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# Y E A S T

## A Newsletter for Persons Interested in Yeast

**Official Publication of the International Commission on Yeasts of the International Union of Microbiological Societies (IUMS)**

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# Editorials

## Students and the Yeast Newsletter

Consistent with the informal nature of the Yeast Newsletter, our readers are reminded that entries need not be confined to material already published or ready to be published. In particular, we would welcome communications originating from students at early stages of their graduate or undergraduate work. Students interested in yeasts are encouraged to communicate summaries of term research projects or short essays dealing with yeasts. Researchers who supervise students in this area are urged to make them aware of the existence of the Yeast Newsletter, and to invite them to send communications. Students in search of graduate or postdoctoral supervisors abroad are most welcome to submit "brief news items" describing their interest. In addition, we would appreciate entries pointing out the existence of any scholarships available to students to conduct research abroad or travel to yeast conferences.

## Format of communications

We appreciate the growing number of readers who send their communications on diskette or by electronic mail. Of course, we are pleased to receive typewritten material, but once more must request that Fax transmissions be avoided, because of poor legibility. Two minor problems arise with e-mail. One is the truncation of lines. To avoid this, please insure that each line does not exceed 78 characters in length. The second difficulty pertains to languages that make use of diacritic characters. These are lost during transmission. It is recommended that a hard copy be mailed to allow restoring correct diacritic symbols in the final copy.

M. A. Lachance
Editor

## I. Mycology and Botany Department, American Type Culture Collection, 12301 Parklawn Drive, Rockville, Maryland 20852-1776, U.S.A. Communicated by S.C. Jong.

Complete information on the following strains may be obtained upon request from the Mycology and Botany Department of the ATCC.

| Name | ATCC# | Depositor & Strain | Significance & Reference |
|---|---|---|---|
| *Candida albicans* | 90234 | R. Gordee A26; NIH B207 | Antifungal studies |
| | 90235 | CA-3 | (Antifungal Drugs **544**, Annals of New York |
| | 90236 | CA-4 | York Academy of Sciences, **12/88** 152-167) |
| *Candida guilliermondii* | 90243 | R. Indrati B80-012 | Enzyme production (1992. Can. J. Microbiol. **38**) |
| *Candida* sp. | 90238 | Y. Park Y-347 | Produces amylolytic enzyme (1990. Biotechnol. Lett. **12**:373-376) |
| *Pichia carsonii* | 90021 | K. Shimada ITA | Produces styrene from *trans*cinnamic acid |
| | 90022 | CHI | (1992. Appl. Environ. Microbiol. **58**:1577-1582) |
| *Pichia guilliermondii* | 90197 | J. Swezey NRRL Y-18654 | Biological control of postharvest rots in fruits |
| | 90198 | NRRL Y-18313 | (U.S. Patent 5,041,384) |
| | 90199 | NRRL Y-18314 | |
| *Pichia pastoris* | 20864 | S. Kellogg GS115; SMD#83 | Produces epidermal growth factor; transformation host (U.S. Patent 5,102,789) |
| *Pichia stipitis* | 90023 | R. Grootjen CBS 7507 | Produces ethanol from glucose/xylose mixtures (1991. Enz. Microb. Technol. **13**:734-739) |
| *Rhodosporidium lusitaniae* | 90175 | I. Spencer-Martins IGC 4651 CBS 7604 | Type culture (1992. System. Appl.Microbiol. **15**:47-51) |

Publications:


1. Jong, S.C., J.M. Birmingham & G.Z. Ma. 1992. Stedman's ATCC Fungus Names. Williams & Wilkins, Baltimore, MD., 253 pp.

2. Huffman, J.L., F.I. Molina & S.C. Jong. 1992. Authentication of ATCC strains in the *Saccharomyces cerevisiae* complex by PCR fingerprinting. Exptl. Mycol. **16**: 316-319.

3. Molina, F.I., P. Shen & S.C. Jong. 1993. Validation of the species concept in the genus *Dekkera* by ribosomal DNA restriction analysis. Int. J. Syst. Bacteriol. **43**:32-35.

## II. Laboratorium voor Microbiologie, Universiteit Gent, Ledeganckstraat 35, 9000 Gent, Belgium. Communicated by M. Vancanneyt.

The following paper has appeared recently.

1. M. Vancanneyt, R. Coopman, R. Tytgat, J.-F. Berny, G.L. Hennebert and K. Kersters. 1992. A taxonomic study of the basidiomycetous yeast genera *Rhodosporidium* Banno and *Rhodotorula* Harrison based on whole-cell protein patterns, DNA base compositions and coenzyme Q types. J. Gen. Appl. Microbiol. **38**:363-377.

A numerical analysis was performed on one-dimensional whole-cell protein electrophoretic fingerprints of 107 strains belonging to the basidiomycetous yeast genera *Rhodosporidium* and *Rhodotorula*. This technique allowed evaluation of taxonomic relationships at the species level. In particular for the anamorphic genus *Rhodotorula*, the electrophoretic groupings did not correspond in all cases with the existing species. Heterogeneity of strains within the anamorphic species *Rhodotorula acheniorum, Rt. aurantiaca, Rt. araucariae, Rt. foliorum, Rt. glutinis, Rt. graminis* and *Rt. minuta* was found. There was a good correlation between the grouping obtained by numerical analysis of protein patterns, the mol% G+C content and the coenzyme Q type. Furthermore, the results obtained with the different techniques used suggest possible close interspecific and/or intergeneric relationships. Most *Rhodotorula glutinis* strains, including the type strain, and the type strain of *Rhodotorula graminis* were highly similar to strains of *Rhodosporidium diobovatum.* For other investigated strains of *Rhodotorula glutinis,* a high similarity was found with strains of *Rhodosporidium kratochvilovae, Rs. sphaerocarpum, Rs. toruloides* and *Rhodotorula mucilaginosa,* respectively. Most of the *Rhodotorula graminis* strains could not be differentiated from *Rhodosporidium paludigenum* strains.

## III. Departamento de Microbiología, ETSIAM, Córdoba. Spain. Communicated by J. Ramos.

The following are papers recently published or submitted for publication.

1. Hohmann, S., Neves, M.J., Koning, W., Alijo, R., Ramos, J., Thevelein, J.M. 1993. The growth and signalling defects of the *ggs1 (fdp1/byp1)* deletion mutant on glucose are suppressed by a deletion of the gene encoding hexokinase PII. Curr. Genet. **23**:281-289.

Yeast cells defective in the *GGS1 (FDP1/BYP1)* gene are unable to adapt to fermentative metabolism. When glucose is added to derepressed *ggs1* cells, growth is arrested due to an overloading of glycolysis with sugar phosphates which eventually leads to a depletion of phosphate in the cytosol. *Ggs1* mutants lack all glucose-induced regulatory effects investigated so far. We reduced hexokinase activity in *ggs1* strains by deleting the gene *HXK2* encoding hexokinase PII. The double mutant *ggs1Δ,hxk2Δ* grew on glucose. This is in agreement with the idea that an inability of the *ggs1* mutants to regulate the initiation of glycolysis causes the growth deficiency. However, the *ggs1Δ,hxk2Δ* double mutant still displayed a high level of glucose-6-phosphate as well as the rapid appearance of free intracellular glucose. This is consistent with our previous model suggesting an involvement of *GGS1* in transport-associated sugar phosphorylation. Glucose induction of pyruvate decarboxylase, glucose-induced cAMP-signalling, glucose-induced inactivation of fructose-1,6-bisphosphatase, and glucose-induced activation of the potassium transport system, all deficient in *ggs1* mutants, were restored by the deletion of *HXK2*. However, both the *ggs1Δ* and the *ggs1Δ,hxk2Δ* mutant lack detectable trehalose and trehalose-6-phosphate synthase activity. Trehalose is undetectable even in *ggs1Δ* strains with strongly reduced activity of protein kinase A which normally causes a very high trehalose content. These data fit with the recent cloning of *GGS1* as a subunit of the trehalose-6-phosphate synthase/phosphatase complex. We discuss a possible requirement of trehalose synthesis for a metabolic balance of sugar phosphates and free inorganic phosphate during the transition from derepressed to fermentative metabolism.

2. Alijo, R., Ramos, J. Several routes of activation of the potassium uptake system of yeast. Biochim. Biophys. Acta. Submitted for publication.

Potassium uptake in yeast is activated by glucose and other fermentable sugars, and by cytoplasmic acidification. In sugar kinase mutants, fermentable sugars and 2-deoxyglucose produced activation if the sugar could be phosphorylated, indicating that phosphorylation of the sugar is sufficient to trigger the activating pathway. Activation by cytoplasmic acidification was mimicked by neomycin suggesting that a phosphatidylinositol-type pathway could be involved.

## IV. School of Biological Sciences, University of East Anglia, Norwich NR4 7TJ, England. Communicated by J.A. Barnett.

The following are recent publications.


1. Entian, K.-D. & Barnett, J.A. 1992. Regulation of sugar utilization by Saccharomyces cerevisiae. Trends Biochem. Sci. **17**:506-510.

2. Barnett, J.A. 1992. Some controls on oligosaccharide utilization by yeasts: the physiological, basis of the Kluyver effect. FEMS Microbiol. lett. **100**:371-378.

3. Barnett, J.A. 1993. Culture deposits. Nature **361**:391.


The following letter was sent to the journals listed below.

Those listed below request the Editor to make the following a condition of accepting any paper for publication that includes the description of a new species of yeast or other microfungus.

> **One or more living strains of any new species that can be cultured, including the type strain, must be deposited in a service culture collection, where it will be available without undue restriction after publication, and the strain number in that collection must be cited. The live strain or strains would be deposited in addition to the dried type material already required.**

Most workers make cultures of their new species available to others. However, this is not always so and a current example is that of *Myxozyma sirexii*[1]. This unfortunate state of affairs is facilitated by one of the rules of the International Code of Botanical Nomenclature[2]. This rule stipulates that only preserved (and not living) specimens of newly described species, including yeasts and other fungi, need be deposited in a collection. As a consequence, much of the description of a new species, such as the ability to form different kinds of cell and utilize a number of substrates for growth, as well as most molecular biological characteristics, is unverifiable. Whilst proposals to have the rule changed are under discussion[3], this change may take some time to implement. Meanwhile, we hope that all microbiological journals will agree to our request and, hence, avoid publishing some unverifiable observations.

I BANNO Settsu Oil Mill Ltd, Fukushimaku, Osaka, Japan
J A BARNETT School of Biological Sciences, University of East Anglia, England
T DÉAK Department of Microbiology & Biotechnology, University of Horticulture & Food Industry, Budapest, Hungary
K W GAMS Centraalbureau voor Schimmelcultures, Baarn, Netherlands
W I GOLUBEV Institute of Biochemistry & Physiology of Microorganisms, Pushchino, Russia
E GUÉHO Institut Pasteur, Paris, France
D L HAWKSWORTH International Mycological Institute, Egham, England
G L HENNEBERT Mycothèque de l'Université Catholique de Louvain, Louvain-la-Neuve, Belgium
P HOFFMANN DSM-Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH, Braunschweig, Germany
S-C JONG American Type Culture Collection, Rockville, USA
C P KURTZMAN USDA Northern Regional Research Center, Peoria, USA
M-A LACHANCE Department of Plant Sciences, University of Western Ontario, London, Canada
A MARTINI Dipartimento di Biologia Vegetale, Università di Perugia, Perugia, Italy
T NAKASE Japan Collection of Microorganisms, RIKEN, Saitama, Japan
J I PITT CSIRO Food Research Laboratory, North Ryde, Australia
I N ROBERTS National Collection of Yeast Cultures, Institute of Food Research, Norwich, England
E SLÁVIKOVÁ Czechoslovak Collection of Yeasts, Slovak Academy of Sciences, Bratislava, Slovakia
I SPENCER-MARTINS Instituto Gulbenkian de Ciência, Oeiras, Portugal
M-L SUIHKO VTT Biotechnical Laboratory, Espoo, Finland
F URUBURU Departamento de Microbiologia, Universidad de Valencia, Burjasot, Spain
D YARROW Centraalbureau voor Schimmelcultures, Kluyver Laboratorium TUD, Delft, Netherlands


1. Spaaij, F., Weber, G. & van der Walt, J.P. *Myxozyma sirexii* sp. nov. (Candidaceae), a new yeast isolated from frass of the woodwasp *Sirex juvencus* L. *Systematic and Applied Microbiology* **15**, 427-431 (1992).
2. INTERNATIONAL CODE OF BOTANICAL NOMENCLATURE (Koeltz, Königstein, 1988).
3. Hawksworth, D.L. Seventeen miscellaneous proposals towards the evolution of a code appropriate to the needs of the 21st Century. *Taxon* **42**, in the press (1993).


THIS LETTER WAS SENT TO THE FOLLOWING JOURNALS

1. Acta Microbiologica Hungarica
2. Acta Microbiologica Polonica

3. Acta Microbiologica Sinica
4. Acta Mycologica Sinica
5. Antonie van Leeuwenhoek
6. Archives of Microbiology
7. Bulletin Trimestriel de la Société Mycologique de France
8. Canadian Journal of Botany
9. Canadian Journal of Microbiology
10. Cryptogamie: Mycologie
11. Current Microbiology
12. European Journal of Applied Microbiology and Biotechnology
13. FEMS Letters
14. Folia Microbiologica
15. International Journal of Systematic Bacteriology
16. Journal of Applied Bacteriology
17. Journal of Bacteriology
18. Journal of Basic Microbiology
19. Journal of General and Applied Microbiology
20. Journal of General Microbiology
21. Journal of Medical & Veterinary Mycology (Sabouraudia)
22. Microbiological Journal
23. Mikologiya i Fitopatologiya
24. Mikrobiologiya
25. Mycologia
26. Mycological Research
27. Mycopathologia
28. Mycotaxon
29. Persoonia
30. South African Journal of Botany
31. Suid-Afrikaanse Tydskrif vir Wetenskap
32. Sydowia Annales Mycologici
33. Systematic and Applied Microbiology
34. Transactions of the Mycological Society of Japan
35. Transactions of the Mycological Society of the Republic of China
36. Yeast

4 January 1993

## V. Department of Applied Microbiology, Lund Institute of Technology/Lund University, P.0. Box 124, S-22100 Lund, Sweden. Communicated by B. Hahn-Hägerdal.

