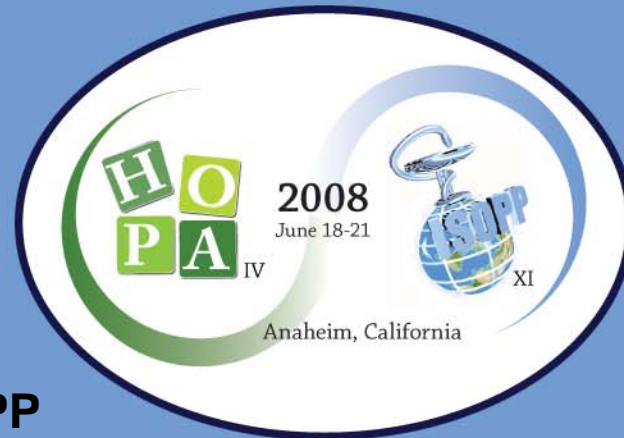


# Integrating Research Into Your Clinical Practice: *Yes, You Too Can Be a Researcher!*



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# Disclosure

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- **Barry R. Goldspiel, PharmD, BCOP, FISOPP has no real or apparent conflicts of interest to report**

# Integrating Research Into Your Clinical Practice

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- Why should pharmacists be involved in research?
- How can I be involved in research?
- How can I convince my supervisor to support me in research?
- How do I balance my clinical responsibilities with research?
- How does the practice site benefit from my research activity?

# The EPOCH Story

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- “New” lymphoma regimen
- Etoposide, doxorubicin, and vincristine given by continuous infusion over 96 hours
- Continuous exposure in vitro reverses multidrug resistance
- How do we give this to patients in an ambulatory setting (c. early 90s)?

# The EPOCH Story

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- Doxorubicin and vincristine – Compatible and stable, extrapolated from VAD regimen
- Etoposide – Stable when very dilute or very concentrated
- Attempt #1 – Doxorubicin and vincristine via portable pump and etoposide via syringe pump
  - Infusions interrupted/problems in first 3 patients
- Attempt #2 – Doxorubicin and vincristine via portable pump and etoposide via second portable pump
  - No infusion problems, but patients and nurses complaining of pump issues

# The EPOCH Story

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- Research question: Are doxorubicin, vincristine, and etoposide stable and compatible when mixed in the same container?
- Answer: Wolfe JL, Thoma LA, Du C, Goldspiel BR, Gallelli JF, Grimes GJ, Potti GK. Compatibility and stability of vincristine sulfate, doxorubicin hydrochloride, and etoposide in 0.9% sodium chloride injection. *Am J Health Syst Pharm.* 1999;56:985-9.

# How Do I Get Started?

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- Think of a research question

# Types of Research

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- Dispensing
  - Compatibility/stability
- Medication use
  - Adverse effects and management
- Financial analysis
- Existing data
- New data
  - Supportive care management

# Types of Research



Stacy S Shord, J.M. Hamilton, Jr, and Sandra Cuellar

**Parenteral iron with erythropoiesis-stimulating agents for chemotherapy-induced anemia**

J Oncol Pharm Pract 2008 14: 5-22. [\[Abstract\]](#) [\[PDF\]](#) [\[References\]](#)

Alexandre Chan, Vivianne Shih, and Lita Chew

**Evolving roles of oncology pharmacists in Singapore: A survey on prescribing patterns of antiemetics for chemotherapy induced nausea and vomiting (CINV) at a cancer centre†**

J Oncol Pharm Pract 2008 14: 23-29. [\[Abstract\]](#) [\[PDF\]](#) [\[References\]](#)

Kellie L Jones, Jennifer M Saucier, Charlotte C Sun, Michael W Bevers, Lois M Ramondetta, Jubilee Brown, and Judith A Smith

**Comparison of chemotherapy education and patient preferences in community versus academic gynecology oncology clinics<sup>a</sup>**

J Oncol Pharm Pract 2008 14: 31-36. [\[Abstract\]](#) [\[PDF\]](#) [\[References\]](#)

