

The ARCHIVES OF GENERAL PSYCHIATRY is a member of the consortium of AMA journals listed below. The complete text of all AMA journals is available online directly from AMA as well as the following aggregators: Dialog Information Services, Proquest, Ovid Technologies, Inc, Gale Research, and EBSCO.

**The Journal of the American Medical Association (JAMA)**

- Archives of Dermatology
- Archives of Facial Plastic Surgery
- Archives of General Psychiatry
- Archives of Internal Medicine
- Archives of Neurology
- Archives of Ophthalmology
- Archives of Otolaryngology-Head & Neck Surgery
- Archives of Pediatrics & Adolescent Medicine
- Archives of Surgery

The ARCHIVES OF GENERAL PSYCHIATRY (ISSN 0003-990x) is published monthly by the American Medical Association, 515 N State St, Chicago, IL 60610-0946, and is an official publication of the Association. The ARCHIVES OF GENERAL PSYCHIATRY reaches more than 31 000 readers in over 79 countries each month. Periodicals postage paid at Chicago, IL, and at additional mailing offices. GST registration number 12622 5556 RT. Canada Post International Publications Mail (Canadian Distribution) Sales Agreement No. 318633.

Printed in the USA.

**SUBSCRIPTION RATES—**

	Individual Print	Individual Print & Online	Individual Online Only
US	\$185	\$195	\$150
Americas	\$240	\$250	\$190
Rest of World	£165	£175	£130
	Institution Print	Institution Print & Online	Institution Online Only
US	\$345	\$365	\$275
Americas	\$455	\$475	\$365
Rest of World	£295	£310	£235

Rates for residents and medical students available.

**CHANGE OF ADDRESS—**POSTMASTER, send all address changes to ARCHIVES OF GENERAL PSYCHIATRY, c/o Subscriber Services, American Medical Association, 515 N State St, Chicago, IL 60610. Please notify us of address change at least 6 weeks in advance to ensure uninterrupted service. Include both old and new addresses, a recent mailing label, and new ZIP code. For mailing addresses outside the United States and the Americas, see below.

**SUBSCRIPTION INFORMATION—**For information about subscribing to any of the AMA publications, change of address, missing issues, or purchasing back issues in the US and the Americas please contact Unified Services Center, American Medical Association, PO Box 10946, Chicago, IL 60610-0946, or call (800) 262-2350 or (312) 670-SUBS (670-7827) between 8:30 AM and 4:30 PM CST. Fax: (312) 464-5831. E-mail: ama-subs@ama-assn.org. For mailing addresses in the Rest of the World contact JAMA & Archives Journals, American Medical Association, Tower House, Sovereign Park, Market Harborough, Leicestershire LE15 9EF, England. Telephone: +44 (0) 1858-438880. Fax: +44 (0) 1858-434958. E-mail: amasubscription.co.uk.

**REPRINTS—**Authors place their reprint order at the time the edited typescript is reviewed and should allow 4 to 6 weeks for delivery following publication. Requests for individual reprints should be sent directly to the author at the address shown in the article.

For bulk reprint orders for distribution by commercial organizations, please contact Wanda Bartolotta, 2441 84th St, Brooklyn, NY 11214. Phone: (718) 946-7424. Fax: (718) 946-7372. E-mail: wanda\_bartolotta@ma-assn.org. For reprint orders in limited quantities for distribution by educational organizations and for author reprints, please contact Reprints Coordinator, 515 N State St, Chicago, IL 60610. Phone: (312) 464-4594. Fax: (312) 464-4849.

**PERMISSIONS—**Contact Rhonda Bailey, Permissions Assistant, 515 N State St, Chicago, IL 60610. Phone: (312) 464-2513.

**ADVERTISING PRINCIPLES—**Each advertisement in this issue has been reviewed and complies with the principles governing advertising in AMA scientific publications. A copy of these principles is available on request. The appearance of advertising in AMA publications is not an AMA guarantee or endorsement of the product or the claims made for the product by the manufacturer.

