UNLOCKING THE SECRETS OF NUTRITION...
...LEADING THE WAY TO A HEALTHIER TOMORROW
JOURNEY OF DISCOVERY
FROM THE EXECUTIVE DIRECTOR
Claude Bouchard, Ph.D.

OUR ORIGINAL MISSION has remained unchanged from the moment we started work: to promote healthier lives through research and education in nutrition and preventive medicine. What has changed, significantly, is the breadth and depth with which we are achieving our mission. Our new Basic Science Laboratory Building is the most outwardly visible symbol of that, but is preceded by a spectrum of publications and research endeavors about which we could only dream a decade ago. Yet, though our daily explorations have occasionally led us to discoveries that seem a bit removed from our core research, all our basic and clinical research, clinical trials, facility construction and improvement, and our public and professional education initiatives result from a sharply focused view of our mission.
HISTORICAL MILESTONES

IN 1989, George Bray, M.D., our first executive director, surveyed his new post: 223,000 square foot of newly completed, yet almost empty basic science laboratories, clinics and administrative offices. Built with a portion of Doc Pennington’s generous donation to LSU, Dr. Bray’s task was to lure world-class researchers and funding to a then unknown research center. The remainder of the donation was placed in trust for future growth.

In his decade of leadership, Dr. Bray built an exceptional faculty and technical staff, witnessed and participated in the publication of hundreds of books, chapters and peer-reviewed papers, touched the lives of thousands of clinical participants and oversaw a second construction phase — a 93,000 square foot complex comprising a beautiful conference center, guest lodge and exercise research facility. The growth and expansion, though funded mainly by the trust, could have occurred only through significant growth in funding from state, federal and private sources.

In 1999, having served as a member of the center’s board of external advisors, I became executive director. At that time, the center began operating under a five-year strategic plan and undertook its third phase of significant expansion. At the end of 2003, the center employed more than 500 scientists, physicians and support personnel. In the closing weeks of the year, and with an eye toward a future hundred-member faculty and 1,000 member post-doc and staff count, the center opened its 180,000 square foot Basic Science Laboratory Building and began to move in.

VISION 2005 STRATEGIC PLAN UPDATE

In early 2000, the Pennington Biomedical Research Center launched a bold, comprehensive plan to meet ambitious long-term goals: 1. build a world-class research center in nutrition and preventive medicine; 2. generate cutting-edge and influential research; 3. maximize the benefits of technological advances and new discoveries made at the center; 4. contribute to the economic development of the State of Louisiana.

The center would reach these goals with a series of activities built on recruiting competent and highly productive scientists, building a strong post-doctoral program, and providing first-class laboratory facilities and state-of-the-art equipment.

The center was organized around four research priorities, which led to the establishment of four research divisions: Obesity, Functional Foods, Nutrition and Chronic Diseases and Health Performance Enhancement. Subsequently, the Division of Obesity was split into a Division of Experimental Obesity and a Division of Clinical Obesity and Metabolic Syndrome. Researchers in these divisions rely on the latest molecular, physiological, clinical, behavioral and bioinformatics technologies. Our ultimate goal is to prevent common diseases such as heart disease, diabetes, hypertension and cancer, so that people can live healthier and fuller lives.
The plan contained specific revenue growth to support substantial capital investment and operating costs. It anticipated growth in the operating budget from $22 million in 2000 to $45 million by 2005, growth in faculty from 45 to 90, and a near doubling of total employment to 750. To meet these goals, the center would require new research space and scientific equipment. Also, the plan outlined the formation of a variety of education programs.

Specifically, the plan called for an additional $5 million per year in general state funds, granted by the legislature; Pennington Medical Foundation funding for construction of two new research buildings and equipment costs; $25 million per year in competitive federal grants for peer-reviewed projects; $10 million per year in private sector grants and contracts; and Pennington Biomedical Research Foundation funding for endowed chairs, professorships and post-doctoral fellowships.

**PROGRESS TO DATE**

With a year remaining in our current Vision 2005 Strategic Plan calendar, we have made significant progress, both in planned activities and in unforeseen opportunities. As in all ambitious plans, we also have a few areas in which we have not yet reached our goals.

A brief comparison chart of specific, measurable goals relative to our current status is seen below.

