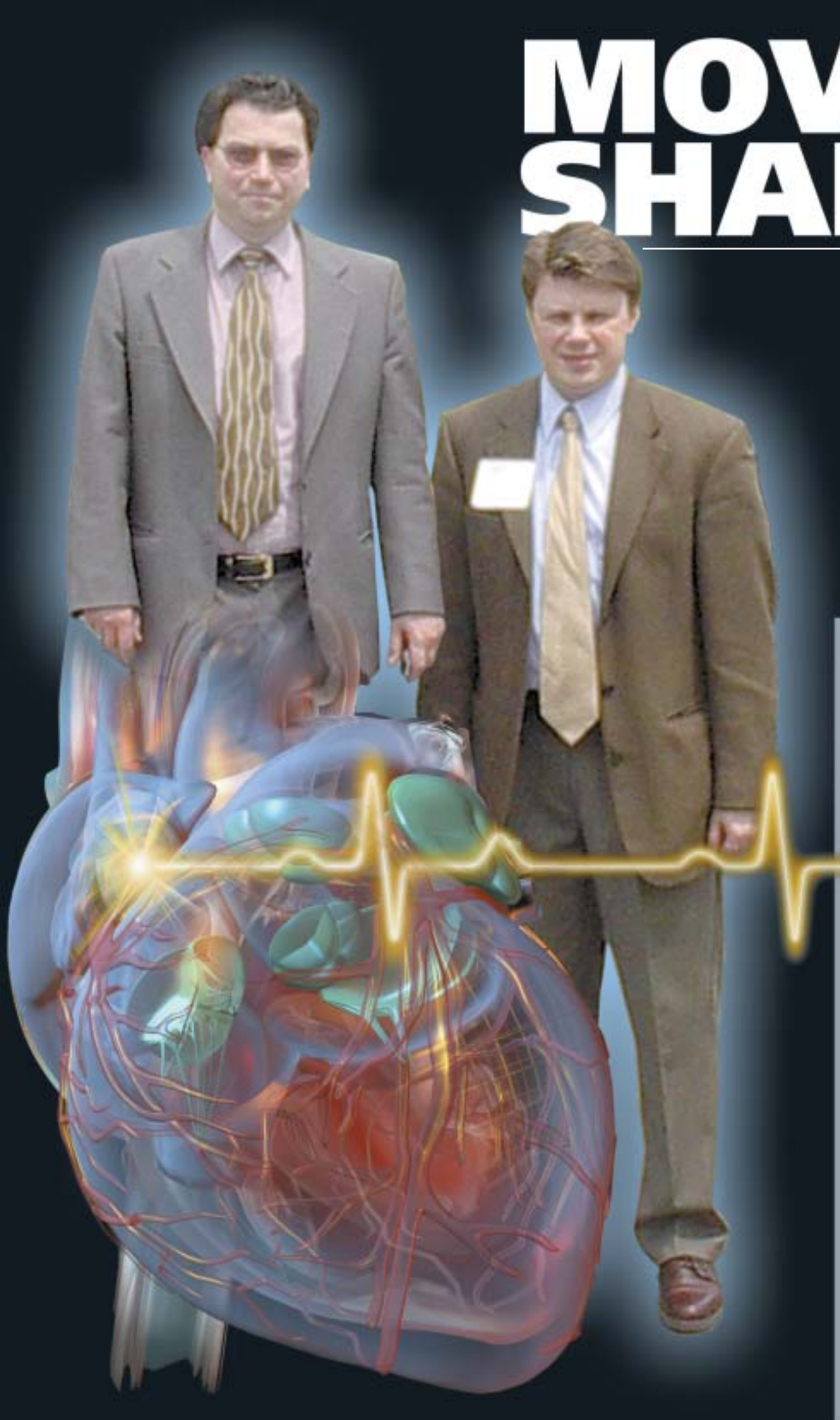
MOVERS & SHAKERS

December 2004
NHBiotech.com



NEW HAMPSHIRE LIFE SCIENCES

Pictured: Vladimir Kudriavtsev & Vladimir Polyshchuk of BioSignetics Corporation

What Does It Take to Make Change?

Trade missions to Ireland and Canada.
Teleconference with Mexican wholesaler.
Expanded manufacturing space.
Export license.
International letter of credit.

Doing business in other countries requires far more than the simple exchange of currency. That's why PSNH has been working closely with state agencies, attending trade missions, underwriting new programs, supporting trade show attendance, and more. As our economy becomes more global, New Hampshire companies are finding new markets for their products and services. As they say, change is good. For more information, contact Pat McDermott, PSNH Economic & Community Development, 800-490-7764, or find us online at psnh.com.

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NHBiotech.com
Movers & Shakers is a newsletter of the NH Biotechnology Council

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ARTICLES

Published by
Seacoast Newspapers
111 Maplewood Avenue, Portsmouth, NH 03801

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Benefits of Regional Economic Development

Public–private partnerships are becoming a new way of doing business in the 21st century. Many states are actively involved in initiatives to enhance their science and technology resources, in order to stay competitive in educational programs, job training, job creation and business development. These initiatives include partnerships among colleges, companies and government and often include a significant amount of state or federal funding. Several states, like New Jersey, Ohio, and California, have established research centers for key scientific areas (most recently for stem cell research). This research has the potential to impact the lives of millions of people suffering from debilitating diseases. Other universities, including MIT, Stanford, Harvard and the Univ. of Minnesota, have similarly established large consortia of academic labs, hospitals, clinics, and companies working on stem cell biology. These consortia comprise hundreds of investigators working on different aspects of the same problem. With that amount of manpower and the money that it can attract, these group initiatives should be highly successful.

So where does that leave smaller states, such as New Hampshire? How do we compete in the world of limited funds and steep competition? The key is to identify the state's strengths and to enhance these resources through cooperative efforts, both inside the state or through regional development efforts. If we don't have a resource readily available to us, let's partner with some one who does! Nowhere is this approach more important than in strengthening university and industry ties and working together to mutual advantage. The good news is that programs are underway in our state to adopt this group approach. These programs include UNH's EPSCoR partnership and the NH Biotech Council's BioSeacoast Life Sciences Cluster initiative. Farther reaching programs include those of the International Northeast BioSciences Corridor, (reaching from New England into the Maritime Provinces of Canada and Quebec) as well as Northern New England life sciences initiatives between VT, NH and ME.

The goals of these initiatives are not to create a new level of bureaucracy or different "hats to wear", but to form teams of people with similar interests that can affect NH's economy and make our state the best it can be in a very competitive and technological world. Wow! That is quite a lofty endeavor, and no one respects the difficulties involved more than we do. But, we are also respectful of the new way of doing science and obtaining funding. Partnerships, consortia, clusters, regional development - all are being used successfully to the benefit of other states. These group efforts have significant advantages in achieving scientific results and in obtaining federal funding. It is not easy to create these partnerships, nor to make them productive. However, the consequences of not working together on shared goals are also worthy of careful thought and consideration.

Please enjoy reading about some of the initiatives in our state that are included in this issue. This is virgin territory for us all and much needs to be done. But, the excitement is real; the potential is enormous; and the fun is just beginning!

Lulu Pickering, Ph.D.
President, NH Biotechnology Council
President, Informagen, Inc., Newington, NH

A new digital stethoscope

Featured company – BioSignetics Corporation

By Marcia Howell Freer

Michael S. Brown & Joseph Goldstein, Winners of the Nobel Prize for Medicine in 1985 said, "If we wait for susceptible individuals to develop symptoms before deciding to treat, the earliest symptom is often death. The challenge is to develop non-invasive screening methods." That is exactly what BioSignetics Corporation of Exeter, NH is trying to achieve.

With the desire to enable patients and doctors to catch heart disease early, they determined they needed to do two things: 1) have inexpensive, non-invasive and widely available diagnostic tools so that people would be able to test themselves on a regular basis, especially at the first signs of symptoms, and 2), develop technology that is sensitive enough to detect very weak signs of the impending disease.

