Malignant Mesothelioma
Malignant Mesothelioma
Advances in Pathogenesis, Diagnosis, and Translational Therapies

Harvey I. Pass, MD
Chief, Thoracic Oncology, Barbara Ann Karmanos Cancer Institute, Harper University Hospital; Professor of Surgery and Oncology, Wayne State University School of Medicine, Detroit, Michigan

Nicholas J. Vogelzang, MD
Director, Nevada Cancer Institute; Clinical Professor, Department of Internal Medicine, University of Nevada School of Medicine, Las Vegas, Nevada

Michele Carbone, MD, PhD
Professor of Pathology, Director, Thoracic Oncology, Cardinal Bernardin Cancer Center, Loyola University Chicago, Stritch School of Medicine, Maywood, Illinois

Editors

With 178 Illustrations

Springer
Dedications are insights into the personal lives and motivations of the editors of a book. Because each of us has dedicated so many years of our professional and personal lives to studying and grappling with mesothelioma, we collectively decided to dedicate this book to the amazing and wonderful patients with mesothelioma and their families who have changed each of our lives for the better. Their humanity, compassion, humor, and courage during their unique and heroic battles are beacons that will forever illuminate the path forward.

Personally, we each dedicate the book to special people in our lives:

To Helen, Ally, and Eric Pass, who put up with Poppy becoming completely overwhelmed but still provide him with the love he always needs.

Harvey I. Pass, MD

To my father Reverend Nicholas Vogelzang who at age 85 continues to have intense curiosity, a keen sense of humor, love of family, and dedication to the welfare of others. I love you Dad.

Nicholas J. Vogelzang, MD

To my father, Carmine Carbone, Professor of Orthopedics and sixth generation physician in my family, who inspired and in a way forced me to become the seventh generation physician.

Michele Carbone, MD, PhD
Malignant mesothelioma remains one of the sentinel malignancies of oncology. It has a breathtakingly rapid natural history with a median survival of 6 to 8 months when untreated, is environmentally related, and has such economic and social impact that attorneys specialize in representing only mesothelioma patients. Expert witnesses devote full time to testifying, and governments are forced to consider not only the banning of the environmental agent but also a reappraisal of the whole tort system for compensation to injured victims. Furthermore, its presence in certain populations has changed the mindset of whole communities, such as Libby, Montana, Cappadocia, Turkey, Sarnia, and Ontario.

Because of its infrequent occurrence, malignant mesothelioma is considered an orphan disease and managed in an anecdotal fashion in most oncologic practices. Yet this disease has set new scientific paradigms—in the clinic, laboratory, and community.

This book has been assembled to correct an information “disconnect” about this orphan disease and to raise awareness among scientists everywhere about new concepts in the molecular genetics, epidemiology, and carcinogenesis of mesothelioma. We, as editors and authors, work to spread knowledge about mesothelioma and reverse the disproportionately low amount of NCI funding committed to the study of this cancer. Furthermore, we believe that study of this fascinating disease, while occurring in the context of litigation concerns, should proceed along the same paths that all science takes, following the trail of discovery. Legal issues should have no influence—but sadly often do have—on the direction taken by science and medicine.

Over the last ten years, data have accumulated indicating that mesothelioma is a cancer caused by the environmental carcinogens asbestos and erionite, which interact with genetic predisposition and viral infection during carcinogenesis. The outcome of these complex interactions determines who among exposed individuals will develop malignancy. Moreover, mesothelioma has become the ideal model to study how genetics and viral infection influence environmental
carcinogenesis, as well as to discover novel targets for early detection and therapy.

Few cancers have caused so much controversy as mesothelioma. For more than 40 years scientists have argued whether chrysotile asbestos does or does not cause mesothelioma. As if the chrysotile controversy was not enough, a new controversy developed in the field of mesothelioma when two of the editors of this book (HP and MC) reported that SV40, a DNA tumor virus that causes mesothelioma in animals, was present in some human mesotheliomas. Besides these important causality issues, conflict exists regarding the best surgical therapy for the disease and the interpretation of novel trials for mesothelioma. All these volatile issues, including the economic, legal, and most important of all, the scientific aspects, are addressed in various chapters in this book. We encourage the reader to not only digest these topics but to follow these controversies in mesothelioma prospectively as new data are introduced.

