



THE PATRICK AND CATHERINE WELDON DONAGHUE
MEDICAL RESEARCH FOUNDATION

THE 2003 ANNUAL REPORT

“...promises to keep...”

NUMBER *12*

...and miles to go before I sleep.”



The Patrick and Catherine Weldon Donaghue Medical Research Foundation is a charitable trust created pursuant to the will of Ethel F. Donaghue, late of West Hartford, Connecticut. The Foundation, which began operations in 1991, is governed by Fleet National Bank and Raymond S. Andrews, Jr., Trustees. The Foundation is exempt from federal income tax under Section 501(c)(3) of the Internal Revenue Code of 1986, is a private foundation within the meaning of Code Section 509(a), and is subject to the jurisdiction of the Probate Court for the District of West Hartford.

THE FOUNDATION'S PURPOSE

The Foundation established hereunder is created and shall be operated solely for the purpose of providing financial assistance for research in the fields of cancer and heart disease and/or other medical research to promote medical knowledge which will be of practical benefit to the preservation, maintenance and improvement of human life.

From the Will of Ethel F. Donaghue (1896-1989)

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Quote from the Robert Frost poem "Stopping by Woods on a Snowy Evening."

As updated by the Trustees August 29, 2000

OUR VISION

We will be an exemplary participant in the ongoing conduct and continuing advancement of useful health research in Connecticut and beyond.

OUR MISSION

We will benefit human life and the individual lives of people as an active, imaginative, and collaborative supporter of useful health research, primarily in Connecticut, and we will thereby honor the memory of Ethel Donaghue and her family.

OUR GOALS

Fidelity to Purpose

We will faithfully carry out the charitable intentions of Ethel Donaghue as expressed in her will, being careful to give her words their proper meaning and best expression in a context of changing facts and conditions.

Grantmaking

We will develop and manage a flexible and well-rounded program of grantmaking initiatives. In so doing:

- (1) We will reflect our Connecticut roots, the Hartford derivation of the Donaghue fortune, and the current health needs of the people of Hartford, Greater Hartford, and Connecticut, with appropriate regard for the underserved, understudied, and disadvantaged.
- (2) We will use and help to develop Connecticut talent in health research, fostering teamwork between investigators and clinicians and among individual researchers, disciplines, and institutions throughout Connecticut's complement of research resources.
- (3) We will be alert to opportunities and needs for responsive and imaginative focusing of our resources upon targets of importance, with particular thought to those which, but for our involvement, might find inadequate financial support.
- (4) We will strive for a balance between the pursuit of new knowledge and its translation into useful forms, between scientific exploration and thoughtful reflection upon the implications of discovery, and between



The Patrick and Catherine Weldon Donaghue Medical Research Foundation was founded by Ethel Donaghue in loving memory of her parents.

the gaining of knowledge and the pursuit of wisdom to temper our use of it for practical benefit to human life;

- (5) We will make full use of our skills and our independence of judgment in seeking out, evaluating, and taking on challenges, being always willing to effect beneficial change through our research funding.
- (6) We will promote public awareness of research activities and accomplishments and an appreciation of the value of steady and continued support of skilled inquiry into problems affecting human health.

Community Responsibility

We will work actively and collaboratively within the community of philanthropic organizations in Connecticut to promote responsible service of the public interest, particularly in the field of health research, and we will work to build a strong and enduring bond of understanding, respect and teamwork among those in Connecticut who engage in health research and those who finance their efforts.

Our Values

Purpose, Principle, Practicality, Prudence

LETTER FROM THE TRUSTEES

We're encouraged by what our "investments" — both human and financial — in research have accomplished over the years and over a wide spectrum of studies aimed at finding improvements that truly connect with people.

Eight years ago, our annual report borrowed from Robert Frost's *The Road Not Taken* to help highlight 1995 as a year of key choices and also the Donaghue Trustees' preference for uncharted courses. Once again this year we allude to a Frost poem, this time *Stopping by Woods on a Snowy Evening*, to focus our 2003 report on "promises to keep." In his classic poem, Frost reminded his readers that the tempting beauty of woods deep in snow should not long distract one from responsibilities. We all have "promises to keep and miles to go before [we] sleep."

When the Donaghue Trustees accepted the responsibility of carrying out the testamentary intent of Ethel Donaghue – and fulfilling the promise of her vision and beneficence – we made a solemn promise ourselves, symbolically to Miss Donaghue and directly to the public, that we would do our utmost to make real the best expression of her charitable purpose. That overarching commitment resolves into many more specific ones as we proceed from purpose through vision and mission to goals and, most concretely, to programs of the Foundation.

The report that follows looks back, not only on 2003 but also to past programs that illustrate the Foundation's ongoing effort to promote practical benefit to human life through research. We're encouraged by what our "investments" – both human and financial - in research have accomplished over the years and over a wide spectrum of studies aimed at finding improvements that truly connect with people. 2003 was itself a year of particular promise-keeping, as we reshaped ourselves to address economic conditions that hit philanthropy so hard in the past few years.

Some disturbing developments around us during 2003 brought into sharp focus the importance of keeping our promises as trustees. Both proposed federal legislation to tighten regulation of foundations and a revealing investigative series in the *Boston Globe* that sharply criticized the practices of many foundation trustees around the country brought to light an embarrassing gap between the theory of philanthropy – with its great promise for public benefit - and its practice by some of those entrusted with charitable dollars. It also highlighted how porous is



official oversight of foundations. The Donaghue Trustees are well aware of the distinct privilege it is to be entrusted with Miss Donaghue's dollars. We are also aware of the heavy responsibility we have as the agents of fulfilling her promise of health improvements through research.

A particularly noteworthy milestone was reached by the Foundation in 2003, as we followed Miss Donaghue's charge to put her millions to work for the public good. She encouraged us to seek out ways to devote both income and principal of her trust to useful research. In the past year, the Foundation's total of grants since inception reached \$55 million, an amount that exceeds the full amount Miss Donaghue started us with at her death in 1989. In spite of this ambitious grantmaking, because of good fortune and careful oversight of our investments, we had on hand at year end over \$65 million more to be put to useful work in the future.

As we reflect on our grantmaking milestone and on the work of 2003 and the preceding years as well, we're deeply grateful for all of the fine assistance we've had from our dedicated staff and our many scientific and policy advisers, without whose tireless efforts we couldn't begin to keep our promises.

Next year, you will see a new name listed for Donaghue's Institutional Trustee. In April of 2004, the Fleet Bank organization merged with Bank of America. Our hopes are that this development will only strengthen support of the Foundation's work.