According to Vladimir Kudriavtsev, Ph.D., senior vice president of marketing and technology at BioSignetics, audio signal acquisition is the key to collecting functional heart data and is traditionally done by way of a stethoscope or similar kind of acoustic sensor. One problem is finding a way to filter out all extraneous noise and be able to clearly detect subtleties in early heart disease. The other problem is in learning to differentiate these abnormal heart sounds and know what disease the patient has.

To address these issues, BioSignetics has developed the "Digital Stethoscope," which is a hardware / software product designed to characterize heart mechanical imperfections and to train physicians and medical students in reading the sounds gathered through an electronic stethoscope.

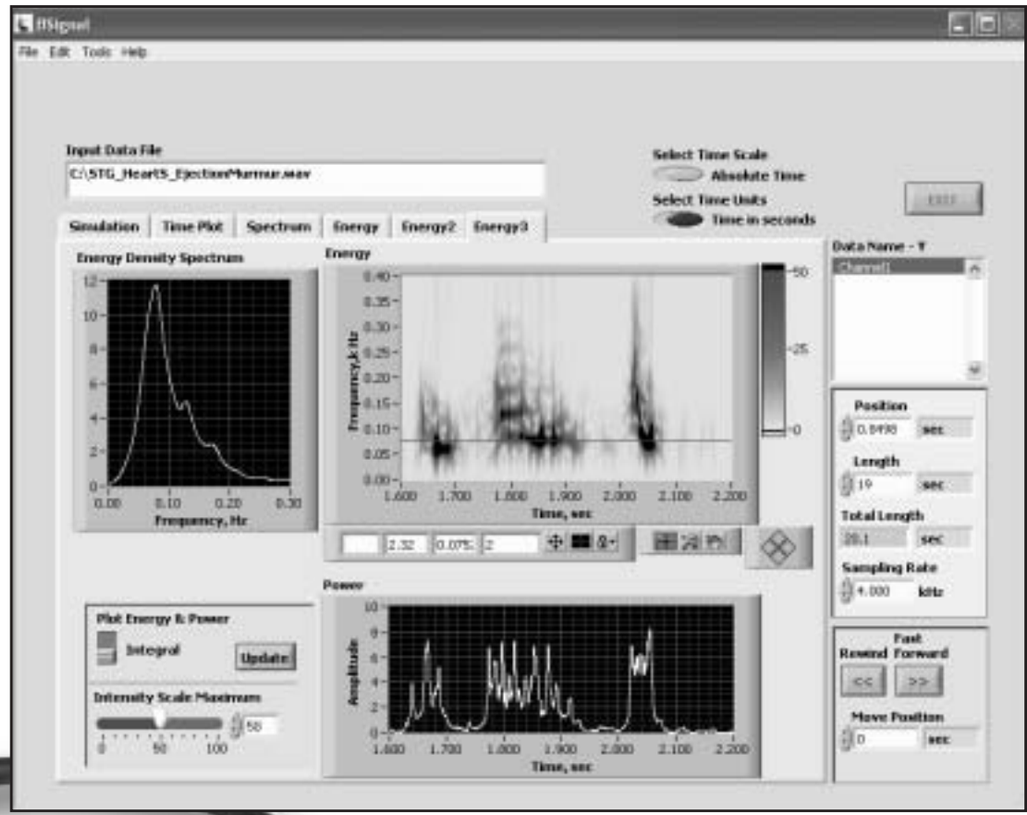
The signal is transmitted to a computer where futuristic mathematical algorithms translate heart beat sounds in time and rhythm to create a self-referencing digital image or "energy signature" of the patient's heart. This signature can then be compared to over 100 pages of energy signatures and phonocardiograms of documented heart conditions, such as stenosis, regurgitation, splits, clicks, gallops, snaps, rumble, valve prolapse, murmurs, septal defect, patent ductus arteriosus, atrial septal defect, etc. This database, known as the Atlas of Heart Sound Diseases, provides a tool that can be used to reference early warning signs, thus providing a more accurate heart auscultation diagnosis.

The "Heart Energy Signature" method and format is patent pending, and is undergoing clinical trials with the University of Cincinnati to test congestive heart failure detection. Just this month, BioSignetics' low cost, low end phonocardiograph monitor software received FDA clearance. This is only the beginning.

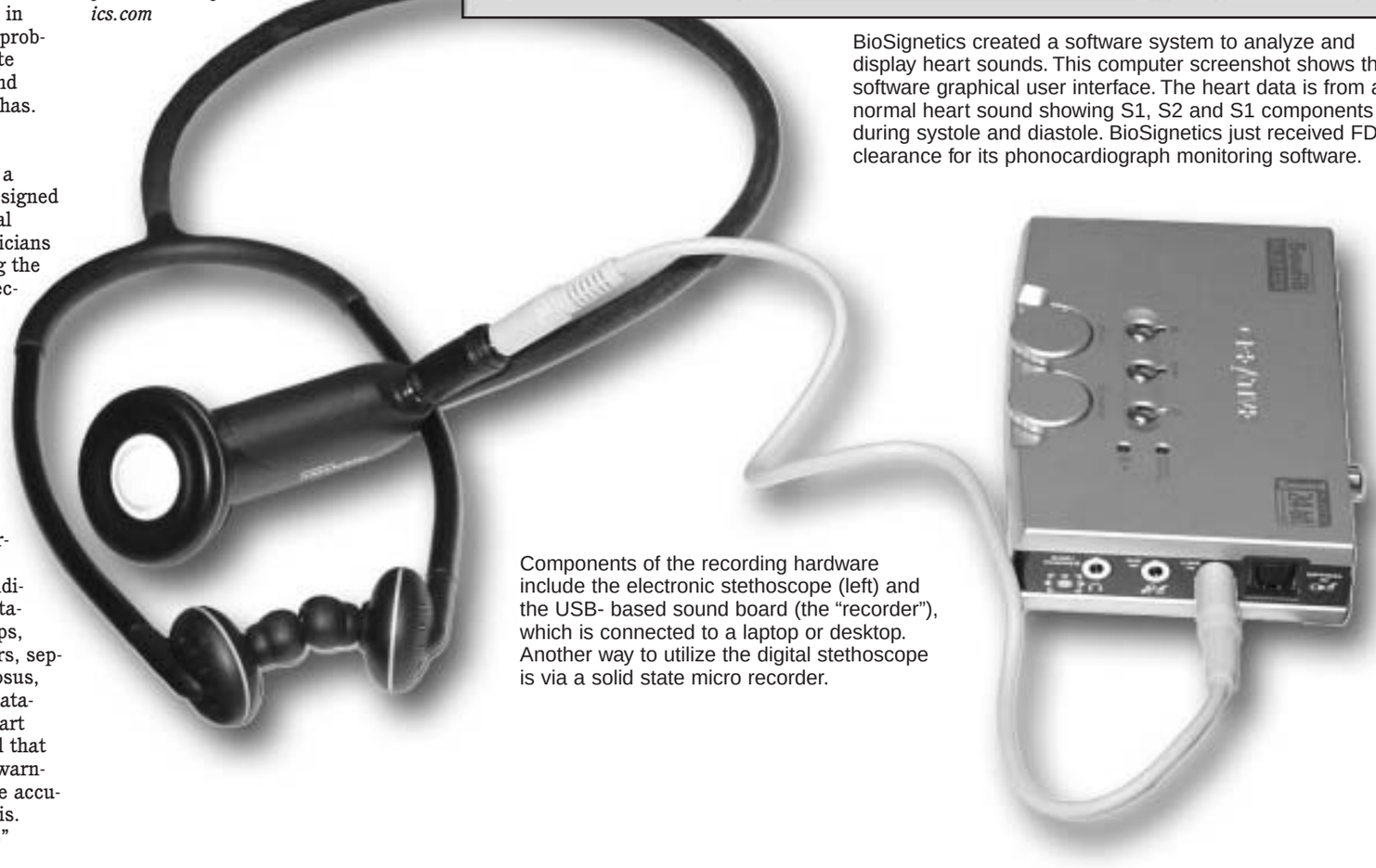
In an effort to fund continued research on this new technology, BioSignetics entered the Advanced Technology Program, aimed to lead to revolutionary new products that can compete in rapidly changing world markets, sponsored by the US Congress and managed by NIST. Their research proposal made it into the semifinalists in the nationwide competition (51 out of 952 proposals), but unfortunately, was not funded.