The proliferation of mesothelioma-specific knowledge has led to an increase in the number of global conferences devoted to mesothelioma, at which scientists present new and exciting findings. A sufficient quantity of mesothelioma-specific research now stands strong and is no longer the stepchild at meetings devoted to lung cancer or sarcoma. Clinicians and scientists alike are being identified as “mesothelioma experts,” and their advice in preventing and detecting the disease early, as well as in the treatment of the disease, is being solicited not only by other physicians, but by a growing number of E-mails directly from patients and their families.

The editors envisioned a comprehensive text that described the controversies and facts in order to heighten awareness of the mesothelioma epidemic and to aid both clinicians and bench scientists in their efforts to either treat the disease or design new therapeutic options. The complexity of mesothelioma has only recently been realized, and this complexity demands that the disease “graduate” from being just another chapter in an oncology text. Therefore, this book is intended to be used as an authoritative guide by PhDs, primary care physicians, pulmonologists, medical oncologists, radiation oncologists, and surgical oncologists, as well as by fellows in training in these subspecialties. Moreover, because of the economics and legal impact of mesothelioma, this book will have a significant impact in courts of law.

This was truly an international effort, and the North American, European, Middle Eastern, and Australian perspectives on both the clinical and translational aspects of mesothelioma are represented. This fact, in itself, reinforces the global nature of this smoldering epidemic, and emphasizes that a reference source that can potentially be expanded in future editions should be launched at this time. The editors are grateful to all of the authors who took time from their incredibly busy schedules to contribute to this first effort. Their enthusiasm and patience in providing the most up-to-date information regarding their areas of expertise are reflected in their chapters, and the editors are convinced that their efforts will be rewarded with a newer
generation of oncologists and investigators who will approach mesothelioma with knowledge instead of apathy.

Finally, the editors wish to thank Springer for having the foresight to recognize the void in the literature regarding mesothelioma by publishing this book. When the publishing house was first approached about this project, there was never any hint of too small a market or population to endorse or support the project, and Springer has been a wholehearted working partner in this effort. Special thanks go to Beth Campbell, Stephanie Sakson, Barbara Chernow, Brian Drozda, and Laura Gillan diZerega, all of whom stood by this undertaking with unwavering support.

Harvey I. Pass, MD
Nicholas J. Vogelzang, MD
Michele Carbone, MD, PhD
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Contributors

Steven M. Albelda, MD
Department of Medicine, University of Pennsylvania Medical Center, Philadelphia, PA, USA

H. Richard Alexander, MD
Surgical Metabolism Section, National Cancer Institute/National Institutes of Health, Bethesda, MD, USA

Shahriyoyur Andaz, MD, MBBS
Department of Surgery, Division of Thoracic Surgery, David Geffen School of Medicine at The University of California, Los Angeles, Los Angeles, CA, USA

Karen Antman, MD
Departments of Medicine and Pharmacology, Columbia University, College of Physicians and Surgeons, New York, NY, USA

Sinoula Apostolou, PhD
Human Genetics Program, Fox Chase Cancer Center, Philadelphia, PA, USA

Samuel G. Armato III, PhD
Department of Radiology, Pritzker School of Medicine at The University of Chicago, Chicago, IL, USA

Paul Baas, MD, PhD
Department of Thoracic Oncology, The Netherlands Cancer Institute, Amsterdam, The Netherlands

Binaifer R. Balsara, PhD
Human Genetics Program, Fox Chase Cancer Center, Philadelphia, PA, USA

Izzetin Y. Baris
Güren Hospital, Ankara, Turkey
Maurizio Bocchetta, PhD  
Department of Pathology, Loyola University Medical Center, Maywood, IL, USA

Raphael Bueno, MD  
Division of Thoracic Surgery, Brigham and Women’s Hospital, Boston, MA, USA

Paola Cacciotti, PhD  
Department of Medical Sciences, University of Piemonte Orientale, Novara, Italy

Robert B. Cameron, MD, FACS  
Department of Surgery, Division of Thoracic Surgery, David Geffen School of Medicine at The University of California, Los Angeles, Los Angeles, CA, USA

Michele Carbone, MD, PhD  
Cardinal Bernardin Cancer Center, Loyola University Chicago, Stritch School of Medicine, Maywood, IL, USA

Nancy M. Carroll, MD  
Surgery Branch, National Cancer Institute/National Institutes of Health, Bethesda, MD, USA