<table>
<thead>
<tr>
<th>STRATEGIC PLAN TRACKING – GOALS TO REACH BY 2005</th>
<th>Status at end of 2004</th>
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<tbody>
<tr>
<td><em>Develop 4 key research areas</em></td>
<td><em>Center organized into 5 divisions to match key areas</em></td>
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<td><em>Double operating budget from $22 million to $45 million</em></td>
<td><em>2003 – 2004 budget equals $45 million</em></td>
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<td><em>Expand faculty from 45 to 90</em></td>
<td><em>70 faculty</em></td>
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<td><em>Increase total personnel from 385 to 750</em></td>
<td><em>500 total personnel</em></td>
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<tr>
<td><em>Construct 3 new buildings</em></td>
<td><em>Basic Science Laboratory Building complete (180,000 square feet); Clinical Research building (80,000 square feet) on hold; Bio-imaging center planned, site located, partial funding plan in place</em></td>
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<tr>
<td><em>Create ambitious educational program</em></td>
<td><em>Educational director on board; several scientific and outreach conferences planned and convened</em></td>
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<tr>
<td><em>A new lodging facility</em></td>
<td><em>On hold</em></td>
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<tr>
<td><em>Increasing Chairs and Professorships from 7 to 20</em></td>
<td><em>12 chairs and professorships</em></td>
</tr>
<tr>
<td><em>Increasing post-doctoral fellows from 19 to 100</em></td>
<td><em>40 post-doctoral fellows</em></td>
</tr>
<tr>
<td><em>Upgrade to physical plant</em></td>
<td><em>New parking areas, sidewalks and landscaping</em></td>
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<tr>
<td><em>Increase core services from 15 to 20</em></td>
<td><em>16 core services</em></td>
</tr>
<tr>
<td><em>Increase number of labs from 27 to 60</em></td>
<td><em>14 labs or research units. This is the result of a consolidation into larger lab groups.</em></td>
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BUILDING CONSTRUCTION – A NEW MILESTONE

WE NOW HAVE ACHIEVED a significant milestone: the completion of a state-of-the-art Basic Science Laboratory Building. Designed to stimulate scientific collaborations, its 180,000 square feet are shaped into interlacing, free flowing hallways, shared service areas, and open, spacious, multi-use laboratories. This building is specifically designed with the future in mind, creating a rich environment for scientific discoveries. Rising above all other structures on campus, its glass paneled walls, airy spaces and free-flowing hallways create the perfect scientific, creative environment. Ideas will be born, nurtured and grow to maturity within the conversations and information exchanges that will naturally occur at the lab bench, in shared equipment areas, lecture rooms, conference rooms and even the casual coffee and gathering areas overlooking a serene lake.

A second building called for in our strategic plan is an 80,000 square foot Clinical Research Building. Preliminary site selection, plans and costing studies are completed. However, this building has been delayed, primarily due to the fall in value of trust fund investments. With late-year, positive economic indicators appearing, along with rising values in investments, we remain optimistic that we can break ground during 2004, the last year of our current strategic plan. We have also begun the design and plans for a bio-imaging center, which will house magnetic resonance spectroscopy equipment and other imaging technologies.

The need for these buildings is clear. We have had to install several temporary, modular office buildings to accommodate a surge in clinical staff and our stream of citizen volunteers for clinical trials. These temporary buildings now occupy a substantial portion of one of our parking areas. Although they have proven to be very useful, they are not sufficient to accommodate the current rate of growth in the clinical research area.

RECRUITMENT

One of our most important goals is the recruitment of excellent, productive faculty. Our long term goals can only be met with the dedication, insight and innovative research of a top-notch faculty leading a dynamic group of post-doctoral researchers. We are well on our way to achieving those recruiting goals.

Also, by the end of 2003, there were four occupied endowed chairs and three endowed professorships at the Pennington Biomedical Research Center with several others in the process of being filled or in development.

ORGANIZATIONAL STRUCTURE

One refinement to our strategic plan was a re-organization of our research units. Toward the end of 2003, we consolidated the research units of our 70 faculty members into 14 laboratories and research units contributing to the center’s five divisions. This research enterprise at the center is supported by the expertise and physical resources of 16 core facilities. In addition to our five current research divisions, we have also developed a Division of Educational Programs.
SEIZING OPPORTUNITIES

We believe that excellent strategic planning creates unforeseen opportunities, and such has been the case here at the center. Although we did not include the following in our strategic plan, we were certainly poised to act. Opportunities for funding, partnership, outreach and even goodwill, all essential to the future of our center, come in many forms.

