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T. Nagata (Managing Editor)
H. Lörz
J. M. Widholm

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Tobacco BY-2 Cells

Edited by
T. Nagata, S. Hasezawa, and D. Inzé

With 84 Figures, 12 in Color, and 8 Tables

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Series Editors
Professor Dr. T OSHIYUKI NAGATA
University of Tokyo
Graduate School of Science
Department of Biological Sciences
7-3-1 Hongo, Bunkyo-ku
Tokyo 113-0033, Japan

Professor Dr. H ORST LÖRZ
Universität Hamburg
Institut für Allgemeine Botanik
Angewandte Molekularbiologie
der Pflanzen II
Ohnhorststraße 18
22609 Hamburg, Germany

Professor Dr. J ACK M. W IDHOLM
University of Illinois
285A E.R. Madigan Laboratory
Department of Crop Sciences
1201 W. Gregory
Urbana, IL 61801, USA

Volume Editors

Professor Dr. T OSHIYUKI NAGATA (address see above)

Professor Dr. Seiichiro Hasezawa
University of Tokyo
Graduate School of Science
Department of Integral Biosciences
5-1-5 Kashiwanoha
Kashiwa-shi 227-8562
Chiba, Japan

Professor Dr. Dirk Inzé
VIB/Ghent University
Department of Plant Systems Biology
Technologiepark 927
9052 Ghent, Belgium

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The editors would like to dedicate this volume to

Professor Jeff Schell

who inspired several generations of scientists to explore the fascinating world of plant sciences.

Please note that the decision to dedicate this volume to Prof. Schell was made before he passed away on April 17, 2003.

Preface

It is our pleasure to present the 53rd volume of the *Biotechnology in Agriculture and Forestry (BAF)* series. This is the second issue of the BAF series edited by the new editorial team consisting of Professors Horst Lörz, University of Hamburg, Hamburg, Germany, Jack Widholm, University of Illinois, Urbana, USA, and Toshiyuki Nagata, University of Tokyo, Tokyo, Japan. This series was originally founded by the late Professor Y.P.S. Bajaj, Delhi, India, in 1986. The current volume is somewhat unique, since in this volume only one plant cell line, the tobacco BY-2 cell line, is handled, while previous volumes mainly dealt with plants having certain economical importance. Nonetheless, the three editors of this volume, Professors Dirk Inzé, Seiichiro Hasezawa and Toshiyuki Nagata, believe that most scientists who are working in the field of plant sciences will enjoy seeing this volume as a kind of source book of the unique tobacco BY-2 cells. Indeed, tobacco BY-2 cells have, over the years, gained the status as a model plant system, comparable to HeLa cells for human research. The current book is very timely because a wealth of basic knowledge on plant cells related to, e.g., cell division, cytoskeleton, cytokinesis, plant hormone signaling, etc., has been gathered from experiments with this cell line. As reflected in the contents, the accumulated knowledge of the BY-2 cell line is enormous and there is no other cell line that has been so important for progress in the plant sciences. Such knowledge should be shared with scientists from the fields of both applied and basic plant science. Furthermore, systematic studies on BY-2 cells are a prerequisite for further progress. Thus, the cell line that has been correctly called the HeLa cells in plant cell cultures should have particular importance.

In this volume, the following themes are handled. In Chapter 1, the early cradle stage in the development of tobacco BY-2 cell line, which has not been previously reported, is described. Chapters 2–5 describe recent progress in cell cycle studies. Chapters 6–9 discuss cell biological aspects, focusing on the dynamic changes in the cytoskeleton. Contributions to physiological and developmental aspects are dealt with in Chapters 10–17. Finally, studies from the viewpoint of molecular biology are described in Chapters 18–22. Thus, many aspects that have not been reported in books or journals so far are presented.

Dirk Inzé (Gent, Belgium), Seiichoro Hasezawa (Kashiwa, Japan),
and Toshiyuki Nagata (Tokyo, Japan)
November 2003

Contents

Section II: Cell Biology and Cytoskeleton

Section III: Physiological and Developmental Aspects

14 Studies on Dynamic Changes of Organelles Using Tobacco BY-2 as the Model Plant Cell Line
ATSUSHI SAKAI, YUTAKA MIYAZAWA, and TSUNEYOSHI KUROIWA (With 5 Figures)

Section IV: Molecular Biological Aspects

List of Contributors

G. Armstrong, Institute of Biotechnology, University of Cambridge, Tennis Court Road, Cambridge, CB2 1QT, UK

T. Asada, Department of Biology, Graduate School of Science, Osaka University, Machikaneyama 1-1, Toyonaka, Osaka 560-0043, Japan