Alfonso Catalano, MD  
Institute of Experimental Pathology, University of Ancona, Ancona, Italy

Paolo G. Cerrano, MD, PhD  
Department of Environmental Epidemiology, National Cancer Research Institute, Genoa, Italy

John A. Chabot, MD  
Division of General Surgery, Department of Surgery, Columbia University Medical Center, New York, NY, USA

A. Philippe Chahinian, MD  
Departments of Medicine and Oncological Sciences, Mount Sinai School of Medicine, New York, NY, USA

Katherine D. Crew, MD  
Department of Oncology, Columbia University Medical Center, New York, NY USA

Charles L. Croteau, DO  
Department of Radiology, Pritzker School of Medicine at The University of Chicago Chicago, IL, USA
Richard M. DeMay, MD
Director of Cytopathology, Department of Pathology, Pritzker School of Medicine at The University of Chicago, Chicago, IL, USA

A. Umran Dogan, PhD
Department of Geological Engineering, Ankara University, Ankara, Turkey

Meral Dogan, PhD
Department of Geological Engineering, Hacettepe University, Beytepe Campus, Ankara, Turkey

Dean A. Fennell
Department of Medical Oncology, St. Bartholomew’s Hospital and Medical College, London, UK

Rosangela Filiberti, PhD
Department of Environmental Epidemiology, National Cancer Research Institute, Genoa, Italy

Susan Gross Fisher, PhD
Division of Epidemiology, Department of Community and Preventive Medicine, University of Rochester Medical Center, Rochester, NY, USA

Raja Flores, MD
Department of Thoracic Surgery, Memorial Sloan-Kettering Cancer Center, New York, NY, USA

Karen Fountain, MD
Mesothelioma Center, Columbia University College of Physicians and Surgeons, New York, NY, USA

Raoul Fresco, MD, PhD
Department of Pathology, Loyola University Medical Center, Maywood, IL, USA

Joseph S. Friedberg, MD
Division of Thoracic Surgery, Department of Surgery, Presbyterian Medical Center, Philadelphia, PA, USA

Giovanni Gaudino, PhD
Department of Medical Sciences, University of Piemonte Orientale, Novara, Italy

Adi Gazdar, MD
Department of Pathology, The University of Texas, Southwestern Medical Center at Dallas, Dallas, TX, USA
contributors

J. Bernard L. Gee, MD
Department of Medicine, Yale University School of Medicine, New Haven, CT, USA

Allen R. Gibbs, TD, MBChB, FRCPath
Department of Histopathology, Llandough Hospital, South Glamorgan, Wales, UK

Giovan Giacomo Giordano, MD, PhD
Institute of Pathology, Second University of Naples, Naples, Italy

Donald G. Guinee, Jr., MD
Department of Pathology, Virginia Mason Medical Center, Seattle, WA, USA

Stephen M. Hahn, MD
Department of Radiation Oncology, University of Pennsylvania Health System, Philadelphia, PA, USA

Philip Harber, MD
Department of Family Medicine, David Geffen School of Medicine at The University of California, Los Angeles, Los Angeles, CA, USA

Raffit Hassan, MD
Laboratory of Molecular Biology, National Cancer Institute/National Institutes of Health, Bethesda, MD, USA

Dan Hauzenberger, MD, PhD
Department of Clinical Immunology, Karolinska University Hospital at Huddinge, Stockholm, Sweden

Mary Hesdorffer, RN
Department of Medical Oncology, Columbia University Medical Center, New York, NY, USA

Michael T. Jaklitsch, MD
Lung Transplant Program, Division of Thoracic Surgery, Department of Surgery, Brigham and Women’s Hospital, Boston, MA, USA

Pasi A. Jänne, MD, PhD
Lowe Center for Thoracic Oncology, Dana-Farber Cancer Institute, Boston, MA, USA

Bharat Jasani, BSc (Hons.), PhD, MBChB, FRCPath
Department of Pathology, Cardiff University Hospital, Cardiff, Wales, UK

Elliot Kagan, MD, FRC Path
Department of Pathology, Uniformed Services University of the Health Sciences, Bethesda, MD, USA
Larry Kaiser, MD
Department of Surgery, University of Pennsylvania Health System, Philadelphia, PA, USA

