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FEMS Yeast Research

www.fems-microbiology.org

Internet sites useful for research and teaching with yeasts[1]

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Introduction

Many Internet sites contain information on yeasts which is freely available, although you may have to register. The content is dominated by material related to *Saccharomyces cerevisiae* because of its industrial, genetical and genomic importance. With the imminent completion of both *Schizosaccharomyces pombe* and *Candida albicans* genomes, and partial sequencing (ca. 20%) of a further 13 species, other yeasts will start to counterbalance the present bias. Although much of the data are genetic, there are also protocols, bioinformatics software, announcements of meetings, Email directories, micrographs, phylogenies, teaching support, and much else. Only sites that contain a substantial fraction of information directly related to yeasts have been included in this list. The URL addresses were correct on 1st February 2001. This journal may update the list annually. Please send an Email to us about broken links, interesting and new sites.

Tools for analysing genomes

DANTE
http://cnb.uam.es/~tamames/DANTE.html
Useful for the analysis and annotation of genomic or new DNA sequences (*Trends in Biochemical Sciences* (2000), **25**(8), 402-404).

SCPD: the promoter database of *Saccharomyces cerevisiae*
http://cgsigma.cshl.org/jian
Data and tools for the analysis of yeast gene promoters and transcription factors.

RSA-tools: Regulatory Sequence Analysis Tools
http://www.ucmb.ulb.ac.be/bioinformatics/rsa-tools/
A series of modular computer programs for the detection of regulatory sequences in non-coding sequences (*Yeast* (2000), **16**(2), 177-178).

Candidate regulatory sequence elements for cell cycle-dependent transcription in *Saccharomyces cerevisiae*
http://www.ncbi.nlm.nih.gov/CBBresearch/Landsman/Cell_cycle_data/
Identification of short sequence elements involved in the expression of co-regulated genes (*Genome Research* (1999), **9**, 775-92).

TRADAT: Transcription Databases and Analysis Tools
http://www.itba.mi.cnr.it/tradat/
Contains tools for the interpretation of genomic DNA sequences, with emphasis on regulatory sequences.

GenomeInspector
http://www.gsf.de/biodv/genomeinspector.html
Software for the analysis of spatial correlations of elements on DNA sequences (Genomics (1996) **33**, 301-304).

WWW Signal Scan
http://bimas.dcrt.nih.gov/molbio/signal/
Useful for finding and listing homologies of published signal sequences with the input DNA sequence (*CABIOS* (1991), **7**, 203-206).

Gene Regulatory Sequence Analysis
http://compel.bionet.nsc.ru/
A searchable database on composite regulatory elements affecting gene transcription in eukaryotes and the detection of potential composite elements.

PBC DNA/RNA Sequence Analysis
http://www.wehi.edu.au/collaborative/pbc/s5.html
Links to lots of sites with DNA/RNA sequence analysis tools (including the identification of restriction endonuclease and transcription factor sites, and intron & exon regions).

***Saccharomyces cerevisiae* introns**
http://www.EMBL-Heidelberg.DE/ExternalInfo/seraphin/yidb.html

Tools for analysing proteomes

PathCalling Yeast Interaction Database
http://portal.curagen.com/extpc/com.curagen.portal.servlet.Yeast
An analysis that identifies proteins which are likely to

[1] For your convenience, a html document with active hyperlinks can be found on the Journal's page on the FEMS web site at http://www.fems-microbiology.org.

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form stable complexes with proteins (*Nature* (2000), **403**, 623-631).

GQserve – Public GeneQuiz Server
http://columba.ebi.ac.uk:8765/gqsrv/submit
Derives functional annotation for protein sequences and provides supporting evidence, including family alignments.

PAA: Protein Annotator's Assistant
http://www.ebi.ac.uk/paa/
Attempts to attach a hypothetical function to a protein sequence (*Trends in Biochemical Sciences* (2000), **25**(5), 252-253).

UCLA-DoE Lab
http://www.doe-mbi.ucla.edu
Numerous programs to help with the prediction of protein structure and function.