- Following tentative approval by Congress of the creation of a United States Department of Agriculture Human Nutrition Research Center at the Pennington Biomedical Research Center, negotiations have begun with USDA officials with the goal of implementing a USDA Prevention of Obesity program in the course of 2004.
- Development of a confocal microscope suite
- Opening of a 24-hour inpatient clinic with 14 beds
- Enhanced communications abilities through new director and a new communication plan
- Increased public access to campus with initiation of perimeter sidewalk
- Organization of several educational activities designed for the general public

In addition, generous donations during the last year or so have allowed us to establish the following chairs, with which we can attract leading researchers:

- Douglas L. Gordon Chair in Diabetes and Metabolism
- LPFA Chair in Nutrition
- Marie Edana Corcoran Chair in Pediatric Obesity and Diabetes
- Coypu Chair in Health Wisdom

CONTINUING THE PURSUIT OF EXCELLENCE

The development of significant and life improving findings is the hallmark of the Pennington Biomedical Research Center and its researchers. We achieve this, in part, through aggressive recruitment of leading researchers and a competitive tenure policy that ensure dedication to innovative research. Faculty members at the center can aspire to a maximum of five-year tenure, renewed yearly in what we call a rolling tenure program. In addition, the Pennington Biomedical Research Center must offer first-class research facilities in an environment that is completely conducive to free thought and collaborative research. The result is a most productive senior faculty in terms of acquired funding, successful publication and numerous citations of their work in the scientific literature.

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The Information Center gives researchers access to the latest scientific findings.

Collectively, the faculty has published approximately 5,500 peer-reviewed papers in their careers. These papers have been cited more than 125,000 times, a frequency that is highly reflective of a core of productive and influential scientists.

During the last two years, an aggressive recruiting program has brought to the Center specialists in neuroscience, stem cell biology, skeletal muscle biology, statistical genetics, diabetes, behavior modification, eating disorders and others.
THE INVESTMENT IN EXCELLENCE

IN 1980, a Louisianian named C.B. “Doc” Pennington invested $125 million to create what he envisioned would be “the best nutrition center in the country.” Doc Pennington understood an investment was an infusion of money into a viable enterprise in hopes of a positive return — in this case a return in improved health and longer life for citizens of his state and country, and eventually, the world. Since then we have all grown to understand the concept of continued investment.

Like continued investment with compounded interest, a continued investment in a growth enterprise nets exponential returns over time. This means to achieve the goals Doc set out and the latest goals of our strategic plan, we need to continue to increase the level of funding from all concerns. The Pennington Biomedical Research Center history is clear; the initial research facility sat empty until a steady level of funding was established to meet ongoing expenses.

The reality of federal and private grant awards is that they rarely provide sufficient funds for center overhead and no funds for capital investment. Grants typically cover the expenses of administering the grant itself. In a competitive research environment, where a single biomedical research laboratory using modern molecular genetics approaches may cost $1 million per year to remain functional, we must continually seek unrestricted funds for the ongoing operations of the center. Fortunately the legislature of Louisiana has lately met 20% of the center budget. This percentage must be maintained as the center is successful in winning more and more private and federal funding.

To continue to grow, we also must continually win federal and private grants and recruit world leaders in their fields. It is imperative for the citizens of Louisiana and the legislature to understand that without state support and the contribution from philanthropy, we will not succeed.

IMPACT ON OUR COMMUNITY

Pennington Biomedical Research Center basic and clinical researchers are not only working to discover future knowledge, they are impacting the lives of citizens today. Research advances made at the center are already impacting lives as envisioned by those who built and began work at the Pennington Biomedical Research Center. These advances represent what we set out to do daily — improve health and increase life expectancy.

