

THE LASER

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Telling the World's Best Stories
about Endocrine Health

This coming January, Dr. Paul Robertson, PNRI's President and Scientific Director, will become the new Editor-in-Chief of the scientific journal *Endocrine Reviews*. As the world's leading review publication for the study of hormones, the journal publishes authoritative and exhaustive articles on the clinical diagnosis and treatment of endocrine diseases, as well as the physiology, pathophysiology, and molecular biochemistry responsible for their clinical expression.

Robertson's appointment to a five-year term as *Endocrine Reviews*' Editor-in-Chief fits well both with PNRI's mission to eliminate diabetes and with the research and publication interests that have marked his whole career.

Endocrinology

The word "endocrine" refers to all the hormones of the body: those produced by, among others, the ovaries, testes, thyroid, pituitary, and adrenal glands, and the largest gland, the pancreas, which produces insulin.

These glands influence reproductive physiology, calcium and bone homeostasis, and glucose metabolism. The ups and downs of hormone secretion, the swing from excessive secretion to insufficient, are the bane of many patients. "It's the key task

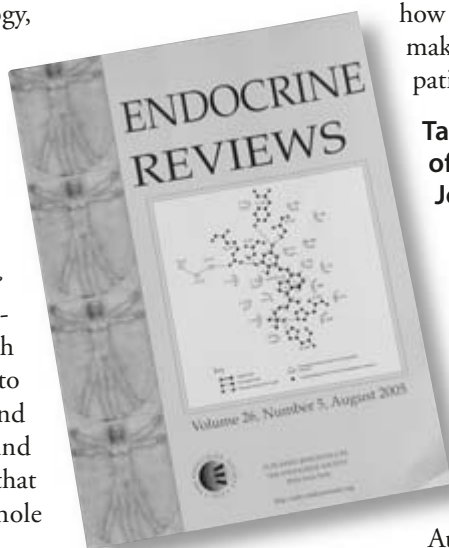
of the endocrinologist," Robertson says, "to work all this out with the patient in the clinic—to provide the hormone therapy that is sometimes curative but at least always improves patients' lives."

"It's beautiful," Robertson says, "seeing biochemistry alive, as it is in endocrinology." But the physician in him speaks simultaneously: "It's exciting to see how readily and surely we can make a positive difference for patients."

**Taking the Editorial Reins
of an Outstanding
Journal**

Endocrine Reviews is one of four journals published by the Endocrine Society, all four of them international. *Endocrine Reviews* is the most erudite, most focused, thorough, and well-referenced. In the

August issue of this year, for example, one article—*Hereditary Hormone Excess: Genes, Molecular Pathways, and Syndromes*—runs to 47 pages, and includes 461 references. This is in contrast to, say, a paper in *Science*, which might run little more than four pages and include only 50 or so references. Using the *Citation Index* as a measure of the journal's importance, *Endocrine Reviews* stands head and shoulders above other journals as a well-rounded, authoritative source of current information about the clinical and basic science aspects of endocrinology.



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PERSPECTIVES

by R. Paul Robertson, M.D.

Biomedical
Research: Neither
Guns nor Butter

The "guns or butter" phrase is used to signal conflicting times when our government must choose between supporting either its military budget or its domestic budget. This dilemma has never been more sharply drawn than it is today. At the same time that we face seemingly never-ending military spending in Iraq, we are confronted with the fresher and more immediate catastrophe of hurricanes in our Gulf States. The financial implications of spending new billions of dollars for governmental efforts in Iraq and for hurricane relief boggle the mind, especially in the context of a governmental policy of not increasing taxation. Where will the extra money come from to cover these extraordinary expenses? We are told they will be taken from domestic programs.

What does this policy mean for

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THE LASER

NOVEMBER 2005

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FROM THE EDITOR:

November is National Diabetes Month

by Rich Murphy

Every November the American Diabetes Association reminds us to think about diabetes. They call it National Diabetes Month. It's the same idea that the National Greeting Card Association or the Society of American Florists employs to hook our imaginations with an anniversary we forgot or an employee or colleague we need to thank.