BioSignetics is an early stage start-up company with developed technology, intellectual property, but limited resources. The company is now working on establishing global partnerships, product quality assurance, a sales network, and is actively looking for VC funding and research collaborations with local teaching hospitals and practicing physicians.

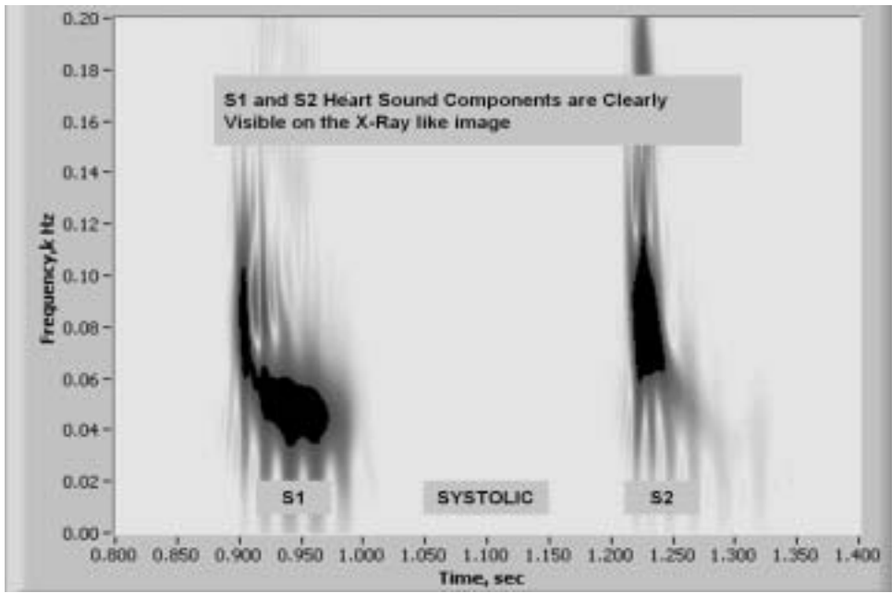
For more information, go to www.bsignetics.com

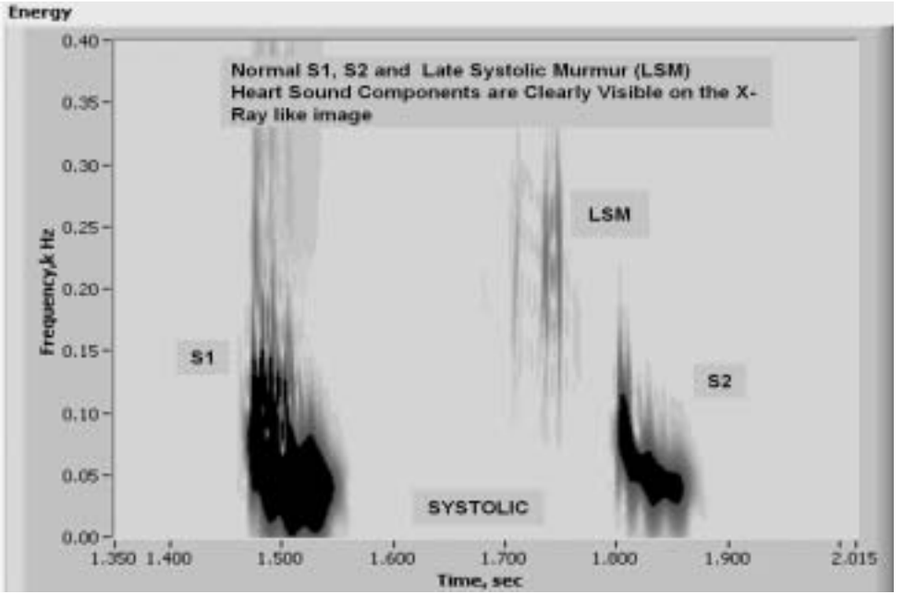


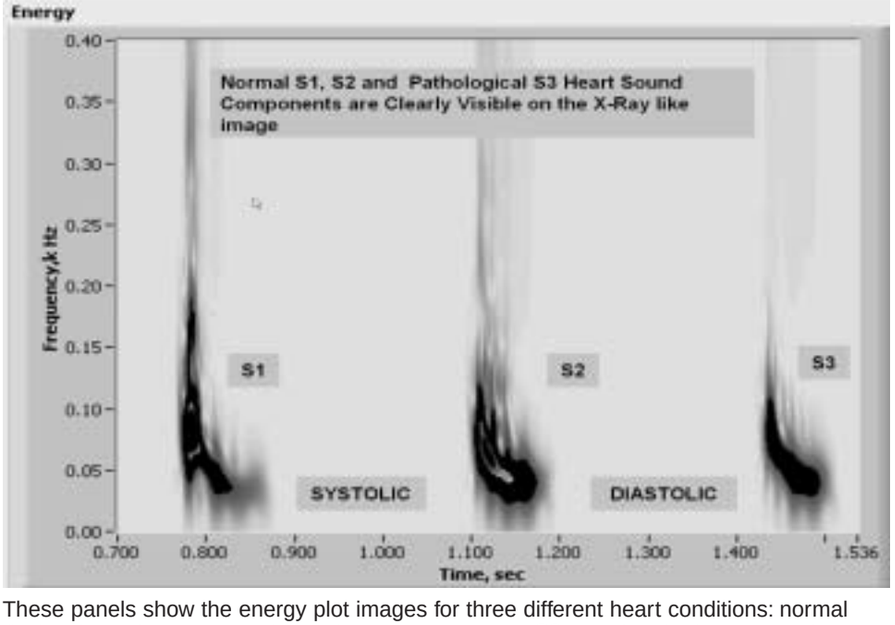
BioSignetics created a software system to analyze and display heart sounds. This computer screenshot shows the software graphical user interface. The heart data is from a normal heart sound showing S1, S2 and S1 components during systole and diastole. BioSignetics just received FDA clearance for its phonocardiograph monitoring software.



Components of the recording hardware include the electronic stethoscope (left) and the USB- based sound board (the "recorder"), which is connected to a laptop or desktop. Another way to utilize the digital stethoscope is via a solid state micro recorder.







These panels show the energy plot images for three different heart conditions: normal (top), late systolic murmur (middle), and an abnormal S3 condition that may reflect impending Congestive Heart Failure (CHF) in patients that are over 40 years old. BioSignetics is beginning its first clinical trial the end of November.

Three European-born inventors start company in Exeter, NH

Vladimir Kudriavtsev, Ph.D., Vladimir Polyshchuk, Ph.D., and Olga Saynina, M.A., MBA all met and worked together at the University of Akron in Akron, Ohio between 1990-1995.

The time they spent together made a lasting impression. "We got our idea of heart health monitoring back in 1995," explained Kudriavtsev. "At the time we were working on different grants from NASA, and we thought if we can monitor helicopters, then why not a human heart? How hard can it be to transition aerospace grade technology to finally serve to protect human life?" For the next 6-8 years or so, this idea incubated, and their work and life experiences prepared them to combine their synergy and find solutions.