**WORLD WIDE WEB ADDRESS—**<http://www.ama-assn.org>

**GENERAL PSYCHIATRY HOME PAGE—**<http://www.archgenpsychiatry.com>

**Publication Staff**  
Offices: 515 N State St, Chicago, IL 60610

**Editorial Processing Department**

**Division Director:** Cheryl Iverson  
**Department Director:** Paula Glitman  
**Copyediting Manager:** Brenda Gregoline  
**Freelance Copyediting Manager:** Diane L. Cannon  
**Freelance Copyediting Coordinators:** Lauren B. Fischer, Connie Manno  
**Electronic Editing Specialist:** Paul Frank  
**Assistant Electronic Editing Specialist:** Monica Mungle  
**Senior Copy Editor:** Vicky Golden  
**Copy Editors:** Juana N. Llorens, Rachel Novickas, Cheryl L. Tobey  
**Editorial Assistant:** Wanda Hill

**Scientific Publications & Multimedia Applications**

**Assistant to the Editor:** Helga Fritz

**Scientific Online Resources**

**Director:** Margaret Winker, MD  
**Electronic Media Department Director:** Michelle Kurzynski  
**Associate Web Editors:** Katherine Behar, Erin M. Giannini  
**Web Office Manager:** Marla A. Hall

**Specialty Journal Division Office**

**Manager, Marketing Services:** Geoffrey A. Flick  
**Assistant to the Publisher:** Christine Hearne

**Circulation & Content Marketing Division**

**Administrative Assistant:** Millette Jackson-Bates

**Circulation Processing Department**

**Director:** Karen Howes  
**Circulation Systems Manager:** Alfred Tomaselli  
**Circulation Specialists:** Reginald Jordan, Kathryn Osten  
**Assistant Application Administrator:** Julie Burton

**Circulation Development Department**

**Director:** Bina Oza  
**Circulation Marketing Managers:** Vida Damijonaitis, Donna Goldman, Michael McGraw  
**Circulation Marketing Specialist:** Sandra Garzon

**Licensing & Permissions Department**

**Director:** Norman Frankel  
**Permissions:** Rhonda Bailey

**Production & Distribution Division**

**Directors:** Karen Adams-Taylor, Paul Gasiccki, Vanessa Hayden  
**Managers:** David Antos, Karen Branham, Debbie Camp, Diane Darnell, Karl Elvin, Betty Frigerio, Terri Hanley, Mary Ellen Johnston, Carole Piszker, Susan Price, Charl Richey, Carmela Ware  
**Production Assistant:** Kristy Kambanis  
**Production Associates and Specialists:** Advertising and Production Services: LaWanda Brown, Susan Chiara, Mary Anne Donley, Brian McCartney, Sarah Powell, Denise Steinhauer, Ellen Yoshihara  
**Composition:** Rebecca Aiken, Brenda Chandler-Grayer, Amy Evers, Fred Furtner, Mary Ann Kuranda, Sandra Lopez  
**Database & New Media:** Bruce McGregor (indexer), Clifford O. Barrett, Gail Barrett, Regina Brownlee, Rowena F. Dagang, John Marcinek, La'son Diggs Sledge, Angela Smits  
**Distribution:** Linda Alexander, Michelle Robinson  
**Graphics:** Joe Amft, Noel Chaparro, Carolyn Hall, Maria Kowalkowski, Chris Meyer, JoAnne Weiskopf  
**Proofreading:** Daniel James, Teresa H. Omiotek, Mary Kay Tinerella, Barbara Wojtowicz, Agnes A. Zarkadas

**Advertising**

**Director, Advertising Sales:** Peter G. Messina  
**AMA Classified Advertising Department:** Thalia Moss, 800-262-2260  
**Advertising Office:** J. P. Cahill & Associates, 341 S Waiola Ave, La Grange, IL 60525 (708) 352-0322



# ARCHIVES

OF

## GENERAL PSYCHIATRY

OCTOBER 2001 VOLUME 58, NUMBER 10 PAGES 893-984

### EDITORIAL

- Thanks and Farewell to Jack Barchas, MD** 900  
*Catherine D. DeAngelis, MD*

### ORIGINAL ARTICLE

- Cortical Serotonin Transporter Density and Verbal Memory in Individuals Who Stopped Using 3,4-Methylenedioxymethamphetamine (MDMA or "Ecstasy"): Preliminary Findings** 901  
*Liesbeth Reneman, MD; Jules Lavalaye, MD; Ben Schmand, PhD; Frederik A. de Wolff, PhD, DSc; Wim van den Brink, MD, PhD; Gerard J. den Heeten, MD, PhD; Jan Booij, MD, PhD*