But the ADA reminder is for all of us, to remember ourselves, to do what we can to prevent, manage, and cure diabetes. To make ourselves healthier, to strengthen our families, to help our communities contain the disease. To call special attention to it in just one month is misleading. It's a year-round challenge, and the diabetes pressure on all of us these days is growing more intense.

You know the urgent need to address diabetes, but it's good to look at just some of the numbers. 18,000,000 Americans have diabetes, including 700,000 children and young adults. The Centers for Disease Control estimate that 1 of every 3 Americans born in 2000 will develop diabetes. The incidence of diabetes among people of color is dramatically disproportionate: among whites it is 8%; among Hispanic/Latino persons it is 12%; among non-Hispanic Blacks, 13%; among American Indians and native Alaskans, 18%. The cumulative annual direct and indirect dollar cost of diabetes today is \$132 billion, 10-14% of all annual US healthcare dollars. Between 1995 and 2005, the number of people in the world with diabetes has grown from 135,000,000 to 170,000,000. According to World Health Organization estimates, that number will more than double by 2030, to 355,000,000.

So PNRI's mission—to eliminate diabetes—is growing if anything more critical, and no single month will be enough to draw sufficient attention and resources to the problem or to solve it.

Still, the Institute is hard at work in the thriving Pacific Northwest diabetes research

community to prevent the disease and arrest its terrible complications. We are increasing understanding of both the causes and complications of diabetes. We are conducting vigorous programs of type 1 diabetes prediction and prevention, islet transplantation and islet cell biology, and glucose toxicity research.

And we are collaborating with a rich array of local scientific and community partners to extend and deepen our work. The American Diabetes Association and the Juvenile Diabetes Research Foundation are aggressively encouraging public support for the research we and other diabetes scientists are doing. Leading investigators and laboratories at the University of Washington, the Benaroya Research Institute at Virginia Mason, and the Veterans Administration Puget Sound Health Care System are making new discoveries to advance the treatment of diabetes or to block or retard its development. Community clinics like SeaMar, the Center for Multicultural Health, and the International Community Health Service are all working to educate especially hard-hit communities about the risks and dangers of diabetes, and to provide them with the resources they need to better manage the disease.

One of our partners, Larry's Markets, is organizing a November promotion of PNRI diabetes research. If you live in the Puget Sound region, you can support *Ducks for Kids with Diabetes* at any one of the six Larry's markets. You can make healthy food choices, and you can help advance diabetes prevention and cure at PNRI.

All our partners share with us a common mission—to conquer diabetes. November is a reminder of the critical challenge we face. It is also a time to celebrate the fact that so many talented and dedicated people are facing it together.

PNRI is a 501(c)(3) organization and welcomes donations to help support its research in the basic biomedical sciences. All gifts to PNRI are tax deductible as provided by law. The Institute is registered with the Secretary of State, Olympia, Washington.



PROFILE profile

Stanley Savage: Financial Stewardship for a Worthwhile Mission

Stanley D. Savage is the Treasurer of the Board of Trustees of PNRI. As such he takes the lead in overseeing the fiscal management and financial stability of the Institute. "It is our job as a Board to maintain careful stewardship," Savage explains, "to protect the investments of grantors and donors in PNRI's scientific work, and to ensure that its excellent, life-saving research continues."

Savage brings an impressive resume of professional and volunteer experience to this task. He is the Chairman, President, and CEO of The Commerce Bank of Washington, headquartered in Seattle. For more than thirty years, he has held a series of increasingly responsible and influential posts in the banking industry of the Pacific Northwest. After graduating with an economics degree from the University of Washington and an MBA from the University of Southern California, Savage managed commercial banking, treasury, capital markets, retail brokerage, and domestic and international corporate lending for Rainier Bank. He then became President, Chief Operating Officer, and Vice-Chairman of Seafirst Bank, as well as Executive Vice-President of Bank of America and President of Bank of America's International Private Bank.

"We have a very solid financial foundation," Savage says of PNRI as it is reflected in annual audits and regular financial statements. (The latest annual report is available online at www.pnri.org.) "We have deep resources, a very valuable building, a strong total asset base, and very little debt for an organization our size."

