

# Volume 154

Official Journal of the American Roentgen Ray Society



## American Journal of Roentgenology Diagnostic Imaging and Related Sciences

- Editor-In-Chief** Robert N. Berk, *La Jolla, California*  
*University of California, San Diego*  
*School of Medicine and Medical Center*
- Editor Emeritus** Melvin M. Figley, *Seattle, Washington*
- Associate Editor** Saskia von Waldenburg Hilton, *San Diego, California*
- Consulting Editor** Michael S. Huckman, *Chicago, Illinois*
- Statistician** Charles C. Berry, *San Diego, California*

### Editorial Board

- |                     |                          |                    |
|---------------------|--------------------------|--------------------|
| John R. Amberg      | John R. Hesselink        | Peter M. Ronai     |
| Itamar Aviad        | Charles B. Higgins       | Sjef H. J. Ruijs   |
| Mark E. Baker       | Melvyn T. Korobkin       | Stuart S. Sagel    |
| Lawrence W. Bassett | Faye C. Laing            | David J. Sartoris  |
| Michael A. Bettman  | Thomas L. Lawson         | Stefan C. Schatzki |
| Felix S. Chew       | Robert G. Levitt         | William P. Shuman  |
| N. Reed Dunnick     | Bruce L. McClennan       | Edward A. Sickles  |
| David K. Edwards    | Richard P. Moser         | Barry A. Siegel    |
| Ronald G. Evens     | Albert A. Moss           | David D. Stark     |
| David S. Feigin     | Jeffrey H. Newhouse      | Edward T. Stewart  |
| Sandra K. Fernbach  | Donald L. Resnick        | Murali Sundaram    |
| Richard H. Gold     | Stewart R. Reuter        | Eric vanSonnenberg |
| William R. Hendee   | Charles A. Rohrmann, Jr. | Robert K. Zeman    |

**Editorial Staff:** Margaret Levene, *managing editor*; Katie L. Spiller, Barbara Rose, Barbara L. Halliburton, and Janine Anderson, *manuscript editors*; Nancy Rydbeck, *office manager*; Sheri Smith, *administrative assistant*; Sandra L. Griffin, *administrative secretary*.

AJR, AMERICAN JOURNAL OF ROENTGENOLOGY (ISSN 0361 803X) is the official journal of the American Roentgen Ray Society, and is published monthly by Williams & Wilkins, 428 E. Preston St., Baltimore, MD 21202. Annual dues include \$50 for journal subscription. Second-class postage paid at Baltimore, MD, and at additional mailing offices. Postmaster, send address changes (Form 3579) to AJR, 428 E. Preston St., Baltimore, MD 21202. Subscription rates \$110 (\$155 foreign, \$244 Japan); institutions \$120 (\$165 foreign, \$254 Japan); in training \$25 (\$70 foreign, \$159 Japan); single copy \$16 (\$19 foreign). Japanese rates include airfreight. Japanese yen price is available from our sole agent USACO Corporation, 13-12, Shimbashi 1-Chome, Minato-Ku, Tokyo 105, Japan, telephone 03-502-6471. Airmail rates furnished on request. Indexed by *Current Contents* and *Index Medicus*. Copyright © 1990 by American Roentgen Ray Society. 0361-803X/89\$2.00