### COMMENTARY

- "Ecstasy" and Serotonin Neurotoxicity: New Findings Raise More Questions** 907  
*Una D. McCann, MD; George A. Ricaurte, MD, PhD; Mark E. Molliver, MD*

### ORIGINAL ARTICLES

- Neuropsychological Performance in Long-term Cannabis Users** 909  
*Harrison G. Pope, Jr, MD; Amanda J. Gruber, MD; James I. Hudson, MD, SM; Marilyn A. Huestis, PhD; Deborah Yurgelun-Todd, PhD*
- Marijuana Abstinence Effects in Marijuana Smokers Maintained in Their Home Environment** 917  
*Alan J. Budney, PhD; John R. Hughes, MD; Brent A. Moore, PhD; Pam L. Novy, PhD*

- Magnetic Resonance Imaging Correlates of Depression After Ischemic Stroke** 925  
*Risto Vataja, MD; Tarja Pohjasvaara, MD, PhD; Antero Leppävuori, MD, PhD; Riitta Mäntylä, MD; Hannu Juhani Aronen, MD, PhD; Oili Salonen, MD, PhD; Markku Kaste, MD, PhD; Timo Erkinjuntti, MD, PhD*

- Two-Year Effects of Quality Improvement Programs on Medication Management for Depression** 935  
*Jürgen Unützer, MD, MPH; Lisa Rubenstein, MD, MSPH; Wayne J. Katon, MD; Lingqi Tang, PhD; Naihua Duan, PhD; Isabel T. Lagomasino, MD; Kenneth B. Wells, MD, MPH*

- Prevalence of Psychiatric Disorders Among Persons Convicted of Driving While Impaired** 943  
*Sandra C. Lapham, MD, MPH; Elizabeth Smith, PhD; Janet C'de Baca, PhD; Iyiin Chang, MS; Betty J. Skipper, PhD; George Baum, BA; William C. Hunt, MA*

### COMMENTARY

- More Reasons to Buckle Your Seat Belt** 950  
*George E. Woody, MD; Robert F. Forman, PhD*

### ORIGINAL ARTICLES

- Aberrant Tyrosine Transport Across the Cell Membrane in Patients With Schizophrenia** 953  
*Lena Flyckt, MD; Nikolaos Venizelos, MD, PhD; Gunnar Edman, MD, PhD; Lars Bjerkenstedt, MD, PhD; Lars Hagenfeldt, MD, PhD; Frits-Axel Wiesel, MD, PhD*

**JAMA**  
&  
**ARCHIVES**  
**JOURNALS**  
American Medical Association

All articles published, including editorials, letters, and book reviews, represent the opinions of the authors and do not reflect the policy of the American Medical Association, the Editorial Board, or the institution with which the author is affiliated, unless this is clearly specified.

**Catherine D. DeAngelis, MD, MPH**  
Editor in Chief, Scientific Publications  
& Multimedia Applications

**Robert A. Musacchio, PhD**  
Senior Vice President,  
Publishing & Business Services

**Peter L. Payerli**  
Interim Vice President, Publishing  
Publisher

**Cheryl Iverson**  
Managing Editor

Copyright 2001 by the American Medical Association. All rights reserved.  
Reproduction without permission is prohibited.

**Association Between Nonpsychotic Psychiatric Diagnoses in Adolescent Males and Subsequent Onset of Schizophrenia** 959  
Mark Weiser, MD; Abraham Reichenberg, PhD; Jonathan Rabinowitz, PhD; Zeev Kaplan, MD; Mordehai Mark, MD; Ehud Bodner, PhD; Daniella Nahon, MA; Michael Davidson, MD

**Clozapine and Haloperidol in Moderately Refractory Schizophrenia: A 6-Month Randomized and Double-blind Comparison** 965  
John M. Kane, MD; Stephen R. Marder, MD; Nina R. Schooler, PhD; William C. Wirshing, MD; Daniel Umbricht, MD; Robert W. Baker, MD; Donna A. Wirshing, MD; Allan Safferman, MD; Rohan Ganguli, MD; Marjorie McMeniman, PhD; Michael Borenstein, PhD