Suzanne C Malfair Taylor, Mário L de Lemos, Dennis Jang, Juliana Man, Dawn Annable, Saira Mithani, Leela John, Thanh Vu, and Robin K O'Brien

**Impact on patient satisfaction with a structured counselling approach on natural health products**

J Oncol Pharm Pract 2008 14: 37-43. [\[Abstract\]](#) [\[PDF\]](#) [\[References\]](#)

Diana N Howard, Carole Chambers, and Frances Cusano

**Efficacy vs. effectiveness — docetaxel and prednisone in hormone refractory prostate cancer**

J Oncol Pharm Pract 2008 14: 45-49. [\[Abstract\]](#) [\[PDF\]](#) [\[References\]](#)

Kathleen Collier, Cordula Schink, Anna Mary Young, Katharine How, Michael Seckl, and Philip Savage

**Successful treatment with etoposide phosphate in patients with previous etoposide hypersensitivity**

J Oncol Pharm Pract 2008 14: 51-55. [\[Abstract\]](#) [\[PDF\]](#) [\[References\]](#)

Samantha Price, William Harless, Somi Rikhye, and Ramin Altaha

**A fatal outcome in a patient with glioblastoma multiforme after receiving high-dose methotrexate**

J Oncol Pharm Pract 2008 14: 57-60. [\[Abstract\]](#) [\[PDF\]](#) [\[References\]](#)

Mike J Hallam and Jill M Kolesar

**Hydroxyurea induced acute elevations in liver function tests**

J Oncol Pharm Pract 2008 14: 61-63. [\[Abstract\]](#) [\[PDF\]](#) [\[References\]](#)



# Types of Research

*Cancer Epidemiology Biomarkers & Prevention* 16, 829-833, April 1, 2007. doi:10.1158/1055-9965.EPI-06-0882  
© 2007 American Association for Cancer Research

## Clinical and Biological Activity of Soy Protein Powder Supplementation in Healthy Male Volunteers

Susan Goodin<sup>1,3,4</sup>, Francisco Shen<sup>2,6</sup>, Weichung J. Shults<sup>3</sup>, Nisha Dave<sup>5</sup>, Michael P. Kane<sup>3</sup>, Patrick Medina<sup>3</sup>, George H. Lambert<sup>2,3,6</sup>, Joseph Aisner<sup>1,3,4</sup>, Michael Gallo<sup>1,3,6</sup> and Robert S. DiPaola<sup>1,3,4</sup>

Departments of <sup>1</sup>Medicine and <sup>2</sup>Pediatrics, University of Medicine and Dentistry of New Jersey/Robert Wood Johnson Medical School, <sup>3</sup>The Cancer Institute of New Jersey, and <sup>4</sup>The Dean and Betty Gallo Prostate Cancer Center, New Brunswick, New Jersey; and <sup>5</sup>Ernest Mario School of Pharmacy, Pharmaceutical Industry Fellowship Institute, Rutgers, The State University of New Jersey, and <sup>6</sup>Environmental and Occupational Health Sciences Institute, Piscataway, New Jersey

**Requests for reprints:** Susan Goodin, The Cancer Institute of New Jersey, University of Medicine and Dentistry of New Jersey/Robert Wood Johnson Medical School, 195 Little Albany Street, New Brunswick, NJ 08903-2681. Phone: 732-235-7472; Fax: 732-235-7493. E-mail: [goodin@umdnj.edu](mailto:goodin@umdnj.edu)

*American Journal of Transplantation* 2008; 8: 1-6  
Blackwell Munksgaard

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Transplantation and the American Society of Transplant Surgeons

doi: 10.1111/j.1600-6143.2008.02220.x

## Pharmacokinetics of Low and Maintenance Dose Valganciclovir in Kidney Transplant Recipients

C. E. Chamberlain<sup>a,\*</sup>, S. R. Penzak<sup>a</sup>, R. M. Alfaro<sup>b</sup>, R. Wesley<sup>b</sup>, C. E. Daniels<sup>d</sup>, D. Hale<sup>e</sup>, A. D. Kirk<sup>c</sup> and R. B. Mannon<sup>c</sup>