Agnes B. Kane, MD, PhD
Department of Pathology and Laboratory Medicine, Brown University, Providence, RI, USA

Mary Louise Keohan, MD
Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, NY, USA

Charles R. Key, MD, PhD
Department of Pathology, University of New Mexico School of Medicine, Albuquerque, NM, USA

Oliver S. Kim, MD
Department of Pathology, Advocate Lutheran General Hospital, Park Ridge, IL, USA

Julius Klominek, MD, PhD
Department of Lung Medicine, Karolinska University Hospital at Huddinge, Stockholm, Sweden

Robert A. Kratzke, MD
Department of Medicine, University of Minnesota; Division of Hematology, Oncology, and Transplant, Minneapolis VA Medical Center, Minneapolis, MN, USA

Thomas Krausz, MD
Director of Anatomic Pathology, Pritzker School of Medicine at The University of Chicago, Chicago, IL, USA

Joyce A. Lagnese, JD
Danaher, Lagnese and Neal, P.C., Hartford, CT, USA

Richard A. Lake
University Department of Medicine, Queen Elizabeth II Medical Centre, Nedlands, Australia

Heber MacMahon, MD
Department of Radiology, Pritzker School of Medicine at The University of Chicago, Chicago, IL, USA

Gian Pietro Marchetti, MD
Pulmonology Department, Spedali Civili Di Brescia, Brescia, Italy

Marcella Martinelli, PhD
Department of Pathology, The University of Vermont College of Medicine, Burlington, VT, USA
Alison McDonald, MD
University of London; Department of Occupational and Environmental Medicine, Brompton National Heart and Lung Institute, London, UK

J. Corbett McDonald, MD
University of London; Department of Occupational and Environmental Medicine, Brompton National Heart and Lung Institute, London, UK

Markku Miettinen, MD
Department of Soft Tissue Pathology, Armed Forces Institute of Pathology, Washington, DC, USA

Faheez Mohammed, MBChB, MRCS
The Washington Cancer Institute and Washington Hospital Center, Washington, DC, USA

Brooke T. Mossman, PhD
Department of Pathology, The University of Vermont College of Medicine, Burlington, VT, USA

Luciano Mutti, MD, PhD
Department of Medicine, Local Health Unit #11, Piedmont, Vercelli, Italy

Oscar Nappi, MD
Institute of Anatomic Pathology, Histopathology and Diagnostic Cytology, Naples, Italy

Alfred I. Neugat, MD, PhD
Department of Medicine and Epidemiology, Columbia University Medical Center, New York, NY, USA

Anna K. Nowak, MBBS, FRACP
Department of Medicine, University of Western Australia, Perth, Australia

Geoffrey R. Oxnard
Department of Radiology, Pritzker School of Medicine at The University of Chicago, Chicago, IL, USA

Bruno Pasquotti, MD
Department of Surgical Oncology, Centro Riferimento Oncologico-IRCCS, Aviano, Italy

Harvey I. Pass, MD
Barbara Ann Karmanos Cancer Institute, Harper University Hospital, Department of Surgery and Oncology, Wayne State University School of Medicine, Detroit, MI, USA
Nick Pavlakis, BSc, MBBS, MMed (Clin. Epi.), FRACP
Department of Medical Oncology, Royal North Shore Hospital, St. Leonards, New South Wales, Australia

Roman Perez-Solar, MD
Department of Oncology, Montefiore Medical Center, Bronx, NY, USA

Betta Pier-Giacomo, MD
Department of Oncology, Pathology Unit, Azienda Sanitaria Ospedaliera, Alessandria, Italy

Bilal Piperdi, MD
Department of Medicine (Hemato-Oncology), University of Massachusetts Medical School, Fitchburg, MA, USA

Camillo Porta, MD
Department of Medical Oncology, IRCCS San Matteo University Hospital, Pavia, Italy

Amy Powers, MD
Department of Pathology and Laboratory Medicine, The Cleveland Clinic Foundation, Cleveland, OH, USA

Antonio Procopio, MD
Department of Molecular Pathology and Innovative Therapies, Polytechnic University of Marche, Ancona, Italy

Riccardo Puntoni, PhD
Department of Environmental Epidemiology, National Cancer Research Institute, Genoa, Italy

Marc Ramael, MD, PhD
Departments of Surgical Pathology and Molecular Pathology, Saint Elisabeth Hospital, Herentals, Belgium