The yeast research focuses on the product formation in xylose and xylulose fermenting yeasts. A review will shortly be published (1). Of particular interest is the fermentation of lignocellulose hydrolysates containing a number of different sugars in addition to a great number of inhibitors such as acetic acid, furfurals, aromatic acids and salts. Several fermentation routes have been investigated: Baker's yeast *Saccharomyces cerevisiae* in combination with the bacterial enzyme xylose isomerase; xylose fermenting yeast such as *Pichia stipitis,* and genetically engineered *S. cerevisiae*. An acetic acid tolerant strain of *S. cerevisiae* has been isolated from a spent sulphate liquor fermentation plant (2). The mechanism for the acid tolerance is presently under investigation. Free and immobilised xylose isomerase from *Lactobacillus brevis* have been characterised (3). This enzyme has a lower pH optimum and a higher acid tolerance than commercial enzymes. In a recent communication we proposed that the ethanol intolerance of the xylose-fermenting yeasts was due to the inevitable acetic acid formation when the formed ethanol is reassimilated in the presence of oxygen (4). *S. cerevisiae* has been transformed both with the gene for the enzyme xylose reductase from *P. stipitis* (5) and with the genes for xylose reductase and for xylitol dehydrogenase, both from *P. stipitis* (6). The single transformant converts xylose to xylitol stoichiometrically in the presence of a co-substrate. The influence of the co-substrate on yield and productivity is presently under investigation. In order to better study the regulation of the product formation during xylulose fermentation in *S. cerevisiae* a chromatographic method has been developed for the production of preparative amounts of xylulose (7).

The department has coordinated a RoundRobin activity within the IEA (International Energy Agency) with the aim to compare the performance of different microorganisms in the same lignocellulosic substrate. The results are presently being evaluated and the report is being written up (8).
PhD theses:

Kerstin Skoog. 1992. The influence of oxygen in pentose fermentation by yeasts.

Torbjörn Linden. 1992. The fermentation of lignocellulose hydrolysates with xylose isomerases and yeasts.

References


1. Hahn-Hägerdal B., Hallborn J., Jeppsson H., Olsson L., Skoog K., & Walfridsson M. In press. Pentose fermentation to ethanol. In "Bioconversion of forest and agricultural plant residues ", Ed. J Saddler, CAB International, Wallingford, United Kingdom.

2. Linden T., Peetre J., & Hahn-Hägerdal, B. 1992. Isolation and characterisation of acetic acid-tolerant galactose-fermenting strains of *Saccharomyces cerevisiae* from a spent sulphite liquor fermentation plant. Appl Environ microbiol **58**:1661-1669.

3. Linden T. & Hahn-Hägerdal, B. 1993. Activity and stability of xylose isomerase preparations from whole cells of *Lactobacillus brevis* in spent sulphite liquor. Enz. Microb. Technol (in press).

4. Skoog K., Hahn-Hägerdal, B., Degn, H., Jacobsen, J.P., & Jacobsen, H.S. 1992. Ethanol reassimilation and ethanol tolerance in Pichia stipitis CBS 6054 as studied by 13C nuclear magnetic resonance spectroscopy. Appl. Environ. Microbiol **58**:2552-2558. .

5. Hallborn, J., Walfridsson, M., Airaksinen, U., Ojamo, H., Hahn-Hägerdal, B., Penttilä, & M., Keränen, S. 1991. Xylitol production by recombinant *Saccharomyces cerevisiae*. Bio/Technology **9**:1090-1095.

6. Hallborn, J., Walfridsson, M., Airaksinen, U., Keränen, S., Hahn-Hägerdal, B., & Penttilä, M. 1992. Xylitol dehydrogenase activity in recombinant *Saccharomyces cerevisiae.* 16th Int conf on yeast genetics and molecular biology, Wienna, Austria. 8th Int. Symp. on yeasts, Atlanta, Georgia, USA.

7. Olsson L., Linden T., & Hahn-Hägerdal, B. A rapid chromatographic method for the production of preparative amounts of xylulose (manuscript in preparation).

8. Hahn-Hägerdal, B., Jeppsson, H., Olsson, L., & Mohagheghi, A. A comparison of yield and productivity in fermentations of acid hydrolysed corn cobs with natural and recombinant bacteria, yeasts and fungi (manuscript in preparation).


The department arranged a session on Fermentation of Pentoses and Hexoses at the IEA Symposium on Biotechnology for the Conversion of Lignocellulosics, June 6-9, 1993, Helsinki, Finland. (Editor's note: a notice for interested potential participants was received too late for inclusion in the December 1992 issue of the YNL).

## VI. BKM Institute for Biochemistry and Physiology of Microorganisms, Pushchino, Moscow Region 142292, Russia. Communicated by W.I. Golubev.

The English version of the 1991 edition of the VKM (All-Russian Collection of Microorganisms) Catalogue of Cultures is now available and may be requested online through the MSDN (Microbial Strain Data Network).

The following papers have been published recently.

1. Golubev, W. I. and Boekhout, T., 1992. Dimorphism in Itersonilia perplexans: yeast and hyphal phases differ in their sensitivity to mycocins produced by tremellaceous yeasts. - FEMS Microbiol. Lett. **98**:187-190.

The monokaryotic yeast phase of the heterobasidiomycete *Itersonilia perplexans,* unlike the hyphal phase, was found to be sensitive to mycocins (killer toxins) produced by killer strains of *Cryptococcus humicolus, Cr.laurentii, Cystofilobasidium bisporidii* and *Rhodotorula fujisanense*. Both the yeast and hyphal phases were resistant to mycocins of *Cr. podzolicus, Filobasidium capsuligenum, Rhodotorula glutinis, Rh. pallida, Sporidiobolus johnsonii, Sporid. pararoseus* and *Sporobolomyces alborubescens.* The different sensitivity patterns of yeast and hyphal phases are probably caused by biochemical differences in the cell walls.

2. Golubev, W. I., 1992. Evolution of the meaning of "yeasts". Uspekhi sovremennoi biologii **112**:715-724.

For historical reasons the opinion was formed that the yeasts are a small taxonomic group of lower ascomycetes and asporogenous organisms commonly considered as imperfect counterparts. In the recent two decades the taxonomic diversity of yeasts (that was revealed in chemotaxonomic and ultrastructural studies) expanded greatly by elucidation among them of life cycles which are inherent to the smuts and the Tremellales, and by isolation of yeast phase cultures of many filamentous fungi. At present yeast phases are known in representatives of over 15 orders that belong to zygomycetes, ascomycetes and basidiomycetes. In contradistinction to the obsolete but still retained taxonomic meaning the yeasts are defined as single cell assimilative life forms (ecomorphs) of eumycetes.

## VII. Research Institute for Viticulture and Enology, SQ-8JJ 11 Bratislava, Matuskova 25, Slovakia. Communicated by E. Minárik.

The following are summaries of papers recently published or accepted for publication.

1. Halík, F,, Krásny, S., Nahálka, J., & Minárik, E. 1993. Immobilized yeasts in secondary sparkling- wine fermentation (in German), Mitteilungen Klosterneuburg **43**: (in press).

Wine yeasts immobilized in pectate gel have been used for the production of sparkling wine by the"méthode champenoise". By optimization of immobilizing conditions a preparation was constructed by which sensorially acceptable sparkling wines could be produced.

2. Krásny, S,, Malík, F,, Kozánková, J,, Nahálka, J., & Minárik, E. 1993. Immobilized yeasts in the cider fermentation process (in German). Mitteilungen Klosterneuburg **43** (in press).

*Saccharomyces cerevisiae* strain 6C has been immobilized in alginate and pectate gel. The system was tested in the apple juice fermentation process. The results deal with the fermentation activity and stability of the system under the given conditions.

3. Malík, F,, Šajbidor, J., Krásny, S., Minárik, E. 1993. Yeast cultures in dried or immobilized form? 1Oth International Symposium on Enology, Montreux Palace, Montreux, Switzerland, May 1993 (in press).

## VIII. AG Hefegenetik, Institut für Pflanzengenetik und Kulturpflanzenforshung, Correnstr. 3, D(0)-4325 Gatersleben, Germany. Communicated by G. Kunze.

The following papers have been published recently

1. Kunze, G., Kunze, I., Barner, A., & Schulz, R. 1993. Classification of *Saccharomyces cerevisiae* strains by genetical and biochemical methods. Monatsschrift für Brauwissenschaft **1**:132-136.

Methods were tested to classify brewery strains. We used different techniques like pulsed-field gel electrophoresis, DNA-finger printing and one-dimensional SDS-polyacrylamide gel electrophoresis of intracellular and secretory proteins and enzyme

activity tests to analyse five different brewery strains. These were the *Saccharomyces cerevisiae* laboratory strain S288C and a strain each of the *S. cerevisiae* varieties *diastaticus* and *uvarum*, respectively. Pulsed-field gel electrophoresis and DNA-fingerprinting were found to be appropriate methods to distinguish our strains whereas protein electrophoresis and enzyme activity only support data obtained by genetical analyses.

2. Pich, U. & Kunze, G. 1992. Genome organization of mitochondrial DNA from the nonsaccharomycete yeast *Arxula adeninivorans* LS3. Curr. Genet. **22**:505-506.

Mitochondrial (mt) DNA of the ascomycetous asexual yeast *Arxula adeninivorans* LS3 was isolated and characterized. The mtDNA has a GC content of 30.3 mol%. It is circular and the size estimated by restriction analysis performed with 9 endonucleases was 33.5 kbp. Using mt genes probes from *Saccharomyces cerevisiae* six structural genes (*cob, cox1, cox2, oli1, oli2,* 21S rRNA) were located on the mitochondrial genome of *A. adeninivorans.* The comparison between the mt genomes of *A. adeninivorans* and other yeasts showed differences in the genome organization.

## IX. Institut für Mikrobiologie und Weinforschung, Johannes Gutenberg-Universität Postfach 3980, D-6500 Mainz, Germany. Communicated by F. Radler.

The following paper was published recently.

1. F. Radler, S. Herzberger, I. Schönig & P. Schwarz. 1993. Investigation of a killer strain of *Zygosacchayomyces bailli*. J. Gen. Microbiol. **139**:495-500.

The yeast *Zygosaccharomyces bailii* strain 412 was found to liberate a killer toxin (KT412) lethal to sensitive strains of *Saccharomyces cerevisiae* and *Candida glabrata.* Culture supernatants of the killer strain were concentrated by ultrafiltration and the extracellular protein was purified by gel filtration and ion-exchange chromatography. Gel filtration and SDS-PAGE of the electrophoretically homogeneous killer protein indicated an apparent molecular mass of 10 kDa. The killer toxin KT412 is probably not glycosylated since it did not show any detectable carbohydrate structures. KT412 was bound to sensitive but not to resistant yeast cells. The mannan, and not the glucan, fraction of the cell wall of the sensitive yeast was the primary target for the killer toxin binding. The killer strain *Z. bailii* 412 contained three double-stranded RNA plasmids of 1 .9, 2.9 and 4.0 kb. Curing by cycloheximide resulted in the concomitant loss of killer activity and the 1.9 kb dsRNA species that is therefore regarded as equivalent to the killer-toxin-coding M-plasmids of *S. cerevisiae*.

## X. Food Research Institute, Department of Food Microbiology and Toxicology, University of Wisconsin - Madison, 1925 Willow Drive, Madison, WI 53706, U.S.A. Communicated by E.A. Johnson.

The following papers have been published recently or are in press.

1. Johnson, E.A. 1992. New advances in astaxanthin production by the yeast *Phaffia rhodozyma.* In: Profiles on Biotechnology (T.G. Villa and J. Abalde, Eds.), pp. 289-299, Univ. Santiago de Compestela, Spain.

Astaxanthin is the principal carotenoid pigment of several animals of economic importance in aquaculture including salmonids, the red sea bream, and crustaceans. Since animals cannot synthesize carotenoids de novo, the pigments must be provided in their feed. This requirement has created a large market for astaxanthin. Synthetic astaxanthin is currently being used but there is considerable interest in utilizing biological sources of carotenoids in feeds. *Phaffia rhodozyma* synthesizes astaxanthin as its primary carotenoid, but its use in the feed industry has been limited because of the relatively low content of astaxanthin in wild strains (-400 μg/g) and the low temperature for growth of the yeast. Astaxanthin production has been improved by the isolation of mutants that produce much higher levels of astaxanthin (≥3,000 μg/g), and by an understanding of the biosynthesis and function of carotenoids in the yeast. Astaxanthin appears to protect the yeast against oxidative stress, and its synthesis is stimulated by oxygen radicals. The carotenoids appear to be associated with lipid globules within the yeast, and may be concentrated near the cell envelope. After several years of development, certain companies are presently bringing commercial *Phaffia* products to the market.