"But . . ." and this is the caution of a man who has spent his professional life taking responsibility for the financial performance, safety, and soundness of

institutions, ". . . we face annual challenges. There is a constant need to balance revenue and expenses." According to Savage, "The management of PNRI has done an outstanding job of controlling expenses and making hard decisions. But in order to grow, we need to increase revenue, and that means increasing both grant income and private gifts."

Savage's fiscal assessment of PNRI is informed by another perspective than just his banking background. He serves on a wide array of nonprofit community Boards as well, so he understands the challenges the Institute faces as a nonprofit. He is a member of the Board of, among others, the Arts Fund, the Greater Seattle Chamber of Commerce, the Seattle Art Museum, and the Seattle Repertory Theater.

"Though PNRI's financial position is strong," according to Savage, "it is no different than other nonprofits. It faces familiar challenges. Every year requires careful stewardship. It takes work to balance revenue and expenses. It takes work to grow."

The effort is well worth it because of the mission that guides it. "PNRI is adding to the knowledge necessary to cure diabetes," Savage says. He devotes an enormous amount of effort to supporting the arts in the community, because as he says, "the arts enrich lives." But the mission of PNRI resonates for him as well, because through its excellent science, PNRI is committed to "saving lives."

investments
balance
careful stewardship

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PNRI LABORATORIES AND THEIR MAJOR AREAS OF RESEARCH

- **Peter Dempsey, PhD**
(Cellular communication, ErbB ligand trafficking and processing, disintegrin-metalloproteases, ErbB receptor signaling)
- **William A. Hagopian, MD, PhD**
(Type I diabetes mellitus)
- **Sen-itiroh Hakomori, MD, PhD**
(Aberrant cell recognition and signaling in cancer, based on changes in glycosylation)
- **Donald Malins, PhD, DSc**
(Breast, ovarian, prostate cancer)
- **Christopher Rhodes, PhD**
(Biochemistry of pancreatic beta cells)
- **R. Paul Robertson, MD**
(Pancreas and islet transplantation, glucose toxicity of pancreatic beta cells)
- **Barton Wicksteed, PhD**
(Alpha cell regulation)



THANKS TO OUR EVENT VOLUNTEERS

We extend gratitude to volunteers of the 2005 *An Evening of Wine – Flights of Red and White*.

Carolyn Anderson
Laura Belcher
Dan Caldwell
Brittany Dalton
Joe Dawson
Geneva Gautestad
Cindy Haba
Melissa Helsel
Callie Hembree
Margaret Holley
Suzan Hruska
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Chris Mounsey
Colleen Mounsey
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Aaron Robitaille
Jim Smith
Harry Smith
Jody Stanislaw
Milton Tam
Mike Toney

*(Names in italics are
Washington Wine Ambassadors)*

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Name That Wine Game Sponsor

PNRI Board of Trustees

An Evening of Wine

flights of red & white



This imperial was one of 21 wine auction packages.

The 2005 *An Evening of Wine* was a massive success. “The whole evening was awesome,” said co-chair and PNRI Trustee Carol Heimkes. “Our fun was eclipsed by surpassing all of our goals—more volunteers, more unique wine packages, more guests, more sponsors, more wine makers, and more funds raised to support basic and clinical research at PNRI.”

The Golf Club at Newcastle was a spectacular setting for PNRI’s second annual

An Evening of Wine – Flights of Red and White on August 4th. The blue summer skies and warm sun embraced 180 guests, who arrived to cheerful volunteer greeters and superbly prepared passed hors d’oeuvres. An amazing wine tasting social featured nine Washington wine makers and Wine Ambassadors from the Washington Wine Commission. The *Name That Wine* game was set in The Prestwick Terrace and featured five red and three white

*“An Evening of Wine is
an outstanding event with many
fun components.”*

*Vicky and Casey McClellan,
Seven Hills Winery*

Washington wines. Richard Kinssies, columnist for the *Seattle Post-Intelligencer* and director of the Seattle Wine School, entertained guests who tried to match their

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FUND-A-NEED SPEECH EXCERPTS

ALLY PEPIN, AGE 11:

“When I was 9, I had a blood test and learned that I’m at risk for developing diabetes just like my brother Drew. Now every year, I get another blood test to see if that risk is increasing. I hate getting that blood test, but I have decided that I will do anything I can to help researchers find a cure for Drew and others with diabetes.”



