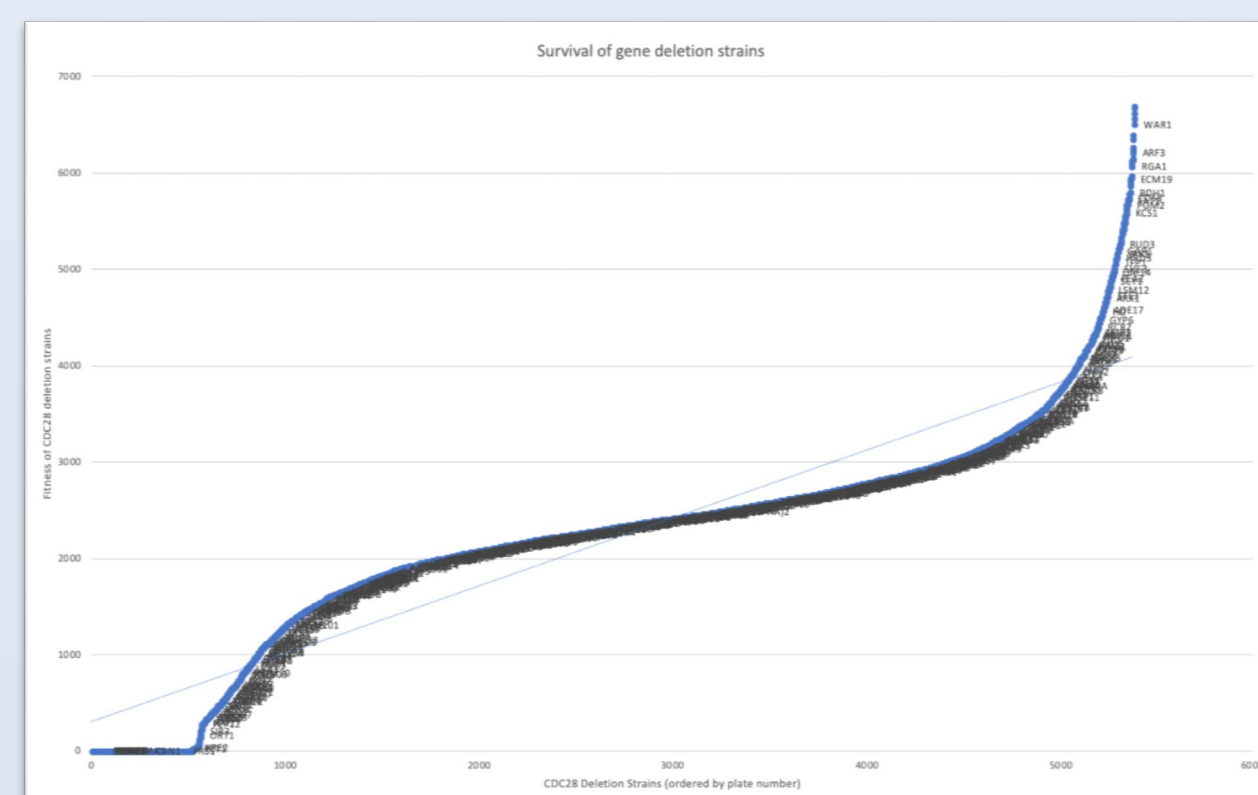


Figure 3a

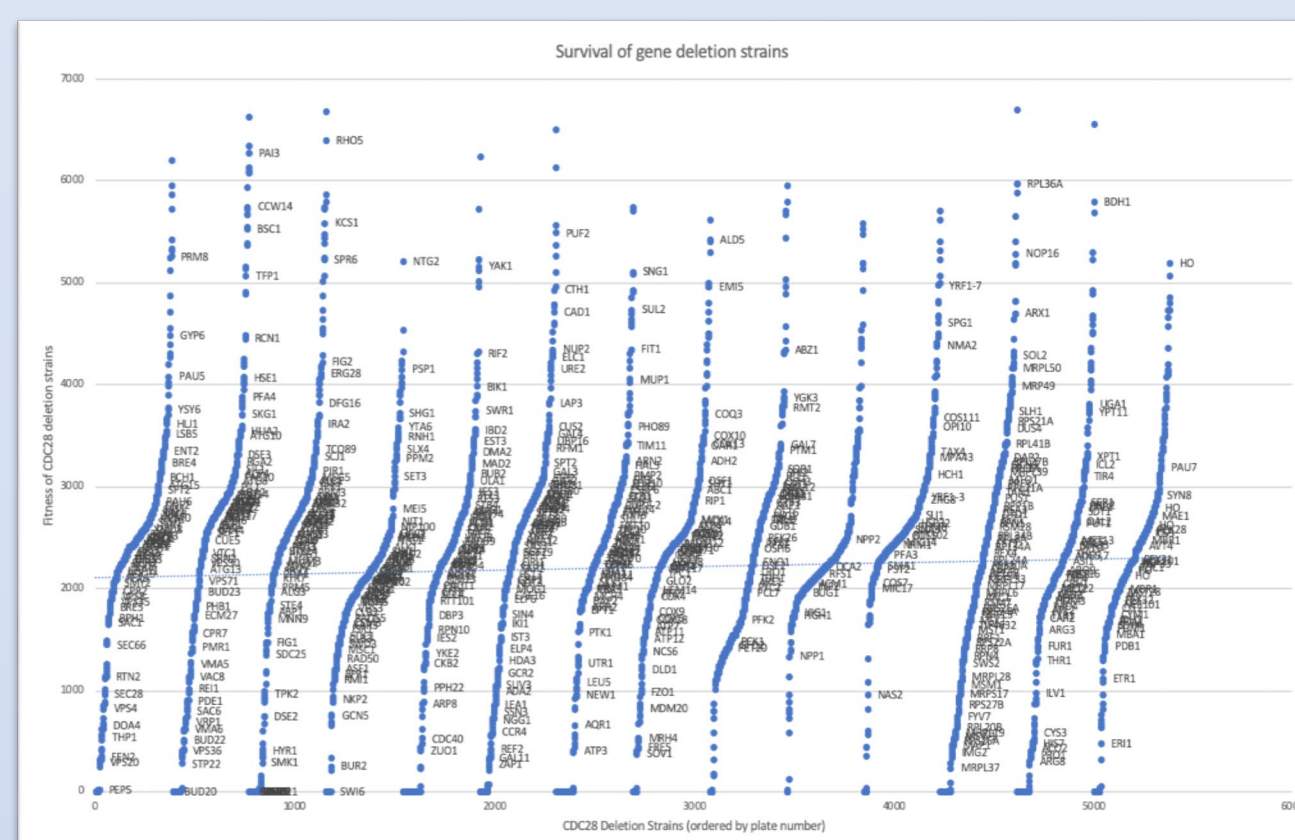


Figure 3b

- Figure 3a shows the the spread of the data and the outer layers

- Figure 3b shows the colony size on each column, with gene deletion names

Conclusion

- Selectively identified certain smaller colonies, which indicated lower fitness levels
- SAC6 and THP1 have had lower fitness, which are both known genes to interact with CDC28
- SAC6 is involved in the maintenance of actin cytoskeleton and it is phosphorylated by CDC28
- THP1 is a nuclear pore associated protein and is involved in mRNA export from nucleus. THP1 also known as G1 cyclin is phosphorylated by CDC28

Further Research

- DNA staining
- Additional knockouts for SAC6, THP1
- Co-immunoprecipitation for other 75 protein targets of CDC28