

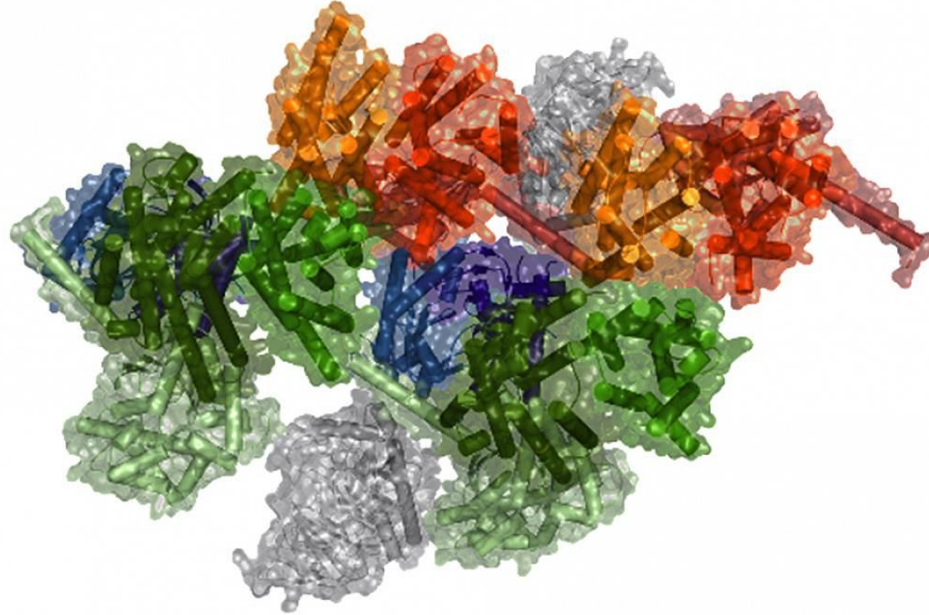
Integration of Macromolecular Complex Data into the *Saccharomyces* Genome Database