8-year old Drew Pepin has type 1 diabetes. He and his family told their story to Evening of Wine guests. Here Drew reads his speech to the auction audience.

KIM PEPIN, THE MOM:

“Dr. Hagopian’s staff is great. One day, Martha Horike-Pyne was thoroughly answering my frantic questions. Her concluding remarks were unforgettable: ‘My boss sends great hope that type 1 diabetes will be reversible or very easily controlled in the future, long before your son Drew has to worry about long term complications.’ Reversible or very easily controlled. These words and the research at PNRI represent the hope that families like ours hang on to.”

SHAYNA PEPIN, AGE 13:

“Before we became involved in the research at PNRI, I felt hopeless and helpless. I never knew that we could help researchers find a cure for my brother’s disease. Now I feel more hope. I know that PNRI is making advances every day toward finding a way to prevent diabetes. I am very encouraged by that and very thankful. If you support diabetes research you will help us conquer this disease. I tell my friends that we will be known as the generation that helped cure diabetes.”



Winners of Name That Wine show off their tastevin medals.

tasting skills with wine descriptions. The *Name That Wine* game was sponsored by PNRI's Board of Trustees. During dinner in the St. Andrews Ballroom, the live auction featured 21 packages, bundles of items

"An Evening of Wine is our most important friend-raising event of the year!"

Dr. R. Paul Robertson

collected by the Event Committee during the prior nine months. One of the evening's highlights was the Fund-A-Need presentation by Kim, Scott, Shayna, Ally, and Drew Pepin from Tacoma. Their remarks about participation in PNRI researcher Dr. Bill Hagopian's genetic screening and antibody testing studies of diabetes raised more than \$58,000. These funds will be earmarked for

a one-year training fellowship for a post-doctoral fellow in diabetes research. Guests experienced an unforgettable evening of extraordinary wines from Washington wineries. The *2005 An Evening of Wine* raised \$141,900 with all proceeds benefiting basic and clinical diabetes research at PNRI, the most comprehensive program of diabetes science in the Northwest.

"An Evening of Wine features Washington wineries with a fun tasting game of eight different wines. The whole evening—from the tasting social with vintners to our unique wine packages at the live auction—is unlike any other wine event in the Northwest."

Ryan Allison, owner, AWineStore.com



Auctioneer Mark Shenfeld encourages buoyant bidding to support diabetes research.

PNRI Tribute Gifts

July through September 2005 (Tribute name is listed in bold)

MEMORIALS

Betty Rice

Dr. and Mrs. William H. Lucas, Sr.

Donald Pardee

Mr. and Mrs. Thomas P. Bayley

Edwin G. Bannick

Ms. Nancy M. Bannick

Dr. William Hutchinson

Ms. Nancy M. Bannick

HONORS

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Mrs. Meta Buttnick

Olivia Bery

Mr. Warren T. Raymond

Our staff is available to assist you with Tribute Gifts. Call 206.726.1200 or make a donation online at www.pnri.org/howtohelp/gifts.

thank you!

JOIN A COMMITTEE

PNRI needs your help! We are actively recruiting community members – both individuals and businesses – to participate in two committees. Our *Development* and *An Evening of Wine* Committees help us increase awareness of diabetes and raise needed funds for basic and clinical research programs. Fun and refreshments are guaranteed! For more information about joining a committee, contact the Development Office at 206.726.1200.

Year-End Tax Relief Promotes Charitable Donations

The *Katrina Emergency Tax Relief Act of 2005* provides incentives for year-end charitable giving. In 2001, many people who made donations for victims of the 9/11 tragedy inadvertently diverted year-end gifts away from other charities. This year's tax relief legislation reflects the lesson learned in 2001. It not only promotes contributions that aid victims of recent hurricanes, but also contains provisions that encourage people to support all Qualified Charities, including PNRI. Normally, gifts of cash made by individuals to public charities such as PNRI are deductible only up to 50% of adjusted gross income. However, for cash gifts made between August 28 and December 31, 2005, the limit is 100% of adjusted gross income. Individuals who have savings bonds, commercial annuity policies, IRAs (if owners are 59.5 years or older) or other assets that would generate income tax if liquidated may want to consider taking advantage of this unusual window, as the amount withdrawn and contributed to charity can be fully deducted from income. Check with your tax advisor for advice about how you and PNRI can benefit from this temporary tax relief provision.