Maria E. Ramos-Nino, PhD
Department of Pathology, The University of Vermont College of Medicine, Burlington, VT, USA

Bruce Robinson, MD, PhD
University Department of Medicine, Queen Elizabeth II Medical Centre, Nedlands, Australia

Evelio Rodriguez, MD
Department of Surgery, Thomas Jefferson University Hospital, Philadelphia, PA, USA

Kenneth Rosenzweig, MD
Department of Radiation Oncology, Memorial Sloan-Kettering Cancer Center, New York, NY, USA
Katie Ross, MD
Department of Pathology, Cardiff University Hospital, Cardiff, Wales, UK

Valerie W. Rusch, MD
Department of Thoracic Surgery, Department of Surgery, Memorial Sloan-Kettering Cancer Center, New York, NY, USA

Umberto Saffiotti, MD
Center for Cancer Research, National Cancer Institute/National Institutes of Health, Bethesda, MD, USA

Luca Scapoli, PhD
Department of Pathology, The University of Vermont College of Medicine, Burlington, VT, USA

Dong M. Shin
Division of Hematology and Oncology, University of Pittsburgh Cancer Institute, Pittsburgh, PA, USA

Dorsett D. Smith, MD
Division of Respiratory Diseases and Critical Care, University of Washington Medical Center, Seattle, WA, USA

Ryan P. Smith, MD
Department of Radiation Oncology, University of Pittsburgh Cancer Center, Pittsburgh, PA, USA

Jeremy P.C. Steele, MD
Mesothelioma Unit, St. Bartholomew’s Hospital and Medical College, London, UK

Daniel H. Sterman, MD
Pulmonary, Allergy, and Critical Care Division, University of Pennsylvania Health System, Philadelphia, PA, USA

Luigi Strizzi, MD, PhD
Department of Oncology and Neurosciences, G. D’Annunzio University, Chieti, Italy

David J. Sugarbaker, MD
Division of Thoracic Surgery, Department of Surgery, Harvard Medical School; Brigham and Women’s Hospital, Boston, MA, USA

Paul H. Sugarbaker, MD
Program in Peritoneal Surface Malignancy, The Washington Cancer Institute, Washington Hospital Center, Washington, DC, USA

Gian Franco Tassi, MD
Department of Pulmonology, Spedali Civili Di Brescia, Brescia, Italy
Robert N. Taub, MD, PhD
Mesothelioma Center, Professor of Clinical Medicine, Department of Medicine, Columbia University Medical Center, New York, NY, USA

Joseph R. Testa, PhD
Human Genetics Program, Senior Member, Population Science, Department of Population Science, Fox Chase Cancer Center, Philadelphia, PA, USA

William D. Travis, MD
Department of Pulmonary and Mediastinal Pathology, Armed Forces Institute of Pathology, Washington, DC, USA

Eric Vallieres, MD
Lung Cancer Program, Department of Surgery, Swedish Cancer Institute, Seattle, WA, USA

Claire Verschragen, MD
Cancer Research and Treatment Center, University of New Mexico School of Medicine, Albuquerque, NM, USA

Nicholas J. Vogelzang, MD
Nevada Cancer Institute, Department of Internal Medicine, University of Nevada School of Medicine, Las Vegas, NV, USA

Jennifer A. Wagmiller, MD
Department of Medicine, University of Rochester Medical Center, Rochester, NY, USA

Anil Wali, PhD
Departments of Surgery and Pathology, Barbara Ann Karmanos Cancer Institute, Wayne State University, Detroit, MI, USA

Daniel Wiener, MD
Department of General Surgery, Dartmouth-Hitchcock Medical Center, Lebanon, NH, USA
Malignant mesothelioma is a cancer of the thin tissue (mesothelium) that lines the lung, chest wall, and abdomen. The major risk factor for mesothelioma is asbestos exposure. Explore the links on this page to learn more about malignant mesothelioma treatment and clinical trials. Treatment. Malignant Mesothelioma. Summary of Key Points. The development of malignant mesothelioma is usually associated with asbestos exposure. The most common genetic alterations in mesothelioma are deletion of CDKN2A/ARF, inactivation of NF2, and mutation or deletion in BAP1. The eighth edition of the American Joint Commission on Cancer/Union for International Cancer Control staging manual has altered the T and N components for staging from the previous edition.