2. Schroeder, W. A., and E. A. Johnson. 1993. Antioxidant role of carotenoids in *Phaffia rhodozyma.* J. Gen. Microbiol. (in press).

The role of carotenoids in protecting the yeast *Phaffia rhodozyma* against reactive oxygen species was studied. The addition of the $0_2$ generator duroquinone (DQ) to yeast-malt broth increased total carotenoid content as well as the relative amounts of xanthophylls present, while the reactive oxygen scavenger mannitol reversed this effect. Resistance to DQ increased in the stationary phase, particularly in the carotenoid hyperproducing strain studied. Assay of superoxide dismutase (SOD) in *P. rhodozyma* indicated the presence of Mn-SOD and the complete absence of Fe-SOD and Cu/Zn-SOD. Catalase activity in *P. rhodozyma* was significantly lower than in *S. cerevisiae* particularly in stationary cultures. In young cells, $H_20_2$ resistance was directly related to carotenoid levels, and selection of cultures based on peroxide resistance resulted in slightly increased carotenoid production. These results indicate that carotenoids play an antioxidant role during aging in P. rhodozyma.

## XI. Biochemisches Institut der Universität Freiburg, Hermann-Herder-Strasse 7, D-7800 Freiburg, Federal Republic of Germany. Communicated by H. Holzer.

The following data on a new yeast gene have been submitted to the EMBL Data Library. From genomic DNA from *Saccharomyces cerevisiae* 2165 bases have been sequenced. The gene name is *YGP1*; the gene product name is GP38 (glycoprotein 38). The new glycoprotein exhibits high homology to the sporulation-specific protein SPS 100 (Law and Segall, Mol. Cell. Biology (1988) **8**:912-922). An open reading frame of 1062 bp, corresponding to 354 amino acids, is from the start signal at 370-372 to the termination signal at 1432-1434. Putative TATA-boxes have been found from 125-128 and 206-210. The putative extent of a signal peptide is from 370-425. Fourteen putative N-glycosylation sites have been found and a putative polydenylation signal is from 1839-1844. The following accession number has been assigned to this data: X73030 *S. cerevisiae YGP1* gene.

## XII. Instituto de Investigaciones Biomédicas del CSIC, Arturo Duperier 4, 28029 Madrid, Spain. Communicated by J.M. Gancedo.

The following papers have been published recently.

1. González M.I., Stucka R., Blázquez M.A., Feldmann H. & Gancedo C. 1992. Molecular cloning of *CIF1* , a yeast gene necessary for growth on glucose. Yeast **8**:183-192.

The *cif1* mutation causes inability to grow on glucose and absence of catabolite inactivation. We have cloned the *CIF1* gene by complementation of function using a collection of cosmids covering the region where the mutation has been mapped. Strains carrying the *cif1* mutation did not increase the intracellular concentration of cAMP after glucose addition although they did so in response to galactose or to 2,4 dinitrophenol. The ATP level dropped after 15 seconds of glucose addition to less than 0.1 mM. The metabolite profile after addition of glucose characterized by an increase of hexose monophosphates and a very high content of fructose-1,6-bisphosphate suggest that the initial steps of glycolysis are deregulated.

2. Delgado M.A. & Gancedo C. 1992. Mapping of the PCK1 gene encoding phosphoenolpyruvate carboxykinase on chromosome XI of *Saccharomyces cerevisiae*. FEMS Microbiol. Lett. **92**:125-128.

The gene *PCK1* encoding phosphoenolpyruvate carboxykinase has been mapped on the right arm of chromosome XI, 12.7 centimorgans proximal to *MAL4* and 20.1 centimorgans distal to *MET1*.

3. Gancedo J.M. 1992. Carbon catabolite repression in yeast. Eur. J. Biochem. **206**:297-313.

In this review article, information gathered in the last few years on a variety of catabolite-repressible systems has been integrated and a scheme for catabolite repression consistent with the results obtained has been elaborated. The review is centered around *Saccharomyces cerevisiae* but reference to other yeast species is made when information is available.

4. Mercado J.J. & Gancedo J.M. 1992. Regulatory regions in the yeast *FBP1* and *PCK1* genes. FEBS Lett. **311**:110-114.

By deletion analysis of the fusion genes *FBP1-lacZ* and *PCK1-lacZ* we have identified a number of strong regulatory regions in the genes *FBP1* and *PCK1* which encode fructose-1,6-bisphosphatase and phosphoenolpyruvate carboxykinase. We have found in both genes consensus sequences for the binding of regulatory proteins as *MIG1* or the complex *HAP2/HAP3/HAP4*. Neither deletion nor overexpression of the *MIG1* gene affected the regulated expression of the *FBP1* or *PCK1* genes.

5. B. Benito & R. Lagunas. 1992. The low-affinity component of *Saccharomyces cerevisiae* maltose transport is an artifact. J. Bacteriol. **174**:3065-3069.

It has been reported by several laboratories that maltose transport in *Saccharomyces cerevisiae* consists of two components with high- and low-affinity constants for maltose. We have investigated the characteristics of the low affinity component and have found that it shows an abnormal behavior without similarity to any transport mechanism described in this organism. The results strongly indicate that this apparent transport activity is due not to a genuine transport process but to nonspecific binding of maltose to the cell wall and plasma membrane.

6. Gamo F.J., Portillo F. & Gancedo C. 1993. Characterization of mutations that overcome the toxic effect of glucose on phosphoglucose isomerase less strains of *Saccharomyces cerevisiae*. FEMS Microbiol. Lett. **106**:233-238.

Glucose inhibits growth of phosphoglucoseisomerase-less mutants in permissive media. Mutants insensitive to this effect were isolated. Two nuclear, monogenic, recessive mutations termed *rgl* were responsible for this phenotype. When double mutants *pgi rgl* were grown on fructose, fermentation of fructose or glucose was similar to that of the parental *pgi* strain but it was not measurable when the double mutants were grown on

fructose+glucose. Under these conditions respiration of glucose, and to a lesser extent that of fructose, was enhanced. The double mutants *pgi rgl* did not grow on fructose+glucose in the presence of inhibitors of respiration. They exhibited a derepressed activity of cytochrome oxidase. The results are interpreted as indication that in the double mutants glucose may be channelled through the pentose phosphate pathway to respiration.

7. Navas M.A., Cerdán S. & Gancedo J.M. 1993. Futile cycles in *Saccharomyces cerevisiae* strains expressing the gluconeogenic enzymes during growth on glucose. Proc. Nat. Acad. Sci. USA **90**:1290-1294.

The systems which control the levels of the gluconeogenic enzymes in *Saccharomyces cerevisiae* have been bypassed to ascertain their physiological significance. The genes *FBP1* and *PCK1* were put under the control of a promoter not repressed by glucose and introduced in yeast in multicopy plasmids. Yeasts with high levels of fructose1,6-bisphosphatase or phosphoenolpyruvate carboxy-kinase during growth on glucose had generation times and growthyields not significantly different from those of the wild-type strain. For a strain expressing both enzymes the increase in generation time was about 20% and the decrease in growth yield around 30%. The concentration of ATP remained at about 1.5mM in the different strains. *In vivo* cycling was measured by $^{13}C$ NMR: cycling between fructose-6P and fructose-1,6$P_2$ was less than 2%, cycling between phosphoenolpyruvate and pyruvate was low but a precise figure could not be obtained due to poor equilibration of label between carbons 2 and 3 of oxaloacetate.

8. Mazón,M.J., Behrens, M.M., Morgado, E. & Portillo, F. 1993. Low activity of the yeast cAMP-dependent protein kinase catalytic subunit Tpk3 is due to the poor expression of the *TPK3* gene. Eur.J. Biochem. **212** (in press).

Three genes *TPK1, TPK2* and *TPK3* encode in *Saccharomyces cerevisiae* distinct catalytic subunits of cAMPdependent protein kinase (cAPK). We have measured cAPK activity *in vitro* and, indirectly, *in vivo* in yeast strains carrying only one of the three *TPK* genes. The strain containing *TPK3* as the only intact *TPK* gene showed nearly undetectable phosphorylating activity and no TPK3 mRNA could be detected, although the cells grew normally. Overexpression of *TPK3* in a high copy vector or under the control of the inducible *GAL1* promoter did not by itself result in a corresponding increase in activity; coexpression of *BCY1*, the gene coding for the regulatory subunit, was necessary in both cases to achieve high levels of phosphorylating activity. Moreover, *BCY1* overexpression not only increased Tpk3 catalytic activity but it also increased the amount of TPK3 mRNA detected in Northern blots.

9. Stucka R., and Blázquez M.A. 1993. The *fdp1* and *cif1* mutations are caused by different single nucleotide changes in the yeast *CIF1* gene. FEMS Microbiol. Lett. **107**:251-254.

Mutations in *cif1* or *fdp1* cause inability to grow on glucose or fructose. Recently it has been shown that the sequence encoded by *cif1* encodes one subunit of the trehalose-6-phosphate synthase. It was not clear if mutations *fdp1* and *cif1* were different or allelic. Results presented in this article show that these mutations are allelic forms of the same gene. The mutation *cif1* results in a shortened version of the protein by the creation of a stop codon at position 545 (taking 1 as the first nucleotide of the coding region) while *fdp1* changes a nucleotide at position 190 resulting in the introduction of a glutamate residue in a highly hydrophobic region where glycine is found in the wild type.

## XIII. Photo-Biology Laboratory, Photodynamics Research Center, The Institute of Physical and Chemical Research (RIKEN), 19-1399 Koeji, Nagamachi, Aoba-ku, Sendai, Miyagi 982, Japan. Communicated by G. Lazarova.

The following paper will be submitted to J. Photochem. Photobiol.

1. G. Lazarova and H. Tashiro. Protective effect of Amphotericin B against lethal photodynamic treatment in yeast.

This study was designed to investigate the effect of the polyenic antibiotic Amphotericin B on photodynamically induced cell damage using *Kluyveromyces fragilis* yeast as the test strain. The photosensitizers applied are well known to act via cell membrane damage (Rose Bengal and Toluidine Blue) or via DNA modification causing genotoxic effect (8-Methoxypsoralen). Here Methylene Blue was proven to cause membrane damage comparable with the damage in the case of Rose Bengal and Toluidine Blue. Under the conditions of photodynamic damage an unexpected well pronounced protective effect of the antibiotic was observed expressed in an increased survival fraction with all of the photosensitizers tested. The mitochondrial activity according to the MTT-test resembled the tendency of the antibiotic to protect the cells. At some points the results for the MTT-activity of the cells under the combined effect of the photosensitizer (Toluidine Blue or Methylene Blue) and the antibiotic exceeded the data obtained under the conditions of individual action of the agents. The membrane damage caused by Toluidine Blue and Methylene Blue was expressed in increased leakage of intracellular substances and increased hydrolysis of the normally impermeable substrate ONPG. No additivity in the membrane damage caused by photosensitizers and Amphotericin B was observed. With 8-Methoxypsoralen as the photosensitizer no membrane damage was detectable and under its action combined with Amphotericin B the increased membrane leakage was caused only by the antibiotic.

Here follows the summary of the project on which I am now working in the Photo-Biology group:

2. G. Lazarova, C. Sato, M. Kurachi, H. Tashiro. Vacuum-ultraviolet laser irradiation effect on yeasts.

Research will be directed to investigation of the killing, mutagenic and membrane damaging effect of vacuumultraviolet (VUV) irradiation provided by up-conversion of a Q-switched Nd:YAG laser with several discrete lines in the range from 200 nm to 120 nm. The data in the literature concerning the cellular target of yeast destruction by VUV are somewhat contradictory. Continuous wave VUV irradiation was demonstrated to cause only membrane damage without influencing the DNA (Hieda et al., 1984), while Winckler and coworkers (1989) using pulsed 193 nm irradiation by excimer laser have proven considerable mutagenic effect. Investigations on the mechanism of yeast damage using Q-switched Nd:YAG laser will reveal whether this apparent discrepancy could be attributed to the pulsed nature of the irradiation in the latter case.

## XIV. Laboratory of Applied Microbiology, Department of Agricultural Chemistry, Shizuoka University, 836 Ohya, Shizuoka 422, Japan. Communicated by Y. Yamada.

The following papers have been published recently.

1. Y. Yamada, K. Maeda & I. Banno[1]. 1992. An emendation of *Kloeckeraspora* Niehaus with the type species, *Kloeckeraspora osmophila* Niehaus and the proposals of two new combinations, *Kloeckeraspora occidentalis* and *Kloeckeraspora vineae* (Saccharomycetaceae). J. JFCC **8**:79-85.
[1]Institute for Fermentation, Osaka, 2-17-85 Juso-honmachi, Yodogawa-ku, Osaka 532, Japan.

The type strains of *Hanseniaspora osmophila, H. uvarum* and *H. valbyensis* were examined for their partial base sequences of 18S and 26S rRNAs. The sequence data obtained presently and previously indicated that the six species of the genus *Hanseniaspora* are divided into two groups at the generic level. The genus

*Kloeckeraspora* Niehaus was emended for the spherical ascospore-forming species with the designation of the type species, *Kloeckeraspora osmophila* Niehaus. Two new combinations, *Kloeckeraspora occidentalis* and *Kloeckeraspora vineae* were proposed.

2. Y. Yamada, K. Maeda, & I. Banno. 1992. The phylogenetic relationships of the $Q_9$-equipped, spheroidal ascospore-forming *Pichia* species based on the partial sequences of 18S and 26S ribosomal RNAs. J. Gen. Appl. Microbiol. **38**:247-252.

