PomBase

COMMUNITY CURATION

USING THE COMMUNITY ANNOTATION TOOL (CANTO)

Antonia Lock

PomBase

COMMUNITY CURATION

USING THE COMMUNITY ANNOTATION TOOL (CANTO)

~~Antonia Lock~~
Midori Harris

COMMUNITY CURATION

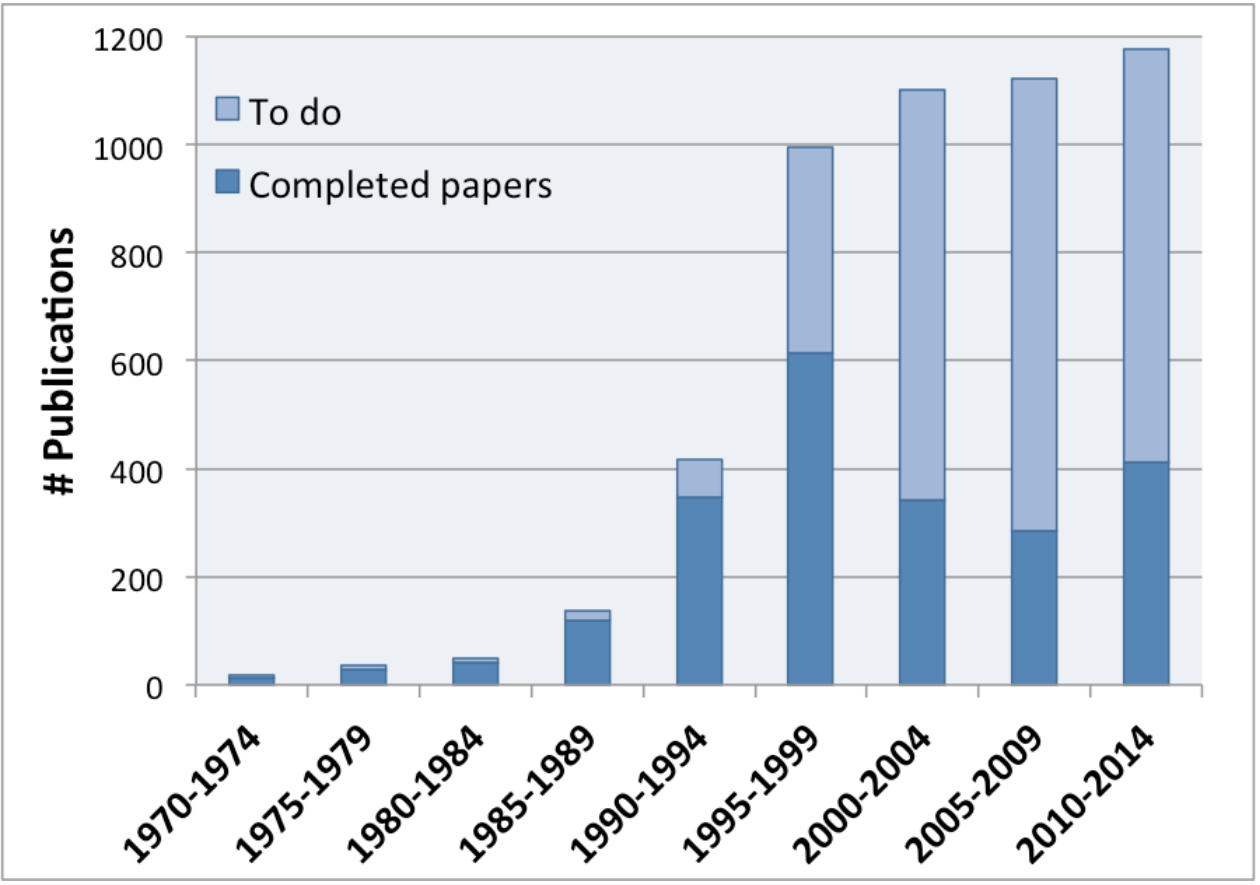
PomBase

- Authors supply draft annotations
- Online community annotation tool: Canto
- Curators review all submissions

- Launched 2012
- 270 submissions to date

CURATION STATUS

PomBase

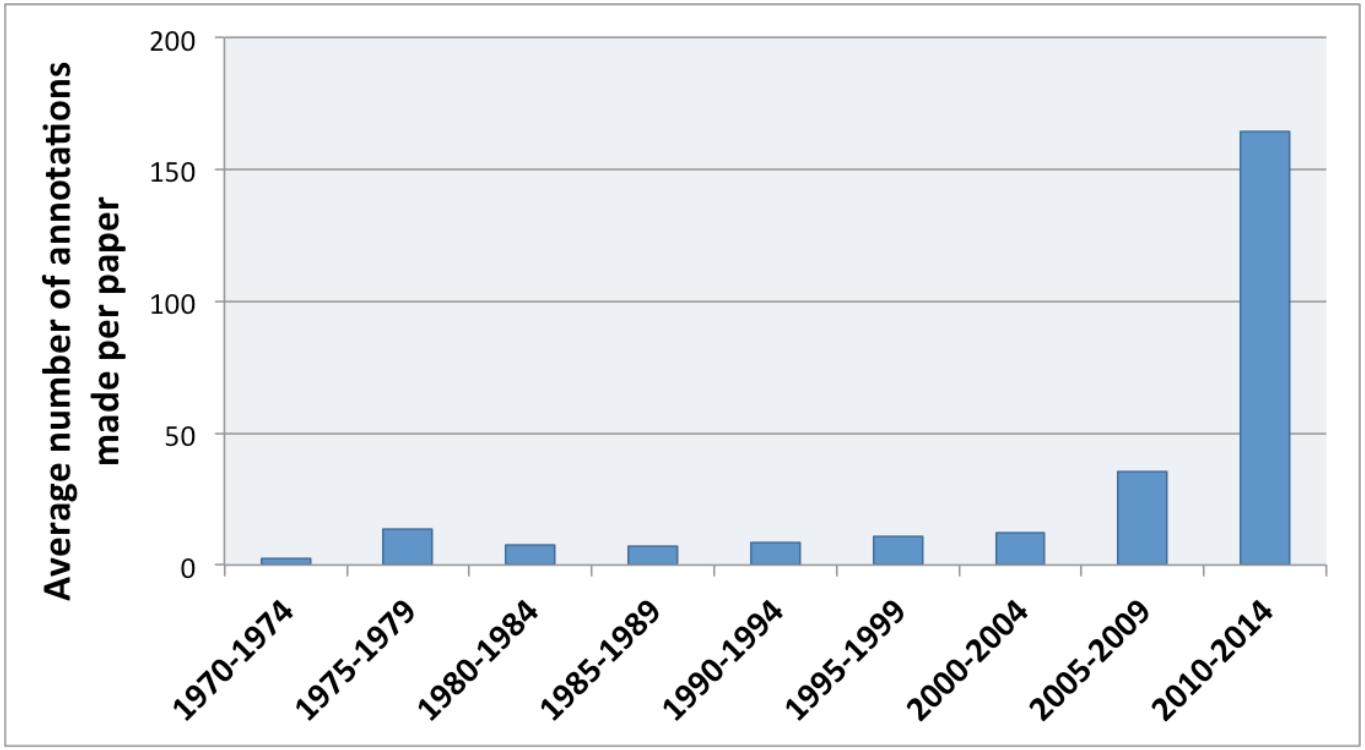


- 5050 *S. pombe* publications contain information that we can curate
- We have completed 2200 of these (44%)

WHY?