New Staff

Sheryl Stiefel, PNRI's new Director of Development, is working to expand individual and business participation in PNRI's cause-marketing, corporate sponsorship, and estate giving initiatives. Previously, Sheryl led the \$34 million comprehensive campaign at Overlake Hospital (Bellevue). She was also Deputy Director and Chief Curator at the Museum of History and Industry (Seattle) for more than 15 years.

Bridget Haba is PNRI's new Major Gifts Officer. During the last three years at PNRI, she created anniversary appeal letters, organized the wine event, and helped develop a professional fundraising infrastructure. In her new role, she will work to increase charitable contributions from individuals and organizations.

International Collaboration

continued from back cover

came to PNRI from that lab, and for July and August of this year, Dr. Zhenyuan Zhu came to study photoactivatable GM3 ganglioside. In August, Dr. Luis Eduardo Balanzino arrived from the Department of Biochemistry at the National University of Córdoba in Argentina, to study cell-to-cell adhesion mechanism during embryogenesis, in which glycosylation plays a pivotal role.

Most recently, in early October, Dr. Adriane Todeschini joined Hakomori's group from the famous laboratory of Professor Lucia Previato at the Carlos Chagas Filho Institute of Biophysics, Federal University of Rio de Janeiro, Brazil. The Hakomori lab is especially honored by Dr. Todeschini's visit because she has received a prestigious Top Research Career Investigator Fellowship from the National Research Council (CNPq) of Brazil.

In addition to Dr. Todeschini, October brought two more scientists to Hakomori's team, Drs. Jean-Philippe Gaillard and Paola Vecino, both from the Bioengineering Institute of the University Miguel Hernandez in Barcelona, Spain. Gaillard and Vecino visited briefly in 2004. At that time they got very interesting preliminary results on the role of glycosylation in stem cell development, which they will complete during this visit.

Dr. Hakomori says, "This is the time that the functional role of glycosylation, particularly glycosynapses, is becoming an exciting central theme in all areas of cell biology and medical sciences. PNRI is a center of international collaboration in this important area of research."

PROFILE *profile* science

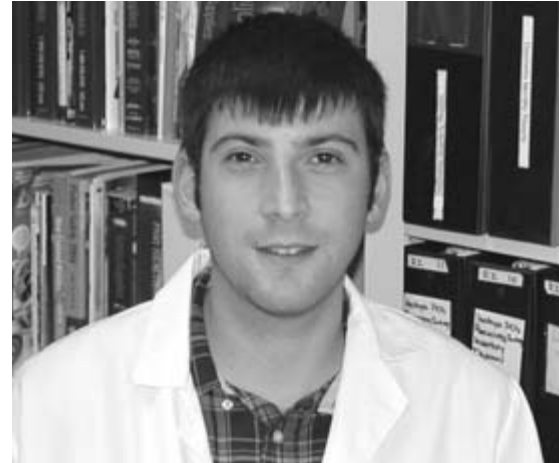
David Scarsella: From Science to Safety to Environmental Policy

David Scarsella is another example of the powerful formative effect PNRI has on many of the students who work here and grow toward careers of complex responsibility. Scarsella is the Health and Safety Manager at the Institute, a post he's held since June 2005. But he did not begin by administering the fire and safety regulations in the labs.

When he first came to PNRI, he was a sophomore biology major at neighboring Seattle University, accepting a work study assignment in the Hakomori lab. After graduation, he took up a full time post as a lab technician with the Hakomori group. In that role he focused on cloning genes that the senior scientists would then use in cell cultures for their gene expression experiments.