Seven strains of *Pichia abadieae, P. carsonii, P. etchellsii, P. humboldtii,* and *Candida ingens* were examined for partial base sequences in positions 493-622 (130 bases) and positions 1611-1835 (225 bases) of 26S rRNA and in positions 1451-1618 (168 bases) of 18S rRNA. These three partial base sequencings indicated that *P. abadieae* and *P. humboldtii* (and *C.ingens*) are phylogenetically distant from *P. carsonii* and *P. etchellsii*. In contrast, the latter two species, *P. carsonii* and *P. etchellsii* had very close relationships to *Debaryomyces* species. Some discussions were made, especially on transferring the two *Pichia* species to the genus *Debaryomyces*.

3. Y. Yamada & Y. Nakagawa. 1992. The phylogenetic relationships of some heterobasidiomycetous yeast species based on the partial sequences of 18S and 26S ribosomal RNAs. J. Gen. Appl. Microbiol. **38**:559-565.

Eight strains of *Leucosporidium fellii, L. lari-marini, Filobasidium capsuligenum, F. floriforme,* and *F. uniguttulatum* were examined for partial base sequences in positions 492-625 (134 bases) of 26S rRNA and in positions 1451-1618 (168 bases) of 18S rRNA. In the 26S rRNA partial base sequence, there were low maximum homologies (46-58%) among *L. fellii, L. lari-marini,* and *Filobasidium* species. In the 18S rRNA partial base sequence, *F. capsuligenum* had 4 and 5 base differences, compared with *F. floriforme* and *F. uniguttulatum,* respectively. *Leucosporidium lari-marini* and *L. fellii* showed 0 and 4 base differences with *Cystofilobasidium capitatum* and *L. scottii,* respectively. The sequence data obtained were discussed phylogenetically and taxonomically, especially on transferring *L. lari-marini* to the genus *Cystofilobasidium*.

4. Y. Yamada, K. Maeda, & I. Banno. 1992. The phylogenetic relationships of the $Q_6$-equipped species in the teleomorphic apiculate yeast genera *Hanseniaspora, Nadsonia* and *Saccharomycodes* based on the partial sequences of 18S and 26S ribosomal ribonucleic acids. J. Gen. Appl. Microbiol. **38**:585-596.

Eleven strains of species in the apiculate yeast genera *Hanseniaspora, Nadsonia,* and *Saccharomycodes* were examined for partial base sequence determinations of 18S and 26S rRNAs. In the partial base sequence of 26S rRNA (positions 493-622, 130 bases), percent similarities were 65-79, 76-84, and 70-76 between the genera *Hanseniaspora* and *Nadsonia,* the genera *Hanseniaspora* and *Saccharomycodes,* and the genera *Nadsonia* and *Saccharomycodes,* respectively. These apiculate yeasts showed 72-85 percent similarity with *S. cerevisiae.* In the partial base sequences of 26S rRNA (positions 1611-1835, 225 bases) and of 18S rRNA (positions 1451-1618, 168 bases), the number of base differences was calculated to be 38-26, 27-9, and 30-23, and 12-8, 11-5, and 13-8 between the above-mentioned genera, respectively. These apiculate yeasts showed 33-9 and 12-4 base differences, respectively, with *S. cerevisiae*. The three apiculate yeast genera were recognized phylogenetically based on the sequence data obtained. Some discussions were made, especially on dividing the members of the genus *Hanseniaspora* into two groups at the generic level.

5. Y. Yamada, K. Maeda, I. Banno, & J.P. van der Walt.[1] 1992. An emendation of the genus *Debaryomyces* Lodder et Kreger-van Rij and the proposals of two new combinations, *Debaryomyces carsonii* and *Debaryomyces etchellsii* (Saccharomycetaceae). J. Gen. Appl. Microbiol. **38:**623-626.

Department of Microbiology and Biochemistry, The University of The Orange Free State, Bloemfontein 9300, South Africa.

## XV. Department of Chemical Engineering, University of Sydney, Syndney, NSW 2006, Australia. Communicated by P.K. Mwesigye and J.P. Barford.

Investigations are continuing on the utilisation of mixtures of sugars by *S. cerevisiae.* We are currently examining the mechanism of sucrose utilisation and its interaction with maltose. Recently, we demonstrated the direct uptake of sucrose by actively growing yeast cells (submitted for publication). Evidence for this direct uptake has been obtained form careful kinetic (fermentation) studies (with adaptation) in conjunction with radiometric studies i.e.

using labelled sugars. The combination of kinetic and radiometric studies is unique to our laboratory and details will be communicated as soon as our publications go to press. In studying the mechanism of sugar(s) utilisation and then interaction, we hope to contribute to the industrial baking and brewing where such interactions have significant commercial implications.

## XVI. Dipartimento di Protezione e Valorizzazione Agroalimentare, Università Delgi Studi di Bologna, Via F. III Rosselli 107, 42100 Sede di Reggio Emilia, Italy. Communicated by P. Romano and G. Suzzi.

The following are the abstracts of articles recently published or in press:

1. Romano P., Suzzi G., Zironi R., & Comi G. 1992. High acetoin production as a determinative character in apiculate wine yeasts. Presented at the 8th International Symposium on Yeasts (ISY), Atlanta, Georgia (USA), August 1992, p. 137.

Apiculate yeasts of the species *Kloeckera apiculata* and *Hanseniaspora guilliermondii* were investigated for their ability to produce acetoin. In synthetic medium, the acetoin production ranged from 19.0 to 42.5 mg/l in *K. apiculata,* and from 22.3 to 59.7 mg/l in *H. guilliermondii.* The same strains were tested in grape must and no significant differences were found between the two species. Our results seem to indicate that high acetoin production is a general feature in *K. apiculata* and *H. guilliermondii,* so that the "high acetoin production" could be suggested as a determinative character in these two genera.

2. Suzzi G., Romano P., & Benevelli M. 1992. Structure of cell surface of flocculent yeasts belonging to different genera. Presented at the 8th International Symposium on Yeasts (ISY), Atlanta, Georgia (USA), August 1992, p.144.

We have compared, using Scanning Electron Microscopy (SEM), flocculent cells of different wine yeast genera, that is *Saccharomyces, Zygosaccharomyces, Saccharomycodes* and *Kloeckera.* In general, flocculent cells of all the genera studied showed a smooth coat that resulted very consistent in *Zygosaccharomyces,* whereas it was thin enough not to obscure bud scars or other details in *Saccharomyces, Saccharomycodes* and *Kloeckera.* Besides, as previously seen in *Zygosaccharomyces,* were also observed on the surface of all yeasts tested. These structures, probably, promote the bridge formation between adjoining cells.

3. Romano P. & Suzzi G. 1992. Sulfur dioxide and wine microorganisms. In: Wine Microbiology and Biotechnology, G.H. Fleet (ed.), Harwood Academic Publishers, pp. 373-393.

This chapter provides a comprehensive account of sulfur dioxide in winemaking and its relationship with microorganisms. The following outlines are developed: Properties of sulfur dioxide - Function of sulfur dioxide in winemaking (stabilization of biochemical and chemical properties; control of microorganisms) - Action of sulfur dioxide on microorganisms (molecular effects; sulfur dioxide resistance in yeasts) - Effect of sulfur dioxide on wine microorganisms (yeasts, bacteria) - Sulfur dioxide minimization in winemaking (treatment of must and wine; biological sulfite).

4. Romano P. & Suzzi G. 1993. Acetoin production in *Saccharomyces cerevisiae* wine yeasts. FEMS Microbiol. Lett. **108**:23-26.

A hundred strains of *Saccharomyces cerevisiae* were examined for the capacity to produce acetoin in synthetic medium and in grape must. The low production of acetoin was found to be the more common pattern in this species. Most strains exhibited a similar distribution in both media, producing from non-detectable amounts to 12 mg/l. Only four strains produced high quantities of acetoin, up to 29.5 mg 11 in synthetic medium and up to 194.6 mg/l in grape must, suggesting different mechanisms in the biosynthesis of the compound.

5. Zironi R., Romano P., Suzzi G., Battistutta F., & Comi G. 1993. Volatile metabolites produced in wine by mixed and sequential cultures of *Hanseniaspora guilliermondii* or *Kloeckera apiculata* and *Saccharomyces cerevisiae.* Biotechnol. Lett. **116**:235-238.

Secondary products in wines obtained by pure, mixed and sequential cuttures of *Saccharomyces cerevisiae, Hanseniaspora guilliermondii* or *Kloeckera apiculata* were studied. Consistent differences in the composition were determined in wines fermented by sequential cultures. When *S. cerevisiae* was added to musts partially fermented by apiculate yeasts, its metabolism was significantly affected. In partlcular it synthesized high amount of n-propanol and metabolized high quantities of acetoin, produced by apiculate yeasts.

6. Romano P. & Suzzi G. 1993. A potential use for Zygosaccharomyces species in winemaking. J. Wine Res. **4** (in press).

Twenty nine strains of *Zygosaccharomyces bailii* and *Zygosaccharomyces fermentati*, isolated from grape juice, were examined for some traits of oenological interest. The two species showed considerable differences in some of the characteristics studied. *Z. fermentati* strains were found to possess a high fermentative vigour and to produce lower amounts of acetic acid in must, whereas *Z. bailii* exhibited an interesting break-down of malic acid (in same cases about 70%). Flocculation ability was found in all strains of *Z. bailii.* Both the species produced low amounts of sulphur dioxide and hydrogen sulphide in must. The inherent characteristics found make the two species studied worth considering for different oenological use.

## XVII. Centro de Investigaciones Biologicas de Baja California Sur, Km 1 Carr. San Juan de la Costa "El Comitan", A.P. 128, La Paz, B.C.S., México. Communicated by D. Hernandez Saavedra.

The following are summaries of presentations at different symposia and congresses:

IXth International Symposium of Marine Biology, La Paz, B.C.S., Mexico, June 1992.

1. Hernandez-Saavedra, D. and Ochoa, J.L. Marine Yeast biotechnological applications: I.- Biomass production. Lecture.

The interest for obtaining resources from the sea ignored for many years lead us to the isolation of marine yeasts in the Ensenada of Aripez, B.C.S., Mexico, where we found two different genera (*Rhodotorula* and *Candida*). The utilization of this kind of yeast as food and vitamin supplement in aquaculture is being proposed. We developed an optimized process for biomass production using sea water complemented with some nutrients with yields above 35% for *Rhodotorula rubra* strain 2LM.

2. Hernandez-Saavedra, D. and Ochoa, J.L. Marine Yeast biotechnological applications: II.- Enzymes. Lecture.

Since 1986, after the microbiological sampling along the west coast of Baja California Sur, Mexico. We isolated 200 like-yeast strains in the different sampling stations. Fourteen distinct genera were characterized and are the principal component in our collection, making our collection the most important in our country with this kind of microorganisms. The potential utilization of marine yeast in the production of commercial compounds such as Superoxide dismutase (SOD) was demonstrated in our laboratory. The perspectives in the applications of marine yeast on various fields are high, thanks to the wide utilization of carbon sources and their physiologic characteristics which allows the yeasts to survive in this environment.

Ist National Congress of Mycology. Pto. de la Cruz, Tenerife, Spain, July 1992.

3. Hernandez-Saavedra, N.Y., Cueva, R. and Suarez-Rendueles, M.P. Preliminary studies about the proteasome of *Schizosaccharomyces pombe*. Poster session.

The multicatalytic proteinase complex (MPC) of an unusual high molecular weight (700kDa) is called proteasome. MPC is composed by a series of low molecular weight nonidentical subunits with molecular masses between 20 and 32 kDa; and its presence in archaeobacteria and in all the eukaryotic cells constitutes up to 0.5 -1% of the protein of cell homogenates. The MPC presents three kinds of endopeptidic activities on the basis of the structure of the amino acid in the P1 position. The proteasome function is not so clear *in vivo,* but its participation in the non-vacuolar proteolysis of short lived proteins its known. Recently the proteasome has been implicated in the ATP-ubiquinin-dependent proteolysis and in the processing of intracellular antigens for cytolytic immune response. In this work, we are tried to obtain the characterization and purification of the *Schizosaccharomyces pombe* proteasome to establish the differences and similarities between *S. cerevisiae* and other eukaryotic cells.

VIIth PAABS Congress. Ixtapa, Guerrero, Mexico, September 1992.

4. Hernandez-Saavedra, N.Y., Cueva, R., Valle, E. and Suarez-Rendueles, M.P. Preliminary characterization of *Schizosaccharomyces pombe* proteasome . Poster session.

The multicatalytic proteinase complex, proteasome or prosome is an unusually high molecular weight proteinase (Mr 700 kDa) composed of a series of low molecular weight (20-32 kDa) nonidentical subunits, which has been described in a variety of eukaryotic cells ranging from man to yeast. The complex exhibits three distinct endopeptidase activities, cleaving bonds on the carboxyl side of hydrophobic, acidic and basic amino acid residues. We have started a combined genetic and biochemical characterization of the *Schizosaccharomyces pombe* proteasome to uncover the function of this complex in yeast. By using several protein purification techniques we have ended with a partially purified preparation that shows the characteristic pattern of this kind of complex when analyzed by SDS-PAGE electrophoresis. The most prominent subunit cross-reacts with polyclonal antibodies raised against the purified *S. cerevisiae* proteasome, showing a certain degree of similarity at least one subunit of the complex, between both yeast genera.

Keystone Symposia on Molecular and Cellular Biology. The extracellular matrix of plants: Molecular, Cellular and Developmental Biology. Santa Fe, New Mexico, U.S.A., January 1993.