PomBase

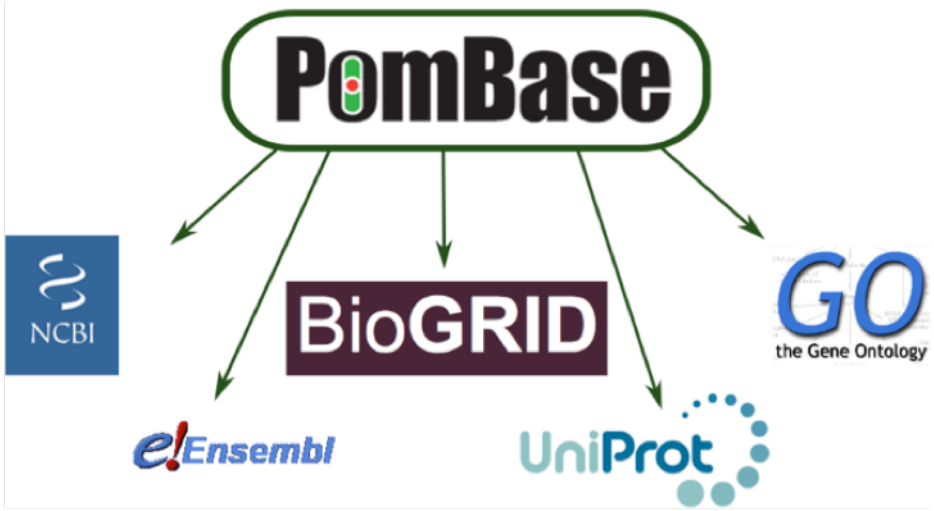
- Number of *S. pombe* papers published each year has reached a plateau
- The amount of information contained in each paper has not!



WHY?

PomBase

- Database benefits
  - Improved quality of annotations
  - Data assimilated more quickly
- User benefits
  - Improved understanding of formal data representation -> more efficient usage of database resources
  - Improved online visibility of publications due to information propagation



