

# Rice Biotechnology

*Edited by Gurdev S Khush, International Rice Research Institute, The Philippines and  
Gary H Toenniessen, The Rockefeller Foundation, USA*

Rice is the most important food crop in the developing world and rice genetic improvement through breeding has effectively benefited hundreds of millions of resource-poor people. Biotechnology can significantly strengthen rice breeding programs, enabling breeders to achieve results more quickly and efficiently and to attain goals not feasible using conventional techniques.

This book reviews progress and prospects for applying biotechnology to rice improvement. The last decade has witnessed major advances, such that today some workers consider rice to be a model plant for cereal research. The book will therefore be of interest to a wide range of plant biotechnologists and breeders in providing an authoritative review of the current state of knowledge of this subject.

- Foreword *K Lampe*
- The world rice economy: Challenges ahead *C C David (IRRI)*
- Research priorities for rice biotechnology *R W Herdt (Rockefeller Foundation)*
- Genetic diversity of wild and cultivated rice *H I Oka (National Institute of Genetics, Japan)*
- Rice karyotype, marker genes and linkage groups *G S Khush and T Kinoshita (Hokkaido University)*
- Development and use of restriction fragment length polymorphism in rice breeding and genetics *S R McCouch (IRRI) and S Tanksley (Cornell University)*
- Rice tissue culture and its application *E C Cocking et al (University of Nottingham)*
- Transformation and regeneration of rice protoplasts *T Hodges et al (Purdue University)*
- Assessment of rice genetic transformation techniques *R Wu et al (Cornell University)*
- The identification and characterization of rice nuclear genes *T Okita (Washington State University)*
- Gene expression in rice *V Walbot and D Gallie (Stanford University)*
- Potentially useful genes for rice genetic engineering *G H Toenniessen*
- Molecular probes for disease diagnosis and monitoring *J E Leach and F F White (Kansas State University)*
- Prospects for the future *G H Toenniessen and G S Khush*

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# Barley

## Genetics, Biochemistry, Molecular Biology and Biotechnology

Edited by P R Shewry, Long Ashton Research Station, UK

The applications of molecular biology and molecular genetics have had a major impact on our understanding of the barley plant, and have opened the way to the application of biotechnology to manipulate and improve yield, quality and agronomic characters. This major book reviews our current knowledge of the genetics, biochemistry and molecular biology of barley and how biotechnology can be used to improve crop yields and their quality for feed or in the brewing industry. The book is divided into six main sections covering: origin, evolution and wild relatives; basic genetics; analysis of metabolism and development; seed development, composition, germination and utilization; pathogen resistance; and biotechnology. It will therefore represent a major reference volume for research workers in cereal chemistry, agronomy and plant biotechnology, who are interested in either the barley crop or in barley as a model biological system.

- The wild species of *Hordeum*: relationships and potential use for improvement of cultivated barley  
*Roland von Bothmer*
- Origin, evolution, population genetics and resources for breeding of wild barley, *Hordeum spontaneum*, in the fertile crescent  
*E Nevo*
- Intergeneric hybrids with *Hordeum*  
*G Fedak*
- Cloned and mapped genes: current status  
*Penny von Wettstein-Knowles*
- Progress in the production of wheat/barley addition and recombinant lines and their use mapping the barley genome  
*K W Shepherd and A K M R Islam*
- DNA marker techniques for genetic analysis in barley  
*D A Laurie, J W Snape and M D Gale*
- Nuclear genome structure and organization  
*E Ananiev*
- Molecular analysis of barley chloroplast proteins  
*J S Okkels*
- Analysis of barley metabolism using mutant genes  
*P J Lea, R D Blackwell and R A Azevedo*
- Molecular analysis of nitrate metabolism  
*A Kleinhofs and R L Warner*
- Genetics of barley development: mutant phenotypes and molecular aspects  
*G Bossinger, W Rohde, U Lundqvist and F Salamini*
- The slender mutation of barley  
*C J Pollock, H J Ougham and J L Stoddart*
- Biochemical and molecular studies of stress tolerance in barley  
*A M Stanca, V Terzi and L Cattivelli*
- Grain structure and composition  
*C M Duffus and M P Cochrane*
- The control of protein synthesis in developing barley seeds  
*M Kreis and P R Shewry*
- Alpha-amylase-trypsin inhibitors and thionins. Possible defense proteins from barley  
*F Garcia-Olmedo et al*
- Nutritional aspects of barley seed structure and composition  
*C W Newman and R K Newman*
- Barley germination: biochemical changes and hormonal control  
*D E Briggs*
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*P M Chandler*
- Cell wall metabolism in barley  
*G B Fincher*
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*J H Jorgensen*
- Biochemical and molecular analyses of the response of barley to infection by powdery mildew  
*T Bryngelsson and D B Collinge*
- The molecular analysis of barley resistance to powdery mildew  
*K J Scott*
- Strategies for cloning disease resistance genes  
*S Somerville*
- Haploid production: approaches and use in plant breeding  
*R A Pickering and P Devaux*
- Regeneration, stability and transformation of barley  
*A Karp and P A Lazzeri*
- The case of high lysine barley  
*L Munck*

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## ANNOUNCEMENT

# FOURTH INTERNATIONAL SEED SYMPOSIUM

## Basic and Applied Aspects of Seed Biology

**Angers, France: 20–24 July, 1992**

The meeting is the fourth international symposium on the biology of seeds, following those organized by A. Mayer (Jerusalem, 1980), C. M. Karssen (Wageningen, 1985) and R. B. Taylorson (Williamsburg, 1989).

Its objectives are:

- coverage of current research in different areas of seed biology;
- exchange of views between scientific researchers and the industrial/commercial sector;
- to consider future trends in fundamental research and applications.

The meeting is open to researchers and to those concerned with the production, commercialization and utilization of seeds. The number of participants will be limited to 150. Acceptances will be made in the order of applications received by the organizers.

SCIENTIFIC PROGRAMME: Oral presentations and posters on the following topics are invited:

1. Seed development — regulatory processes and molecular aspects
2. Biotechnology and composition of seeds
3. Artificial seeds
4. Regulation of germination — external and internal factors (including growth regulators), ecophysiology
5. Dormancy mechanisms
6. Viability, longevity, conservation, seed banks
7. Seed quality: evaluation and improvement of germinability — genetics, priming, pre-germination, coating

For further details and an application form please contact:

**Professor D. Côme**

Université Pierre et Marie Curie, Physiologie Végétale Appliquée, Tour 53, 1er étage, 4 Place Jussieu,  
75252 Paris Cedex 05, France

Telephone: 33-1-44 27 59 26 Fax No.: 33-1-44 27 59 27 Telex: 200 145 UPMCSIX F

**IMPORTANT:** Completed application forms **MUST** be received by Professor Côme **before** 30 September 1991.

# Seed Science Research

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