Unlike many research and academic institutions, we also make it part of our mission, vision and strategic plan to create a positive economic impact on our city, state and region. Why? Because we know that in an environment of limited resources and seemingly unlimited needs, any institution which relies, even in part, on public funds and private donations, can only compete successfully for those funds by providing a greater reward — maximizing both scientific and economic return.
IN CONCLUSION

It is clear that much work and many opportunities are still ahead of us. As we set about planning our bio-imaging center, building our new clinical research center, recruiting top-notch faculty, equipping them with the best labs and equipment available and keeping our eye on our mission, we expect incredible growth and impact in the years to come. In 2004, as we wind up our current strategic plan, we will also complete planning for our strategic plan for 2005 to 2010 — Vision 2010.

The collective vision of our founders, leaders, current faculty and staff is one of a seamless flow of findings from our basic scientists through clinical trials to licensing, technology transfer and, ultimately, marketing for the greater good. The Pennington Biomedical Research Center has already established its place among those in our field and is well on its way to greater recognition of those in allied fields and the public in general. As we continue to grow, we expect to attract even more private and public resources and dedicate them to our mission. We will make new discoveries and gain new intellectual property, which we can leverage to fulfill our goals of contributing not only to scientific knowledge but also to the economic development of our region and state.

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THE BASIC SCIENCE research area continues its expansion. This has encompassed developments in a number of areas including the appointment of additional faculty, the development of new Core facilities, the acquisition of additional funding from federal grants and industry contracts together with new initiatives in training of post-doctoral fellows. However, to the citizens of our city and to our numerous visitors from around the world, the most visible sign of our expansion is the completion of our new Basic Science Laboratory Building, and it is entirely appropriate to dwell on it for a moment. Its 180,000 square feet have been intentionally crafted into open, spacious and interconnected laboratories, core facilities and meeting areas designed to foster both planned and spontaneous conversations and exchanges of discovery. Engineers and architects have collaborated with our researchers to create a highly engaging and exciting environment for research, learning and knowledge sharing.

As we move to a new phase in the basic science research program with the opening of the new building, it is also worth highlighting some of the major research findings of our first 15 years leading up to this milestone. These include:

- The identification of a specific ion channel that responds to dietary fat
- The lytic peptide approach to treating certain cancers
- The demonstration of genetic linkages to abdominal obesity and to the response to exercise
- The identification of a peptide that regulates dietary fat ingestion
- Insight into the role of afferent neural signals from the gastrointestinal tract on feeding behavior
- New insight into the molecular genetics of thermogenesis
- Identification that the agouti protein promotes adipogenesis

In the modern scientific world, teams of experts are needed to stay competitive and at the forefront of developments. With the expansion of our facilities, the current faculty and the new faculty we are recruiting, we can be very optimistic that the progress over the last 15 years is only a forerunner of many more exciting things to come.
THE CLINICAL RESEARCH at Pennington Biomedical Research Center is truly a spectrum – it spans studies in our inpatient unit, our outpatient unit, and to studies in the field as far away as North Carolina. Since our last Scientific Report, we have categorized our clinical research spectrum to include the following four areas: Clinical Physiology and Metabolism, Clinical Trials, Health Behaviors, and Epidemiology and Public Health.

Our clinical researchers have yielded new knowledge and impacted many lives during our first 11 years of clinical work. Those findings include:

- Adoption of a lifestyle program can reduce the risk of type 2 diabetes mellitus.
- A diet rich in fruits, vegetables and low fat dairy products can have a blood pressure lowering effect equivalent to medications for hypertension.
- Studies for NASA yielded promising results to prevent kidney stones and bone loss during prolonged space travel.
- Being physically fit is advantageous in the body’s ability to adapt to dietary fat increases.
- Through our long-standing partnership with the Department of Defense, we have collaborated with USARIEM to improve the understanding of warfighter energy and water requirements, to develop improved operational rations and to improve nutritional intake of recruits during basic combat training.
- Characterization of the nutritional status of the residents of the lower Mississippi River Delta
- The obesity epidemic tracks with the use of high fructose corn sweetener substituted for cane sugars in the food supply. Since the body does not recognize this carbohydrate source in a way that is equivalent to other sources, this could be one factor contributing to the rise in rates of overweight and obesity in the US.

Reviewing our clinical research activities, it is clear why we are, quite literally, bursting at the seams in the clinical area. To date, more than 8,000 local citizens have volunteered for our clinical trials, and the number is growing rapidly. To maintain this pace and our lead in clinical research, we anticipate not only larger clinical research facilities, but expansion to satellite operations, perhaps in conjunction with hospitals and medical clinics. Community-based facilities, public health clinics and schools are also likely to be sites for our research efforts.