Raymond S. Andrews, Jr.
Trustee

Sheilah B. Rostow
Senior Vice President, Fleet Bank
Trustee

PURPOSE AND PROLOGUE

Since its inception, the Patrick and Catherine Weldon Donaghue Medical Research Foundation has been committed to the stipulations in Ethel Donaghue’s will that the research the Foundation funds be, first and foremost, directed at seeking “medical knowledge...of practical benefit to...human life.” Over the years, one of the Foundation’s greatest challenges has been how to take the promising knowledge discovered in the laboratory by our grant recipients and see that it is put to practical use for public benefit. With this 12th annual report – focused on Promises to Keep, from the Robert Frost poem, *Stopping by Woods on a Snowy Evening* – we renew our promise to Ethel Donaghue to actively and imaginatively pursue medical research projects that will confer direct and practical benefit on the people of Connecticut, with particular thought to disadvantaged, underserved and vulnerable populations and the Greater Hartford community that was her home.

To carry out the search for useful knowledge of “practical benefit to ... human life,” Miss Donaghue, who died in 1989, wrote into her will a charitable trust of more than \$50 million in honor of her parents, Patrick and Catherine Weldon Donaghue. Her will was, and remains in many respects, her promise of financial resources available to a select group of talented, dedicated – and promising – physicians and scientists committed to addressing pressing medical and health problems affecting her community.

“Over the years, one of the Foundation’s greatest challenges has been how to take the promising knowledge discovered in the laboratory by our grant recipients and see that it is put to practical use for public benefit.”

Those talented people, of course, are the medical researchers to whom the Foundation has awarded more than \$55 million in grants to date. Donaghue Investigators and Clinical and Community Health Issues Program researchers are involved in a wide variety of exciting projects that hold great promise for practical application in the not-too-distant future. While each of the award recipients for 2003 is helping to fulfill Ethel Donaghue's promise in a particular area of medical research, they all focus on enhancing the health and well-being of people in Connecticut. Those who may benefit include minorities with dementia, young people with substance abuse problems, and children at risk for bone loss from chronic illnesses, to name a few. As you will see in this annual report, the work done to date by our 2003 award recipients holds great promise for people in Connecticut and elsewhere. It is with great hope that we support their continued research – and expect the hands-on application of their findings.

In addition to the Donaghue Investigator and Clinical and Community Health Issues Program grants noted above, in 2003 the Foundation awarded a series of smaller grants for projects we refer to as Trustee Initiatives. Those initiatives comprised three conferences and a seminar geared to communicating and disseminating some of the very promising results of the research that Foundation grant recipients have undertaken. While these programs required a relatively small outlay of funds, we expect them to have a significant, ongoing impact of practical benefit to human life. As we have noted in past annual reports, Miss Donaghue's will expressly contemplates the spending of trust principal for "unusual" and "non-standard" activities, enabling her trustees to "do whatever they deem necessary or desirable" to further her purpose. That, in many ways, is what the Trustee Initiatives are all about. So, if some of the areas of the research we funded in 2003 seem more "practical" than usual, good. Miss Donaghue would be pleased by that – for if we don't push the knowledge we discover out of academia and into practice in the real world, we risk leaving much of what we promised Ethel Donaghue unfulfilled.

As an astute businesswoman and one of Connecticut's first woman lawyers, Ethel Donaghue would understand how difficult it is to keep her – and our – promises in today's health care, economic and legal environment. That is why we took time out this past year, like the little horse in Frost's poem, to give our "harness bells a shake" and reevaluate how to best use the considerable fortune Miss Donaghue put in our hands. Stated another way, like the woods in Frost's last stanza, medical research can be "lovely, dark and deep," thereby luring the researcher into the many fascinating medical mysteries and paths ahead. But the temptation to explore each and every one of those mysterious paths must be weighed carefully, to ensure we see the forest – and the trees.

After all, we have promises to keep – and miles to go before we sleep.

THE YEAR IN REVIEW

2 003 was a busy year, despite our commitment to temporarily reduce spending in line with the goals of our five-year plan. In addition to the standard activities of implementing grant programs, writing newsletters, conducting an annual meeting, acknowledging the service of long-time advisers and welcoming new ones, we focused on the promise made in our five-year plan to evaluate our own work (see March 6 and 27, May 7, October 29) and engage in new ways to actively communicate research findings to the public (see April 14, Spring, July 11 and October 22).

The following entries in the Foundation's calendar mark the major activities of 2003:

- Feb 7** New members were added to the Policy Advisory Committee - Bruce Gould, MD, David Ormstedt, JD, and TV Rajan, MD, PhD. (see November for later additions to the Committee).
- Feb 25** Negotiations were completed with Yale University on the Donaghue Initiative in Biomedical and Behavioral Research Ethics, resulting in an agreement to fund the three-year project, and furthering the Foundation's commitment to focus on ethics in research.
- Mar 6** The major components of the ongoing Health Care Relationships program were reviewed with the project principals.
- Mar 21** Death of Joseph Flood, conservator of Ethel Donaghue the last six years of her life and charter member of the Donaghue Policy Advisory Committee.
- Mar 27** Ethics review of our application review process for the Clinical and Community Health Issues program by a research ethicist (Celia Fisher, PhD, who was then a visiting Professor at Yale University and is now back at Fordham University).
- Apr 1** Executive director position established and filled by Lynne Garner, PhD, former Director of Program Development and Evaluation. Job descriptions revised, with Jacque Daniel becoming Program Administrator.
- Apr 14** Patient Safety Conference at Connecticut Hospital Association for hospital CEOs, chief medical officers, and board chairs. The conference was based on the Donaghue-funded project conducted by the Hastings Center, led by Virginia Ashby Sharpe, PhD, author of *Medical Harm*, and featured project members and a Connecticut hospital team discussing a patient tragedy. It also included a particularly moving presentation by a family member activated by the hospital death of her brother.
- May 7** Completion of negotiations for a supplemental award to the "Hospitals and Churches" project for the purpose of including a qualitative evaluation of the project itself and to reinforce the partnership between the project principals and the community participants.