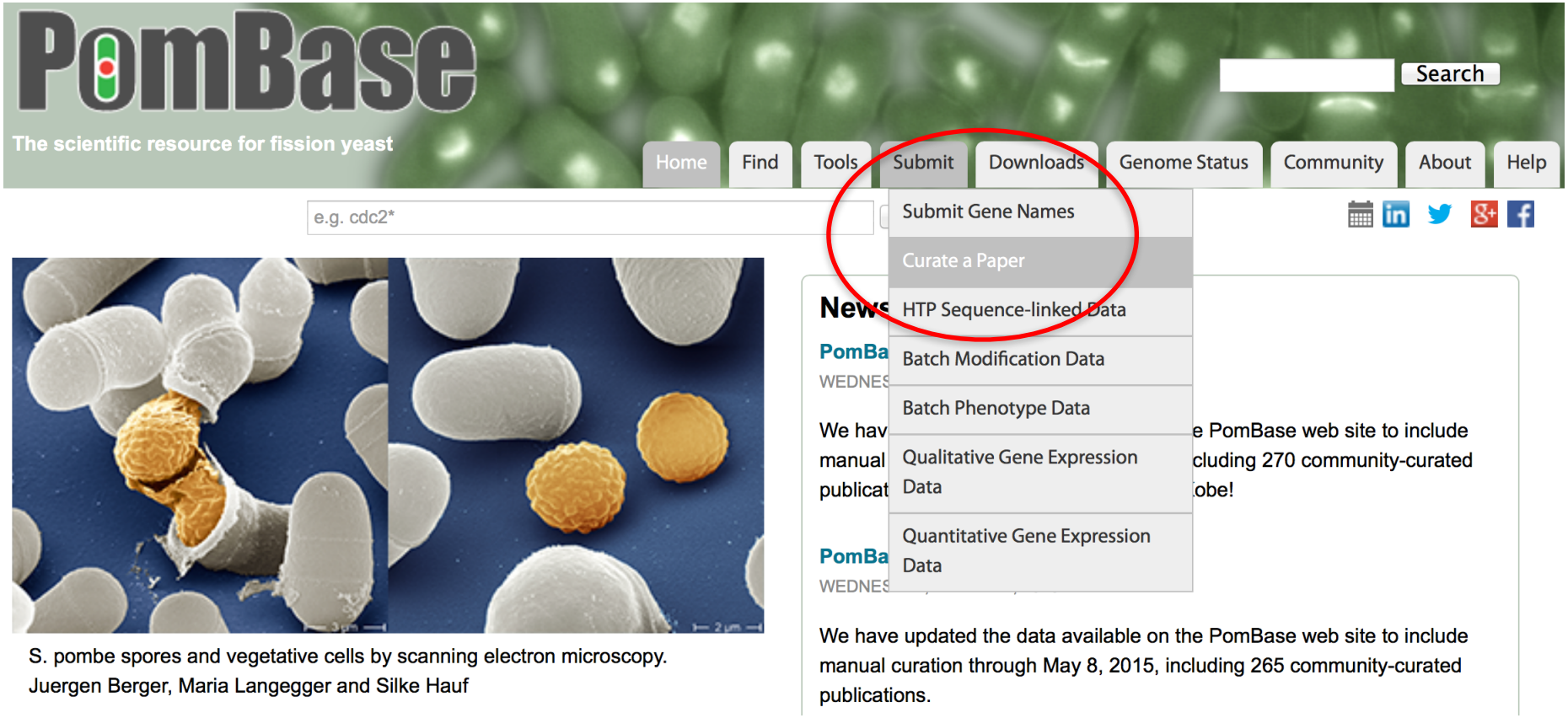
GETTING STARTED

PomBase

- Click the link in the invitation email

or

- Go to www.pombase.org



S. pombe spores and vegetative cells by scanning electron microscopy.
Juergen Berger, Maria Langegger and Silke Hauf

GETTING STARTED

PomBase

- Click the link in the invitation email

or

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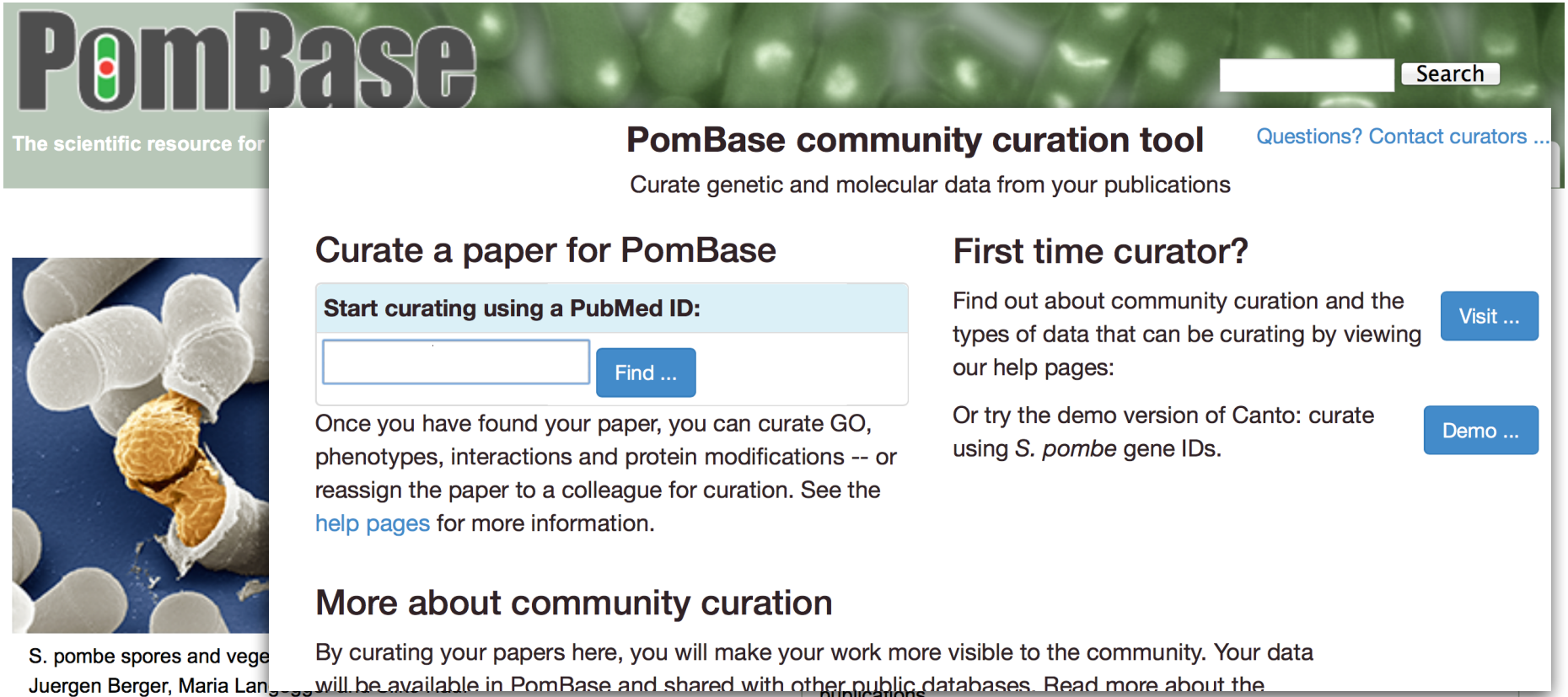

S. pombe spores and vege
Juergen Berger, Maria Lan

GETTING STARTED

Abstract Send to:

Mol Genet Genomics. 2003 Jul;269(4):437-42. Epub 2003 Apr 2.

A defect in a fatty acyl-CoA synthetase gene, lcf1+, results in a decrease in viability after entry into the stationary phase in fission yeast.

Oshiro T[1], Aiba H, Mizuno T.

Author information

Abstract

An intriguing mutant was isolated in Schizosaccharomyces pombe, which is defective in the maintenance of viability after entry into the stationary phase. In the logarithmic growth phase, the mutant cells grow at the same rate as the parental cells. Upon the onset of the stationary phase, however, the mutant cells lose viability very rapidly. It was found that this phenotype was due to a mutational lesion in the lcf1+ gene, which encodes a long-chain fatty acyl-CoA synthetase. The lcf1Deltamutant shows pleiotropic phenotypes, in that they are also sensitive to high temperature (37 degrees C) and to high salt concentrations (0.9 M KCl) in the medium. Based on the fact that Lcf1 is highly homologous to Faa1 and Faa4 of Saccharomyces cerevisiae, both of which have previously been suggested to play roles in the maintenance of endogenous acyl-CoA pools, the possible function of Lcf1 in S. pombe is discussed.

PMID: 12684881 [PubMed - indexed for MEDLINE]

GETTING STARTED

Abstract ▾ Send to: ▾

Mol Genet Genomics. 2003 Jul;269(4):437-42. Epub 2003 Apr 2.

A defect in a fatty acyl-CoA synthetase gene, lcf1+, results in a decrease in viability after entry into the stationary phase in fission yeast.

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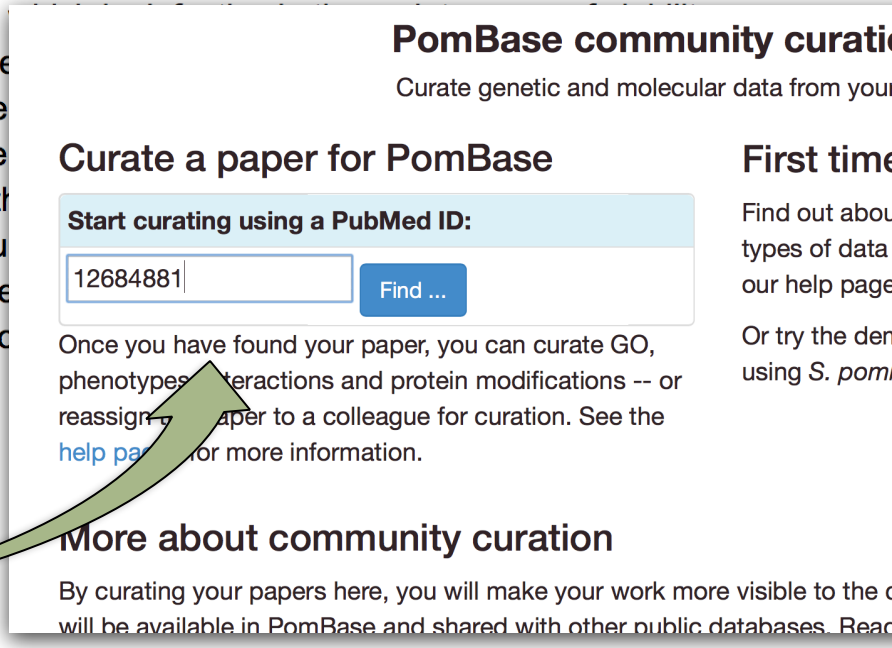


GETTING STARTED

PomBase

Create gene list for PMID:12684881

Please list the genes studied in this paper using the systematic identifier (eg. SPCC1739.10) or standard name (eg. cdc11) separated by commas, spaces, tabs or one per line.

lcf1
sty1

Back Continue

☐ This paper does not contain any gene-specific information

SUMMARY PAGE

PomBase

PomBase Canto
PMID:12684881 summary

PMID:12684881 summary

Questions? Contact curators ...

Genes and genotypes

Click on a gene name to start entering data

lcf1
sty1

Edit gene list ...

Genotype management ...