Now, as health and safety manager, Scarsella is still using his scientific training but in a larger framework. "I'm an administrator," Dave says, "a compliance officer, charged with seeing that the science that's conducted here is done safely, for the protection of the investigators themselves and for all the other people in the Institute as well." It's a challenging and important task with a wide array of problematic issues to manage. Hazardous waste disposal, for one. Radiation and respiratory protection. Chemical hygiene. Ensuring the safety of all these processes requires scrupulous record keeping, accurate and effective signage, proper storage and security of compounds, and the careful monitoring of access to and use of materials. And Dave needs to enlist the attention and cooperation of all the scientists in the building to get it done right.

"I'm still learning," Dave says, explaining how professionally helpful his colleagues from other regional research facilities are. Jim Denovan, who has his own consulting company, Environmental Health & Safety, is, as Scarsella terms it, his "right-hand man." Along with Denovan and others—like Chris Carney, the Health and Safety Manager at Institute for Systems Biology, and Matt Donelan,



Dave Scarsella in his Health and Safety office at PNRI.

Director of Facilities at Berlex—Scarsella belongs to a local professional group that meets regularly to discuss common safety issues, to keep each other abreast of current regulations, and to share solutions to typical compliance problems they encounter.

"Still learning" is literally true. Scarsella has moved on from the molecular biology that was the focus of his undergraduate studies and of his technical work in the laboratory here at PNRI. Now, thanks to the emphasis in his health and safety work on environmental protections, Scarsella is growing more and more absorbed by issues of environmental policy.

"What is the structure you need to build, what policies must be in place to have effective environmental protections?" he asks. And how especially can those policies be established where the traditions of environmental protection are not already robust?

It's not the obvious next step from cloning genes for cell culture. But in the case of Dave Scarsella, it makes perfect sense. Learning the science, then putting it safely to work in a laboratory, then helping multiple labs adhere to strict health and safety guidelines, then seeing the environmental implications of the whole enterprise—it was enough to make him want to be helpful in bigger ways than he had ever imagined.



safety

Telling the World's Best Stories

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Taking the reins of such a journal was just the editorial challenge that appealed to Robertson when he was nominated for the editorship. "I like the editorial process," Robertson explains, having served for five years as the editor of *Diabetes*, the major research journal of the American Diabetes Association. "I like being involved in the publishing process, shepherding articles through to print." Himself the author of 286 published articles, Robertson regards himself as an "author advocate." "I like helping authors," he says, "representing their interests and perspective, especially in the context of a very competitive and sometimes arbitrary peer-review system."

But in addition to serving authors, Robertson sees other roles for himself as editor. He will introduce a number of changes in the journal, starting with the cover. He believes that a much more important change will be in the organization of each issue. "I hope to make the journal more cohesive, focusing each issue on a particular topic and including a whole array of articles addressing it from different perspectives." The issue could begin with a clinical case—for example, of obesity—first describing an interesting case history, then presenting considerations of the basic pathophysiology and biochemistry of obesity and ending up with a description of the newest molecular discoveries about new hormones involved in regulating fat metabolism. "Such an approach would give the issue focus and coherence, with the clinical case serving as the hook."

Robertson hopes to expand the Editorial Board as well, to provide succinct editorials before each article, and to create ways for readers to be even more engaged in

the discourse of the journal.

The biggest change he anticipates is in content. As important a part as diabetes and obesity play in the clinical practice of endocrinology, Robertson believes that there should be more emphasis on them in *Endocrine Reviews*. "Through all of the last ten years, there has been relatively little attention paid to diabetes and obesity in the pages of the journal. I want to bring more balance to the content, giving diabetes and obesity the attention they deserve."

Serving the Diabetes Mission of PNRI

Describing the conditions of various hormones and the effects these have on patients, examining the mechanisms of endocrine diseases and assessing the effects of treatments introduced to help them—these are the tasks Robertson and other scientists at PNRI are already working on in their diabetes laboratories in the Institute. All of these appeal to him as a researcher. They also appeal to him as a physician. "Endocrinology offers precise explanations of disease," he says, "and then provides clear direction toward effective therapy that works. That makes patients' lives better." What could be more satisfying to a scientist and a doctor?