- May 13** Annual meeting featured three “doctor-authors”: Sherwin Nuland, MD (many titles to his credit, most prominent perhaps *How We Die, How We Live*, and most recently *Lost in America*, a brave and perceptive account of his relationship with his father); Atul Gawande, MD (*Complications: A Surgeon’s Notes on an Imperfect Science*); and Charles Bosk, PhD (*Forgive and Remember*).
- Spring** “Pathways in Research” educational series of six evening lectures for the public conducted by University of Connecticut Health Center, sponsored by Donaghue and featuring eight scientists funded by Donaghue.
- May 21** Annual spending limit of \$1 million set for Clinical and Community Health Issues Program.
- June** Terms of service for the Donaghue Investigator Advisory Committee developed.
- July 11** Thought-provoking Washington, D.C. conference on influence of corporate money on research, conducted by the Center for Science in the Public Interest with partial funding by Donaghue.
- July 30** Two-year extension of the Connecticut Collaborative for Fall Prevention negotiated to permit fuller data collection and analysis.
- Sept 30** Presentation of ethics assessment by Karen Lebacqz, PhD, of the eleven individual research grants in the Program to Study Health Care Relationships.
- Oct 22** Partial funding provided for the Biomedical Engineering Alliance and Consortium (BEACON) for their annual symposium “Neural Engineering: Methodologies to Detect, Analyze and Treat Brain Function.”
- Oct 29** Results of two financial audits of grant projects received.
- Nov 22** Addition of three new members to Policy Advisory Committee to replace members completing service: Nancy Angoff, MD; Cheryl Beck, DNSc; Michael Rion, PhD. Completion of service as Committee chair by Katherine Ill, MD (after 7 years) and naming of Hon. Alvin Thompson as chair (see February for earlier additions).
- Dec** Modification of Donaghue Investigator program announced: 2004 focus will be specifically on areas desired to fill out diverse complement of fields funded. Application process made electronic.
- Dec 31** After twelve years of grant making, the money paid out in grants for health research passes the amount of the initial funding of the Foundation by the will of Ethel Donaghue (\$55,988,852 versus \$53, 436,074).

LISA DIERKER, PHD

YOUTHS AT RISK

“I am most excited about the critical shift in attention that my research could generate toward developing and implementing measures that will help prevent substance abuse, use and dependence.”

Donaghue Investigator Lisa Dierker, PhD, Assistant Professor of Psychology at Wesleyan University, is undertaking research aimed at identifying factors that either place youth at risk for the development of substance use disorders or act as protection against their development – with the ultimate goal of informing both the content and timing of efforts aimed at preventing the onset and/or escalation of these disorders. “With funding from the Donaghue Foundation, I will be able to focus my efforts specifically on Connecticut youth who are at particularly high risk for developing substance use disorders and associated disabilities,” says Dierker. “Specifically, I will be examining the impact of psychiatric disorders and coordinated mental health care services on the subsequent development of substance abuse and dependence among youth enrolled in community mental health care systems across the state.”

According to Dierker, substance use disorders are a significant contributor to many of America’s most serious problems, including personal injury, crime, child abuse and neglect, and the spread of HIV. “My research will aid in informing decisions about service delivery aimed at reducing the prevalence of these disorders.” Dierker emphasizes that despite the fact that child and adolescent psychiatric disturbance has been clearly established as a powerful predictor of substance use disorders, mental health service delivery is most often focused on emergent care and crisis management – without “balanced opportunities” for considering the promise of prevention initiatives. “I am most excited about the critical shift in attention that my research could generate toward developing and implementing measures that will help prevent substance abuse, use and dependence,” she says.

Looking ahead, Dierker is hopeful that her research will ultimately allow for informed decision-making about the implementation of targeted intervention and provide new insight into what aspects of the current mental health care system may predict an increased or decreased vulnerability to substance use disorders among youth. “As risk-focused prevention is considered an appropriate and cost-effective method of dealing with emerging substance use disorders, my study will provide the foundation for attracting additional federal funding for mental health services to Connecticut.”

FRANCISCO A. SYLVESTER, MD

BONE LOSS IN CHILDREN

“Although most people are aware of the impact osteoporosis has in older individuals, there is much less emphasis on the importance of promoting bone health in growing children.”



Francisco A. Sylvester, MD, Pediatric Gastroenterologist at Connecticut Children’s Medical Center, is using his Donaghue Investigator grant to study bone loss in children with gastrointestinal and other diseases. “My interest is to promote the development of strong bones in children with chronic illnesses,” says Sylvester. “Although most people are aware of the impact osteoporosis has in older individuals, there is much less emphasis on the importance of promoting bone health in growing children.”

According to Sylvester, the vast majority of bone tissue is accumulated in the first twenty years of a person’s life. Chronic illness acquired during this time of rapid growth may prevent the formation of normal bone tissue – and increase the risk of fractures throughout one’s life. “Because I am a pediatric gastroenterologist, I initially focused my research on how digestive diseases, such as celiac disease, affect bone development. The Donaghue Investigator grant will give me the flexibility to also study the impact on bone tissue of cerebral palsy, childhood cancer, and medications like corticosteroids.

“As pediatricians, we know that children are not small adults.” continues Sylvester, who will collaborate with colleagues from CCMC, Saint Francis Hospital & Medical Center, the General Clinical Research Center at the University of Connecticut Health Center, and Johns Hopkins University. “Not surprisingly, children respond differently to illness than adults when it comes to their bones. For example, in Crohn disease, a condition that chronically inflames the whole wall of any part of the intestine, we discovered that children at diagnosis form less bone because the disease puts the bone-forming cells in a dormant state. In contrast, adults with Crohn disease tend to dissolve bone more rapidly, resulting in more fragile bones over time. These findings have promising implications on how to treat these children to make their bones stronger.”

Sylvester stresses that a primary goal of his research is to raise community awareness about the importance of promoting the development of strong bones in healthy and chronically ill children. “We also expect to find out more about the mechanisms by which different diseases affect bone health,” concludes Sylvester, “so we can improve medical treatment for children.”



“Our study will test the idea that supplementation with 500mg of vitamin C will reduce blood pressure in persons with type-2 diabetes mellitus.”

George A. Mansoor, MD

EFFECTS OF ASCORBIC ACID ON BLOOD PRESSURE IN TYPE-2 DIABETES

George A. Mansoor, MD, Associate Professor of Medicine at the University of Connecticut Health Center, will use his Clinical and Community Health Issues Program grant to study whether ascorbic acid – vitamin C – will lower blood pressure and preserve vascular health in people with type-2 diabetes. “The role of vitamin C as an anti-oxidant has been touted for many years,” says Mansoor, “and other data point to vitamin C having the potential effect of lowering blood pressure. In addition, more recent observations suggest a relative deficiency of ascorbic acid in persons with type-2 diabetes and in smokers. Our study will test the idea that supplementation with 500mg of vitamin C will reduce blood pressure in persons with type-2 diabetes mellitus.”