#### LETTERS TO THE EDITOR

**Lithium: An Orphan Drug** 973  
Norman E. Rosenthal, MD

**Repetitive Transcranial Magnetic Stimulation at the Frontopolar Cortex Reduces Skin Conductance but Not Heart Rate: Reduced Gray Matter Excitability in Orbitofrontal Regions** 973  
Jack van Honk, PhD; Dennis J. L. G. Schutter, MA; Alfredo d'Alfonso, MD; Roy P. C. Kessels, PhD; Albert Postma, PhD; Edward H. F. de Haan, PhD

**In Reply** 974  
Adrian Raine, DPhil

#### REGULAR DEPARTMENTS

**This Month in Archives of General Psychiatry** 899

**Classified Advertising** 976

**Index to Advertisers** 984

**Instructions for Authors—**  
See January 2001 issue, page 98, or visit the Web site at <http://www.archgenpsychiatry.com>.

#### Announcement

Jack D. Barchas, MD, has decided to step down as Editor of the *Archives of General Psychiatry* as of October 1, 2001. A search for the next editor is in process. Richard M. Glass, MD, will serve as Interim Editor until the next editor is found. During this interim period, new manuscripts should be sent to:

Richard M. Glass, MD  
Archives of General Psychiatry  
515 N State St  
Chicago, IL 60610  
Phone: (312) 464-2413  
Fax: (312) 464-5824

## ARCHIVES OF GENERAL PSYCHIATRY

*Interim Editor:*  
**Richard M. Glass, MD**  
Archives of General Psychiatry  
American Medical Association  
515 N State St  
Chicago, IL 60610  
Phone: (312) 464-2413  
Fax: (312) 464-5824

*Editor Emeritus:*  
**Jack D. Barchas, MD**  
New York, NY

*Associate Editor Emeritus:*  
**Peter M. Marzuk, MD**  
New York, NY

*Web Site Editor:*  
**Francis S. Lee, MD, PhD**  
New York, NY

*Editorial Board:*

**Huda Akil, PhD**  
Ann Arbor, Mich

**Ross J. Baldessarini, MD**  
Belmont, Mass

**Floyd E. Bloom, MD**  
La Jolla, Calif

**Malcolm B. Bowers, Jr, MD**  
New Haven, Conn

**David L. Braff, MD**  
San Diego, Calif

**William T. Carpenter, Jr, MD**  
Baltimore, Md

**Joseph T. Coyle, MD**  
Boston, Mass

**Raymond J. Dolan, MD**  
London, England

**Felton Earls, MD**  
Cambridge, Mass

**Glen R. Elliott, PhD, MD**  
San Francisco, Calif

**Ellen Frank, PhD**  
Pittsburgh, Pa

**Richard M. Glass, MD**  
Chicago, Ill

**Frederick K. Goodwin, MD**  
Bethesda, Md

**Fritz A. Henn, PhD, MD**  
Mannheim, Germany

**Steven E. Hyman, MD**  
Bethesda, Md

**Kenneth S. Kendler, MD**  
Richmond, Va

**Kenneth K. Kidd, PhD**  
New Haven, Conn

**Donald F. Klein, MD**  
New York, NY

**Helena Chmura Kraemer, PhD**  
Stanford, Calif

**David J. Kupfer, MD**  
Pittsburgh, Pa

**Herbert Y. Meltzer, MD**  
Nashville, Tenn

**Grayson S. Norquist, MD**  
Bethesda, Md

**Charles P. O'Brien, MD, PhD**  
Philadelphia, Pa

**Michael Posner, PhD**  
New York, NY

**Judith L. Rapoport, MD**  
Bethesda, Md

**Alan F. Schatzberg, MD**  
Stanford, Calif

**Goran Sedvall, MD**  
Stockholm, Sweden

**Gary L. Tischler, MD**  
New York, NY

**Ming T. Tsuang, MD, PhD**  
Boston, Mass

**Stanley J. Watson, Jr, PhD, MD**  
Ann Arbor, Mich

**Myrna M. Weissman, PhD**  
New York, NY

**Kenneth B. Wells, MD, MPH**  
Los Angeles, Calif