International Biocuration Conference 2019
Cambridge, UK

Poster # 121

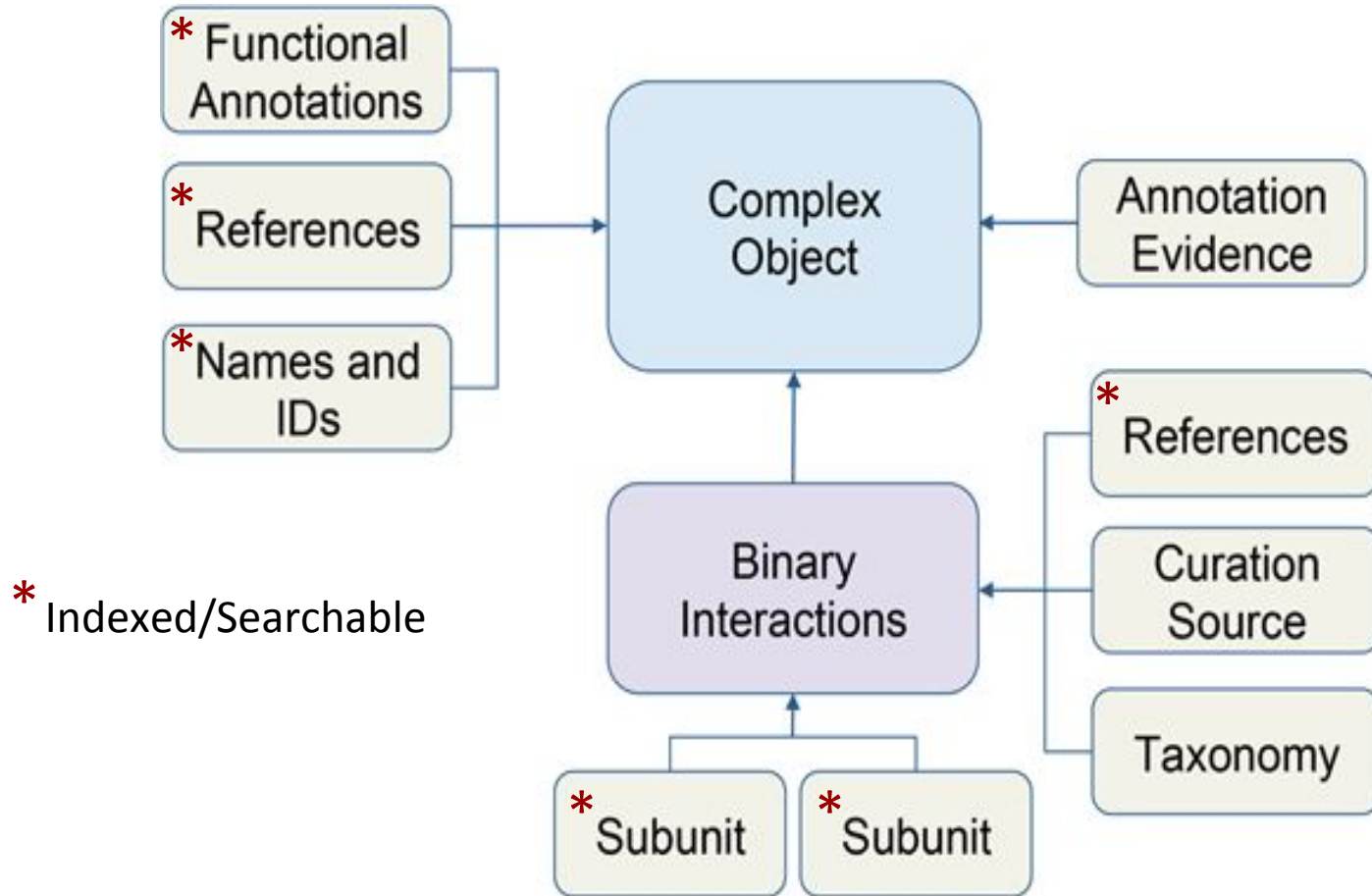
Wong E et al (2019). PMID: 30715277

What is a macromolecular complex?



From NIH Image Gallery

Data schema



Connecting Datatypes

Summary

Sequence

Protein

Gene Ontology

Phenotype

Interactions

Regulation

Expression

Literature

MAD1 / YGL086W

Locus Overview

Sequence

Protein

Gene Ontology

Complex

Phenotype

Interaction

Regulation

Expression

Summary Paragraph

Literature

History

MAD1 / YGL086W Overview

Standard Name: MAD1¹

Systematic Name: YGL086W

SGD ID: SGD:S000003054

Feature Type: ORF, Verified

Description: Coiled-coil protein involved in spindle-assembly checkpoint; required for inhibition of karyopherin/importin Pse1p (aka Kap121p) upon spindle assembly checkpoint arrest; phosphorylated by Mps1p upon checkpoint activation which leads to inhibition of anaphase promoting complex activity; forms a complex with Mad2p; gene dosage imbalance between MAD1 and MAD2 leads to chromosome instability^{2 3 4 5}

Name Description: Mitotic Arrest-Deficient^{1 2}

Comparative Info: Integrated model organism details available at the Alliance of Genome Resources website

Sequence ⓘ

Sequence Details ⓘ

Download (.fsa) ▼

View in: JBrowse

Primary Source: Condensed nuclear chromosome kinetochore (KOR5, KMT)

nucleus (IDA)

Complex ⓘ

- Mitotic checkpoint complex, MAD1-MAD2-BUB1-BUB3 subcomplex
- Mitotic spindle assembly checkpoint Mad1-Mad2 complex

Phenotype ⓘ

Phenotype Details ⓘ

Summary: Non-essential gene; null mutant has chromosome instability defect and shows sensitivity to benomyl and reduced spore germination; in large scale studies null mutant is resistant to caffeine, camptothecin, hydroxyurea and MMS, but sensitive to DMSO

Classical Genetics

Shared Annotations ⓘ

● FOCUS ● GO ● subunit ● complex

SGD 2019-03-18

All

GO Terms

Subunits


Download (.png)


References ⓘ

London N and Biggins S (2014) Mad1 kinetochore recruitment by Mps1-mediated phosphorylation of Bub1 signals the spindle checkpoint. *Genes Dev* 28(2):140-52 PMID: 24402315
SGD Paper DOI full text PMC full text PubMed