According to Mansoor, state-of-the-art methodology will be used to measure blood pressure, while vascular function will be assessed using ultrasound. He emphasizes that his study is particularly promising due to the relatively benign nature and lack of adverse effects of vitamin C, the possible therapeutic effect of the vitamin in lowering blood pressure in participants, and the potential benefit to the large – and growing – at-risk type-2 diabetes population. “We are excited that a commonly available and widely ingested vitamin supplement will undergo scientific testing based on sound rationale,” says Mansoor. “We also are excited about applying modern scientific methods to elucidate the actions of vitamin C.”

Looking ahead, Mansoor hopes to discover “with a high level of confidence, whether vitamin C supplements do indeed lower blood pressure in persons with type-2 diabetes.” He also will study the effects of vitamin C on vascular, or endothelial, health. “The endothelium is the inside lining of the living artery that accepts and releases multiple chemical signals related to vascular health,” says Mansoor. “It also modulates and has direct effects on atherosclerosis, stroke, heart attacks and other vascular problems. A finding that vitamin C improves vascular health would have immediate and important implications.”

DEMENTIA CARE CONSULTATION FOR ETHNIC MINORITY FAMILIES

The number of Connecticut citizens with progressive memory loss – dementia – is expected to increase from 70,000 today to 95,000 by 2025. With his Clinical and Community Health Issues Program grant, **Richard H. Fortinsky, PhD**, Associate Professor of Medicine at the University of Connecticut Health Center, will develop a one-on-one education program for family members from ethnic minority groups who are responsible for taking care of older relatives with dementia. “Because of the rapidly growing older population, more and more families are facing the challenges of how to help keep relatives with dementia at home as long as possible,” says Fortinsky. “These family caregivers often do not know where to turn for assistance. Our education program is intended

“Our goal is to determine how statins cause muscle problems so that effective preventive or treatment strategies can be developed.”

Paul D. Thompson, MD



to help them improve their ability to manage their relative’s health problems, sustain their own health, and find appropriate support services in the community.”

Fortinsky notes that his project will involve working with both English- and Spanish-speaking minority groups using bilingual, bicultural staff. “We intend to partner with many local community-based organizations to help us find family caregivers in the greater Hartford area willing to participate in the study. We know from our previous work that ethnic minority families often face many barriers when they seek medical care and social services. We want to help them become better caregivers by knowing the kinds of resources that are available in the community.”

In the next few years, Fortinsky expects to help raise the level of awareness in the greater Hartford region about the realities and causes of dementia. “We also expect to encourage a large number of older adults from ethnic minority communities with memory problems, as well as their families, to seek physician care to establish an accurate diagnosis, such as Alzheimer’s-type dementia, or memory loss due to strokes, which is known as vascular dementia.” Ultimately, Fortinsky hopes to establish the “most progressive and useful one-on-one education program” of its kind in the country.

SKELETAL MUSCLE GENE EXPRESSION IN STATIN MYALGIA

A ccording to **Paul D. Thompson, MD**, Director of Cardiovascular Research at Hartford Hospital, the family of cholesterol-lowering medications known as statins has been definitively shown to reduce the occurrence of heart disease, including heart attacks, new onset heart chest pain, and sudden heart death. “Statins are among the most widely prescribed medications in the world,” says Thompson. “Unfortunately, about three percent of patients treated with statins develop intolerable muscle aching known as myalgia, the mechanism for which is unknown. Our project will examine changes in the muscle cell – with and without statin therapy – in patients who have previously developed statin myopathy. Our goal is to determine how statins cause muscle problems so that effective preventive or treatment strategies can be developed.”

Thompson’s study will involve patients with statin-associated myalgia and a like number of controls. Subjects will receive a statin or placebo for four months, or until they experience two weeks of muscle pain. They then will have strength testing, perform exercise using one leg – in order to elicit statin-related muscle problems that might not be present at rest – and have a needle biopsy from both legs to measure for messenger RNA, an indicator of what genes have been activated in the muscle. Patients then will then be switched to a placebo, if previously on statin, or to a statin, if previously on a placebo.




Samuel Varghese, PhD

“We know that inflammation is caused by the increased activity of white blood cells, particularly T lymphocytes. What is not known is how inflammation causes osteoporosis.”

“We expect to determine what genes inside the muscle are activated by statins in patients with muscle complaints,” says Thompson. “Knowing how statins injure muscle may help identify patients most likely to develop muscle problems with these drugs. Ultimately, such knowledge may help to develop medications that lower cholesterol without causing myalgia.”

Clearly, Thompson sees great promise in his research. “We know that these medications save lives and prevent heart attacks,” he says. “Finding out how they can be used safely with even more patients would increase their value and benefit many, many people.”

THE MECHANISM OF BONE LOSS IN INFLAMMATORY DISEASES

 osteoporosis – a common disease characterized by bone fractures due to bone loss – occurs in an estimated 400,000 people in Connecticut, causing them pain, disability and increased mortality. “Osteoporosis is commonly associated with aging, menopause and inflammatory diseases such as arthritis and inflammatory bowel disease (IBD),” says Research Scientist **Samuel Varghese, PhD**, of Saint Francis Hospital & Medical Center. “We know that inflammation is caused by the increased activity of white blood cells, particularly T lymphocytes. What is not known is how inflammation causes osteoporosis.”

With his Clinical and Community Health Issues Program grant, Varghese and his co-investigators will test if T lymphocytes from patients with IBD can decrease bone formation directly. “We plan to identify the biological factors produced by T lymphocytes that are causing bone loss in inflammatory diseases, particularly IBD,” says Varghese, who notes that study participants will come from Hartford area clinics and hospitals. “In the future, this information may be useful in preventing bone loss in IBD.”

At this stage of Varghese’s research, he and his team have confirmed that the soluble factors from artificially activated T lymphocytes decrease bone formation. “Our studies, although preliminary, suggest that T cells harvested from healthy and sick individuals alter bone formation differently. This observation supports our hypothesis that factors from active T lymphocytes in IBD patients may adversely affect bone formation. We have identified some factors that are overproduced by active T cells and we are in the process of determining if any of these factors are responsible for causing bone loss in IBD.”

