



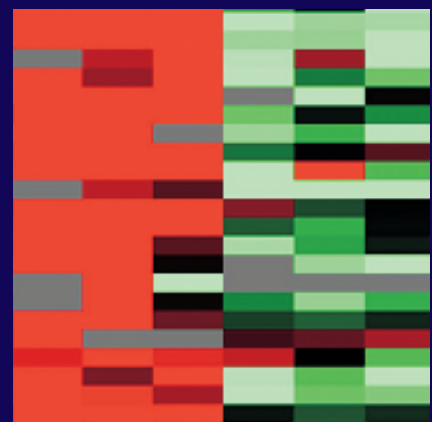
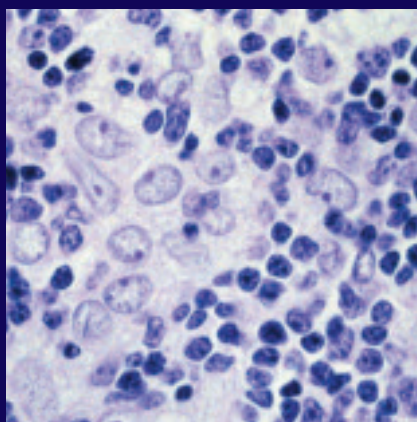
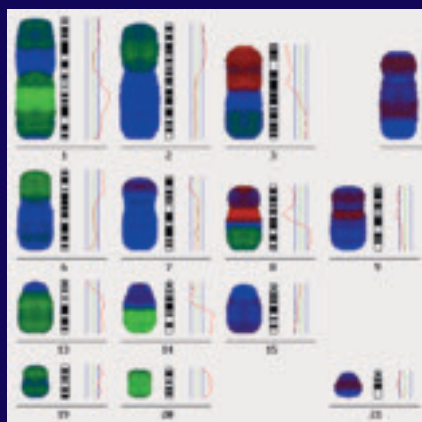
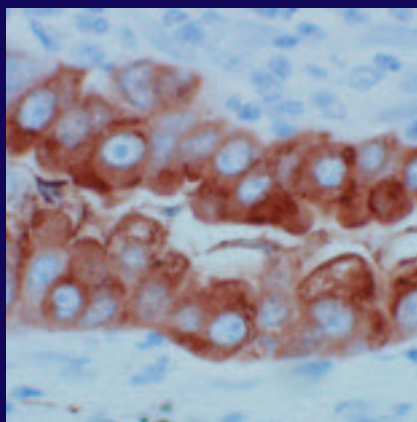
World Health Organization Classification of Tumours



Pathology & Genetics

Tumours of the Lung, Pleura, Thymus and Heart

Edited by William D. Travis, Elizabeth Brambilla,
H. Konrad Müller-Hermelink and Curtis C. Harris



WHO Classification of Tumours of the Lung, Pleura, Thymus and Heart

Previous volumes in this series

Kleihues P., Cavenee W.K. (Eds.):
World Health Organization
Classification of Tumours.
Pathology and Genetics of
Tumours of the Nervous System.
IARC Press: Lyon 2000
ISBN 92 83 22409 4

Hamilton S.R., Aaltonen L.A. (Eds.):
World Health Organization
Classification of Tumours.
Pathology and Genetics of Tumours
of the Digestive System.
IARC Press: Lyon 2000
ISBN 92 83 22410 8

Jaffe E.S., Harris N.L., Stein H.,
Vardiman J.V. (Eds.): World Health
Organization Classification of Tumours.
Pathology and Genetics of Tumours of
Haematopoietic and Lymphoid Tissues.
IARC Press: Lyon 2001
ISBN 92 83 22411 6

Fletcher C.D., Unni K.K.,
Mertens F. (Eds.): World Health
Organization Classification of Tumours.
Pathology and Genetics of Tumours of
Soft Tissue and Bone.
IARC Press: Lyon 2002
ISBN 92 832 2413 2

Tavassoli F.A., Devilee P. (Eds.):
World Health Organization
Classification of Tumours.
Pathology and Genetics of Tumours of
the Breast and Female Genital Organs
IARC Press: Lyon 2003
ISBN 92 832 2412 4

Eble J.N., Sauter G., Epstein J.E.,
Sesterhenn I.A. (Eds.): World Health
Organization Classification of Tumours.
Pathology and Genetics of Tumours of
the Urinary System and Male Genital
Organs.
IARC Press: Lyon 2004
ISBN 92 832 2415 9