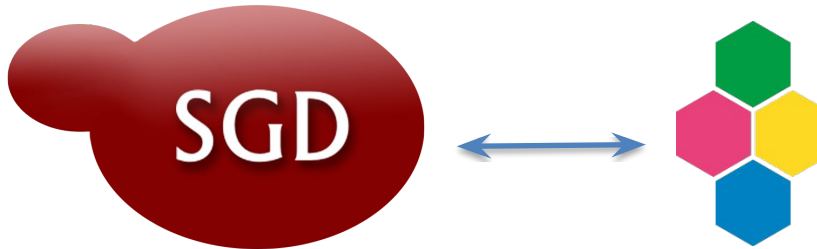
Lara-Gonzalez P, et al. (2012) The spindle assembly checkpoint. *Curr. Biol.* 22(22): R966-80. PMID: 23174302
SGD Paper DOI full text PubMed

Brady DM and Hardwick KG (2000) Complex formation between Mad1p, Bub1p and Bub3p is crucial for spindle checkpoint function. *Curr Biol* 10(11):675-8 PMID: 10837255
SGD Paper DOI full text PubMed

 **ALLIANCE**
of GENOME RESOURCES
FOUNDING MEMBER

 **Saccharomyces**
SGD GENOME DATABASE

Future work

[illegible]

Complex Portal

Advanced Check

PS, et al. (2005)

Abstract

Related References

Gene History

Annotations

Phenotype

Protein

Reference Check

Chenck, P.S. et al. (2005) The roles of MAD2 and MAD3 in mitotic progression and the segregation of nonexchange chromosomes. *Nat Genet* 37(7):756-60

Abstract

Errors in mitotic chromosome segregation are the leading cause of spontaneous abortion and birth defects. In humans, chromosomes that fail to experience crossovers for exchange are error prone, more likely than exchange chromosomes to undergo segregation. We used a yeast model to investigate the mechanisms that partition nonexchange chromosomes. These studies showed that the apical spindle checkpoint (ASCC) of MAD2 and MAD3 had different roles. We identified a new mitotic role for MAD3 (though dispensable for the segregation of exchange chromosomes). It is essential for the segregation of nonexchange chromosomes. The function of MAD3 could also be carried out by human BUB1, MAD2, and MAD3 as in a surveillance mechanism that mediates a metaphase delay in response to nonexchange chromosomes, whereas MAD2 acts as a crucial mitotic time-limiting apparatus device in every mitosis. These findings suggest plausible models for the basis of error chromosome segregation in humans.

PMID: 15818802 DOI: 10.1038 10486

Reference Title *Joint Article (Research Summary, Non U.S. Gov't)*

Authors *Chenck, P.S., Keng, B.J, Board, B.J., Davies D.*

Primary Lab For *MAD2, MAD3, MAD3*

Related References

Reference Title: Content + News

LaGriffola N and Murray, (2015) A life-or-death tie: the role of Nat Genet 37(7):662 3 news items
DOI:10.1038 10486

Gene Ontology Annotations

[Help/Go/Save](#)

Gene	Qualifier	Gene Ontology Term	Annotation Extension	Evidence	Source	Assigned On	Reference
MAD3		disjunction segregation		IMP	SGD	2007-09-05	Chenck PS, et al. (2005) view news

Showing 1 to 1 of 1 entries

Phenotype Annotations

[Search/for Names](#)

Gene	Phenotype	Experiment Type	Mutant Interaction	Strain Background	Chemical	Details
MAD3	metabolic precursors	clonal growth	n/a	528K6		
MAD3	spore germination	clonal growth	n/a	528K6		
MAD3	spore germination	clonal growth	n/a	528K6		

Showing 1 to 3 of 3 entries

Poster #121

<https://academic.oup.com/database/article/doi/10.1093/database/baz008/5306168>

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Saccharomyces Genome Database

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Sandra Orchard
Birgit Meldal – poster #29
Livia Perfetto

Other Cherry lab posters :

#162



Suzi Aleksander

#172



Felix Gondwe

#127



Idan Gabdank

#135



Yunhai Luo

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