The future of the Pennington Biomedical Research Center is full of promise. We envision an expanded clinical research portfolio with a full spectrum of activities from genetic, molecular, epidemiology and physiologic studies, through clinical trials and behavioral research to classical epidemiologic and public health approaches. It may seem like a lot has been accomplished in 15 years, but we’re just getting started!
ECONOMIC IMPACT
MESSAGE FROM THE ASSOCIATE EXECUTIVE DIRECTOR

WITH THE NEW Basic Science Laboratory Building a reality, the center now has the most modern, state-of-the-art research facility into which we will recruit world-class scientists in nutrition and preventive medicine. This facility increases the center’s research space by more than 75 percent. Moreover, we are confident that within a short time we will break ground on a new Clinical Research Building that, in combination with the just-completed Basic Science Laboratory Building, will more than double the center’s research space since the beginning of 2003.

The Pennington Biomedical Research Center has established itself as an important player in nutrition and preventive medicine research on the national and international scenes. While this fact is recognized more and more by those in our community and state, what perhaps are less recognized are the financial benefits that accrue from the center’s scientific accomplishments.

The $10 million of general fund support that the center will receive from the State of Louisiana in fiscal year 2003 – 04 is expected to generate an additional $35 million of federal and private grant and contract revenues, resulting in a $45 million operating budget. To put it another way, for every dollar the state invests in the center this year, the center will bring in $3.50 from other sources, the vast majority of which will flow into the state from entities outside its borders, creating new wealth in Louisiana. This money circulates through the Louisiana economy, producing what is called the economic multiplier effect.

Applying the multiplier effect to the center’s anticipated $45 million operating budget, the center will have a total impact on Louisiana’s economy of $85 million, with $66 million of that resulting from grant and contract revenue that flows almost exclusively from out-of-state sources. If we also consider the $42 million construction costs associated with the Basic Science Laboratory Building, the center’s impact on the state’s economy increases to an estimated $164 million in the current fiscal year.

Using the same multiplier effect, we estimate that as of its opening in 1988, the total economic impact on the local economy of the Pennington Biomedical Research center has been $748 million.

It is clear that the scientific success of the Pennington Biomedical Research Center brings significant financial success as well, not only for the center but also for the Baton Rouge area and all of Louisiana. The investment made by the state of Louisiana in providing operating support to the center has produced a strong financial return, one that can be objectively measured and demonstrated. As the center continues its growth, we feel certain that this return on investment will not only continue, but will grow stronger.
MANY YEARS AGO, my grandfather had more than a dream, he had a vision. It is difficult to express fully the wonderful experience I had watching him bring that vision to life — being witness to it and joining him and my family to help nurture it. How rare and inspiring an individual he was, leaving behind him a vision so clear, so well developed that hundreds, many from around the world, now strive to fulfill it. Stepping into a role once reserved for and so ably carried out by him, I am thrilled and humbled. 

The Pennington Medical Foundation, created in 1980 with a generous gift from my grandfather and grandmother, C.B. “Doc” and Irene Pennington, to Louisiana State University, was dedicated to achieving their bold vision to build “the biggest and best nutrition research center in the country.” Through time, both Doc Pennington and the foundation became dedicated to an even greater vision, to create and maintain a world-class center of excellence in research.

We are proud to witness the latest results of continued foundation investment in that vision — the completion of a splendid, state-of-the art Basic Science Laboratory Building. This $42 million dollar facility is now a highly visible and beautiful landmark in both our local community and in the scientific community. It will be the center of leading scientific discovery for years to come and brings the Pennington Medical Foundation total investment in the Pennington Biomedical Research Center to more than $123 million. Our goal is simple: to enable the Pennington Biomedical Research Center to maintain and expand its role as an international leader in nutrition research and to be a significant contributor to Louisiana’s economic development. We are proud of our successes at the center — both past and future — and will continue our commitment to the highest level of scientific excellence in health and nutrition.

Paula Pennington de la Bretonne
CHAIR

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The Pennington Biomedical Research Foundation’s mission is to support the faculty development of the Pennington Biomedical Research Center, primarily through raising and providing funds...