For five years, starting in January, he's going to guide the telling of endocrinology's impressive stories. Such an editorial mission fits neatly with PNRI's strategic goal of conquering diabetes. Working to bring researchers and clinicians together, inviting policymakers and community leaders to collaborate in a unified assault on the root causes of diabetes and on the best strategies for preventing and treating it, PNRI is committed to eliminating the disease. Editing *Endocrine Reviews* is one way that Robertson can help PNRI bring this important vision to reality.

PERSPECTIVES

Neither Guns nor Butter

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biomedical research? Nothing good. Our research activities and livelihoods are neither guns nor butter. We fall somewhere in the middle between being warriors and caregivers. Consequently, federal funding for biomedical research is plummeting. Approved NIH grants that were funded in the 20-25th percentile range a year ago are now not funded. They must be revised and resubmitted in hopes of reaching the 10-12th percentile. This means that only 10 percent of proposals written by seasoned scientists will be funded for the foreseeable future. The impact of this on ongoing, productive research programs is enormous.

The great irony in this situation is that institutes such as PNRI that take great pride in being able to compete successfully for peer-reviewed NIH support now have to drop research programs. We more than ever must turn to the private sector to help us continue research in basic science and clinical medicine that is designed to provide new means to achieving healthier lives and better treatments for serious diseases. These challenging times call for creative approaches to obtaining support. Broadening our non-governmental research funding portfolios is absolutely critical if we are to maintain the momentum that we have achieved in this era of new biotechnologies. Failure to do so means failure to support the huge number of young scientists we trained for the past 20 years. The consequence of the guns or butter dilemma for the life sciences in these times is discouraging. But it is a reality we must face and must learn to deal with effectively.

Join us in discovery

PNRI's laboratories conduct pioneering research to prevent and cure diabetes. We invite your help to eliminate diabetes as a global threat.

BECOME A PARTNER IN DISCOVERY

Call or email Sheryl Stiefel, Director of Development
206.726.1203 or [sstiefel@pnri.org](mailto:ssstiefel@pnri.org)
All inquiries are confidential.

ADDRESS SERVICE REQUESTED

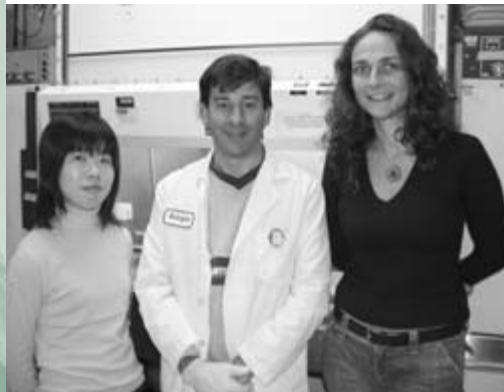
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NOVEMBER 2005

Support Ducks for Kids
with Diabetes
at Larry's Markets for
National Diabetes
Month in November!

Give generously
at grocery checkstands
or online at
www.pnri.org/howtohelp/gifts.
Thank you!

International Collaboration in the Hakomori Laboratory



*Yoshimi Murozuka, Dr. Luis Eduardo Balanzino and
Dr. Adriane Todeschini*

International collaboration and training are increasingly important nowadays. Dr. Sen-itiroh Hakomori's lab at PNRI (the Division of Biomembrane Research) has become an international center for some areas of membrane research.

During the past two years, Drs. Koji Mitsuzuka from Tohoku University in Sendai, Japan, Seon-Joo Yoon from Yonsei University in Seoul, Korea, and Marcos Toledo and Erika Suzuki from the Federal University of Sao Paulo in Brazil joined the group and made important contributions in glycosynaptic microdomains.

This year, in April, Yoshimi Murozuka from the Institute of Industrial Science at the University of Tokyo joined the lab to study ganglioside effect on growth factor receptors, sponsored by a fellowship from the University of Tokyo. Dr. Hakomori has a long-standing collaboration with Professor Pierre Sinay in the Department of Chemistry at the Ecole Normale Supérieure in Paris. Last year, Dr. Yongmin Zhang

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Read inside for more about our International Collaboration