Publication details

PubMed

ID	PMID:12684881
Title	A defect in a fatty acyl-CoA synthetase gene, lcf1+, results in a decrease in viability after entry into the stationary phase in fission yeast.
Authors	Oshiro T, Aiba H, Mizuno T

Pause curation | Submit to curators

ADDING ANNOTATIONS

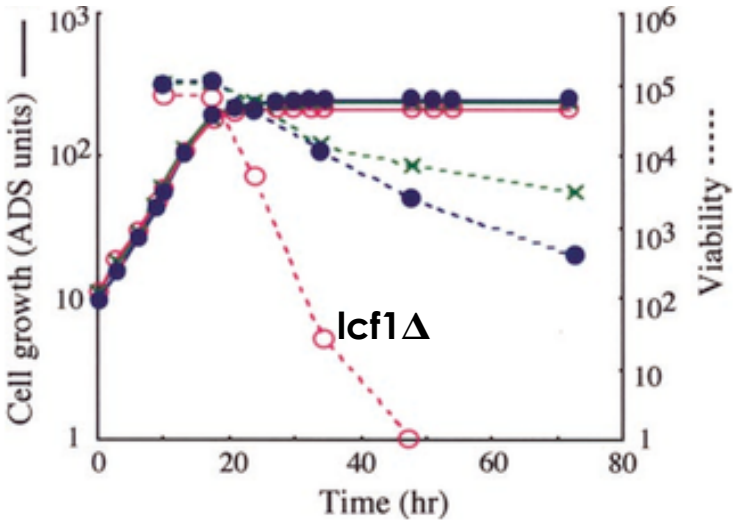
PomBase

- All annotations are based on data from the publication

PHENOTYPE DATA

PomBase

A

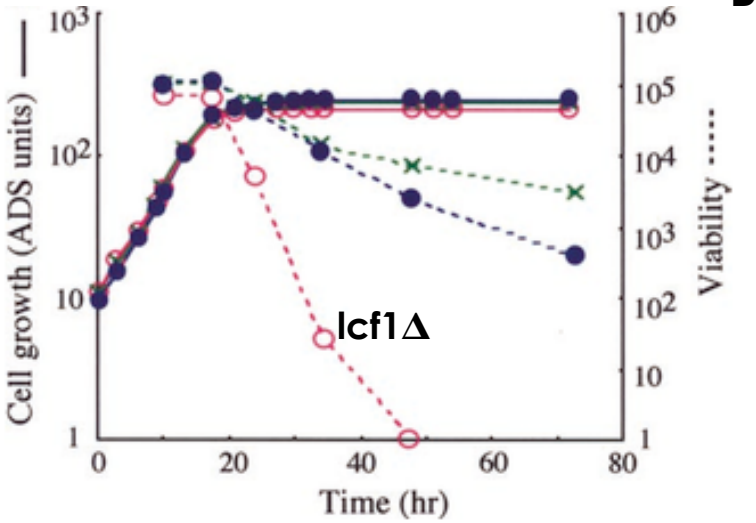


A: Loss of viability in stationary phase

PHENOTYPE DATA

PomBase

A



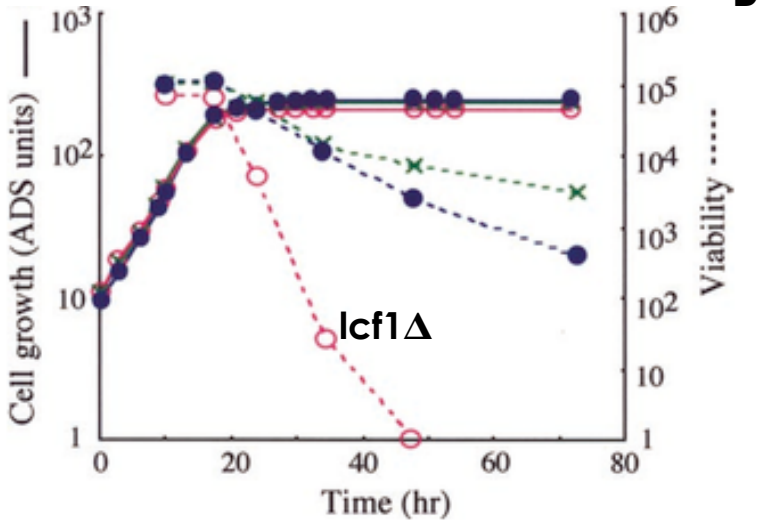
B

A: Loss of viability in stationary phase
B: Sensitive to salt stress

PHENOTYPE DATA

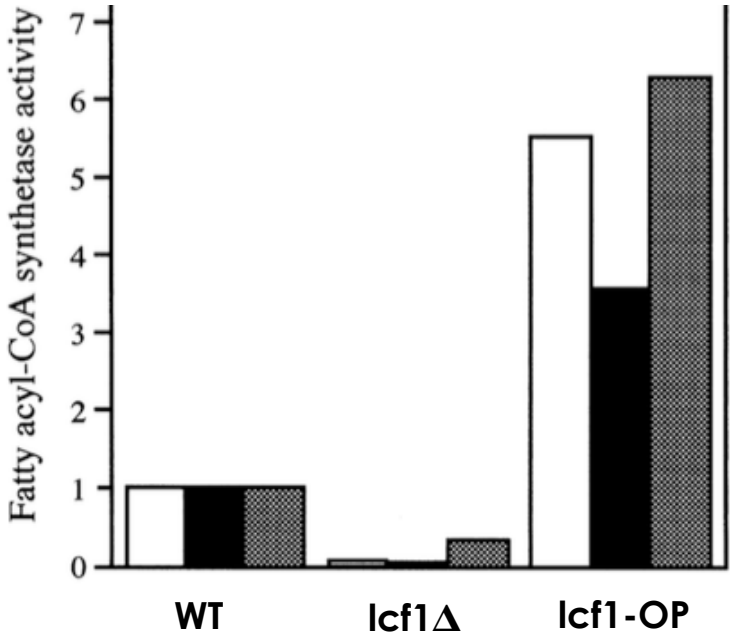
PomBase

A



B

C



A: Loss of viability in stationary phase
B: Sensitive to salt stress
C: Decreased (lcf1Δ) and increased (lcf1-OP) fatty acyl-CoA synthetase activity in cell extracts

