

EDITOR-IN-CHIEF
Donald J. Dierschke

ASSISTANT EDITOR
Roy L. Ax

EDITORIAL ASSISTANT
Judith Jensen

OFFICERS

President
Robert Ryan
Mayo Medical School
Rochester, Minnesota

President Elect
John A. Resko
Oregon Health Science University
Portland, Oregon

Secretary
Anita Payne
University of Michigan
Ann Arbor, Michigan

Treasurer
Barry R. Zirkin
Johns Hopkins School of Hygiene
and Public Health
Baltimore, Maryland

Past President
Philip J. Dziuk
University of Illinois
Urbana, Illinois

Executive Secretary
Carl D. Johnson
Champaign, Illinois

DIRECTORS

P. Landis Keyes
The University of Michigan
Ann Arbor, Michigan

M. Susan Smith
University of Pittsburgh
Pittsburgh, Pennsylvania

Barry Bavister
University of Wisconsin
Madison, Wisconsin

David Garbers
Vanderbilt University
Medical Center
Nashville, Tennessee

Mary Hunzicker-Dunn
Northwestern University
Chicago, Illinois

Paul Terranova
University of Kansas Medical Center
Kansas City, Kansas

**TRAINEE
REPRESENTATIVES**

James H. Killen
Meat Animal Research Center
USDA-ARS
Clay Center, NE 68933

Ann M. Miller
National Zoo
Washington, DC

Cover designed by Linda Endlich.

**Biology of
Reproduction**

Official Journal of the
Society for the Study of Reproduction

Society for the Study of Reproduction
309 West Clark Street
Champaign, Illinois 61820
(217) 356-3182

EDITORIAL BOARD

Louis Ainsworth
Eugene Albrecht
Lloyd Anderson
Janice Bahr
David Baldwin
C. Wayne Bardin
Nira Ben Jonathan
Charles Blake
Robert Bridges
Jack Britt
P. Michael Conn
S. K. Dey
Gere di Zerega
Allen Enders
John Eppig
Neal First
Charles Flickinger
David Garbers
Anne Hirshfield
Gary Jackson

Fred Karsch
Clarke Millette
Diana Myles
Sally Perreault
Ed Plotka
Leo Reichert
Russel Reiter
R. Michael Roberts
Lonnie Russell
Pat Saling
O. D. Sherwood
Robert Steiner
Milton Stetson
Bayard Storey
Jerry Strauss
Prudence Talbot
Joe Tash
Ei Terasawa
Darrel Ward
Irving Zucker

Manuscripts offered for consideration should be sent to *Biology of Reproduction*, Dr. Donald J. Dierschke, Regional Primate Research Center, University of Wisconsin-Madison, 1223 Capitol Court, Madison, WI 53715-1299 in accordance with the instructions for authors which appear in each issue.

Membership: Membership in the Society is on a calendar year basis from January through December. Requests for application for membership should be sent to the business office, Society for the Study of Reproduction, 309 West Clark Street, Champaign, Illinois 61820.

Subscriptions: Rates on request, two volumes per year. New subscriptions and renewals begin with the first issue of the current volumes and should be sent to the SSR business office.

Back Issues: Back issues of *Biology of Reproduction*, volumes one (1) through eleven (11) may be ordered from Academic Press, Inc., 111 Fifth Avenue, New York, New York 10003. Volumes twelve (12) to the present volume may be obtained from the SSR business office.

Change of Address: All matters pertaining to the receipt of the Journal and changes in the mailing list should be sent to the SSR business office.

Claims: Claims for copies lost in the mail or defective copies must be received within 30 days (90 days foreign) of the date of issue to ensure free replacement.

Biology of Reproduction (ISSN 0006-3363) is published monthly except January and July for \$90 per year by the Society for the Study of Reproduction, 309 West Clark Street, Champaign, IL 61820. Second class postage paid at Champaign, IL and at additional mailing offices. POSTMASTER: Send address changes to the Biology of Reproduction, 309 West Clark Street, Champaign, IL 61820.

Printed at Kowa Graphics, Champaign, Illinois 61820. No part of this publication may be reproduced or transmitted in any form, or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the Society. All rights reserved.

©Copyright 1987
Society for the Study of Reproduction