5. Hernandez-Saavedra, D., Ochoa, J.L. and Lopez-Gutierrez, F. Cell Wall composition of marine yeast. Poster session.

Yeasts play an important role in the marine food chain because of their ability to assimilate a great variety of carbon compounds. Current knowledge of the composition, structure and metabolism of yeast cell walls is based on data derived from *S. cerevisiae* (terrestrial), but little is known about the marine cell wall composition. To determine the major cell wall components of marine yeast, 100mg of lyophilized cells of *Debaryomyces hansenii* and of *Rhodotorula sp.*5 were disrupted by Braun MSK homogenizer for 5 min to prepare the cell wall. Lyophilized cell walls were separated into the 4 classical fractions according to Leal-Morales and Ruiz-Herrera (1985). These fractions were analyzed for neutral sugars, and 20-25mg of total cell walls were analyzed for soluble proteins, lipids, chitin and inorganic materials. The preliminary data from these

analyses are show. In general terms, the marine yeast were higher in inorganic material and chitin. These differences undoubtedly reflect the different environments of the two organisms. The chemical nature of the lipids, carbohydrates and inorganic material is under investigation.
V° Congreso Latinoamericano sobre Ciencias del Mar. La Paz. B.C.S., Mexico, october 1993.

6. Ochoa, J.L., Ascencio, F., Hernandez, S.D., Hernandez, S.N.Y., Lopez, G.F., Tovar, R.D., Ramirez, O.M. and Cruz, V.A. Marine Biotechnology: Biological reagents obtention from marine resources. Lecture.

We have tried the application and development of different procedures to isolate and purify biological reagents from the sea natural sources. In particular we have been studying if the clams or shellfishes can be considered as a possible source of lectins to be applied in the characterization of human blood groups, showing that serospecificity of the aqueous extract of the clams such as *P. canadensis, M. aurantica* and *M. squalida* for the A and O groups can be obtained if the red cells are trypsinized first. We also have designed a method to produce and isolate the SOD enzyme (Superoxide-dismutase) from marine yeasts with very attractive yields. For this case we chose the yeast *Debaryomyces hansenii* obtained from the west coast of Baja California peninsula, grown in sea water added with a carbon source and other several nutrients in the presence of a disinfectant which contains chlorine, this avoid the necessity to use expensive ways of sterilization. This and other examples will be presented in this congress, showing the potential of the marine resource in biotechnology, a field that offers a great possibility for development in Latin America.

The following abstract are from recently publish papers:

7. Alarcón-Gonzalez, C., Vazquez-Juarez, R., Lopez-Trinidad, R. and Hernandez-Saavedra N.Y. Infective yeast on brown shrimp (*Penaeus californiensis*) from Baja California Sur, Mexico: Isolation, identification and fungicide sensitivity. Rev. Lat-amer. Microbiol., **32**: 121-125, 1990.

Two strains of yeast were isolated from ocular infectious processes of brown shrimp (*Penaeus californiensis*). According to colonial and cellular morphology, one was characterized as the "black yeast" *Aureobasidium pullulans* and the other as the teliospore-forming yeast *Rhodosporidium* sp. In a first attempt to look for a treatment, we tested *in vitro* sensitivity of the isolates against three antifungal compounds. *Rhodosporidium* sp. showed sensitivity to nystatin (10 000-100 U/ml) and green malachite (12 x $10^{-3}$ mg/ml) while griseofulvin had no effect at all. *A. pullulans* was sensitive only to nystatin (10 000-100 U/ml) and no effect was detected with green malachite and griseofulvin at the concentrations tested. This results suggest that nystatin may be an option for treatment of eye infection on brown shrimp.

8. Hernandez-Saavedra N.Y., Hernandez-Saavedra D. and Ochoa J.L. Distribution of *Sporobolomyces* (Kluyver et van Niel) genus in the western coast of Baja California Sur, Mexico. System. Appl. Microbiol. **15**: 319-322, 1992.

One hundred forty one strains of yeast were isolated from 98 seawater samples collected in the Pacific Ocean, off the west coast of Baja California, Mexico. The genus *Sporobolomyces* represented 32% of the total isolates and comprised the species *Sp. holsaticus* (10%), *Sp. puniceus* (20%) and *Sp. roseus* (2%). By correlating the distribution of marine yeast with temperature, salinity, dissolved oxygen and depth, it was possible to establish the distribution pattern for each species.

The following papers are being prepared for publication:

9. Hernandez-Saavedra N.Y., Hernandez-Saavedra D. and Ochoa J.L. Effect of salinity, temperature and dissolved oxygen on the distribution of the genus *Candida* (Berkhout) along the west coast of Baja California Sur, Mexico.

Of 141 yeast strains isolated from 98 samples of sea water off the Pacific coast of Baja California Sur, Mexico, 22% were of the genus *Candida*. Five different groups of *Candida* were found based on physiological characteristics. A distribution pattern was established which correlated these

group to physicochemical parameters of the sea water samples. We found that temperature and dissolved oxygen influence the distribution of this genera, while the amount and kind of nutrients influence both distribution and population density.

10. Ochoa J.L., Vázquez-Juárez, R., Hernández-Saavedra D., Hernández-Saavedra N.Y., Tovar-Ramírez D., Vega-Villasante F., and Schulte, T.L. Isolation and purification of superoxide dismutase enzyme from a halotolerant yeast *Debaryomyces hansenii*.

The isolation and identification of the yeast *D. hansenii* from the west coast of the Baja California Peninsula is described. Biomass production is compared under several culturing conditions using different carbon sources. The enzyme superoxide dismutase (SOD) was extracted, partially purified and characterized. It is concluded that *D. hansenii* may be an alternate source for the production of SOD, an enzyme with important clinical applications.

The following are abstracts from two M.Sc. dissertations.

11. Hernandez-Saavedra Daniel. Cell wall chemical composition of distinct Marine Yeast genera. M.Sc. Thesis. Univ. de Guanajuato, Mexico. 1991.

The chemical analysis of the main components which conform the cell wall of some yeast genus isolated from the sea was done and was compared with *S. cerevisiae* which was used as model. The results obtained in the present work permit us to affirm that the cell wall of the yeast analyzed is particular in each case, however, the main component of all the yeast taxonomically related were polysaccharides. In the same way, in all the fractions of cell wall analyzed we detected glucose, which show that this monosaccharide conform the different polysaccharides of the cell wall of *S. cerevisiae, Debaryomyces hansenii* and *Rhodotorula acheniorum*. In some cases it was associated to mannose and to a unidentified compound, which is an distinctive characteristic. The big differences of sensibility to zymolyase, shows a stronger evidence about the variability of the cell wall structure of the different yeast genus studied. Like an exception, we found in *Rh. acheniorum* that the lipids and inorganic material, constitute until a 20% of the total dry weight of the cell wall, which is a great difference compared with *S. cerevisiae* (8%), it suggest a different structure of the polymers that conform this dynamic envelop.

12. Hernández-Saavedra Norma Y. Effect of salinity in composition and concentration of osmoregulators on halotolerant yeast. M.Sc. Thesis. CICIMAR-IPN. Mexico. 1992.

Five halotolerant yeast strains were selected to study the effect of salinity and temperature on growth and on composition and concentration of their osmoregulators. It was found that an increase in temperature and salinity promoted strain specific effects, however, three tendencies were observed and defined as: slightly halotolerant (*Rhodotorula rubra, Cryptococcus albidus var. albidus* and *Candida sp.*), moderately halotolerant (*Hansenula sp.* and *Debaryomyces hansenii*) and extremely halotolerant (*Aureobasidium pullulans*). A close relationship was found between an increase in salinity an increase in the concentration of certain intracellular metabolites. In *Rh. rubra*, *Cr. albidus* var. *albidus, Candida* sp. and *A. pullulans*, the glycerol level increased concomitantly with salinity. This metabolite seems to play a major role in the osmoregulation of these species. Nevertheless, in the last two species, the intracellular aminoacid pool contributed also to their osmoregulatory process. Although most yeasts synthesize glycerol in response to salinity, *Deb. hansenii* was not able to balance the osmotic pressure with this compound alone. Therefore, we conclude that this particular microorganism may have other mechanisms that it allows its survival and grow in highly saline environments.

## XVIII. École Nationale Supérieure Agronomique de Montpellier, Chaire de Microbiologie Industrielle et de Génétique des Microorganismes. Communicated by P. Galzy.

The following papers have been publishes recently.

1. Riaublanc A., Ratomahenina R. & Galzy P. 1993. Study of lipase from *Candida rugosa* Diddens and Lodder. Fat. Sci. Technol. **95**:134-137.

2. Vasserot Y., Arnaud A. & Galzy P. 1993. Evidence for muscat marc monoterpenol glucosides hydrolysis by free or immobilized yeast ß-glucosidase. Bioresource Technol. (GB), **43**:269-271.

3. Drider, D., Pommares, P., Chemardin, P., Arnaud, A. & Galzy, P. 1993. Purification and properties of the endocellular ß-glucosidase of *Candida cacaoi* Buckley and van Uden CBS 2020. J. Appl. Bacteriol. (GBR) **74**:473-479.

4. Drider, D., Chemardin, P., Arnaud, A. & Galzy, P. 1993. Isolation and characterization of the exocellular ß-glucosidase of *Candida cacaoi*: possible use in carbohydrate degradation. Lebensm. Wiss. Technol. (CHE) **26** (in press).

5. Segueilha L., Boze H., Moulin G. & Galzy P. 1992. Alternative respiration pathways in *Schwanniomyces castellii*. Involvement in energy production and growth. J. Gen. Appl. Microbiol. (JAP) **38**:457-465.

6. Embrechts C., Boze H., Segueilha L., Moulin G. & Galzy P. 1993. Influence of culture conditions on the biosynthesis of *Schwanniomyces castellii* phytase. Biotechnol. Lett. **15**:399-405.

## XIX. Department of Genetics, L. K. University, H-4010 Debrecen, P.O. Box 56, Hungary. Communicated by M. Sipiczki.

The following paper has been accepted recently.

1. M. Sipiczki, B. Grallert, & I. Miklos. 1993. Mycelial and syncytial growth in *Schizosaccharomyces pombe* induced by novel septation mutations. J. Cell Sci. **104**:485-493

Mutation in the gene sep1$^+$ of the unicellular fission yeast *Schizosaccharomyces pombe* impairs cell separation after cytokinesis and confers a branching mycelial morphology. The mutant is not defective in cell wall ß-glucanase activity but shows increased sensitivity to $Ca^{2+}$ and $Mg^{2+}$, and increased resistance to the microtubule inhibitor benomyl. The mycelial growth of *sep1-1* provides a convenient method for the examination of the polar growth pattern and for pedigree analysis as demonstrated by the segregation of mating types in the homothallic microhyphae. *sep1* is closely linked to *ade1* (0.94 cM) on the right arm of chromosome II. The ts mutation *spl1-1* confers a bent cell shape and causes aberrant septum formation at the restrictive temperature. *sep1*$^+$ and *spl1*$^+$ perform closely related functions as their mutant alleles interact with each other and with another septation mutant *cdc4-8*. These functions may overlap with certain cytoskeletal processes and with the determination of cell polarity because the triple mutant forms huge multunucleate syncytia with promiscuous branching and rare septum formation.

## XX. Department of Food Science and Technology, University of New South Wales, P.O. Box 1, Kensington, New South Wales, 2033 Australia. Communicated by G.H. Fleet

Our laboratory has a group of PhD students working on various aspects of the growth and biochemical activities of wine yeasts, food spoilage yeasts, yeasts in dairy products, yeast autolysis and the extraction of derivatives from yeasts for food processing. The following are some recent publications.

1. Fleet, G.H. (ed). 1993. Wine Microbiology and Biotechnology, 520 pages. Harwood Academic Publishers, Switzerland. ISBN 3-7186-5132-7.

This book contains 17 chapters, written by a team of the world's leading researchers in wine microbiology and biotechnology. About 90% of the book contents is devoted to yeasts with specific chapters on the metabolism of sugars, nitrogen and sulfur compounds by yeasts, killer yeasts, yeast autolysis, yeast genetics, yeast bioreactors, spoilage yeasts and their control, and the commercial production of yeasts.

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2. Fleet, G.H. 1993. The microorganisms of winemaking - isolation, enumeration and identification. In Wine Microbiology and Biotechnology edited by G.H. Fleet, pp 1-25. Harwood Academic Publishers, Switzerland.

3. Fleet, G.H. and G.M. Heard 1993. Yeasts - growth during fermentation. In Wine Microbiology and Biotechnology edited by G.H. Fleet, pp.27-54. Harwood Academic Publishers, Switzerland.

4. Fleet, G.H. 1992. Spoilage yeasts. CRC Critical Reviews in Biotechnology, 12:1 44.

5. Fleet, G.H. 1991. Cell walls. In The Yeasts, Vol-e 4, Yeast Organelles edited by A.H. Rose and J.S. Harrison. pp.199-278. Academic Press, London.

6. Aryanta, R., G.H. Fleet and K.A. Buckle. 1991. The occurrence and growth of microorganisms during the fermentation of fish sausage. Inter. J. Food Microbiol. 13:143-156.


The following PhD theses have been completed recently:


7. Hernawan, T. 1992. Chemical and cytological changes during the autolysis of yeasts. PhD.

8. Roostita, R. 1993. The occurrence and growth of yeasts in cheeses and milk. PhD.

## XXI. Planta Piloto de Procesos Industriales Microbiológicos (PROIMI), Avenida Belgrano y Pasaje Caseros, 4000 S.M. de Tucuman, Argentina. Communicated by J.F.T. Spencer.