Varghese expects to build on these promising results to establish if bone loss in “inflammatory patients” is caused by soluble factors produced by activated T lymphocytes. “If so, we hope to definitively determine the identities of such factors and study the molecular mechanisms of bone loss caused by these factors. This information will provide important insight into the pathogenesis of osteoporosis associated with inflammatory diseases.”

“We believe that with a change in the surgical procedure to allow a fatty covering on the top of the heart to remain intact, the heart rhythm will be even more stable.”

C. Michael White, PharmD



THE ATRIAL FIBRILLATION SUPPRESSION TRIAL III

According to C. Michael White, PharmD, Associate Professor of Pharmacy Practice at the University of Connecticut School of Pharmacy, more than 600,000 people have heart bypass surgery each year. “The vast majority of these people feel better, can perform daily activities with less pain, and live longer,” says White. “However, about two-thirds of them will develop a heart rhythm disturbance – known as arrhythmia – shortly after surgery, and about four percent will have a stroke. How sad it is for a patient whose surgery brings such promise to end up disabled by a stroke.”

White notes that two previous atrial fibrillation suppression trials that he and his colleagues were involved in reduced the risk of arrhythmia by more than 50 percent and the risk of stroke by more than 75 percent. “Unfortunately, even with our best treatments, 22 percent still have heart rhythm disturbances each year.” In White’s third trial – which is being funded through a Donaghue Foundation Clinical and Community Health Issues Program grant – he will be working closely with skilled cardiothoracic surgeons at Hartford Hospital. “We believe that with a change in the surgical procedure to allow a fatty covering on the top of the heart to remain intact, the heart rhythm will be even more stable,” White says. “We are encouraged by preliminary scientific data indicating that this approach will be successful.”

White believes that his research project holds great promise for reducing a patient’s hospital stay, symptoms, and the risk of stroke. “This is a problem that cannot be solved by one health profession so it’s gratifying that pharmacists, cardiologists, and surgeons are so willing to work together. When the study is completed we will know if this surgical procedure alteration is effective at reducing the occurrence of the arrhythmia. If it is, we will focus on making sure that our hospital adopts it into clinical practice and that we disseminate the information to hospitals around the country and the world.”

TRUSTEE INITIATIVES

Trustee Initiatives

Through the Donaghue Foundation's Trustee Initiatives, the trustees use a small percentage of each year's grant funds very flexibly on exploratory undertakings that further Foundation purposes. During 2003, approximately \$50,000 was allocated for four Trustee Initiatives in support of our goal of communicating and disseminating promising research results, including some previously funded Donaghue projects.

PATHWAYS IN RESEARCH

In the spring, the Foundation funded a six-lecture series on medical research held at the University of Connecticut Health Center. Featured lecturers were eight Donaghue-funded researchers who discussed the nature and findings of their research projects to public audiences of up to 100 people. Topics included: Problem and Pathological Gambling; Markers of Biological Risk in Schizophrenia; Cell Damage and Death in Multiple Sclerosis or Following Stroke; Improved Stroke Outcome Using Quantitative Functional MRI; Effect of Aging on Human Bone Cell and Implant Interactions; Studying Bone Formation to Treat Osteoporosis; Electrical Signaling in the Brain; and Effects of Nicotine on Bone Turnover in Women. The goal of the Pathways in Research series was twofold: to provide a general audience with a challenging exposure to some of the leading medical researchers at the University of Connecticut and to encourage investigators to share their work – the purpose, results and implications of their clinical studies – with the public so as to build appreciation of research and researchers.

**IMPROVING PATIENT SAFETY IN YOUR INSTITUTION:
ISSUES AND RESOURCES FOR HOSPITAL LEADERS**

On April 14, the Foundation, in collaboration with the Hastings Center, the Connecticut Health Foundation and the Connecticut Hospital Association, sponsored a special conference on patient safety for hospital CEOs, medical executives and trustees. The conference, which was based on a Donaghue-funded project conducted by the Hastings Center, featured presentations by medical professionals from across the country, including speakers from the Hospital of Saint Raphael in New Haven. Speakers addressed issues of special concern to hospital leaders, such as physician relations and the role of trustees in patient safety efforts; the immediate and long-term impact of medical errors on families and communities; values-based approaches to patient safety; and physician resistance to patient safety efforts. Noteworthy was a compelling first-person account by Roxanne Goeltz, a patient safety activist motivated by tragedy in her own family.

TRUSTEE INITIATIVES

CONFLICTED SCIENCE: CORPORATE INFLUENCE ON SCIENTIFIC RESEARCH AND SCIENCE-BASED POLICY

During 2003, the Donaghue Foundation supported the development of a thought-provoking conference that highlighted concerns about the influence of corporate money on the independence and integrity of scientific inquiry and medical research. The conference, which was held in Washington, D.C. on July 11, was sponsored by the Integrity in Science Project of the Center for Science in the Public Interest. Assisting in the funding of the conference was a logical extension of the Foundation's commitment to linking research and ethics, as well as an important facet of our five-year plan to be more proactive in bringing knowledge to the public, with a view to improving human behavior. As part of the day-long event, attended by about 250 people, prominent examples of profit-driven business interests operating to hide or distort truth through initiatives labeled as scientific inquiry were discussed, as were schemes to torpedo scientific inquiry that produced unwelcome truth.

BEACON SYMPOSIUM**NEURAL ENGINEERING: METHODOLOGIES TO DETECT, ANALYZE AND TREAT BRAIN FUNCTION**

On October 22, the Biomedical Engineering Alliance and Consortium (BEACON) – a regional collaborative of academic, medical and industrial partners in the field of biomedical engineering – held its Annual Symposium at Hartford Hospital's Heublein Hall Education and Resource Center. The symposium, expenses of which were partially underwritten by the Donaghue Foundation, featured presentations on research and development efforts underway in developing new neural engineering technologies, as well as examples of successful academic and industrial collaborations in these promising areas of research. Symposium speakers representing a cross section of academic institutions, hospitals and private enterprise addressed several important topics. The BEACON annual symposium was followed by a technology fair, which enabled participants to share their research and development projects in neural engineering as well as in other bioscience and bioengineering fields.

In addition to the four Trustee Initiatives funded in 2003, the Foundation continued our collaboration with the National Patient Safety Foundation for a second year by funding a grant for a Yale-New Haven Hospital pilot project geared to determining whether it is technically feasible to disseminate – throughout an integrated delivery network – knowledge gained from a single institution's clinical decision support system. The Foundation also made a supplemental award to fund an ongoing evaluation of the research process being used in the Churches and Hospitals project (which was funded in 2002), as well as a supplemental award to extend the length of the Connecticut Collaborative Fall Prevention project (originally funded in 2000). In addition, the Foundation made the first payment toward the Yale biomedical and behavior research ethics project that was featured in the 2002 annual report.