YPD: Yeast Proteome Database
http://www.proteome.com/databases/index.html
Contains proteome databases for *Saccharomyces cerevisiae* and *Schizosaccharomyces pombe* (*Nucleic Acids Research*, **27**, 69-73).

PIR: Protein Information Resource
http://www-nbrf.georgetown.edu/
A comprehensive, annotated, and non-redundant protein sequence database.

The Yeast Protein Interaction Map Project
http://depts.washington.edu/sfields/projects/YPLM/
This is a systematic attempt to identify as many protein-protein interactions among yeast proteins as possible, using a two-hybrid system (*Nature* (2000), **403**, 623-631).

Microarrays
http://www.biologie.ens.fr/en/genetiqu/puces/links.html
Excellent links to many sites: Micro-array news, laboratories and publications, data processing, materials, firms and microarray databases.

Bioinformatics sites

SGD: Saccharomyces Genome Database
http://genome-www.stanford.edu/saccharomyces/
A scientific database of the molecular biology and genetics of the yeast *Saccharomyces cerevisiae*.

MIPS: Munich Information Center for Protein Sequences
http://www.mips.biochem.mpg.de/
Contains various gene/protein databases (including yeasts and the *EUROFAN* project) and a couple of genomic analysis tools.

NCBI *S. cerevisiae*
http://www.ncbi.nlm.nih.gov/PMGifs/Genomes/4932.html
A collection of *Saccharomyces cerevisiae* complete chromosome sequences and annotations (homepage; http://www.ncbi.nlm.nih.gov/).

YTPdb: The Yeast Transport Protein Database
http://www.mips.biochem.mpg.de/proj/eurofan/eurofan_1/n6/index.html
A database of a genome-scale analysis of the membrane transporter proteins of the yeast *Saccharomyces cerevisiae* (*Yeast* (1995), **11**, 1575-1611).

The Kyoto Encyclopedia of Genes and Genomes (KEGG)
http://www.tokyo-center.genome.ad.jp/kegg/
This is an effort "to computerize current knowledge of molecular and cellular biology in terms of the information pathways that consist of interacting molecules or genes and to provide links from the gene catalogs produced by genome sequencing projects".

Saccharomyces cerevisiae analysis

Yeast/human homologies
http://www.ncbi.nlm.nih.gov/cgi-bin/XREFdb/YeastHuman
Cross-references *Saccharomyces cerevisiae* and human genes.

Yeast Gene Duplications
http://acer.gen.tcd.ie/–khwolfe/yeast/topmenu.html
Information of whether genes are part of duplicated regions on the *Saccharomyces cerevisiae* genome (*Gene* (1999), **238**, 253-261).

Published datasets-Stanford
http://genome-www.stanford.edu/cgi-bin/PublicRef?organism=S.+cerevisiae
Links to the web supplements of various papers.

MitBASE - Pilot
http://www3.ebi.ac.uk/Research/Mitbase/mitbiog.pl
A database on nuclear genes involved in mitochondrial biogenesis and its regulation in *Saccharomyces cerevisiae* (*Nucleic Acids Res.* (1999) **27** (1), 147-149).

Nucleolar RNAs
http://www.bio.umass.edu/biochem/rna-sequence/Yeast_snoRNA_Database/snoRNA_DataBase.html
Small Nucleolar RNAs (snoRNAs) from the Yeast *Saccharomyces cerevisiae*.

Links to *Saccharomyces cerevisiae* Labs
http://genome-www.stanford.edu/Saccharomyces/yeastlabs.html
Contains listings of many labs by name and by topic but is no longer maintained so will gradually go out of date.

Link page to *Saccharomyces cerevisiae* resources
http://www.cybergenome.com/yeast/

Schizosaccharomyces pombe and *Candida albicans*

Susan Forsburg Web pages
http://pingu.salk.edu/–forsburg/pombeweb.html
Comprehensive pages on *Schizosaccharomyces pombe* teaching and research (especially cell cycle) including protocols, vectors, meetings, addresses and many links.

***Schizosaccharomyces pombe* web pages**
http://www.bio.uva.nl/pombe/

Pages maintained by Frans Hochstenbach at the University of Amsterdam.