The following paper was recently accepted for Applied Microbiology and Biotechnology.

1. H. Heluane, J.F.T. Spencer, D. Spencer, L. de Figueroa & D.A.S. Callieri. In press. Characteristics of hybrids, obtained by protoplast fusion, between *Pachysolen tannophilus* and *Saccharomyces cerevisiae*.

The genes for utilization of xylose were transferred from *Pachysolen tannophilus* to *Saccharomyces cerevisiae.* The hybrids resembled the *Saccharomyces cerevisiae* parent morphologically and in sugar assimilation and fermentation, and in addition, assimilated xylose. Pulsed field gel electrophoresis showed that the chromosome banding pattern was intermediate between the two parental species.

## XXII. Molecular and Population Genetics Group, Research School of Biological Sciences, The Australian National University, P.O. Box 475, Canberra, ACT 2601, Australia. Communicated by R. Maleszka.

Recent submission to the EMBL database:

A fragment of genomic DNA from a yeast *Pachysolen tannophilus* has been sequenced and deposited under the accession No. X68593. The gene encodes a protein that is homologous to the UDP galactose-6-epimerase from both bacteria and eukaryotes (this is a collaborative project with Dr. M. Skrzypek from the Department of Biochemistry, University of Lexington, USA).

The following manuscript is in press:

1. R. Maleszka. 1993. Single stranded regions in yeast mitochondrial DNA revealed by pulsed-field electrophoresis, Appl. Theoret. Electrophoresis

## XXIII. Instituto de Microbiologia Bioquimica, Departamento de Microbiologia y Genetica, Universidad de Salamanca, Pl. de la Merced s/n, 37008 Salamanca, Spain. Communicated by J.R. Villanueva.

The following theses have been defended recently.

1. Diaz Martinez, M. 1992. Isolation and characterization of the *cwg2+* gene of *Schizosaccharomyces pombe*. Directors: Dra. P. Pérez González & Dr. A. Durán Bravo.

2. Rogriguez Cousiño, N. 1992. Cloning and molecular characterization of double stranded W RNA of *Saccharomyces cerevisiae* and study of its relationship with 20S RNA. Director: Dr. R. Esteban Cañibano.

3. Puente Lanzarote, M.P. 1992. Global changes in protein composition of *Aspergillus nidulans* during conidiation. Director: Dr. F. Leal Sanchez.

4. Santos Garcia, M.A. 1992. Cloning and molecular characterization of the gene that codes for riboflavin synthesis in *Saccharomyces cerevisiae*. Director: Dr. J.L. Revuelta Doval.

5. Correa Bordes, J.T. 1993. Characterization of the *EXG2* gene of *Saccharomyces cerevisiae*. Director: Dr. F. J. del Rey Iglesias.

6. Coll Fresno, P.M. 1993. Biochemical and genetic characterization of phenol oxidase activity of basidiomycete PM1 (CECT 2971). Directors: P. Pérez González & Dr. R. Santamaría Sánchez.

7. Fernandez Abalos, J.M. 1993. Molecular characterization of the *celA1* gene of *Streptomyces halstedii* JMB. Directors: Dr. R. Santamaría Sánchez & Prof. Dr. J. Villanueva.

## XXIV. Dipartimento di Biologia Vegetale, Università degli Studi di Perugia, Borgo XX Giugno 74, 06100 Perugia, Italy. Communicated by A. Martini & A. Vaughan-Martini.

Below are some of the most recent publications from our department:

1. Vaughan Martini, A.E. & A. Martini. 1993. A taxonomic key to the genus *Saccharomyces*. Syst. Appl. Microbiol. **16**:113-119.

2. Vaughan Martini, A.E., A. Martini & G. Cardinali. In press. Electrophoretic karyotyping as a taxonomic tool in the genus *Saccharomyces*. Antonie van Leeuwenhoek **62**.

The electrophoretic karyotypes of strains of the ten species of the yeast genus *Saccharomyces* (*sensu* Vaughan-Martini & Martini, 1992) were determined by the CHEF (Contour-clamped homogeneous electric field ) system of pulsed field gel electrophoresis. The number of bands was found to vary from 6 to 17 and calculated molecular weights of haploid genomes ranged from 7.9 to 14.6 Mbp. The type strains of *S. exiguus* and the four species of the *Saccharomyces* sensu stricto complex (*S. bayanus, S. cerevisiae, S. paradoxus* and *S. pastorianus*) have genomes comprised of chromosomes of all three size classes: light (<500 kb), medium (500-1000 kb) and heavy (>1,000 kb) . *Saccharomyces kluyveri* DNA has only heavy bands, while the remaining species exhibit medium-, heavy- and no small-sized chromosomes. When more than one strain of each species was examined, it was seen that while the species *Saccharomyces bayanus, S. castellii, S. cerevisiae, S. kluyveri, S. paradoxus* and *S. pastorianus* showed uniform karyotypes. *Saccharomyces dairensis, S. exiguus, S. servazzii* and *S. unisporus* comprise heterogeneous taxa.

3. A. Martini. 1993. Origin and domestication of the wine yeast *Saccharomyces cerevisiae* Journal of Wine Research (in press).

Recent ecological evidence point to a circulation model of *Saccharomyces cerevisiae* in nature which is different from that proposed at the end of last century. The wine yeast "par excellence" may be isolated with extreme difficulty from conventional habitats such as vineyard soil or the surface of ripe grapes, while it is almost the only species colonizing the surfaces of the winery.

## XXV. Department of Plant Sciences, University of Western Ontario, London, Ontario N6A 5B7. Communicated by M.A. Lachance.

The following paper was presented recently.

1. Kaden, J.E. & M.A. Lachance 1993. Correlating mating and killing in the cactophilic yeast *Sporopachydermia*. Great Lakes-St.Lawrence Winter Wokshop in Mycology, Cornell University, Ithaca, NY.

The following Master of Science dissertation was defended recently.

2. Nair, P. 1993. Nutrient limitation and the mating process in *Clavispora opuntiae*.

The mating process in *Clavispora opuntiae* was studied under varying nutritional conditions in liquid media. Mating responses (conjugation tubes and conjugation) were observed only in cultures that were grown and mixed both in nitrogen-free media. Mating in a medium containing very low amounts of $(NH_4)2S0_4$ began after this nitrogen source was completely exhausted. *C. opuntiae* cells in nitrogen-free medium become mating competent early in the stationary phase. Diffusible mating factors capable of arresting cell growth and inducing mating responses were searched for and not found. The lack of mutual growth inhibition of mixed cultures and the proportionality of mating response intensity to mating type ratios corroborate the absence of diffusible mating factors. Supernatants of single or mixed cultures have no effect on haploid strains. Single cell cultures that reached the stationary phase due to nitrogen source depletion exhibited high synchrony with respect to bud emergence upon resuspension in media replenished with nitrogen. The results indicate cell-cycle arrest in $G_1$ (shown by lack of budding). In *Saccharomyces cerevisiae,* $G_1$ arrest is required for mating to proceed and is mediated by mating factors. Unlike many other yeasts, *C. opuntiae* does not agglutinate prior to mating. Simulated agglutination mimicked by allowing mixed cells to remain in the pelleted form for various lengths of time did not affect the initiation and intensity of mating responses. The absence of agglutination and detectable diffusible factors suggests that cell to cell contact during nitrogen starvation is responsible for triggering the mating process in *C. opuntiae.* The mating reaction would be mediated by interactions between surface effectors and surface receptors that are produced during nitrogen depletion.

The following paper is to appear in the June issue of Can. J. Microbiol.

3. Lachance. M.A. 1993. *Metschnikowia agaveae* sp.nov., a heterothallic haploid yeast from blue agave. Can. J. Microbiol. **39** (in press).

Several strains of a new haploid, heterothallic species of Metschnikowia have been isolated from *Agave tequilana* var. *azul* in two agave-growing localities of Jalisco, Mexico. The new yeast species forms two aciculate ascospores per ascus after conjugation of enlarged and elongated compatible cells. Named after its host, *Metschnikowia agaveae* resembles superficially *Metschnikowia hawaiiensis,* but differs from the latter by some physiological and morphological characteristics. These two species exhibited no signs of sexual cross-reactivity. Strain VWO(PS)92-207.1 ($h^+$, CBS 7744, ATCC 90148) is the type culture, and strain UWO(PS)92-210.1 ($h^-$, CBS 7745, ATCC 90147) has been designated as isotype.

# Obituary

### In Memory of Prof. E. N. Odintsova, Dr.Sc.

With great sadness we announce that E.N. Odintsova, Dr.Sc., passed away on February 11, 1993 in Moscow after a long life of 90 years. She was a famous scientist in yeast vitaminology, author of the monograph "Microbiological methods of vitamin determination" (1959, in Russian). Until the last days of her life she worked on the yeast preparations "Ammivit" and "Solvit" for people needing vitamin therapy. Prof. E.N.Odintsova supervised more than 10 Ph.D. and graduate students. Her original scientific ideas will be developed by her pupils.

On behalf of the Zymologists of Russia

I.P. Bab'eva

# International Commission on Yeasts

### Minutes of the meeting of the International Commission on Yeasts. August 27, 1992 - Atlanta, Georgia, USA (VIII ISY)

**Members present**: D. Berry (UK), T. Deák (Hungary), L.I. de Figueroa (Argentina, J.C. DuPreez (South Africa), G.H. Fleet (Australia), P. Galzy (France), B.F. Johnson (Canada), M. Korhola (Finland), C.P. Kurtzman (USA), M.-A. Lachance (Yeast Newsletter), A. Martini, (Italy), S.A. Meyer (USA), H.J. Phaff (Honorary member), B. Prior (South Africa), I. Russell (Canada), F. Sherman (USA), M.T. Smith (The Netherlands), J.F.T. Spencer (England), G.G. Stewart (Canada). The following members sent their apologies: V. Johanidis (Slovenia), W.A. Scheffers (The Netherlands), A. Stenderup (Denmark).

**1. Previous ICY Meetings Minutes**

The Minutes of the Commission meeting held during the VII International Symposium of Perugia, Italy on August 4, 1988 were accepted as written.

**2. Proposals for membership of the Commission**

The Chair distributed the list of names proposed for membership during the ICY meetings of Louvain (Belgium, 1989), Smolenice (Czechoslovakia, 1990), Riga (Latvia, 1991):

BEKER, MARTIN Institute of Microbiology, Latvian Academy of Sciences, Riga, Latvia - Proposed by: N. Elinov & R. Sentandreu (XV ISSY)

BIELY, PETER Slovak Academy of Sciences, Bratislava, Czechoslovakia - Proposed by: E. Minarik for A. Kocková-Kratochvilová (XIV ISSY)

CALLEJA, GODE B. Institute of Biology, University of the Philippines, Diliman-Quezon City, The Philippines - Proposed by: B. Johnson (XIV ISSY)

KULAEV, I.S. Moscow State University, Moscow, Russia - Proposed by: N.P. Elinov (XV ISSY)

LOUREIRO-DIAS, MARIA C. Gulbenkian Institute of Science, Oeiras, Portugal - Proposed by: W.A. Scheffers ( XIII ISSY)

NAGORNYA, S.S. - Ukrainian Academy of Sciences, Lvov, Ukraina - Proposed by: V.V. Smirnov, Ukrainian Academy of Sciences (XV ISSY)

OLSEN, INGAR - School of Dentistry, Blindern, Oslo, Norway - Proposed by: A. Stenderup (XV ISSY)

OXENBOLL, KAREN M. Statens Institute for Folkenhelse, Oslo, Norway - Proposed by: A. Stenderup (X ISSY)

PRASAD, R. - Jawaharlae Nehru University, New Dehli, India -Proposed by: A. Martini (XIV ISSY)

PRILLINGER, HANS-JOERG - Raiffaisen Bioforschung, Tuelln, Austria -Proposed by: H. Klaushofer (XIV ISSY)

RAPOPORT, ALEXANDER - Institute of Microbiology, Latvian Academy of Sciences, Riga, Latvia - Proposed by: T. Lachowicz & R. Sentandreu (XV ISSY)

RASPOR, PETER - Faculty of Technology & Biotechnology, Lubljana, Slovenia - Proposed by: V. Johanides (XV ISSY)

SYBIRNY, ANDRAS - Ukrainian Academy of Sciences, Lvov, Ukraina - Proposed by: G. Shawlowsky (XV ISSY)

All proposed names were accepted for membership.

S.A. Meyer and A. Martini proposed Dr. ISABEL SPENCER-MARTINS of the Gulbenkian Institute of Science,

Oeiras, Portugal as the new member for Portugal. The Commission approved the nomination.

The Chair informed that Prof. A. Rose, member for UK, sent a letter of resignation from the Commission immediately after the 1988 ISY of Perugia and confirmed his decision upon request of withdrawal. The Commission accepted Anthony Rose's resignation.

Another member, Dr. Frank Spencer, presented his resignation since he is no longer resident of the UK and he therefore does not feel eligible to represent that country. At the same time, Dr. Lucia de Figueroa (member for Argentina), sent a letter of proposal for the nomination of Frank Spencer as the third member for Argentina where he has resided since 1990 and works at PROIMI, San Miguel de Tucuman. The Commission accepted Frank Spencer's resignation and contextually approved his nomination as a member for Argentina.

At this point F. Spencer and A. Martini proposed the name of Dr. R.T. MOORE of the University of Ulster, Coleraine, UK for one of the two places made available for the UK by the above resignations. The Commission approved the nomination of Dr. Moore.