PROMISES KEPT

Since 1997, the Donaghue Foundation has funded a series of Practical Benefit Initiatives that show particular promise for producing practical benefit to human health. Here are updates on how several previously funded PBI projects are living up to that promise.

1998**EASY BREATHING**

Approximately five years ago, the Donaghue Foundation made a \$2.1 million grant for an ambitious University of Connecticut Health Center study aimed at improving the quality of life for thousands of Hartford schoolchildren suffering from asthma. Under the direction of Principal Investigator Michelle Cloutier, MD, a pulmonary specialist at Connecticut Children's Medical Center and professor of pediatrics at the University of Connecticut School of Medicine, the citywide program has been highly successful. According to Cloutier, the Easy Breathing project has screened more than 10,000 children in Hartford, trained primary care providers to use national guidelines, conducted longitudinal measures of asthma treatment and health care utilization, and demonstrated an average annual estimated savings of \$420 per child with asthma. "Easy Breathing has shown that a good combination of diagnosis and evidence-based therapy is effective in treating asthma," she says. While Donaghue Foundation funding for the program ended in 2003, Connecticut Children's Medical Center picked up the torch by making Easy Breathing a part of its strategic plan, and state and federal and other private sector funds are enabling Easy Breathing to continue and expand in other Connecticut cities.

1998**ETHEL F. DONAGHUE WOMEN'S HEALTH INVESTIGATOR PROGRAM**

When the Ethel F. Donaghue Women's Health Investigator Program at Yale was launched, it generated an unprecedented opportunity to advance research on the health of women, while providing the groundwork for the formation of Women's Health Research at Yale – the largest interdisciplinary program of its kind in the nation. Today, the program continues to provide grants to support innovative research projects of importance to the health of women, including sex differences in cardiovascular disease and treatment outcome, osteoporosis, early detection of breast cancer, autoimmune disorders, the relationship of estrogen and depression, and gene therapies in ovarian cancer. The leverage of Foundation money has been substantial. According to Principal Investigator and Director, Carolyn M. Mazure, PhD, "Our program's 'seed' grants of \$3.6 million have resulted in \$15.5 million of new external funding channeled directly into our investigators' labs and clinical settings. Faculty affiliated with Women's Health Research at Yale have generated many research and training grants from the National Institutes of Health to study sex differences in an array of health areas as a result of new research avenues originated through our program."

1999**DOMESTIC VIOLENCE**

Headed up by University of Connecticut Health Center Assistant Professor Mary Duncan, PhD, the Domestic Violence project is dedicated to improving clinic-based screening and intervention programs for low-income women abused during pregnancy. Since its inception, the project – formally entitled Screening, Outreach and Safety for Abused Prenatal Patients – has involved the regular screening of patients receiving prenatal care at Hartford Hospital, St. Francis Hospital and Burgdorf/Fleet Health Center, and has reported back to clinicians the results of their own screening efforts. “Preliminary results indicate that screening patients for domestic violence doubled among obstetrics and gynecology residents in the study site,” says Duncan. “Prior to feedback, 40% of visits included screening; by the time feedback ended, 87% of visits included screening. Nine months post-intervention, residents screened at 77% of visits, approximately twice the percentage observed at baseline. We conclude that individualized performance feedback is an effective means of increasing domestic violence screening during prenatal care, as well as a fairly simple intervention to improve patient care in many different practice settings.”

1999**VITAL SIGNS**

Vital Signs, a project directed by Thomas Babor, PhD, chairman of the Department of Community Medicine and Health Care at the University of Connecticut Health Center, has been evaluating the use of screening and brief interventions (SBI) for managing smoking and alcohol use. The project has focused on Hartford Medicaid populations in order to demonstrate the value of SBI in practical managed care settings. “The Vital Signs project has shown that alcohol and smoking interventions produce significant reductions in both drinking and smoking behavior regardless of whether they are delivered individually or together,” says Babor. “The findings suggest that screening and brief intervention programs should focus on the risk behavior that the patient is most willing to change. If systematic screening and brief intervention were implemented routinely in primary health care settings, it could have a significant benefit on population health, especially in the prevention of lung disease, accidents, injuries and other conditions associated with smoking and risky drinking.”

2000**CONNECTICUT COLLABORATION FOR FALL PREVENTION PROJECT**

Yale University School of Medicine Professor Mary E. Tinetti, MD and her colleague Dorothy Baker, PhD have been working to prove that falls and fall-related injuries – the most common preventable cause of functional decline and nursing home placement among older persons in Connecticut – are avoidable when providers incorporate fall assessment and management in their practices. Seven hospitals and 27 home care agencies in north central Connecticut are currently participating in the project, as are 101 of 122 outpatient rehabilitation and 95 of 139 primary provider offices contacted to date. “We cannot determine how many of the area’s 95,000 persons 70 years or older have been exposed to fall assessment and management,” says Tinetti. “However, more than 60,000 passbooks, which list the targeted fall risk factors and recommended interventions, have been distributed. While many factors facilitate our efforts, the support of influential organizations, the sharing of best practices among provider groups, the establishment of new or enhanced referral patterns across disciplines, and the enthusiasm with which local providers take over outreach efforts are some of our greatest successes.”

PROMISES KEPT

2000**INFLUENCE OF COGNITIVE ACTIVITIES ON COORDINATION DYNAMICS**

The ability to control and coordinate body movements while engaged in an unrelated cognitive activity declines as people age, thus requiring that more attention be directed to such fundamental skills as balancing and walking. With her PBI grant, University of Hartford Professor Geraldine L. Pellecchia, PhD, PT (now on the faculty of the University of Connecticut School of Allied Health) has been identifying the factors that play the most important roles in dual-task performance, with the goal of identifying training strategies to improve this basic life skill. "A traditional assumption has been that cognitive and motor tasks use different mental and physical resources, and thus performance of one should not affect the other," says Pellecchia. "Counter to this conventional perspective, our research project showed that performing an unrelated cognitive task, such as mental arithmetic, negatively impacts standing balance and hand coordination. This dual-task interference persisted following a series of sessions in which cognitive and motor tasks were practiced separately, but was eliminated when cognitive and motor tasks were practiced simultaneously. Clearly, interventions aimed at improving the ability to perform concurrent cognitive and movement tasks should incorporate practice dual tasking."

