

# Human PATHOLOGY

**VOLUME 108**

**February 2021**

**EDITOR-IN-CHIEF**

Lori A. Erickson, MD

**SENIOR ASSOCIATE EDITORS**

Liang Cheng, MD  
Michael S. Torbenson, MD

**MANAGING EDITOR**

David Newcombe

**ASSOCIATE EDITORS**

Virginia A. LiVolsi, MD – Book Reviews

**EDITORIAL BOARD**

Mahul B. Amin, MD  
Daniel A. Arber, MD  
Gustavo Ayala, MD  
Justin A. Bishop, MD  
Edi Brogi, MD, PhD  
Pierre Brousset, MD, PhD  
Darya G. Buehler, MD  
Natalia Buza, MD  
Philip T. Cagle, MD  
Runjan Chetty, MB ChB, FRCPC, FRCPath, PhD  
Sanja Dacic, MD, PhD  
Ben Davidson, MD, PhD  
Brett Delahunt, MD  
Ronald A. DeLellis, MD  
Andrea T. Deyrup, MD, PhD  
Yoh Dobashi, MD  
Adel K. El-Naggar, MD, PhD  
Jonathan I. Epstein, MD  
Oluwole O. Fadare, MD  
Andrew Feldman, MD  
Christopher D. M. Fletcher, MD  
Agnes B. Fogo, MD  
Andrew Folpe, MD  
Maria Pia Foschini, MD  
Guo-Hui Fu, MD, PhD  
Anthony J. Gill, MD, FRCPA  
John R. Goldblum, MD  
Jeannette Guarnier, MD  
Jason L. Hornick, MD, PhD  
Brooke E. Howitt, MD  
Ralph H. Hruban, MD  
Eric D. Hsi, MD  
Hsuan-Ying Huang, MD  
Pei Hui, MD, PhD  
Peter A. Humphrey, MD, PhD  
Michael O. IDOWU, MD, MPH  
Carrie Inwards, MD  
Dhanpat Jain, MD

Vickie Y. Jo, MD  
Sanjay Kakar, MD  
Andras Khoor, MD  
Scott Kilpatrick, MD  
Günter Klöppel, MD  
Thomas Krausz, MD, FRCPath  
Murlí Krishna, MD  
Stefano La Rosa, MD  
Alfred King-yin Lam, MBBS, MD, PhD, FRCPA  
Jerzy Lasota, MD, PhD  
Gregory Y. Lauwers, MD  
Cheng-Han Lee, MD, PhD, FRCPC  
Susan Carole Lester, MD, PhD  
Xiaoxian (Bill) Li, MD, PhD  
Pei Lin, MD  
Antonio Lopez-Beltran, MD  
Meera Mahalingam, MD, PhD, FRCPath  
Alberto M. Marchevsky, MD  
Kristina A. Matkowskyj, MD, PhD  
W. Glenn McCluggage, FRCPath  
Ellen D. McPhail, MD  
L. Jeffrey Medeiros, MD  
Ozgur Mete, MD, FRCPC  
Markku Miettinen, MD, PhD  
Kamran M. Mirza, MD, PhD  
Kiyoshi Mukai, MD  
Jeffrey L. Myers, MD  
Yasodha Natkunam, MD, PhD  
George J. Netto, MD  
G. Petur Nielsen, MD  
Yoshinao Oda, MD, PhD  
Timothy J. O'Leary, MD, PhD  
Reetesh K. Pai, MD  
Yong-Koo Park, MD, PhD  
Rajiv M. Patel, MD  
Yan Peng, MD, PhD

Manju L. Prasad, MBBS, MD  
Jaime Prat, MD, PhD, FRCPath  
Sarangerajan Ranganathan, MD  
Michelle D. Reid, MD, MS  
Natasha Rekhman, MD, PhD  
Murray B. Resnick, MD, PhD  
Robert Riddell, MD  
Jae Y. Ro, MD, PhD  
Fausto J. Rodriguez, MD  
Peter M. Sadow, MD, PhD  
Stuart J. Schnitt, MD  
J. Kenneth Schoolmeester, MD  
Rajal B. Shah, MD  
Lynette M. Sholl, MD  
Kenneth R. Shroyer, MD, PhD  
Gene P. Siegal, MD, PhD  
Jeff P. Simko, MD, PhD  
Aatur Dilip Singhi, MD, PhD  
Alena Skalova, MD  
Jim Stewart, MD  
Steven H. Swerdlow, MD  
Luigi Terracciano, MD  
Michael T. Tetzlaff, MD, PhD  
Lester D. R. Thompson, MD  
Jose R. Torrealba, MD  
Maria Tretiakova, MD, PhD  
Harry V. Vinters, MD  
Noreen Marian Walsh, MD  
Lawrence M. Weiss, MD  
Bruce M. Wenig, MD  
Thomas M. Wheeler, MD  
Tsung-Teh Wu, MD, PhD  
Haodong Xu, MD, PhD  
Rhonda Yantiss, MD  
Matthew M. Yeh, MD, PhD  
Yoh Zen, MD, PhD, FRCPath  
Hongyiv Zhang, MD, PhD  
Lizhi Zhang, MD, PhD

**EDITOR EMERITUS**

Ricardo V. Lloyd, MD, PhD (2005-2018)  
Fred Gorstein, MD (1988-2005)  
Bernard M. Wagner, MD (1970-1988)

**STATEMENT OF PURPOSE:** Human Pathology is designed to bring to the laboratory and clinical physician, and to the student, information of clinicopathologic significance to human disease. Its primary goal is the presentation of information drawn from morphologic and clinical laboratory studies having direct relevance to the understanding of diseases of humans. Accordingly, it is intended that the journal embrace articles concerned with morphologic and clinicopathologic observations, reviews of a disease or group of diseases, analyses of problems in pathology, significant collections of case material, and new advances in concepts or techniques of value in the analysis and diagnosis of disease. Theoretical and experimental pathology and molecular biology pertinent to the diseases of humans will be included. The journal articles will be of interest to all physicians engaged in the clinical and laboratory practice of medicine as well as to teachers of pathology and clinical medicine. They will be critical. Above all, they will embody a point of view.