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PMID:12684881 summary

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CURATION TYPES

PomBase

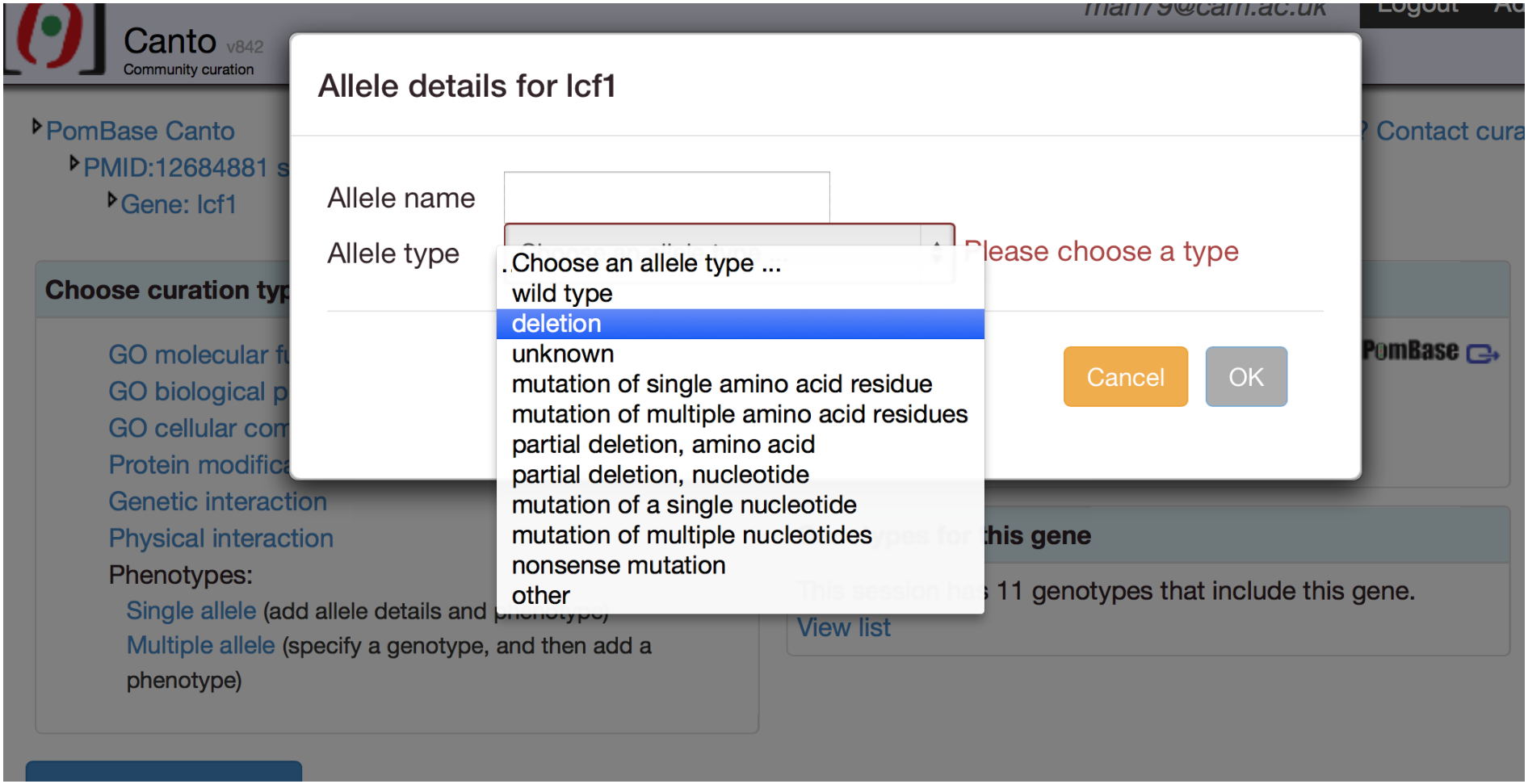
PomBase Canto
- PMID:12684881 summary
  - Gene: lcf1

Choose curation type for lcf1:

GO molecular function
GO biological process
GO cellular component
Protein modification
Genetic interaction
Physical interaction
Phenotypes:
- Single allele (add allele details and phenotype)
- Multiple allele (specify a genotype, and then add a phenotype)

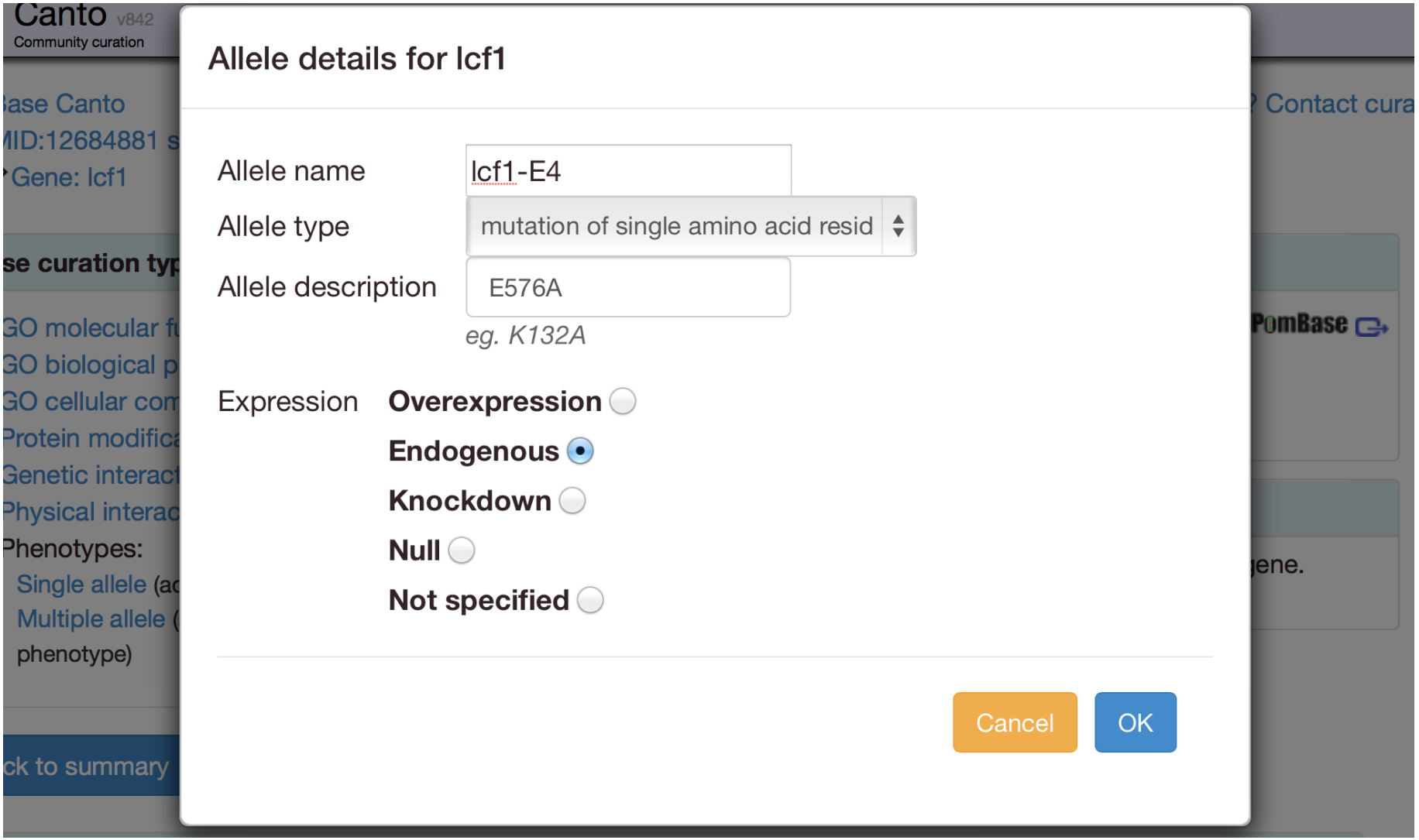
ALLELE DETAILS

PomBase



ALLELE DETAILS

PomBase



GENOTYPES

PomBase

- PomBase Canto
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Phenotypes:
Single allele (add allele details and phenotype)
Multiple allele (specify a genotype, and then add a phenotype)

GENOTYPES

PomBase

PomBase Canto

PMID:12684881 summary

Add a genotype

Add alleles from the genes below until the genotype is fully specified.

Name:

short genotype name (optional) ...

Background:

genotype background (optional) ...