R.A. Bhat, Max-Planck-Institut für Züchtungsforschung, Carl-von-Linné Weg 10, 50829, Köln, Germany

S. Campagne, Institut de Biologie Moléculaire des Plantes, Centre National de la Recherche Scientifique CNRS, UPR 2357, Université Louis Pasteur, Strasbourg, France

J. Canaday, Institut de Biologie Moléculaire des Plantes, Centre National de la Recherche Scientifique CNRS, UPR 2357, Université Louis Pasteur, Strasbourg, France

J.-G. Chen, Department of Biology, University of North Carolina, Chapel Hill, NC 27599, USA

M.C. Criqui, Institut de Biologie Moléculaire des Plantes du CNRS, 12, rue du Général Zimmer, 67084 Strasbourg Cedex, France

J.-L. Evrard, Institut de Biologie Moléculaire des Plantes, Centre National de la Recherche Scientifique CNRS, UPR 2357, Université Louis Pasteur, Strasbourg, France

T. Fujino, Wood Research Institute, Kyoto University, Gokasho, Uji, Kyoto 611-0011, Japan

D. Geelen, VIB/Ghent University, Department of Plant Systems Biology, Technologiepark 927, 9052 Ghent, Belgium

P. Genschik, Institut de Biologie Moléculaire des Plantes du CNRS, 12, rue du Général Zimmer, 67084 Strasbourg Cedex, France

S.T. Häkkinen, VTT Biotechnology, (Tietotie 2), P.O. Box 1500, 02044 VTT, Finland

S. HASEZAWA, Department of Integrated Biosciences, Graduate School of Frontier Sciences, The University of Tokyo, 5-1-5 Kashiwanoha, Kashiwa, 277-8562, Chiba, Japan

E. HERZOG, Institut de Biologie Moléculaire des Plantes, Centre National de la Recherche Scientifique CNRS, UPR 2357, Université Louis Pasteur, Strasbourg, France

D. INZÉ, VIB/Ghent University, Department of Plant Systems Biology, Technologiepark 927, 9052 Ghent, Belgium

M. ITO, Department of Regulation of Biological Signals, Graduate School of Bioagricultural Sciences, Nagoya University, Furocho, Chikusa-ku, 464-8601, Nagoya, Japan

T. ITOH, Wood Research Institute, Kyoto University, Gokasho, Uji, Kyoto 611-0011, Japan

A.M. JONES, Department of Biology, University of North Carolina, Chapel Hill, NC 27599, USA

J. JOUBÈS, present address: Laboratoire de Biogenèse Membranaire – FRE 2694 CNRS, Université Victor Ségalen Bordeaux 2, 146, rue Léo Saignat, F-33076, Bordeaux Cedex, France

J. JOUBÈS, VIB/Ghent University, Department of Plant Systems Biology, Technologiepark 927, 9052 Ghent, Belgium

G. KIUNA, Institute of Biotechnology, University of Cambridge, Tennis Court Road, Cambridge, CB2 1QT, UK

M. KOBAYASHI, Plant Nutrition Laboratory, Division of Applied Life Sciences, Graduate School of Agriculture, Kyoto University, 606-8502, Kyoto, Japan

F. KUMAGAI, Department of Integrated Biosciences, Graduate School of Frontier Sciences, The University of Tokyo, 5-1-5 Kashiwanoha, Kashiwa, 277-8562, Chiba, Japan

T. KUROIWA, Department of Life Science, College of Science, Rikkyo (St. Paul's) University, 3-34-1 Nishiikebukuro, Toshima-ku, 171-8501, Tokyo, Japan

N. KUTSUNA, Department of Integrated Biosciences, Graduate School of Frontier Sciences, The University of Tokyo, 5-1-5 Kashiwanoha, Kashiwa, 277-8562, Chiba, Japan

A.-M. LAMBERT, IBMP, 12, rue du Général Zimmer, 67084, Strasbourg Cedex, France

K. LAUKENS, Laboratory of Plant Biochemistry and Physiology, Department of Biology, University of Antwerp (UIA), Universiteisplein 1, 2610, Antwerp, Belgium

T. MATOH, Plant Nutrition Laboratory, Division of Applied Life Sciences, Graduate School of Agriculture, Kyoto University, 606-8502, Kyoto, Japan

K. MATSUOKA, Plant Science Center Riken, 1-7-2 Suehirocho, Tsurumi-ku, 230-0045, Yokohama, Japan

J.A.H. MURRAY, Institute of Biotechnology, University of Cambridge, Tennis Court Road, Cambridge, CB2 1QT, UK