2000**PROGRAM FOR THE STUDY OF HEALTH CARE RELATIONSHIPS**

Under the Program for the Study of Health Care Relationships (HCR), researchers at the Yale and University of Connecticut Schools of Nursing have been examining how relationships among patients, families, clinicians and providers affect a patient's adherence to "doctor's orders." As a subset of the program in keeping with Donaghue's emphasis on ethics in research, an innovative way of uncovering ethical assumptions and values that make up the hidden foundation of clinical research has been developed. "Karen Lebacqz, PhD, an expert in bioethics, was contracted to analyze 11 funded HCR research projects for their ethical implications," says Project Director Sally Cohen, RN, PhD, Associate Professor of Nursing at Yale. "The analysis described ethical issues about health care relationships and adherence embedded in the studies and synthesized cross-cutting ethical themes that emerged from the program as a whole. Critical themes included respecting autonomy, honoring dignity, developing trust, empowerment and the importance of the structure and context of clinical practice." Lebacqz's findings provide a new model for researchers and ethicists to collaborate on the complexities of clinical research and the challenges of translating findings back into practice.

2000**PROMOTING PATIENT SAFETY: AN ETHICAL BASIS FOR POLICY DELIBERATION**

The Hastings Center's Donaghue-funded patient safety project addressed such issues as collective versus personal responsibility for error, how different kinds of errors are handled by health care institutions, and questions of moral and legal responsibility. "To date, the project's most significant impact has been on the statewide accountability effort in Massachusetts," says Center Deputy Director Nancy Berlinger, PhD. According to Berlinger, in September project creator and co-director Virginia Ashby Sharpe participated in a Massachusetts Coalition on the Prevention of Medical Errors conference, where she discussed an important concept that developed from the project. "This concept makes a distinction between 'retrospective' accountability, which focuses on praising or blaming individuals for past actions, and 'prospective' accountability, which is systems, goal and process oriented, and, therefore, a more productive definition of accountability when crafting approaches to patient safety." The Massachusetts coalition, which includes 50 hospitals, professional societies, state agencies and insurers, is using this definition to develop a framework and action steps for accountability that can be used by providers and regulators throughout the state – as well as in Connecticut.

The Donaghue Foundation conducts several programs and initiatives in support of Connecticut-focused research and related work. Interested persons should contact the Foundation office for detailed program information and application forms.

INVESTIGATOR-INITIATED RESEARCH:

(1) The Clinical and Community Health Issues Program is for health-related research projects that address major medical conditions and social problems affecting the health of individuals, groups and communities. Of particular interest are studies focusing on more effective methods of preventing, diagnosing, and treating illnesses and conditions that have a major impact on health in Connecticut. C&CH grants are up to \$240,000 over periods of one to three years. Applications are invited after scientific and policy review of statements of intent.

(2) The Donaghue Investigator Program

supports particularly promising medical researchers holding faculty appointments at Connecticut institutions. The program emphasis is upon the researcher rather than upon a specific research project. Awards of \$100,000 per year, for up to five years, are made.

PRACTICAL BENEFIT INITIATIVES:

The PBI program has no specific timeline for applications and no pre-determined award amounts. The Foundation itself initiates research projects in an interactive process with prospective investigators. Funding is based upon promise of practical benefit to human life and a likelihood that but for the Foundation's support, the research might not be done.

(1) Targets of Research Opportunity: The Foundation actively seeks funding opportunities for timely and needed research projects outside the parameters of investigator-initiated research programs.

(2) Focused Centers of Research: The Foundation invites discussion of proposed programs of coordinated research effort. The Foundation prefers collaborative, multidisciplinary, integrative programs that are patient-oriented and/or community-focused and that target understudied fields or populations.

(3) Knowledge at Work: The Foundation supports research focused specifically on improving the ways new discoveries are translated into useful knowledge and disseminated to the point of actual use.

(4) Trustee Initiatives: In addition to the programs above, the Trustees are prepared to spend a small percentage of each year's grant funds on exploratory undertakings that further Foundation purposes.

2003 Awards**Research in Clinical & Community Health Issues**

Richard Fortinsky, PhD
University of Connecticut Health Center
Care consultation for families of dementia patients

George Mansoor, MD
University of Connecticut Health Center
Effects of ascorbic acid on ambulatory blood pressure

Paul Thompson, MD
Hartford Hospital
Skeletal muscle gene expression in patients with statin-induced myalgia

Samuel Varghese, MD
St. Francis Hospital and Medical Center
The mechanisms of bone loss in inflammatory diseases

C. Michael White, MD
Hartford Hospital
The atrial fibrillation suppression trial (AFIST III)

Donaghue Investigator

Lisa Dierker, PhD
Wesleyan University
Impact of child psychopathology and intervention on later substance use

Francisco Sylvester, MD
Connecticut Children's Medical Center
Understanding bone loss in children with chronic gastrointestinal diseases

Practical Benefit Initiatives

Robert J. Levine, MD
Yale University
Donaghue initiative in biomedical and behavioral research ethics

National Patient Safety Foundation

Martha J. Radford, MD
Applying knowledge from a clinical decision support system developed at an academic medical center to other hospitals and populations throughout an integrated delivery network

CONTINUATION AWARDS**Research in Clinical & Community Health Issues**

Deepak D'Souza, MD
Yale School of Medicine
D-serine treatment of negative symptoms in schizophrenia

Tony George, MD
Yale School of Medicine
Nicotinic antagonist augmentation of SSRI antidepressants

Naveed Hussain, MBBS
University of Connecticut Health Center
Regional database to study outcomes in premature babies

Karl Insogna, MD
Yale School of Medicine
Dietary protein impact on calcium and bone metabolism

Jeffrey Kahn, MD, PhD
Yale School of Medicine
Epidemiological investigation of human respiratory viruses

George Kuchel, MD
University of Connecticut Health Center
Urinary incontinence in the elderly: A translational approach

Quing Zhu, PhD
University of Connecticut
3-D ultrasound and NIR imaging for breast cancer detection

CONTINUATION AWARDS

Donaghue Investigator

Elizabeth Bradley, PhD

Yale School of Medicine
Quality improvement efforts in the care of older adults

Kevin Claffey, PhD

University of Connecticut Health Center
Mechanisms of MT1-MMP-dependent breast cancer metastasis

Carlos Grilo, PhD

Yale School of Medicine
Treatment of binge eating and obesity

Stephen Helfand, MD

University of Connecticut Health Center
Molecular genetics of aging

Sandra Hewett, PhD

University of Connecticut Health Center
Mechanisms of inflammatory central nervous system injury