In 2004, the three decided to reconnect and start a new company. They chose New Hampshire, where Polyshchuk had been working for Ingersoll-Rand. Said Kudriavtsev, "This area (Southern New Hampshire) offers us close proximity to Boston with its vast research libraries, very qualified human resources, state of the art medical facilities and venture capital networks. New Hampshire also offers lower costs of operation, lower costs of living and higher quality of life. We also like the state motto of New Hampshire - Live Free or Die - very much, as our company's objective is to make life carefree as long as possible.

The focus of their business venture was born out of research Saynina had worked on in California. Her work gave her a keen awareness of the prohibitive costs involved with the treatment of heart diseases. Kudriavtsev, Polyshchuk and Saynina determined their new company, named BioSignetics Corporation, would have the goal of reducing costs of medical procedures through early screening and prevention. Their first project: the heart.

The digital stethoscope concept includes hardware (sound sensor and recorder) and computer software. Shown here are three different examples of the sound sensor devices, or stethoscopes.

Enhancing NH Resources through Regional Development

The BioSeacoast Life Sciences Cluster

By Marcia Howell Freer

Hundreds of businesses involved in the life sciences industry in New Hampshire, Southern Maine, and Northern Massachusetts are located within a 60-mile radius of Portsmouth, NH. Networking these companies together can create good economic synergy for this region.

A new endeavor, known as the BioSeacoast Life Sciences Cluster, is being developed to help this region work together to more efficiently network resources, increase purchasing power, expand existing businesses, and attract new start-up companies to the area.

Within the cluster, working groups will collaborate to define the needs of various industry segments and to create action plans with milestones for implementation. Action items include: creating a BioSeacoast brand, improving marketing of the region, workforce development, business development, innovation/incubation, strengthening academia-industry ties, and expanding the resources available in the cluster to northern regions in NH, ME and VT (North Country Outreach).

"It just makes sense to combine our efforts," says Lulu Pickering, President and Research Analyst of Informagen, Inc. of Newington, NH. "With all of the resources and talent available to us in this area, with strong academic institutions, and with state-of-the-art manufacturing and research facilities, working together enhances our opportunities for growth and will put us on the map to be recognized for our successes."

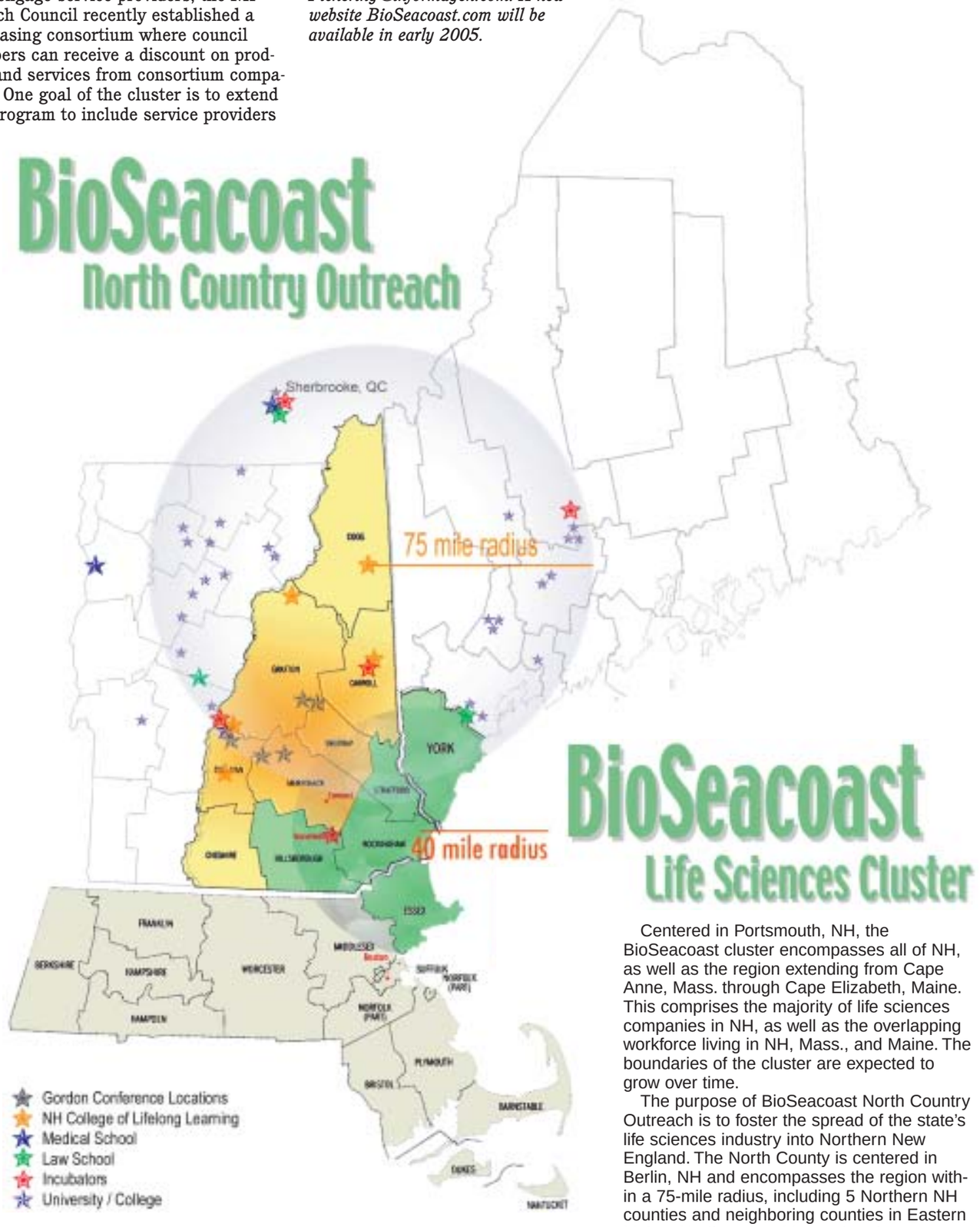
There is a lot of potential embodied in the cluster. Many companies located here have operations including both national and international business; special training programs are expanding to educate individuals in high school up through employees who want to upgrade skills and work in industry, and new job opportunities are slowly opening up as companies like Lonza Biologics expand.

One goal of the cluster is to improve the region's image to include its recognition as a "place where professionals live and work." There is a very fluid pattern of commuting across state borders in the BioSeacoast region, as people living in one state commute to work in a bordering state. State boundaries are becoming much less important as the industry and workforce continues to expand.

Whether it is to organize and participate in regional and national trade shows, to match-make and seek partners, or to aggressively seek federal funding, the combined efforts of all members in the cluster can create a critical mass that would be next to impossible for a single company to achieve trying to "make it" on its own. "By combining resources, the region will have a much stronger story to tell and a better ability to make things happen," says Pickering.

To engage service providers, the NH Biotech Council recently established a purchasing consortium where council members can receive a discount on products and services from consortium companies. One goal of the cluster is to extend this program to include service providers and businesses located throughout the cluster.

For more information on the BioSeacoast Life Sciences Cluster, e-mail Pickering@informagen.com. A new website BioSeacoast.com will be available in early 2005.



Centered in Portsmouth, NH, the BioSeacoast cluster encompasses all of NH, as well as the region extending from Cape Anne, Mass. through Cape Elizabeth, Maine. This comprises the majority of life sciences companies in NH, as well as the overlapping workforce living in NH, Mass., and Maine. The boundaries of the cluster are expected to grow over time.

The purpose of BioSeacoast North Country Outreach is to foster the spread of the state's life sciences industry into Northern New England. The North County is centered in Berlin, NH and encompasses the region within a 75-mile radius, including 5 Northern NH counties and neighboring counties in Eastern Maine, Northeastern Vermont and Sherbrooke, Canada.

Partners in Innovation

BioSeacoast Life Sciences Cluster

By Lulu Pickering, President, Informagen, Inc.