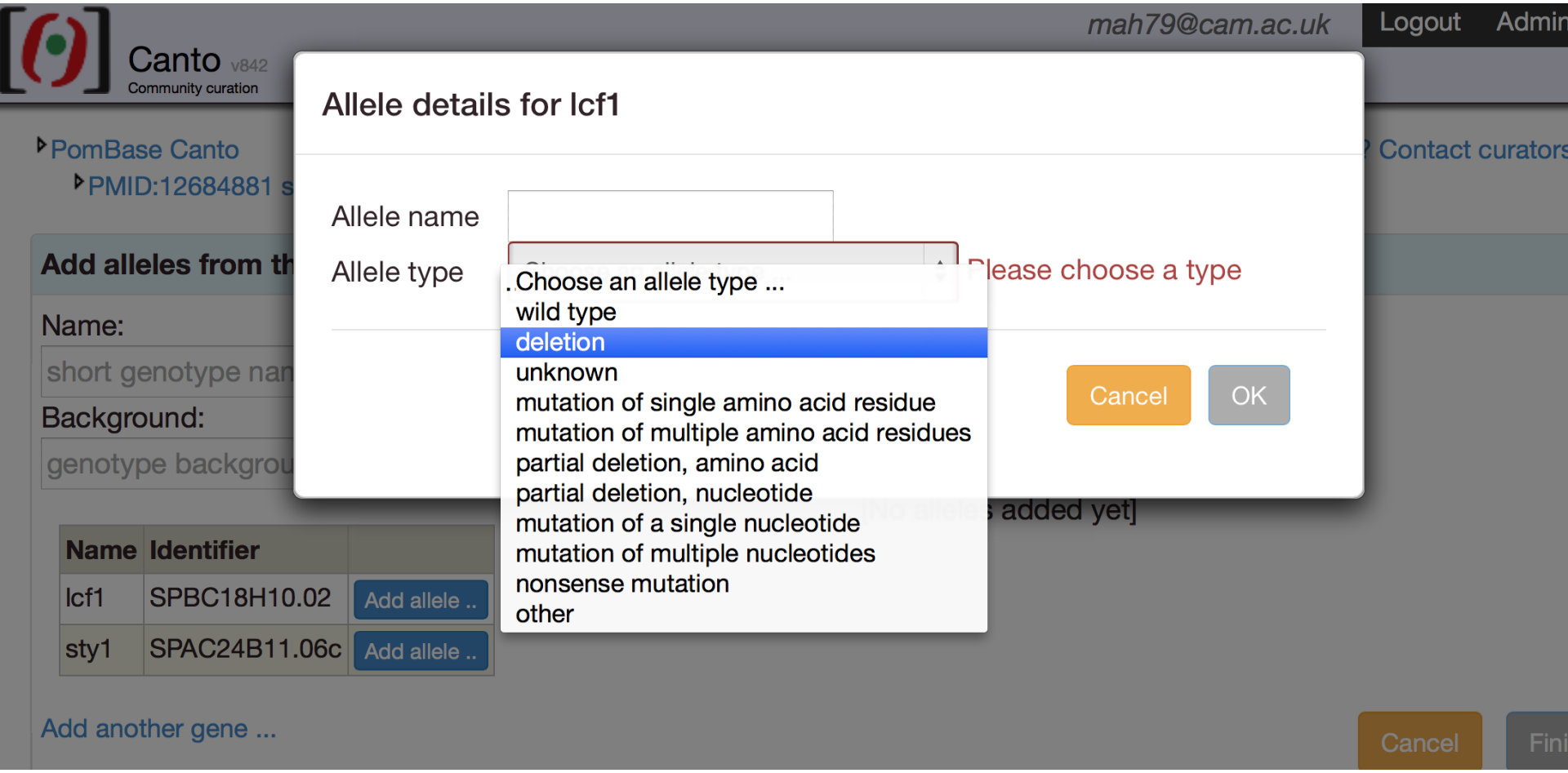
[No alleles added yet]

Name	Identifier	
lcf1	SPBC18H10.02	Add allele ..
sty1	SPAC24B11.06c	Add allele ..

Add another gene ...

GENOTYPES

PomBase



TERM SEARCH

PomBase Canto

PMID:12684881 summary

Genotype: lcf1delta

Search for phenotype term

Annotate normal or abnormal phenotypes, and the associated alleles. A phenotype is any observable characteristic or trait of an organism; examples include multinucleate, abnormal spindle, inviable. more ...

Start typing a phenotype in the search box. If you do not find the term you are looking for with your initial search, begin with a broad term (cell phenotype, multinucleate, abnormal spindle, inviable) more ...

<- Back

A: Loss of viability in stationary phase

TERM SEARCH

PomBase Canto
PMID:12684881 summary
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<- Back

A: Loss of viability in stationary phase
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C: Decreased (lcf1Δ) and increased (lcf1-OP) fatty acyl-CoA synthetase activity in cell extracts

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PomBase Canto

PMID:12684881 summary

Genotype: lcf1delta

Que

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loss of viability in stationary

loss of viability in stationary phase **(FYPO:0000245)**

loss of viability at low temperature **(FYPO:0003903)**

loss of viability at high temperature **(FYPO:0001387)**

normal **viability in stationary** phase **(FYPO:0001310)**

increased **viability in stationary** phase **(FYPO:0001309)**

loss of viability upon nutrient depletion **(FYPO:0000244)**

loss of viability upon glucose starvation **(FYPO:0004162)**

Term name

loss of viability in stationary phase

Definition

A cell population phenotype in which a smaller than normal proportion of the population remains viable after entering stationary phase.

TERM SEARCH

PomBase Canto

Questions

- PomBase Canto
  - PMID:12684881 summary
    - Genotype: lcf1delta

Search for phenotype term

Annotate normal or abnormal phenotypes, and the associated alleles. A phenotype is any observable characteristic or trait of an organism; examples include multinucleate, abnormal spindle, inviable. more ...

Start typing a phenotype in the search box. If you do not find the term you are looking for with your initial search, begin with a broad term (cell phenotype, multinucleate, abnormal spindle, inviable) more ...

sensitive to salt

- **sensitive to salt** stress **(FYPO:0000271)**
- **sensitive to** tacrolimus during **salt** stress **(FYPO:0001749)**
- **sensitive to** arsenic **(FYPO:0000093)**
- **sensitive to** benomyl **(FYPO:0000094)**
- **sensitive to** bismuth **(FYPO:0000758)**
- **sensitive to** cadmium **(FYPO:0000096)**
- **sensitive to** calcium **(FYPO:0000098)**

Term name

sensitive to salt stress

Definition

A cell phenotype observed in the vegetative growth phase of the life cycle in which cells show increased sensitivity to a salt stress.

EVIDENCE & CONDITIONS

PomBase

PomBase Canto
PMID:12684881 summary
Genotype: lcf1delta
Search: "sensitive to salt stress"
sensitive to salt stress

Choose evidence and conditions for annotating lcf1delta with

Cell growth assay

Please add experimental conditions:

K

+ K ions
+ KCl

+ KCl | + YPD | liquid culture

Term name
+ KCl

Definition
An experimental condition in which potassium chloride was added to the medium or assay buffer in excess compared to standard medium or assay buffers.

<- Back

DUPLICATE (1)

PomBase

phenotype

New single allele annotations for lcf1delta for PMID:12684881 Add ...