Y. MIYAZAWA, RIKEN (The Institute of Physical and Chemical Research), 2-1 Hirosawa, Wako-shi, 351-0198, Saitama, Japan

T. NAGATA, Department of Biological Sciences, Graduate School of Science, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, 113-0033, Tokyo, Japan

K. NISHITANI, Biological Institute, Graduate School of Sciences, Tohoku University, Aoba, Aramaki, Aobaku, Sendai 981-0945, Japan

K.-M. OKSMAN-CALDENTEY, VTT Biotechnology, (Tietotie 2), P.O. Box 1500, 02044 VTT, Finland

Y. PARMENTIER, Institut de Biologie Moléculaire des Plantes du CNRS, 12, rue du Général Zimmer, 67084 Strasbourg Cedex, France

S. PLANCHAIS, Institute of Biotechnology, University of Cambridge, Tennis Court Road, Cambridge, CB2 1QT, UK

T. POTUSCHAK, Institut de Biologie Moléculaire des Plantes du CNRS, 12, rue du Général Zimmer, 67084 Strasbourg Cedex, France

J.-P. RENAUDIN, UMR PBV (Physiologie et Biotechnologies Végétale), INRA-IBVM, BP 8133883, Villenave d'Ornon Cedex, France

L. ROEF, Laboratory of Plant Biochemistry and Physiology, Department Biology, University of Antwerp (UIA), Universiteitsplein 1, 2610, Antwerp, Belgium

A. SAKAI, Department of Biological Science, Faculty of Science, Nara Women's University, Kitauoya, Nara-shi, Nara 630-8506, Japan

K. SAKAMOTO, Department of Biological Sciences, Graduate School of Science, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, 113-0033, Tokyo, Japan

T. SANO, Department of Biological Sciences, Graduate School of Science, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, 113-0033, Tokyo, Japan

A.-C. SCHMIT, Institut de Biologie Moléculaire des Plantes, Centre National de la Recherche Scientifique CNRS, UPR 2357, Université Louis Pasteur, Strasbourg, France

M. SEKINE, Graduate School of Biological Sciences, Nara Institute of Science and Technology (NAIST), Takayama 8916-5, Ikoma, 630-0101, Nara, Japan

V. SELTZER, Institut de Biologie Moléculaire des Plantes, Centre National de la Recherche Scientifique CNRS, UPR 2357, Université Louis Pasteur, Strasbourg, France

T. SHIMIZU, Department of Biological Sciences, Graduate School of Science, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, 113-0033, Tokyo, Japan

T. SHIMMEN, Department of Life Science, Graduate School of Science, Himeji Institute of Technology, Harima Science Park City, 678-1297, Hyogo, Japan

A. SHINMYO, Graduate School of Biological Sciences, Nara Institute of Science and Technology (NAIST), Takayama 8916-5, Ikoma, 630-0101, Nara, Japan

S. SONOBE, Department of Life Science, Graduate School of Science, Himeji Institute of Technology, Harima Science Park City, 678-1297, Hyogo, Japan

M. SUGIURA, Graduate School of Natural Sciences, Nagoya City University, Yamanohata, Mizuho, 467-8501, Nagoya, Japan

D. TANAKA, Biological Institute, Graduate School of Sciences, Tohoku University, Aoba, Aramaki, Aobaku, Sendai 981-0945, Japan

R.D. THOMPSON, INRA-URGELP Legume Unit, BP 86510, 21065 Dijon Cédex, France

H. ULLAH, Department of Biology, University of North Carolina, Chapel Hill, NC 27599, USA

H.VAN ONCKELEN, Laboratory of Plant Biochemistry and Physiology, Department Biology, University of Antwerp (UIA), Universiteitsplein 1, 2610, Antwerp, Belgium

E. WITTERS, Laboratory of Plant Biochemistry and Physiology, Department of Biology, University of Antwerp (UIA), Universiteisplein 1, 2610, Antwerp, Belgium

H. YASUHARA, Department of Biotechnology, Faculty of Engineering, Kansai University, Yamate-cho Suita, 564-8680, Osaka, Japan

E. YOKOTA, Department of Life Science, Graduate School of Science, Himeji Institute of Technology, Harima Science Park City, 678-1297, Hyogo, Japan

R. YOKOYAMA, Biological Institute, Graduate School of Sciences, Tohoku University, Aoba, Aramaki, Aobaku, Sendai 981-0945, Japan

A. YONEDA, Department of Integrated Biosciences, Graduate School of Frontier Sciences, The University of Tokyo, 5-1-5 Kashiwanoha, Kashiwa, 277-8562, Chiba, Japan

Y. YUKAWA, Graduate School of Natural Sciences, Nagoya City University, Yamanohata, Mizuho, 467-8501, Nagoya, Japan