### Introduction

Human cytomegalovirus (CMV) is one of the most common viral infections occurring following solid organ transplant and has been associated with significant morbidity and mortality (1). CMV infection and disease generally occurs from 1 to 6 months following transplantation (1). Risk of CMV infection is dependent on donor (D) and recipient (R) serostatus with a CMV seropositive donor to a CMV seronegative recipient (D+R-) representing the highest risk of CMV acquisition for the recipient. Use of lymphocyte depleting therapies such as antithymocyte globulin in R+ patients is also associated with a significant risk of CMV disease secondary to CMV reactivation in these individuals (2). In transplant recipients, CMV infection is as-

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<sup>c</sup>Transplantation Branch, NIDDK/NIH, Bethesda, MD

<sup>d</sup>Skaggs School of Pharmacy and Pharmaceutical Sciences, University of California, San Diego, CA

<sup>e</sup>Transplantation Division, University of Florida, Jacksonville, FL

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ScienceDirect

Gynecologic Oncology xx (2008) xxx-xxx

Gynecologic  
Oncology

[www.elsevier.com/locate/ylgyn](http://www.elsevier.com/locate/ylgyn)

## Efficacy of letrozole in the treatment of recurrent platinum- and taxane-resistant high-grade cancer of the ovary or peritoneum<sup>☆</sup>

Pedro T. Ramirez<sup>a,\*</sup>, Kathleen M. Schmeler<sup>a</sup>, Michael R. Milam<sup>a</sup>, Brian M. Slomovitz<sup>c</sup>, Judith A. Smith<sup>a</sup>, John J. Kavanagh<sup>a</sup>, Michael Deavers<sup>b</sup>, Charles Levenback<sup>a</sup>, Robert L. Coleman<sup>a</sup>, David M. Gershenson<sup>a</sup>

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<sup>b</sup>Department of Pathology, The University of Texas M. D. Anderson Cancer Center, Houston, TX, USA

<sup>c</sup>Department of Obstetrics and Gynecology, Cornell Well Medical College, New York Presbyterian Hospital, New York, NY, USA

Received 13 February 2008

## Pharmacokinetic and Tumor Distribution Characteristics of Temsirolimus in Patients with Recurrent Malignant Glioma

John G. Kuhn<sup>1</sup>, Susan M. Chang<sup>2</sup>, Patrick Y. Wen<sup>3</sup>, Timothy F. Cloughesy<sup>4</sup>, Harry Greenberg<sup>5</sup>, David Schiff<sup>6</sup>, Charles Conrad<sup>7</sup>, Karen L. Fink<sup>8</sup>, H. Ian Robins<sup>9</sup>, Minesh Mehta<sup>9</sup>, Lisa DeAngelis<sup>10</sup>, Jeffrey Raizer<sup>11</sup>, Kenneth Hess<sup>7</sup>, Kathleen R. Lamborn<sup>2</sup>, Janet Dancey<sup>12</sup> and Michael D. Prados<sup>2</sup> for the North American Brain Tumor Consortium and the National Cancer Institute

[www.aacrjournals.org](http://www.aacrjournals.org)

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Clin Cancer Res 2007;13(24) December 15, 2007

# Types of Research



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August 10, 2006

Number 6

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## Neonatal-Onset Multisystem Inflammatory Disease Responsive to Interleukin-1 $\beta$ Inhibition