For six years I have worked with the New Hampshire Biotechnology Council to develop an industry identity for biotech and biomedical sciences in New Hampshire. I have found that New Hampshire is often underestimated for its technology strengths and professional expertise. Excellent science is done here, and there is a large endogenous workforce of highly trained and well-qualified people. One weakness, I believe, is that no one seems to know about our strengths, and we have not done a very good job of marketing our assets. Yankee ingenuity is real, but so is New England reserve and independence!

Last Spring, I engaged people from several organizations to begin to develop New Hampshire's first technology cluster for the life sciences. This is a workforce and economic development initiative based upon the life sciences industry in our region. This includes disciplines in medical devices, biomanufacturing, diagnostics, medical informatics, biotechnology, and biomedical engineering, among others.

I was very pleased to work with a group of dedicated and forward-looking people, who share a similar interest in trying to get New Hampshire on the map, so the rest of the world can come to appreciate what we have to offer. The idea is to join forces and cooperate on shared programs within the geographical region of the cluster; much the way other states and regions around the world have created technology clusters to the benefit of their local economies and workforce.

This endeavor has seen great progress this year, as well as significant disappointment. We were not able to obtain federal funding through an NSF grant proposal we filed in May (only 15 of 222 proposals were funded). On the other hand, we have been extraordinarily successful in establishing a partnership of people from companies, government and academic institutions dedicated to helping this region work together on shared interests.

The idea of establishing a cluster is not to be able to say "Me, too. I have one, too!" A functioning cluster can impart very real advantages in business development, job training, educational outreach and the ability to compete effectively for federal money. If marketed regionally, nationally and globally, the cluster can help establish New Hampshire as a place where professionals live and also work in cutting edge fields of medical science and biotechnology. New Hampshire's image can start to shift from a small, rural state with great natural resources to a state recognized for the diligence and accomplishments of its people and their companies.

These are very exciting and difficult times. Finding sufficient funding will continue to haunt our efforts, but the future is what we make of it, starting now!

Quotes from some of the partners who participated in the BioSeacoast Partnership for Innovation proposal to the National Science Foundation:

"Funding is very important to keeping our momentum going to establish the state's first life sciences cluster."
– Stuart Arnett, Director, NH Division of Economic Development

"I am please to see the success of the NH Biotechnology Council / Informagen in creating a biotech industry identity in our region and in creating several consortia to define problems and innovate solutions." *– Governor Craig Benson*

"BioSeacoast is one of the most comprehensive partnerships ever initiated in our State and can have a major impact on workforce development in our region."
– Thomas Wisbey, President NHCTC Manchester/Stratham/Portsmouth

"In my experience, no other group in our region has shown the initiative, commitment or enthusiasm in networking large numbers of people together and creating new opportunities for them to learn form one another and work together to mutual benefit." *– Linda Holway, Co-op Sales Manager, Portsmouth Herald*

"This group has worked very hard to assess the strengths and weaknesses in the life sciences industry here and has produced an impressive strategy to move forward. We are excited about taking advantage of the opportunities they develop for us and sharing the ones we can develop for them."
– Dawn M. Wivell, Director, NH Office of International Commerce

"Genesis is a venture fund management company that is in the process of raising a venture fund to invest in life sciences companies. I have made the further personal commitment of joining the board of the New Hampshire Biotechnology Council and assuming responsibility of liaison between that body and the academic community in New Hampshire. In this role I will help further the development of the life sciences in New Hampshire and work to involve the University of New Hampshire and Dartmouth College in the BioSeacoast initiative." *– Davis Farmer, Managing Director*

BioSeacoast Partners in Innovation

Dartmouth College, Technology Transfer Office
Alla Kan, Director
Patti Rich, Licensing Associate

Fisher Scientific International, Inc.
David Della Penta, President and Chief Operating Officer
Robert Forte, Senior VP Business Development
Kristina Isakovich, VP Marketing

Lonza Custom Manufacturing USA
Anne Moschella, Director, Marketing and Communications
Michael Chaffee, VP Marketing

Genesis Biomedical Ventures
C. Davis Farmer, Managing Partner

Informagen, Inc.
Lulu Pickering, Ph.D., president

International Northeast BioSciences Corridor
Paul L. Tessier, President, Former Representative for the State of Maine
France Dionne, Quebec Delegate to New England
Janice T. Bourque, past president of the Mass. Biotechnology Council

NH Biotechnology Council (NHBC)
John DiNapoli, State Industrial Representative
C. Davis Farmer, Managing Partner, Genesis Biomedical Ventures
Kevin M. Farrell, partner, Pierce Atwood
Brian M. Gallagher, Business Development Manager, DACON Corporation
Valerie J. Mahar, Director, Emerging Technologies Center at Pease
Anne Moschella, Director, Marketing and Communications, Lonza
Paula C. Newton, Industry Specialist, Intl. Trade Resource Center
Tim Noonis, Economic Development Specialist, Unitil Corporation
Lulu Pickering, President, Informagen, Inc.

NH Community Technical College
Thomas Wisbey, President, NHCTC Manchester/Stratham/Portsmouth

NH Department of Economic Development
Stuart Arnett, Director

NH Office of Business and Industrial Development
Roy C. Duddy, Director

NH Office of International Commerce/ International Trade Resource Center
Dawn M. Wivell, Director

Seacoast Newspapers
Linda Holway, Co-op Sales Manager

South East England Development Agency
Chris King, VP, East Coast

Thomas M. Teague Biotechnology Park
Clyde Dyar, Director, past Board Member, Biotechnology Association of Maine

University of New Hampshire, Hubbard Center for Genome Studies
William Gilbert, Hamel Professor of Innovation and Technology
William Trumble, Dean, College of Life Sciences and Agriculture

Workforce Opportunity Council
Cindy Naiditch, VP Operations
George Copadis, President of International Commerce

The power of public–private partnerships

NH becomes an EPSCoR state

John Aber, vice president for research and public service at the University of New Hampshire, led the charge leading to NH receiving federal status as an EPSCoR state on August 1, 2004. EPSCoR refers to the National Science Foundation's Experimental Program to Stimulate Competitive Research. EPSCoR's goal is to maximize science and technology resources through partnerships among universities, industries, state and federal governments. Aiding researchers and institutions in securing Federal R&D funding will help develop a state's research infrastructure and advance economic growth.

EPSCoR focuses on those states that have historically received lesser amounts of federal research and development funding and are committed to developing their research bases and improving the quality of science and engineering research conducted at their universities and colleges. Including New Hampshire, the program operates in 24 states.

EPSCoR is managed at the state level by a planning group drawn from business, government and academia. In addition to NSF funding, EPSCoR opens the door to research dollars from the Department of Defense, DEA, and NASA, among others.

According to John Aber, New Hampshire was awarded a $200,000 planning grant in August to assess the state's strengths in science and technology, as well as those areas "ready to make a jump."

The planning group has begun work on a science and technology report to be completed July 1, 2005, which will guide the future program. It will also include a comprehensive statewide analysis of existing barriers and possible solutions to improve research competitiveness, as well as determine science and engineering focal areas that represent exceptional opportunities.

"New Hampshire is poised to make significant strides in public-private partnerships to support economic growth," says Aber. "The goal of the New Hampshire EPSCoR program is to maximize the potential of science and technology resources and use those resources as a foundation for this growth." EPSCoR provides funding in three key areas: infrastructure improvement, research and educational grants and outreach initiatives. Potential resources are up to $9 million over 36 to 48 months.

Many EPSCoR states have used their funding to advance or begin new initiatives that have benefited their economies. "EPSCoR will allow us to infuse money into research areas and new programs that best meet the need of New Hampshire companies and the state," Aber says. "It will also foster change in educational programs and practice, and redefine research opportunities for our graduate and undergraduate students. Public and private sectors will be sharing and supporting common goals."

For more information on EPSCoR and funding opportunities, visit the program homepage at http://www.epscor.unh.edu.