Genes	Genotype	Term ID	Term name	Evidence code	Conditions	Curator	
lcf1	lcf1Δ	FYPO:0000271	sensitive to salt stress	Cell growth assay	+ KCl	Antonia Lock <a.lock@ucl.ac.uk>	Edit Duplicate Delete
lcf1	lcf1Δ	FYPO:0000245	loss of viability in stationary phase	Cell growth assay		Antonia Lock <a.lock@ucl.ac.uk>	Edit Duplicate Delete

Edit fields to create a new phenotype annotation for lcf1delta

Genotype lcf1delta

Term name sensitive to salt stress

Evidence code Cell growth assay

Please add experimental conditions:

+ KCl ×

Type a condition ...

Previously used conditions (click to add to list):

+ + KCl | + YPD | + agar plates | + glucose MM | + liquid culture

Term suggestion

Name ...

Definition ...

Comment

Annotation extension

Curator Antonia Lock <a.lock@ucl.ac.uk>

Cancel OK

RETURN TO SUMMARY

PomBase

PomBase Canto
PMID:12684881 summary
Genotype: lcf1delta

Genotype: lcf1delta

Questio

Actions ...

Add a new phenotype for this genotype ...

Genotype details

Name	[none]
Background	
Description	lcf1Δ

lcf1Δ - lcf1

Edit ...

<- Back to summary

phenotype

New single allele annotations for lcf1delta for PMID:12684881 Add ...

Genes	Genotype	Term ID	Term name	Evidence code	Conditions	Curator	
lcf1	lcf1Δ	FYPO:0000271	sensitive to salt stress	Cell growth assay	+ KCl	Antonia Lock <a.lock@ucl.ac.uk>	Edit Duplicate Delete
lcf1	lcf1Δ	FYPO:0000271	sensitive to salt stress	Cell growth assay	+ NaCl	Antonia Lock <a.lock@ucl.ac.uk>	Edit

DUPLICATE (2)

PomBase Canto
PMID:12684881 summary

PMID:12684881 summary

Questions? Contact curators ...

Genes and genotypes

Click on a gene name to start entering data

lcf1
sty1

Edit gene list ...

Genotype management ...

Publication details

ID	PMID:12684881
Title	A defect in a fatty acyl-CoA synthetase gene, lcf1+, results in a decrease in viability after entry into the stationary phase in fission yeast.
Authors	Oshiro T, Aiba H, Mizuno T

Pause curation | Submit to curators

phenotype

New single allele annotations for PMID:12684881 Add ...

Genes	Genotype	Term ID	Term name	Evidence code	Conditions	Curator	
lcf1	lcf1Δ	FYPO:0000245	loss of viability in stationary phase	Cell growth assay		Antonia Lock <a.lock@ucl.ac.uk>	Edit Duplicate Delete

Edit fields to create a new phenotype annotation for lcf1delta

Genotype

Choose a genotype ...
E4(G310D)[Not specified]
..lcf1delta
sty1delta
W376(W376->stop)[Not specified]
G490D(G490D)[Not specified]
G339D(G339D)[Not specified]
E464K(E464K)[Not specified]
G249D(G249D)[Not specified]
G457E(G457E)[Not specified]
W344(W344->stop)[Not specified]
lcf1+[Overexpression]
lcf1delta

Term name

Evidence code

dd to list):

+ KCl | + NaCl | + YPD | + agar plates | + glucose MM | + liquid culture

Term suggestion

Name ...

Definition ...

Comment

Annotation extension

Curator

Antonia Lock <a.lock@ucl.ac.uk>

MAKING GO ANNOTATIONS

PomBase

MAKING GO ANNOTATIONS

PomBase

- Can be based on direct observations
  - e.g. enzyme assays using purified proteins
- Can be based on phenotypes
  - Knock out an enzyme with a predicted function and see the activity decrease
  - Overexpress an enzyme with a predicted function and see the activity increase

MAKING GO ANNOTATIONS

PomBase

MAKING GO ANNOTATIONS

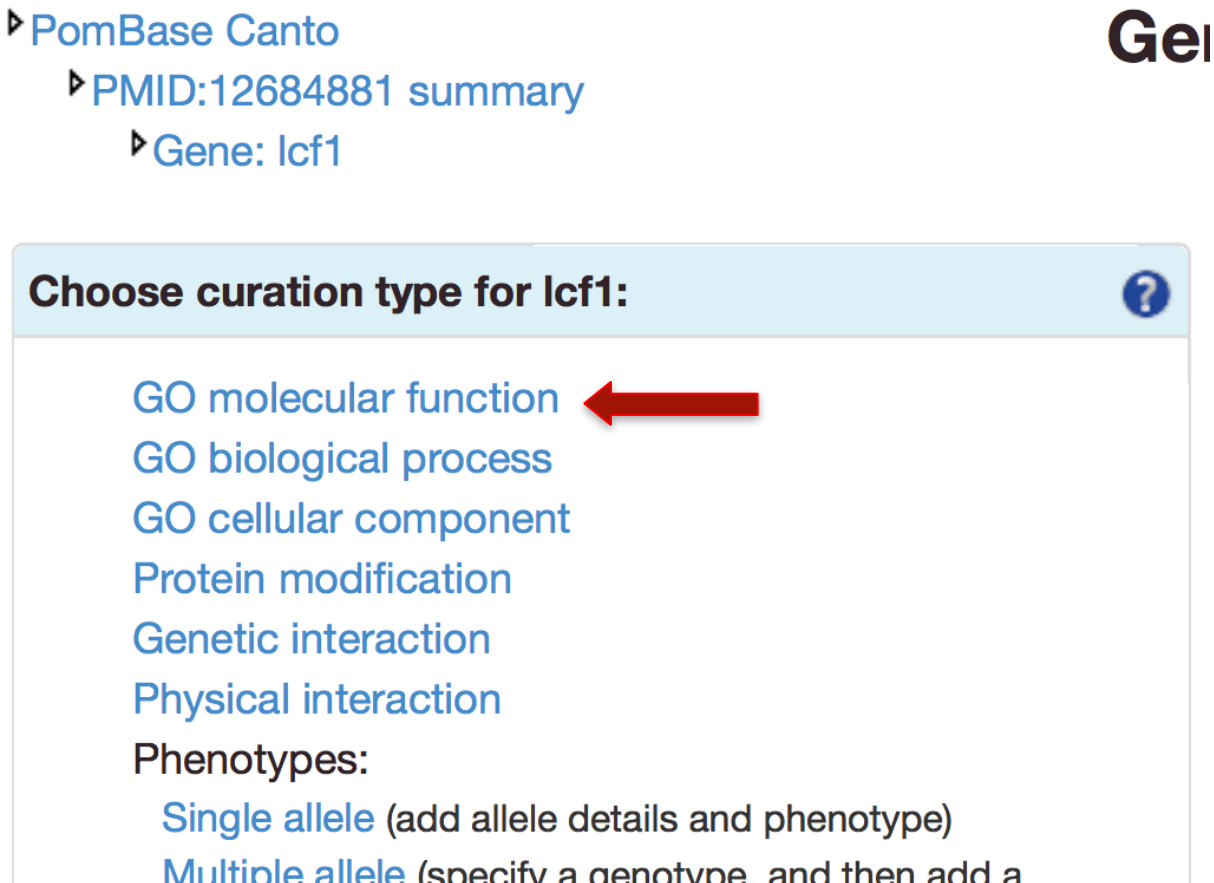
PomBase

- Can be based on direct observations
  - e.g. enzyme assays using purified proteins
- Can be based on phenotypes
  - Knock out an enzyme with a predicted function and see the activity decrease
    - lcf1Δ- decreased fatty acyl-CoA synthetase activity
  - Overexpress an enzyme with a predicted function and see the activity increase
    - lcf1-OP – increased fatty acyl-CoA synthetase activity
  - Also infer involvement in process: fatty acyl-CoA metabolism

MOLECULAR FUNCTION

PomBase

- Lcf1 contains a synthetase/ligase protein domain
- Infer that Lcf1 itself performs this function



Search for GO molecular function term

A molecular function is a catalytic (e.g. protein serine/threonine kinase activity, pyruvate carboxylase activity) or binding activity, or any other activity that occurs at the molecular level. more ...