This book and all other volumes of the series can be purchased from:

World Health Organization (WHO)

WHO Press
1211 Geneva 27 (Switzerland)
Tel. +41 22 791 3264
Fax +41 22 791 4857
bookorders@who.int
online: <http://www.who.int/bookorders>

WHO Publications Center
Albany, NY 12210 (USA)
Tel. (518) 436 9686
Fax (518) 436 7433
qcorp@compuserve.com

WHO Blue Books on the web:

WHO Blue Books in PDF:

www.iarc.fr/who-bluebooks
www.iarc.fr/IARCPress/pdfs/index1.php



World Health Organization Classification of Tumours

WHO



OMS

International Agency for Research on Cancer (IARC)

Pathology and Genetics of Tumours of the Lung, Pleura, Thymus and Heart

Edited by

William D. Travis

Elisabeth Brambilla

H. Konrad Müller-Hermelink

Curtis C. Harris

IARC Press

Lyon, 2004

World Health Organization Classification of Tumours

Series Editors Paul Kleihues, M.D.
Leslie H. Sobin, M.D.

Pathology and Genetics of Tumours of the Lung, Pleura, Thymus and Heart

Editors William D. Travis, M.D.
Elisabeth Brambilla, M.D.
H. Konrad Müller-Hermelink, M.D.
Curtis C. Harris, M.D.

Coordinating Editors Wojciech Biernat, M.D.
Janice Sych, Ph.D.

Editorial Assistants Stéphane Sivadier
Agnès Meneghel
Voichita Meyronein

Layout Vanessa Meister
Marlen Grassinger
Sibylle Söring

Illustrations Thomas Odin

Printed by Team Rush
69603 Villeurbanne, France

Publisher IARC*Press*
International Agency for
Research on Cancer (IARC)
69008 Lyon, France

This volume was produced in collaboration with the
International Academy of Pathology (IAP)
and the
International Association for the Study of Lung Cancer (IASLC)

The WHO Classification of Tumours of Lung, Thymus and Heart presented in this book reflects the views of a Working Group that convened for an Editorial and Consensus Conference in Lyon, France, March 12-16, 2003.

Members of the Working Group are indicated
in the List of Contributors on page 289.

Published by IARC Press, International Agency for Research on Cancer,
150 cours Albert Thomas, F-69008 Lyon, France

© International Agency for Research on Cancer, 2004. Reprinted 2007.

Publications of the World Health Organization enjoy copyright protection in
accordance with the provisions of Protocol 2 of the Universal Copyright Convention.
All rights reserved.

The International Agency for Research on Cancer welcomes
requests for permission to reproduce or translate its publications, in part or in full.
Requests for permission to reproduce figures or charts from this publication should be directed to
the respective contributor (see section Source of Charts and Photographs).

The designations used and the presentation of the material in this publication do not imply the
expression of any opinion whatsoever on the part of the Secretariat of the
World Health Organization concerning the legal status of any country, territory, city,
or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The mention of specific companies or of certain manufacturers' products does not imply
that they are endorsed or recommended by the World Health Organization in preference to others
of a similar nature that are not mentioned. Errors and omissions excepted,
the names of proprietary products are distinguished by initial capital letters.

The authors alone are responsible for the views expressed in this publication.

Enquiries should be addressed to the
Communications Unit, International Agency for Research on Cancer, 69008 Lyon, France,
which will provide the latest information on any changes made to the text and plans for new editions.

Format for bibliographic citations:

Travis W.D., Brambilla E., Muller-Hermelink H.K., Harris C.C. (Eds.): World Health
Organization Classification of Tumours. Pathology and Genetics of Tumours of the
Lung, Pleura, Thymus and Heart. IARC Press: Lyon 2004

IARC Library Cataloguing in Publication Data

Pathology and genetics of tumours of the lung, pleura, thymus and heart /
editors W.D. Travis... [et al.]

(World Health Organization classification of tumours ; 7)

1. Lung neoplasms - genetics
 2. Lung neoplasms - pathology
 3. Pleura neoplasms - genetics
 4. Pleura neoplasms, - pathology
 5. Thymus neoplasms - genetics
 6. Thymus neoplasms - pathology
 7. Heart neoplasms - genetics
 8. Heart neoplasms - pathology
- I. Travis William D. II. Series

ISBN 92 832 2418 3 (NLM Classification: WJ 160)