*BIO***CONNECT***NH*

A proposal of the Workforce Opportunity Council to enhance biotechnology in our state

Cindy L. Naiditch, vice president, operations at the Workforce Opportunity Council, recently filed the BioConnectNH proposal for funding under President Bush's High Growth Job Training Initiative. The proposal addresses challenges cited by project partners as critical to the continued growth and sustainability of the biotechnology industry within New Hampshire. Recruitment, education and training issues are simultaneously addressed that connect systems with employers and workers and build upon the synergy of all three to develop an infrastructure to sustain future industry growth.

- A NHbioscience web portal connected to NHeconomy (the state's web-based economic development clearinghouse for NH business & industry) will be developed and sustained. A new biotechnology student organization will also be developed and will have a website linking to the NHbioscience portal.
- A Biotechnology Industry "pack & play" PowerPoint presentation will be developed to bolster industry awareness, targeting economic development corporations, high school guidance counselors, and others in the public sector who are in a position to promote biotech industry opportunities in NH.
- A dislocated worker scholarship component will recruit former Information Technology workers and others to receive biomanufacturing certificate programs from the NH Community Technical College System.
- To build capacity at the Secondary and Community College levels, twenty secondary teachers from rural areas of the state will receive training and biotechnology kits & curriculum that will enable them to offer biotechnology classes in rural regions where currently such offerings are non-existent.
- There are seventeen (17) high schools in the state that provide some level of biotechnology curriculum; this project will expand that number to 37 - significantly broadening the number of students to benefit from "hands-on" experience in and exposure to the biotechnology industry and the career opportunities within it.
- Bow High School (an advanced biotech-education center) will be upgraded to the level of a "mini-manufacturing" environment; enabling students to actually produce DNA strands for the new schools.
- Four hundred (400) students will have the opportunity to apply the knowledge they have acquired from Biotech Career days and in-school application at a biotechnology Expo. They will have the opportunity to compete for twenty scholarship seats in a biotechnology internship course developed by the NH Community College system.
- NH's Biotechnology Pathway will be enhanced with the inclusion of additional programs at the Post-Secondary level.
- The NH Community Technical College's Center for Emerging Technology will develop a series of "short courses" that are a direct result of input provided by the partner businesses through incumbent worker training initiatives.

*BIO***CONNECT***NH* Partners:

Industry Partners/Employers
Lonza Biologics
Stryker Biotech
Glycofi
Elliot Health System
BioConcept Laboratories
TissueLink Medical

Educational Partners
NH Community Technical College System
The Biotechnology & Education Training Center at Pease
NH Dept. of Education's Eastern Region Partnership
Bow High School
20 rural high schools across the state

Economic & Workforce Development Partners
Workforce Opportunity Council, Inc.
NH Biotech Council
NH Works Centers
NH Department of Resources and Economic Development
Workforce Designs, Inc

A student training in the biotechnology lab at the Pease Emerging Technologies Center (NHCTC)
photo by Tim Dubuque, 2004

NH's forecasted growth in biotechnology

Workforce Opportunity Council's analysis of the workforce

NH's growth in biotechnology and biosciences parallels the national trend. Bioscience, as an industry, has more than tripled in size since 1992, with revenues increasing from $8 billion in 1992 to $27.6 billion in 2001 (Biotechnology Industry Organization). Nationwide employment in pharmaceutical and medicine manufacturing is projected to increase by 68,000 jobs between 2002 and 2012 (Monthly Labor Review, February 2004).

New Hampshire is a leading biomanufacturing state due to a fundamental shift in the industry away from machinery-based and towards value-added high technology manufacturing and bio-manufacturing. This shift came, in large part, from the decline of the defense industry during the 1980's, which encouraged the creation of small, new innovative businesses by displaced, yet highly-trained defense workers. This shift towards value-added high-tech manufacturing spiked a rise in the biosciences field. Continuously since the last quarter of 2000, employment in NH's bioscience industries has seen an overall steady increase (Economic and Labor Market Information Bureau, New Hampshire Employment Security, based on North American Industry Classifications System codes).

Between 2000 and 2010, it is projected that demand for biomedical engineers in NH will increase 38 percent and demand for physicists, chemists, microbiologists, biological and chemical technicians is projected to increase 17-20% (Economic and Labor Market Information Bureau, New Hampshire Employment Security). These forecasts, coupled with the fact NH's southern neighbor, Massachusetts, is the nation's leading bioscience R&D community, validates that NH is ripe for continued growth in the biotechnology industry.

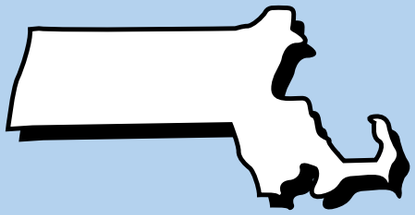
Two biomanufacturing companies, Stryker Biotech and Lonza Biologic, continue to expand their NH facilities - adding hundreds of jobs over the next 2-5 years. To create a skilled "supply" of workers, a pool of job candidates must be prevalent. NH is poised well as the median age in NH is 38.2; the majority falling between ages 25-54 (prime work years.) NH is also growing its population; the state ranks 8th in the nation and 1st in the Northeast in the percentage of population new to the state since 1980. Many of the in-migrants are well educated and in prime work years as well (Preparing NH for the NExT Century, Dr. Ross Gittell, Professor of Economics, University of NH).

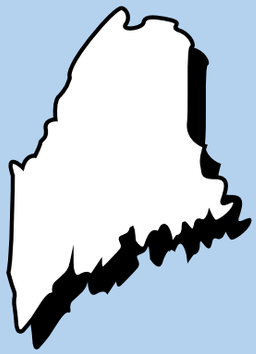
The resulting economic growth potential for NH is high when combining biotechnology training & infrastructure investment with a highly educated workforce in its "prime." Training our current and future workers to meet biotech skill demands is critical to each company's sustainability and growth (leading to NH's continued economic success), and critical for industry retained jobs offering competitive wages & advancement.

For more information, please contact Cindy Naiditch of the Workforce Opportunity Council at 603-228-9500 or cnaiditch@nhworkforce.org.

MASSACHUSETTS CONNECTIONS

The New Hampshire Biotech Council is already enjoying connections with several Massachusetts and Maine companies within the boundaries of the BioSeacoast Cluster region. By mid-2005, the Council had 61 members, including 6 with affiliations to Maine and another 6 from Massachusetts.





REGIONAL INFLUENCE

MASSACHUSETTS

Bradley Pearse, at Univ. of Mass. at Amherst
DACON Corporation
Marc P. Pascucci, at Northeastern University
Middlesex Gases & Technologies, Inc.
Roger Zimmerman of Bowditch & Dewey
Safety Partners, Inc.

MAINE

Allison Tanner of Corning Incorporated
Andrew Cernota of Maine & Asmus
Baker, Newman & Noyes, LLC. (ME & NH)
Chelsea L. Dwinell, of Souhegan High School
Gallagher, Callahan & Gartrell (ME & NH)
Pierce Atwood (ME, NH, MA)

SAFETY PARTNERS

Workplace safety consulting

Safety Partners expands to NH

By Julie Reece, Marketing Consultant

The NH Biotechnology Council is proud to introduce a new member, Safety Partners, Inc. of Lexington, Mass. Safety Partners develops and manages health and safety programs for biotechnology, medical device, pharmaceutical, and diagnostic companies. In October the company announced that it has expanded into the NH market.

"We are delighted to offer our services and expertise to NH biotechnology companies," said Denise Aronson, President of Safety Partners. "This is the logical next step in our company's growth and a wonderful opportunity for us to help NH companies increase workplace safety while contributing to their business growth. We have been very successful with our Massachusetts clients, and would like to bring our cost-effective safety program formula to companies in NH." Several Safety Partners' employees will also benefit from the expansion into New Hampshire with much shorter commutes, which is key to a company that prides itself on employee responsiveness.