*Raphaela Goldbach-Mansky, M.D., Natalie J. Dailey, M.D., Scott W. Canna, M.D., Ana Gelabert, M.S.N., Janet Jones, B.S.N., Benjamin I. Rubin, M.D., H. Jeffrey Kim, M.D., Carmen Brewer, Ph.D., Christopher Zalewski, M.A., Edythe Wiggs, Ph.D., Suvimol Hill, M.D., Maria L. Turner, M.D., Barbara I. Karp, M.D., Ivona Aksentijevich, M.D., **Frank Pucino, Pharm.D., Scott R. Penzak, Pharm.D.**, Margje H. Haverkamp, M.D., Leonard Stein, M.D., Barbara S. Adams, M.D., Terry L. Moore, M.D., Robert C. Fuhlbrigge, M.D., Ph.D., Bracha Shaham, M.D., James N. Jarvis, M.D., Kathleen O'Neil, M.D., Richard K. Vehe, M.D., Laurie O. Beitz, M.D., Gregory Gardner, M.D., William P. Hannan, M.D., Robert W. Warren, M.D., Ph.D., William Horn, M.D., Joe L. Cole, M.D., Scott M. Paul, M.D., Philip N. Hawkins, M.D., Tuyet Hang Pham, B.S., Christopher Snyder, B.S., Robert A. Wesley, Ph.D., Steven C. Hoffmann, M.S., Steven M. Holland, M.D., John A. Butman, M.D., Ph.D., and Daniel L. Kastner, M.D., Ph.D.*



The NEW ENGLAND  
JOURNAL of MEDICINE

ORIGINAL ARTICLE

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Volume 338:499-505

February 19, 1998

Number 8

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## Conventional Compared with Individualized Chemotherapy for Childhood Acute Lymphoblastic Leukemia

*William E. Evans, Pharm.D., Mary V. Relling, Pharm.D., John H. Rodman, Pharm.D., William R. Crom, Pharm.D., James M. Boyett, Ph.D., and Ching-Hon Pui, M.D.*

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**“If we knew what we were doing,  
we wouldn’t call it research.”**

**Albert Einstein**

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**“If we don’t know what we are doing,  
we can turn it into a research question.”**

**Barry Goldspiel**

# Why Should Pharmacists Be Involved in Research?

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- Contribute to improving patient care
- Contribute to the profession
- Achieve personal goals
- Unique ability to identify clinical problems without an answer

# How Can I Be Involved in Research?

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- Find a mentor
- Collaborate on a pharmacy research project – locally or regionally
- Become involved with the research team, then offer your services to help with research
- Start small – then shoot for the stars

# Research Funding

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- Your department
- Your institution
- Pharmacy societies (eg, HOPA, ISOPP)
- Cancer societies (eg, Multinational Association of Supportive Care in Cancer [MASCC], Leukemia & Lymphoma Society)
- National Institutes of Health

# How Can I Convince My Supervisor to Support Me in Research?

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- Have a plan BEFORE you talk
- Outline the benefits to the department and to the profession
- Be sure you have the answer to the question about your time involvement

# How Do I Balance My Clinical Responsibilities With Research?

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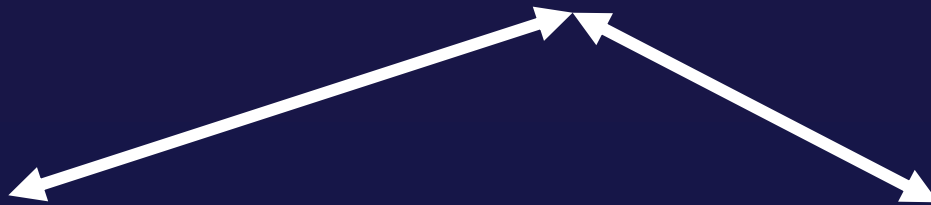
# How Do I Balance My Life?

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Family

Work

Professional  
activities outside  
of work



# How Do I Balance My Clinical Responsibilities With Research?

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- Manage time
- Set reasonable goals
- Create timelines
- Be realistic!

# How Does the Practice Site Benefit From My Research Activity?

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- Improve patient care
- Improve distributive efficiency
- Improve resource utilization

# How Does the Practice Site Benefit From My Research Activity?

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- Increases departmental exposure
  - Increases recruitment potential
    - Staff
    - Training programs

# Conclusions

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- You can do research in almost any pharmacy setting if this is one of your goals
- Start small, then expand
- Seek out a mentor
- Plan, plan, plan – and then when your plan fails – don't give up!