Then, a question was raised regarding members activity in the Commission. Upon reviewing the attendance to ISY meetings in the past 10 years, it became apparent that there are several Commission members who have not taken part in the activity of ICY for a long time. After a short discussion, the Commission decided to ask the new Chair to write to those members who did not attend ISY and ISSY meetings in recent years in order to inquire about their willingness to continue their membership. It was also decided to allow 6 months for a reply and to consider a lack of any answer as equivalent to resignation.

## 3. Future meetings

INTERNATIONAL SPECIALIZED SYMPOSIA:

XVI ISSY 1993 Delft, Holland on "Metabolic regulation and compartimentalization in yeast." Organizer: Prof. W.A. Scheffers, Technische Hogenschool Delft, Laboratorium voor Microbiologie, Julianalaan 67a, 2628 BC Delft, The Netherlands (First circular already out)

XVII ISSY - 1994 New Dehli, India on Pathogenic Yeasts. Proposed by Dr. R. Prasad, Jawaharlae Nehru University, New Dehli, India (to be confirmed).

XVIII ISSY - 1995 Two proposals were introduced:

a) In 1991 (XV ISSY, Riga, Latvia) Prof. Elinov proposed Sankt Petersburg, Russia for a meeting on "Natural compounds active on yeasts" (not confirmed so far);

b) During this meeting Prof. David Berry of the University of Strathclyde, Glasgow, UK expressed his intention of organizing a symposium on "Yeast, growth and differentiation, biotechnological, biochemical and genetic aspects", provisionally scheduled for the last week of August at the Edinburgh Conference Center.

The Commission decided to accept the offer of Prof. Berry.

INTERNATIONAL SYMPOSIUM ON YEASTS--1996 (IX ISY)

The Chair announced that Dr. Martin J. Playne, President of the Australian Biotechnology Association, asked the Commission to consider the value of holding the 1996 General Symposium at Sydney as a joint conference of the 10th International Biotechnology Symposium in Sydney, Australia. Dr. Graham Fleet informed the Commission on the developments and strongly supported the initiative, stressing the growing interest for yeasts in Australia and South East Asia as well as the opportunity of attracting more people from that area.

A short discussion followed, anticipating the problem of attendance to our ISYs scheduled for a later point of the agenda. Dr. M. Korhola informed that the main competitors (Yeast Molecular Biologists and Geneticists) rescheduled their meetings on odd years, thus eliminating any overlapping with our general symposia.

The Commission then decided unanimously to accept the proposal from the Australian Biotechnology Association. As a result, the 1996 International Symposium on Yeasts (IX ISY) will be held in Sydney, Australia during the month of August.

## 4. Archives

The Chair called the attention of members to the fact that any documentation of past ICY activities is not available in an organized form in one single location as it is the case with larger scientific organizations such as the American Society for Microbiology. Documents, letters and other items of interest are present in different place, probably as part of the personal archives of ICY founders, and should be placed in one single location under the responsability of an established institution.

In order to begin the organization of a small archive, it was decided to ask the new Chair to write to all members in order to obtain information and documentation on previous meetings as well as on the persons and organizations that supported and organised the first initiatives.

**5. Name of the Commission on Yeasts & Yeast-like Microorganisms**

The Chair informed that Dr. Matti Korhola (ICY member for Finland) raised in a recent letter the problem of apparent discrepancies in the name of our Commission: initially it was International Commission on Yeasts and Yeast-like Microorganisms; then the most recent statutes (1986) adopted in Lisbon established, with article 2, that: the name of the organization shall be the International Commission for Yeasts (ICY):; in spite of that, more recent representations at the international level still refer to the longer title.

After a short discussion, it was decided to officially opt for the shorter name: **INTERNATIONAL COMMISSION ON YEASTS**.

**6. ICY Directory**

In different occasions the Chair officially requested all members of the Commission to provide names of local scientists interested in the activities of ISY in order to prepare a Directory. Unfortunately, only a few local representatives sent lists of names.

The Commission, still believing in the validity of the initiative, decided to ask again those ICY representatives who have not already sent a list of names, area of interest and Fax/Telephone number of members of the yeast community of their countries, to do so as soon as possible. Dr. André Lachance proposed to include in the Directory also names of graduate students and post-docs. Dr. Martini is still willing to collect names and to take care of the preparation of the Directory. The proposal was accepted.

**7. ICY meeting attendance**

The problem of the decline in attendance of our general meetings was raised by the Chair in a questionnaire sent to all members in 1990. Twenty-six members (41%) answered and the most relevant outcome was the conclusion that a merge with larger scientific societies, such as the Yeast Geneticists and Molecular Biololists, would certainly improve attendance to ISY meetings (20 in favour, 6 against). At the same time, many members were aware of the risk of complete and fast phagocytosis of our group, since an indiscriminate aperture may introduce several "unbiological" yeast scientists and could restrict the concept of yeast to *Sacch. cerevisiae* and *Schiz. pombe*.

More realistic suggestions were also offered such as getting out of synchrony with large meetings or favouring joint conferences with Biotechnology / Industrial Microbiology / Molecular Biology people.

The majority of members was deeply concerned about the loss of identity automatically caused by the merging with other yeast-related communities and did not view as profitable the idea of abandoning the omnicomprehensive approach to biology and biotechnology of yeasts.

The main proposals and the corresponding actions already in progress were the following:

(i) Getting out of synchrony with larger meetings; as already mentioned, the main competitor (Yeast Geneticists and Molecular Biologists) recently decided to hold meetings on odd years.

(ii) Creating a permanent agenda of meetings on specialized topics different from those of other larger groups. This philosophy has been applied in recent years to the organization of International Specialized Symposia (ISSY) and showed its validity through the success of attendance.

(iii) Combine the general symposia (ISY) with other international conference; see point 3. of these minutes for details on the action taken.

(iv) Attract more, younger people (graduate students and post-docs) in our orbit; see point 6. for details on action taken in this sense.

**8. Election of the Chair of the International Commission on Yeasts for the quadrennium 1992-96.**

The Chair expressed the gratitude of all ICY members to Dr. Sally Meyer for her successful organization of the VIII ISY and officially proposed her name for the Chairmanship of the International Commission on Yeasts for the period 1992-1996. The motion was passed unanimously.

**9. Miscellaneous**

The Chair informed that at the ICY meeting held during the XV ISSY (Riga, Latvia, 1991), Prof. Shavlowsky (member for Ukraina) quite strongly raised the problem of the pronounciation of Latin or Latinized names of microorganisms in general and yeasts in particular, especially by English speaking collegues. He expressed the opinion that ICY should recommend some guidelines to its members, based on the currently accepted rules for the pronounciation of the Latin language. After a short discussion, the Commission agreed that the issue may sometimes create some communication problems and asked Dr. Martini to contact some Latin scholars and report the results of his investigation in the Yeast Newsletter.

Meeting adjourned.

A. Martini, Chair, ICY.

# Recent meetings

## 22nd Annual Yeast Conference of the Czechoslovak Commission for Yeasts, Smolenice, Slovakia, February 17-19, 1993.

The 22nd Annual Yeast Conference was the first one in the history of these traditional meetings of the Czechoslovak Commission for Yeasts to take place after the splitting of the former Czechoslovak Federal Republic into two independent states, the Czech Republic and the Slovak Republic. Interestingly, whereas the scientific programme of the national conference had been planned in the united country, the end of Czechoslovakia on January 1st, 1993, resulted in that the presentations took place in the new state, Slovakia, and the conference was actually transformed into a bilateral international event. This fact was, fortunately, not noticeable at the lovely Smolenice castle where the conference was held, since the participants used as is customary the two closely related languages, Czech and Slovak, which are at least as similar as two dialects. Some complications occurred with monetary aspects, because six weeks after the division of the country, the monetary union, originally proposed to last until summer 1993, unexpectedly collapsed. Therefore, some of the Czech participants carried a great amount of change to Slovakia to overcome the lack of exchange services. Low value bills or, of course, coins were not subject to labelling with distinct Czech and Slovak stickers. In spite of the exciting time, the conference was attended by 60 scientist, including 3 guests from outside the former Czechoslovakia, and all enjoyed both the nice environment of the castle and the scientific programme which was concentrated on following subjects: i) Yeast cytoskeleton, ii) Genetics and molecular biology, and iii) Yeasts in industry and the environment.

**Plenary lectures on the cytoskeleton:**

E. Streiblová, J. Hašek: Current state of knowledge of yeast cytoskeleton.

O. Nečas, M. Pavliková-Krejčí, V. Urbanec, K. Kanková, P. Kysela: Effect of cooling shocks on microtubules of *Saccharomyces cerevisiae*.

M. Kopecká, M. Gabriel: The effect of malfunction of the actin cytoskeleton on morphogenesis of budding yeasts.

J. Jochová, I. Rupeš, E. Streiblová: Contractile ring in protoplasts of dividing yeasts.

J. Haplová, V. Farkaš, M. Hejtmánek: The effect of the optical brightener Rylux BSU on biosynthesis of yeast cell walls in vivo and in vitro.

M. Gabriel, M. Kopecká: Protoplasting as a phenocopy of a defective morphogenesis due to a mutation in the actin gene.

**Plenary lectures in genetics and molecular biology:**

F. Cvrčková: Molecular clock in *Saccharomyces cerevisiae*: linkage between the start and cytokinesis.

M. Šipicky: Genetic regulation of the cellular differentiation in *Schizosaccharomyces pombe*.

S. Ulaszewski: Genetics and physiology of the plasma membrane $H^+$ - ATPase in the yeast *Saccharomyces cerevisiae*.

J. Šubík: Molecular biology of the citrate cycle.

L. Šabová, Z. Jenisová, I. Zeman, J. Kolarov: Identification of protein factors and nucleotide sequences responsible for aerobic repression of the AAC3 gene coding for the ADP/ATP translocator.

V. Vondrejs: Autogenomic libraries as an evolutionary shortcut.

H. Sychrová: Cloning and sequencing of the LYP1 gene coding for a specific lysine transporter in *Saccharomyces cerevisiae*.

J. Brozmanová, M.A. Morais Jr., V. Vlčková, M. Slaninová, J.A.P. Henriques: The role of pso genes in DNA repair in *Saccharomyces cerevisiae*.

**Plenary lectures on yeasts in industry and the environment:**

E. Šturdik, M. Tomáška, M. Stredanský, D. Vandák: Use of yeasts in biotechnological processing of whey.

F. Malík, J. Šajbidor, S. Krásny: Question: to dry or immobilize wine yeasts?

J. Šajbidor, F. Malík, J. Grego: The role of lipids in anabiosis of wine yeasts.

J. Augustín: Xenobiotics as substrates for yeast growth.

A. Tomšíková: Ecology of pathogenic and potentially pathogenic yeasts.

E. Breierová: Effect of salt stress on the production of extracellular polymers of yeasts organisms of the genus *Dipodascus* and *Dipodascopsis*.

E. Slaviková, R. Vadkertiová: Yeasts and yeast-like organisms isolated from fishpond water.

**Posters exhibited at the conference:**

I. Hones, M. Havelková, E. Unger: The effect of nocodazole and mating factor on *Yarrowia lipolytica*.

I. Pokorná, A. Svoboda: Cytologic picture of the mating reaction in yeast protoplasts.

M. Janitor, J. Šubík: Genetic and molecular analysis of the gene of the signal pathway between the nucleus and mitochondria in yeasts.

I. Šmardová, G. Varga, B. Janderová, F. Půta: Isolation of the α-amylase gene from *Schwanniomyces occidentalis*.

M. Obernauerová, J. Šubík: A study of the regulation of the expression of a ß-D-fructofuranosidase gene in transformants of the yeast *Saccharomyces cerevisiae*.

Y. Gbelska, J. Šubík: Mutants of petite-negative yeast *Kluyveromyces lactis* unable to grow on non-fermentable substrates.

Z. Kossaczka, J.L. Brown, H. Bussey: Analysis of mutants resistant to a killer toxin revealed additional gene involved in the synthesis of yeast ß-(1-6)-glucan.

E. Farkašová, M. Chovanec, J. Brozmanová, V. Vlčková: Relation between the level of expression and biological activity *E. coli* in the yeast *Saccharomyces cerevisiae*.

M. Slaninová, V. Vlčková, J. Brozmanová, J.A. Henriques: Mutagenesis and recombination in mutants of *Saccharomyces cerevisiae* with the defect in the pso4 reparatory gene after treatment with N-methyl-N-nitro--N-nitrosoguanidine.

V. Vlčková, L. Černaková, E. Farkašová, J. Brozmanová: The effect of the *E. coli* RecA protein on induction of mitotic conversion in *Saccharomyces cerevisiae*.

S. Krásny, F. Malík, P. Tiko: Immobilized yeast in winery.

J. Grego, J. Šajbidor: The effect of ethanol on lipid composition in *Saccharomyces cerevisiae*.

D. Münznerová, J. Augustin: Metabolic activity of yeasts degrading aromatic hydrocarbons.

D. Šmogrovičová, K. Piršelová, Z. Ciesarová: Fermentation of starch fragments by yeasts.

P. Biely, M. Vršanska, E. Sláviková: Pectin-utilizing yeasts.

M. Kružiková, K. Heinrichová, P. Biely: Pectolytic system of a selected strain of *Aureobasidium pullulans*.

E. Sláviková, B. Košíková: Utilization of lignin wastes by yeasts.

Z. Kossaczká, G. Kogan, E. Machová: Isolation and characterization of protein complex and derived oligosaccharides from *Candida albicans* CCY 29-3-160A.