Safety Partners is a pioneer in Environmental and Occupational Health and Safety (EOHS) consulting for biotechnology companies. Many small and mid-size biotechnology companies are turning to consultants like Safety Partners to develop their safety programs. Companies can rely on the expertise of Safety Partners' outsourced consulting services, enabling them to focus on other critical issues.

Founded in 1992, Safety Partners, Inc. develops comprehensive chemical, biological, and radiation safety programs, including the procurement, use, and disposal of hazardous materials, as well as programs for animal care and use, guidance on safe facility design, and ergonomics. Safety Partners brings over 50 years of combined experience in implementing safety programs in accordance with local, state, and federal regulations.

Greater Lawrence Technical School Trains Students in Biotechnology

By Marcia Howell Freer

Lawrence, Massachusetts is home to a unique magnet high school. Greater Lawrence Technical School (GLTS) prepares students from their freshman year to graduation to compete in a changing world. Their newest program provides training in the cutting-edge biotechnology field. Students have the opportunity to learn skills that will prepare them to work in research labs, hospitals, pharmaceutical companies, medical offices, and other related industries. They come away with experiences working with sterile media using the spectrophotometer, they learn to type chromosomal cells, perform various computer applications, electrophoresis and data analysis, etc. No question, these skills give students a head start in the entry level technician job market, as well as prepare them for advancement through postsecondary education.

GLTS just completed a $51 million expansion project, which added 91,000 square feet to the school. The expansion included the addition of a new Advanced Science and Technology wing. This high-tech facility is fitted with the same kinds of state-of-the-art equipment found in the Biotech industry. Patricia Bartsch, director of the new Biotechnology career program, says she is "excited and impressed that the school is headed in the direction of biotechnology." She recognizes the value of this kind of opportunity for young students, she herself being a vocational school graduate. With such equipment as an incubator, centrifuge, pipettes, spectrophotometer, Bio-safety cabinet, etc. available to students at this level of education, they will be well prepared to compete in a growing market.

Bartsch lives in southern NH and comes to GLTS with both industry and education experience. She studied animal science at Bristol County Agricultural School, and earned a bachelor's degree at the University of Massachusetts Amherst where she continued her animal science major and minored in vocational education. She received a master's degree in biology from Anna Maria College before working for BASF Bioresearch Corporation for eight years. She has also taught animal science at Bristol County. She considers this new position at GLTS as being a perfect fit with her experience both in the classroom and in the field. This kind of perspective will give her students the advantage of learning about real-world applications of the classroom theory. Bartsch is an asset to GLTS and will keep the program design fresh and cutting-edge.

For more information, contact Patti Bartsch, Biotechnology Dept., 978-686-0194 x 4039 or e-mail pbartsch@glts.tec.ma.us.

A new technology development company in NH

MVS Solutions, Inc. a Portsmouth-based company

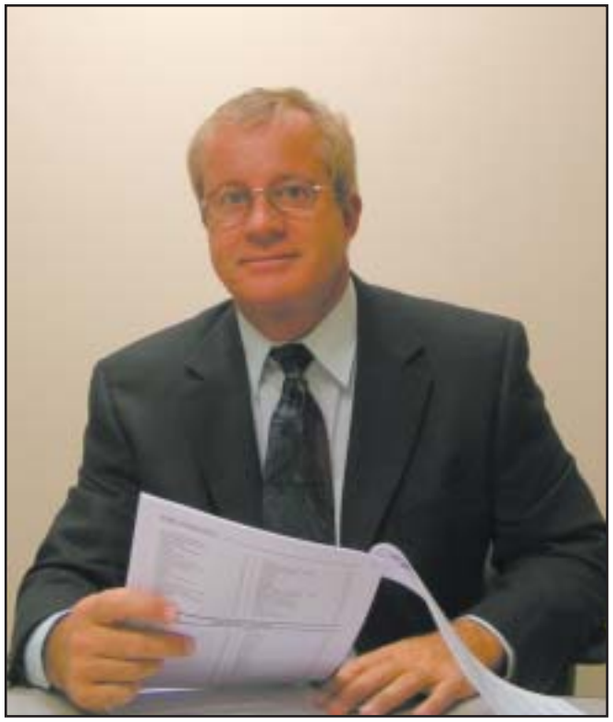
The NH Biotech Council welcomes a new member, MVS Solutions, Inc. of Portsmouth, NH. MVS Solutions is a privately-held research and development company / consulting firm that provides scientific, technical and business assistance to the Biotech, Healthcare and Medical Technology sectors. Their professional services focus includes early stage start-ups, large businesses, government, and nonprofit organizations.

Founded in 1999 by Louis M. Scarmoutzos, Ph.D. and Kevin F. Hahnen, MVS Solutions works with companies to develop and commercialize their technology. MVS brings a unique synthesis of technology development and business acumen to their clients.

Initially located in Melrose, Mass., MVS Solutions moved to New Hampshire, to better support the widening New England biotech corridor. Maintaining close connections to the Greater Boston-Cambridge industry, university and financial sources allows MVS to provide complete solutions to their clients.

MVS' services include developing business plans, technology plans, funding documents, technical due diligence and emerging business and funding strategies for new enterprise development and startup companies.

The partners have over 40 years of hands-on industry experience in creating value for large and early stage companies and focus on companies involved in biotechnology, life sciences, medical devices, medical technology, pharmaceutical, chemistry and healthcare.



Kevin F. Hahnen, Co-Founder and Managing Partner

Louis M. Scarmoutzos, Ph.D., Co-Founder and Managing Partner

BioSeacoast North Country Outreach

By Marcia Howell Freer

The purpose of BioSeacoast North Country Outreach is to foster the spread of the state's life sciences industry into Northern New England.

Northern New Hampshire, parts of Vermont, Maine, and Southern Quebec all make up what is known as the "North Country." The BioSeacoast North Country Outreach initiative is centered in Berlin, NH and encompasses the region within a 75-mile radius, including 5 Northern NH counties and neighboring counties in Eastern Maine, Northeastern Vermont and Sherbrooke, Canada.

Within this 17,600 square mile area, there are 37 colleges, universities, and trade schools, and four incubators. In addition to the education links, the proximity to Southern Quebec's more densely populated areas offers even more resources. Networking the education training programs, incubators, and manpower throughout this area could be very valuable for maximizing the potential of the region's life sciences industry.

NH's Economic Development Division would like to see more expansion in the Northern part of the state. This past year, under the direction of Governor Benson, NH held its first annual business plan competition with over 250K in prizes to encourage new business to come to the state. Woomera Therapeutics, Inc., a North Country biotech business in Lebanon, NH, took away both the grand prize and the award for Biomedical/Life Sciences. This year, in addition to the top three prize winners, the 2005 competition has three subcategories with an award of 30K each: Biomedical/Life Sciences, Manufacturing, and North Country. Incentive programs like this one demonstrates NH's commitment to attracting new business and supporting development in the "North Country."

For more information about this year's Business Plan Competition, go to www.nheconomy.com and click on "Start Up NH 2005 Business Plan Competition"

Dartmouth researchers invent a new method of female contraception

Patented innovation ready for license and partnering

Millions of women have chosen tubal ligation, or sterilization, as a form of permanent birth control. This method of contraception is very effective, but involves surgery.

Inventors at Dartmouth College have been looking for a new way to achieve sterilization in women that meet the following safety and efficacy goals: 1) performance in an outpatient setting with little or no morbidity, 2) elimination of the need for a general anesthetic, 3) elimination of post operative recovery, 4) causing no incisions, 5) cost effective, 6) simplicity and ease of performance, and 7) assurance of highly successful and reliable contraception.

A Dartmouth team, including Paul Manganiello, Professor of Obstetrics and Gynecology, Stuart Trembly, Professor of Engineering who designed numerous medical devices, Jack Hoopes, Professor of Surgery and Radiation Oncology and Doctor of Veterinary Medicine, and Jeffrey Bergeron, Assistant Research Professor of Surgery and Doctor of Veterinary Medicine, have developed an applicator designed to produce tubal occulsions by intentionally causing obstruction in the fallopian tubes.