Barbara Kazmierczak, MD, PhD

Yale School of Medicine
The role of epithelial cells in host defense against pathogens

Stephen King, PhD

University of Connecticut Health Center
Intracellular transport and the regulation of molecular motor-cargo interactions

Richard Marottoli, MD, MPH

Yale School of Medicine
Enhancing older driver safety and mobility

Ishita Mukerji, PhD

Wesleyan University
Structural studies of sickle cell hemoglobin fibers

Nancy Petry, PhD

University of Connecticut Health Center
Brief interventions for problem gamblers

Carol Pilbeam, MD, PhD

University of Connecticut Health Center
Development of new therapies for increasing bone formation and treating osteoporosis

Robert Reenan, PhD

University of Connecticut Health Center
Changes in ion channel and receptor function in brains of adults

Scott Rivkees, MD

Yale University School of Medicine
Prevention of brain injury in premature infants

Joann Sweasy, PhD

Yale University School of Medicine
Understanding how mutations occur during meiosis

Practical Benefit Initiatives

Howard Bailit, DMD, PhD

University of Connecticut Health Center

Thomas Babor, PhD, MPH

University of Connecticut Health Center
Public-private alliance for prevention – Vital signs

Howard Bailit, DMD, PhD

University of Connecticut Health Center

Mary Duncan, PhD

University of Connecticut Health Center
Public-private alliance for prevention – Domestic violence

Sally Cohen, PhD, RN, Yale School of Nursing

Judith Krauss, MSN, RN, Yale School of Nursing

Regina Cusson, PhD, RN, University of Connecticut

School of Nursing
Program for the study of health care relationships

Carolyn Mazure, PhD

Yale University School of Medicine
Ethel Donaghue women's health investigator program

Judith Fifield, PhD

St. Francis Hospital & Medical Center
Hospitals and churches: Partnership to improve health

Therese Kosten, PhD

Yale University School of Medicine
Early life stress and cocaine abuse in male and female rats

Thomas Murray, PhD

The Hastings Center
Ethical issues in the management of financial conflicts of interest in biomedical research

Jean Schensul, PhD

Institute for Community Research
Improving access to mental health services for older adults in Hartford

Mary Tinetti, MD

Yale University School of Medicine

Dorothy Baker, PhD

Yale University School of Medicine
Connecticut collaborative fall prevention project

Geraldine Pellechia, PhD

University of Hartford
Influence on cognitive activity on coordination dynamics

Scott Woods, MD

Yale University School of Medicine
Donaghue early schizophrenia initiative

National Patient Safety Foundation

James Judge, MD

Clinical decision support to reduce adverse drug events in high risk home care patients

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Chief/Assistant Clinical Professor

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Hartford Hospital
Research Scientist

Linda Frisman, PhD

State of Connecticut, Mental Health &
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Director, Biometrics

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Michael Rion, PhD

West Hartford
Principal, Resources for Ethics
and Management

Institution	New	Continuation	Total
Connecticut Children's Medical Center	1	0	1
Hartford Hospital	2	0	2
The Hastings Center	0	1	1
Institute for Community Research	0	1	1
National Patient Safety Foundation	1	1	2
St. Francis Hospital & Medical Center	1	1	2
University of Connecticut Health Center	2	11	13
University of Connecticut-Storrs	0	1	1
University of Hartford	0	1	1
Wesleyan University	1	1	2
Yale University	1	0	1
Yale School of Medicine	0	14	14
Yale School of Nursing	0	1	1
Total	9	33	42

FUNDS AWARDED BY GRANT PROGRAM FOR GRANT CYCLE BEGINNING IN 2003

Research in Clinical & Community Health Issues	Total
New (5)	\$354,674
Continuing (7)	\$558,849
Donaghue Investigator Program	Total
New (2)	\$220,000
Renewal (14)	\$1,710,709
Practical Benefit Initiatives	Total
New (2)	\$490,000
Continuing (11)	\$3,664,592

Research in Clinical & Community Health	\$ 913,523
Donaghue Investigator Program	\$1,930,709
Practical Benefit Initiatives	\$4,154,592

Funds awarded by Grant Program for Grant Cycle beginning in 2003: \$6,998,824

2003 FINANCIAL INFORMATION

Statement of assets and fund balance as of December 31, 2003

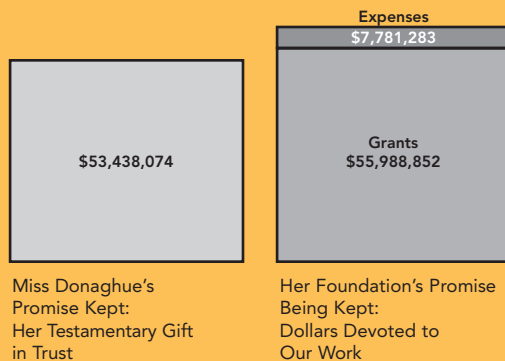
Investment in marketable securities	\$ 65,588,588
Cash and cash equivalent	\$ 1,566,694
Other assets	\$ 41,751
Total assets and fund balance	\$67,197,033

Statement of income and expenditures for the twelve months ended December 31, 2003

Income	\$ 1,947,868
Expenditures	
Program:	
Grants	
Clinical and Community Health	\$ 913,523
Donaghue Investigator	\$ 1,930,709
Practical Benefit Initiatives	\$ 4,154,592
Subtotal	\$ 6,998,824 ¹
Program Support	\$ 128,880
Management and General	\$ 474,732
Investment Management	\$ 96,936
Total Expenditures	\$ 7,699,372 ²

Note 1: Included in this figure is \$113,845 the Foundation facilitated in grants for medical research from other foundations or philanthropic sources.

Note 2: In addition to these expenditures, an estimated amount of up to \$5,118,126 has been earmarked for future spending in support of ongoing grants. The figures listed above are unaudited. Fair market values are approximate.





LEAVE A LEGACY CONNECTICUT

Ethel Donaghue's legacy would be even more meaningful if her Foundation's efforts prompted others to support health research as a part of their own philanthropic planning. The Donaghue Foundation supports the work of Leave a Legacy Connecticut and encourages people to include charitable bequests for health research purposes in their wills. While the Foundation will accept additional funds itself only if they are solely and expressly for Miss Donaghue's own testamentary purpose, we do believe strongly in the public value of committing private sector resources to the ongoing cause of health research.



The
Donaghue
Foundation

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