E. Machová, G. Kogan, J. Šandula: Ultrasonic depolymerization of *Saccharomyces cerevisiae* glucan.

J. Šandula, D. Vraná, E. Machová: Inhibition of the adherence of pathogenic yeasts by a glucan-chitin complex.

A. Bronišová, J. Šandula, G. Kogan, E. Rozinek, V. Vala, L. Slovaková: Cell wall polysaccharides of *Candida lambica*: isolation and application.

N. Kolarová, M. Grešík: Extracellular glycoproteins of the yeast *Cryptococcus laurentii*.

E. Breierová, J. Šajbidor: Composition of fatty acids in the yeast-like species *Malassezia pachydermatis*.

V. Stollárová: Yeast community of fruits.

R. Vadkertiová, E. Sláviková: Ecology of yeasts isolated from water of artificial ponds.

K. Sigler, G. Gille: Oxidative effect of hydrogen peroxide on membranes of *Saccharomyces cerevisiae* and *Schizosaccharomyces pombe*.

H. Kurzweilová, K. Sigler: Factors influencing the activity of the K1 toxin.

S. Betina, G. Gavurniková, M. Nebohačová, J. Kolarov: Regulation of the expression of the AAC2 gene in *Saccharomyces cerevisiae*.

T. Drgoň, M. Šabová, J. Kolarov: The AAC proteins in yeast - enzymic properties of the three isozymes.

S. Ulaszewski, B. Waskiewics, A. Goffeau: Cloning of the TSA1 gene involved in regulation of the plasma membrane H+ -ATPase activity in yeast *Saccharomyces cerevisiae*.

The last meeting of the Czechoslovak Commission for Yeasts took place during the conference. The members of the committee agreed not to divide the Commission into two separate bodies, but to change its name into CZECH AND SLOVAK COMMISSION FOR YEASTS, in spite of the anticipated splitting of the Czechoslovak Microbiological Society. This is possible mainly because the Commission does not have a status of a juridical subject and is considered to be a free coordinating body of Czech and Slovak yeast researchers. It was suggested that both parts of the Commission should have their own representatives in ICY: Dr. P. Biely and Dr. E. Minárik for Slovakia (members of ICY), and Dr. Maria Kopecká for the Czech Republic (proposal sent to the current ICY chairman Dr. Sally Ann Meyer).

Future activities of the Czech and Slovak Commission for Yeast should focus mainly on the organization of annual yeast conferences as well as of specialized international yeast symposia, and on common publications. If there is a need, the conferences may be organized alternatively once in Slovakia and once in the Czech Republic. Finally, it was agreed that the 23rd annual yeast conference will be held again in Smolenice castle in February 1994. Its scientific program will be devoted to yeast membrane systems, extracellular enzymes and other yeast products and to fermentation technology.

Peter Biely, Chair
Czech and Slovak Commission for Yeasts
Institute of Chemistry
Slovak Academy of Sciences
Dúbravská cesta 9
84238 Bratislava
Slovakia

# Forthcoming meetings

## 16th International Specialized Symposium on Yeasts, Metabolic Compartmentation in Yeasts. August 23-26 1993, Arnhem, The Netherlands.

The symposium programme will include lecture and poster sessions on the various metabolic compartments in yeast cells. Strong emphasis will be on trafficking and transport across membranes of metabolites and exchange of cellular constituents between compartments.

With the aim of achieving an integrated picture of cellular metabolism in yeasts, parallel sessions will be avoided and general discussion sessions will be included in the programme.

**Location:** Contrary to an earlier announcement, the meeting will be held at the **Papendal Congress Centre, Arnhem, The Netherlands.**

This new congress accommodation is situated in a beautiful rural environment. It offers hotel accommodation and car parking facilities for approximately 200 participants.The 16th International Specialized Symposium on Yeasts 1993 will be organized in Rotterdam, The Netherlands.

**Organizing Committee:** W.A. Scheffers (chairman), Delft University of Technology, Delft; W.R. de Boer, Gist-brocades, Delft; J. Maat, Unilever Research Laboratory, Vlaardingen, and Free University, Amsterdam; R. van den Berg, Heineken Breweries, Zoeterwoude; J.P. van Dijken, Delft University of Technology, Delft.

Programme outline: Morning and afternoon sessions will consist of lectures by invited speakers. In the evening, poster sessions and workshops are being planned. A selection will be made from submitted abstracts for oral presentation in workshops.

**Preliminary programme:** Individual sessions will focus on biochemical, genetic and physiological aspects of the following metabolic compartments: cell wall and plasma membrane; mitochondrion; peroxisome; vacuole, Golgi and endoplasmic reticulum; nucleus. In each session, state-of-the-art reviews will be presented by invited speakers. Emphasis will be on biogenesis, structure and function. In the final session, the central topic is the integration of the function of the various metabolic compartments in overall cellular metabolism. Invited speakers and provisional titles of their lectures were listed in the previous issue of the YNL.

**Official language:** The official language for the symposium will be English.

**Registration fee:** The subsidized symposium fee will be Dfl. 850. if paid before May 1 1993, and Dfl. 1050. after that date. Included in the fee are: access to all symposium activities; symposium programme and abstract book; coffee and tea during breaks; and all lunches and dinners during the symposium. Not included in the fee is hotel accommodation at Papendal. Rates for accommodation vary from Dfl. 37.50 to Dfl. 130. per night per person, breakfast included. Additional accommodation before and/or after the symposium may be arranged upon request. Car parking at Papendal is free. It is assumed that participants will stay for the duration of the symposium and the full fee will be charged irrespective of the time of attendance. **For further information, please contact:**

W.A. Scheffers,
Kluyver Laboratory of Biotechnology,
Julianalaan 67,
NL-2628 BC Delft, The Netherlands.

Telephone: (..31) 15 782411
Fax: (..31) 15 782355
or (..31) 15 133141

## 2nd International Conference on *Cryptococcus* and Cryptococcosis, Milano, Italy, September 19-23, 1993.

**Organization**: M.A. Viviani (Italy), chairperson, and K.J. Kwon-Chung (USA), co-chairperson.
**Scientific secretariat**: M.A. Viviani and A.M. Tortorano, Laboratorio di Micologia Medica, Istituto di Igiene e Medicina Preventiva, Università degli Studi di Milano, Italy.

**Topics**: Molecular biology and biochemistry. Taxonomy, ecology and epidemiology. Pathogenesis and immunoresponse. Clinical manifestations in humans and animals. Diagnosis. Antifungals: Laboratory aspects and animal models. Therapy and management. Each session will include state of the art lectures followed by relevant oral presentation and posters. **Contact:**

Dr. M.A. Viviani,
Istituto di Igiene e Medicina Preventiva
Universita di Milano
Milano, Italy

FAX 39-2-55191561

## Fourth European Congress of Cell Biology. June 26 - July 1, 1994, Prague, Czech Republic.

The 4th European Congress of Cell Biology will be held in Prague, Czech Republic, June 26 to July 1, 1994.

**To receive additional information, contact:**

Secretariat
Dr. Zdeněk Drahota
Institute of Physiology
CS 142 20 Prague 4
Czechoslovakia

M. Kopecká

## 7th International Symposium on the Genetics of Industrial Microorganisms, GIM 94, Montréal, Canada, June 26 - July 1, 1994

Site and date: The 7th International Symposium on the Genetics of Industrial Microorganisms will be held at the Palais des Congrès, Montreal, Québec, Canada on June 26 -July 1, 1994.

Organizing committee: Claude Vézina, Chairman, BioChem Pharma Inc., Laval; Graham G. Stewart, Co-Chairman, John Labatt Limited, London (also Co-Chairman Scientific Program Committee); Michael DuBow, Vice-Chairman, McGill University, Montreal; Julian Davies, Co-Chairman, Scientific Program Committee, University of British Columbia, Vancouver; Brigitte Lebreton, Local Arrangements, CITEC, Montréal; Jim Germida, Member, University of Saskatchewan, Saskatoon; Ted Medzon, Member, University of Western Ontario, London; David Y. Thomas, Member, National Research Council Canada, Biotechnology Research Institute, Montréal; Nicole Léger, Symposium Manager, National Research Council Canada, Ottawa; Laurier Forget, Member, National Research Council Canada, Ottawa.

Scientific program: A broad range of topics will be discussed in the six days of oral and poster presentations. The following is a preliminary list of the major topics: Recent advances in antibiotics; screening for new activities from microbes and improving production; microbial genetics of infectious agents (mycobacteria, fungi, yeasts, etc.); bioremediation; secretion systems, their roles in industry; food microbiology; biotransformations; yeast (traditional and novel applications); downstream processing systems regarding genetically manipulated organisms; global regulatory systems in industrial microorganisms.

The second circular will be published in the Fall of 1993 and will contain the call for papers, special format paper for typing the abstract, a final list of topics, the theme and Symposium programs, the social events, the tours, and registration and accommodation information. **Contact:**

Nicole Léger, Symposium Manager, GIM 94
National Research Council Canada
Ottawa Ontario, Canada K1A OR6

## Seventh International Congress of Bacteriology and Applied Microbiology Division & Seventh International Congress of Mycology Division of IUMS. July 3-8, 1994, Prague.

The 7th International Congress of the Bacteriology and Applied Microbiology Division and the 7th International Congress of the Mycology Division of the International Union of Microbiological Societies will be held in Prague, Czech Republic, July 3 to 8, 1994. **To receive additional information including the 2nd circular, contact:**

Secretariat, IUMS Congresses '94.
Institute of Microbiology,
Vídeňská 1083
CS-142 20 Prague 4
Czech Republic

Tel./Fax. (+42 2) 471 32 21

## Fifth International Mycological Congress, August 14-21, 1994, Vancouver, B.C. Canada

The Fifth International Mycological Congress (IMC 5) will be held on the campus of the University of British Columbia (UBC), Vancouver, British Columbia, Canada, August 14 through August 21, 1994. A comprehensive scientific programme is planned, with congress symposia, contributed symposia, poster sessions, and discussion groups. Also, there will be pre- and post-congress field trips. Inexpensive accommodation will be available on campus for individuals and families, and also a range of hotels is nearby. Vancouver is located on the Pacific Ocean at the foot of the Coast Range of mountains. A wide spectrum of ecological zones is within easy driving distance; for example, ocean coast, rain forests, alpine areas and semi-deserts. Therefore there are many opportunities for biological field studies. Vancouver itself is a safe cosmopolitan city with many leisure activities such as shopping, walking, hiking, fishing, sailing, windsurfing and touring. Restaurants are numerous and ethnically diverse, and excellent dining can be had in all price ranges. Executive Committee: Robert J. Bandoni, (UBC), President; Anthony J.F. Griffiths, (UBC), Secretary General; I. Brent Heath, (York University), Programme; Clarence Madhosingh, (Agriculture Canada), Finance; Gilbert C. Hughes, (UBC), Publications; Joe Ammirati, (University of Washington), Field Trips; Bert Pepin, (Agriculture Canada), Local Arrangements; Bill Chalmers, (Western Biologicals), Exhibits; Shannon Berch, (UBC), International Arrangements. **For further information, contact:**

Anthony Griffiths, IMC5 Secretariat,
c/o Venue West
#645 - 375 Water Street
Vancouver, B.C., Canada V6B 5C6

Telephone: (604) 681-5226
FacSimile: (604) 681-2503

## An invitation to the 10th International Biotechnology Symposium, August 25-30, 1996, Sydney, Australia.

In recognition of biotechnology's growth and its impact on the country, the Australian Biotechnology Association is proud to be hosting the 10th International Biotechnology Symposium in Sydney between August 25-30, 1996. The Symposium will be held right in the heart of Sydney at the Sydney Convention and Exhibition Centre, Darling Harbour. Not only will it be a showcase for Australian biotechnology but also your opportunity to come and see the industry firsthand. Professor Peter Gray is Chairman of the Organising Committee. **To join the mailing list for the Symposium, contact:**

Australian Biotechnology Association,
PO Box 4, Gardenvale Victoria 3185,
Australia.

Telephone: 61 3 596 8879
Facsimile: 61 3 596 8874

## Ninth International Symposium on Yeasts 1996

As decided by the Commissioners of the ICY at their meeting during the 8th International Symposium on Yeasts, Atlanta, the 9th International Symposium on Yeasts will be held in Sydney, Australia, 1996 in conjunction with the International Biotechnology Congress. Planning of the meeting is in progress. Contact:

Graham Fleet
Department of Food Science and Technology

University of New South Wales
P.0. Box 1, Kensington NSW 2033, Australia.

# Brief News Items

## Change of address: Roy J. Thornton and Susan Rodriguez

Roy J. Thornton, formerly senior lecturer, Dept. of Microbiology & Genetics, Massey University, Palmerston North, New Zealand, and currently Training & Education Manager, Biolog, Inc. in Hayward, California, is pleased to announce that he has accepted a faculty position with Indiana University at Kokomo. Susan Rodriguez, Roy's wife, currently at the USDA's Western Regional Research Center in Albany, California, hopes to continue her aflatoxin research in Indiana. As of July 1, Roy's & Susan's address will be

Indiana University at Kokomo
Dept. of Biological & Physical Sciences
2300 South Washington St., P.O. Box 9003 Telephone: (317)455-9290
Kokomo, Indiana 46904-9003, USA FAX: (317)455-9276

## Change of laboratory: Alessandro Martini and Ann Vaughan Martini

We recently moved our laboratory to another location inside the old benedictine convent of Saint Peter. Even though maintaining our old address, our telephone numbers are changed as follows:

Alessandro Martini: +39 75 5856483; Ann Vaughan Martini: +39 75 5856479; Fax: +39 75 5856470