The *Schizosaccharomyces pombe* Genome Sequencing Project

http://www.sanger.ac.uk/Projects/S_pombe/

***Candida albicans* information**

http://alces.med.umn.edu/Candida.html

Genetics, physical map, sequence data, strains and methods, *Candida* resources and an Email directory.

***Candida albicans* genome**

http://www-sequence.stanford.edu/group/candida/index.html

Sequencing of *Candida albicans* genome at Stanford's DNA Sequencing and Technology Center

Yeast Virtual Library

http://genome-www.stanford.edu/Saccharomyces/VL-yeast.html

Data on *Saccharomyces cerevisiae*, *Schizosaccharomyces pombe* and *Candida albicans*.

Protocols

Yeast molecular biology protocols

http://www.protocol-online.net/molbio/Yeast/yeast.htm

Also includes culture, preparation and media.

Botstein laboratory

http://genome-www.stanford.edu/group/botlab/protocols.html

Breeden laboratory

http://www.fhcrc.org/labs/breeden/Methods_BreedenLab.html

Fangman/Brewer laboratory

http://fangman-brewer.genetics.washington.edu/

Gietz laboratory

http://www.umanitoba.ca/faculties/medicine/units/biochem/gietz/Trafo.html

Gottschling laboratory

http://www.fhcrc.org/labs/gottschling/yeast.html

Hahn laboratory

http://www.fhcrc.org/labs/hahn/methods/methods_index.html

Contacting people

Directory of Email addresses of yeast workers

ftp://ncbi.nlm.nih.gov/repository/yeast/yeaster.lst

Over 1600 addresses, mostly of *Saccharomyces cerevisiae* researchers, but many are out of date.

Yeasts in France

http://apex.ibpc.fr/Yeasts/

Yeast Groups in Switzerland

http://www.expasy.ch/www/linder/Swiss_Yeast_Groups.html

Yeast cooperation group in Italy

http://darwin01.bio.uniroma1.it/lievito/index.htm

Yeast USENET newsgroup

http://www.bio.net/hypermail/yeast/

BIOSCI promotes communication between professionals in the biological sciences. This address will direct you to discussions about the molecular biology and genetics of "yeast" (which means *Saccharomyces cerevisiae*!). Permanent web sites have now replaced much of the discussion and information.

Culture and Strain Collections

Home Pages of Culture Collections in the World

http://wdcm.nig.ac.jp/hpcc.html

This is a comprehensive listing of culture collections of all kinds from all countries. Some have web sites with links and a few of the more important, which usually include on-line catalogues and ordering, are shown below.

The Belgian Co-ordinated Collections of Micro-organisms (BCCM™)

http://www.belspo.be/bccm/

A collection that includes both biomedical and agro-industrial yeasts.

German Collection of Microorganisms and Cell Cultures

http://www.dsmz.de/species/yeasts.htm

There are 67 yeast genera included in this collection.

Japan Collection of Microorganisms

http://www.jcm.riken.go.jp/

A large collection at RIKEN (The Institute of Physical and Chemical Research).

Centraalbureau voor Schimmelcultures (CBS), The Netherlands

http://www2.cbs.knaw.nl/yeast/webc.asp

The largest mycological collection has recently moved to Utrecht.

Spanish Type Culture Collection (CECT)

http://www.uv.es/cect/english/index.htm

The collection is at the University of Valencia and is an affiliated unit of the National Research Council (CSIC).

National Collection of Yeast Cultures of the United Kingdom

http://www.ifr.bbsrc.ac.uk/ncyc/

Over 3,000 strains are available.

American Type Culture Collection (ATCC)

http://phage.atcc.org/searchengine/fy.html

In addition to a very large collection of yeasts, the stock centre of *Saccharomyces cerevisiae* genetic strains is also housed here.

European *Saccharomyces cerevisiae* Archive for Functional Analysis (EUROSCARF)

http://www.rz.uni-frankfurt.de/FB/fb16/mikro/euroscarf/index.html

Contains a very large collection of yeast strains and plasmids that were generated during various yeast functional analysis projects.