Start typing a molecular function in the search box. If you do not find the term you are looking for with your initial search, begin with a broad term (transporter, transferase activity) more ...

fatty acyl synthase

- **fatty-acyl**-CoA **synthase** activity **(GO:0004321)**
- **fatty-acyl**-ethyl-ester **synthase** activity **(GO:0030339)**
- **acyl**-[**acyl**-carrier-protein] hydrolase activity **(GO:0016297)**
- methylene-**fatty-acyl**-phospholipid **synthase** activity **(GO:0004481)**
- cyclopropane-**fatty-acyl**-phospholipid **synthase** activity **(GO:0008825)**
- **fatty-acyl**-CoA binding **(GO:0000062)**
- **fatty-acyl** group transporter activity **(GO:0015246)**

Term name

fatty-acyl-CoA synthase activity

Definition

Catalysis of the reaction: acetyl-CoA + n malonyl-CoA + 2n NADH + 2n NADPH + 4n H+ = a long-chain acyl-CoA + n CoA + n CO2 + 2n NAD+ + 2n NADP+.

BIOLOGICAL PROCESS

PomBase Canto
- PMID:12684881 summary
  - Gene: lcf1

Search for GO biological process term

A biological process is series of events accomplished by one or more ordered assemblies of molecular functions, such as cell cycle, transport, or signal transduction. more ...

Start typing a biological process in the search box. If you do not find the term you are looking for with your initial search, begin with a broad term (cell cycle, transport) more ...

fatty acyl

fatty-acyl group transport **(GO:0015915)**
fatty-acyl-CoA transport **(GO:0015916)**
fatty-acyl-CoA catabolic process **(GO:0036115)**
fatty-acyl-CoA metabolic process **(GO:0035337)**
fatty-acyl-CoA biosynthetic process **(GO:0046949)**
long-chain **fatty-acyl**-CoA catabolic process **(GO:0036116)**
long-chain **fatty-acyl**-CoA metabolic process **(GO:0035336)**

Term name
fatty-acyl-CoA metabolic process

Definition
The chemical reactions and pathways involving a fatty-acyl-CoA, any derivative of coenzyme A in which the sulfhydryl group is in thiolester linkage with a fatty-acyl group.

TERM DETAILS

PomBase Canto

Questions? Conta

PMID:12684881 summary

Gene: lcf1

Search: "fatty-acyl-CoA metabolic process"

fatty-acyl-CoA metabolic process

Please read the definition of the currently selected term to ensure that it accurately describes your gene:

View term ancestry in:

AmiGO

QuickGO

ID	**GO:0035337**
Ontology	biological_process
Term name	fatty-acyl-CoA metabolic process
Definition	The chemical reactions and pathways involving a fatty-acyl-CoA, any derivative of coenzyme A in which the sulfhydryl group is in thiolester linkage with a fatty-acyl group.
Synonyms	fatty acyl CoA metabolic process fatty-acyl-CoA metabolism

If possible, please refine your term selection. Clicking on a child term from the list below selects it and shows its definition (and children, if any):

- 2-methylbut-2-enoyl-CoA(4-) metabolic process
- 2-methylbutanoyl-CoA(4-) metabolic process
- 3-methylbut-2-enoyl-CoA(4-) metabolic process
- L-methylmalonyl-CoA metabolic process
- fatty-acyl-CoA biosynthetic process
- fatty-acyl-CoA catabolic process
- isovaleryl-CoA(4-) metabolic process
- long-chain fatty-acyl-CoA metabolic process
- malonyl-CoA metabolic process

TERM DETAILS

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Synonyms	fatty acyl CoA metabolic process

If you need a more specific term to describe the experiment you are annotating, and if none of terms above is appropriate, you can suggest a new term:

Suggest a new child term for GO:0035337 ...

<- Back

Otherwise, use the currently selected term:

Proceed ->

L-methylmalonyl-CoA metabolic process

fatty-acyl-CoA biosynthetic process

fatty-acyl-CoA catabolic process

isovaleryl-CoA(4-) metabolic process

long-chain fatty-acyl-CoA metabolic process

malonyl-CoA metabolic process

GO EVIDENCE

PomBase

- PomBase Canto
  - PMID:12684881 summary
    - Gene: lcf1
      - Search: "fatty-acyl-CoA metabolic process"
        - fatty-acyl-CoA metabolic process
          - long-chain fatty-acyl-CoA metabolic process

Choose evidence for annotating lcf1 with

..Choose an evidence code ...
IMP
IDA
IGI
IPI
EXP

FINISHING

PomBase Canto
PMID:12684881 summary
Gene: lcf1

Questions? Contact curators ...

You have made the following annotation:

Systematic identifier	Gene name	Term ID	Term name	Evidence code	With
SPBC18H10.02	lcf1	GO:0035336	long-chain fatty-acyl-CoA metabolic process	IMP	

Please provide any additional details you have about this process, such as:
i) Direct or indirect targets of the process, such as gene targets of transcriptional or translational regulation, protein targets of a localisation process, etc.
ii) The period or phase (e.g. during S phase; during sporulation) when the gene product acts in the process
The curators will record this additional information in PomBase.

Optional comment:

Optional annotation extension:

You can annotate other genes from your list with the same term and evidence by selecting genes below:

sty1 (SPAC24B11.06c)

Add more genes from PMID:12684881 ...

Finish

FINISHING

PomBase

PomBase Canto
PMID:12684881 summary

PMID:12684881 summary

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Pause curation

Submit to curators

ACKNOWLEDGEMENTS

Curators: Valerie Wood (Cambridge), Midori Harris (Cambridge), Antonia Lock (UCL)

Programmers: Kim Rutherford (Cambridge), Mark McDowall (EBI), Dan Staines (EBI), Ensembl Genomes Team (EBI)

Additional PIs: Steve Oliver (Cambridge), Paul Kersey (EBI), Jürg Bähler (UCL)

You: *S. pombe* researchers, especially all community curators, past and future!

PomBase is funded by the Wellcome Trust and run by a consortium comprising the University of Cambridge, the European Bioinformatics Institute, and University College London.

UNIVERSITY OF CAMBRIDGE

EMBL-EBI

UCL

Supported by wellcome trust