The Dartmouth inventors received a United States patent (No. 6,485,486) for the new device that they believe offers the potential for an inexpensive, easy and highly consistent method of female sterilization that does not involve surgery. The College is currently looking for a partner from the private sector to bring the device to market.

The new device or "tubal occlusion applicator" is guided through the vagina and cervix and inserted into a fallopian tube using fluoroscopic guidance. Fourteen to 30 days following treatment, a complete tubal occlusion, characterized by fibrotic occlusion of the fallopian tube, is observed.

Although recent preliminary animal testing has demonstrated success tubal occlusion, continued development will be necessary to optimize the performance and clinical applicability of the applicator. The data and information accrued to date will constitute a portion of that necessary for FDA approval for device usage in human patients.

For more information on the invention, entitled "Noninvasive Transcervical Tubal Occlusion (Sterilization) in Women," please contact The Dartmouth College Technology Transfer Office (www.dartmouth.edu/~tto/) at 603-646-3027 or e-mail technology.transfer@dartmouth.edu

Strengthening Maine - NH Ties

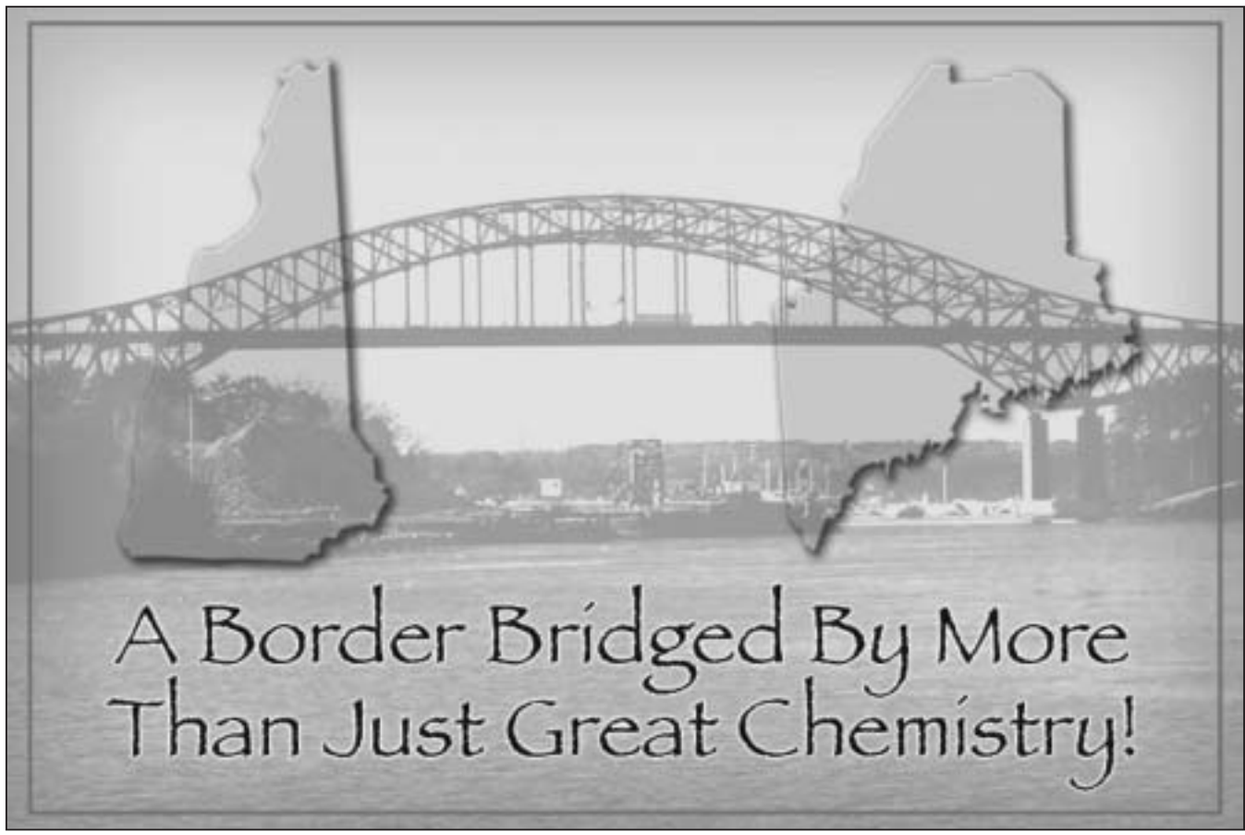
Northern New England Life Sciences

"New Hampshire has initiated a number of programs to strengthen the ties between the State of Maine and the State of New Hampshire," notes Paul Tessier, president of the Intl. Northeast Biosciences Corridor. The New Hampshire Biotech Council works closely with Maine groups, such as the BioCorridor, in order to share resources and to advance programs for mutual advantage. Paul Tessier believes that. "These cross-border interactions will greatly benefit the underlying industry and workforce." Paul has served as a representative in the legislature for the State of Maine and is on the board of the Biotechnology Association of Maine.

One of these shared programs is the joint marketing of the New Hampshire and Maine biotechnology industries at annual tradeshows. "The connection between the biotech councils of Maine and New Hampshire helped our states be well represented at the BIO tradeshow held in San Francisco last June," notes Kevin Farrell, president of the Biotechnology Association of Maine. "Our state trade associations collaborated on a booth, shared the cost, and had representatives from both states in attendance. This was good publicity for all of us working in Northern New England." Kevin also sits on the board of directors of the NH Biotech Council.

Another project of mutual benefit comes from interactions between the NH Biotechnology Council and the Thomas M. Teague Biotechnology Center of Maine. "Our region, its workforce and its entrepreneurs have much in common, so regional economic and workforce development makes good sense for us," states Clyde E. Dyar, Director of the Teague incubator. This incubator is located in Fairfield, Maine, and is one of seven advanced technology development centers in Maine - the only one dedicated to biotechnology. Understanding how the Maine legislature set-up and funds these technology centers offers New Hampshire insight into what may or may not work here. Other shared interests between the Teague Center and NH Biotech include participation in a regional high tech incubator system and coordination of joint seminars / conferences. The Teague Biotech incubator is the closest incubator to the seacoast region of NH.

The International Northeast Biosciences Corridor is a larger regional initiative that serves under the auspices of the New England Governors and Canadian Premiers for Quebec and the Maritime Provinces. This group is basically a "think tank" of government and industry representatives developing strategies for promoting the life sciences industries across the region, as well as within separate states and provinces. NH Biotech has benefited greatly from interactions with other state industry representatives, such as Janice Bourque, past president of the Massachusetts Biotechnology Council, and similar industry or economic development leaders representing Maine, Connecticut, Nova Scotia, Quebec, Newfoundland, Labrador, New Brunswick, and Prince Edwards Island. The value of the networking and in discussing challenges, opportunities and initiatives in this large Northeast Atlantic region is invaluable. Core competencies within this region include pharmaceuticals, medical devices, marine biotech, aquaculture, immunoassays, diagnostics, and biomanufacturing.



Clyde Dyar, Director of the Thomas M. Teague Biotechnology Center of Maine, and Director of Economic & Community Development for the Town of Fairfield, ME

Paul Tessier, president of the International Northeast Biosciences Corridor, headquartered in Fairfield, ME

Marine Biotechnology – a regional strength

East Coast Biologics of North Berwick, Maine

By Marcia Howell Freer

Ten years ago, Clark McDermith was ready to launch his own company. Trained at the Whittemore Business School at UNH, he had good business sense and knew how to prepare a company for the 21st century. Having worked with a small start-up for three years, he had also learned first hand some of the ins and outs of running a successful business. When he was ready to head out on his own, he started East Coast Bio, Inc. (ECB), a company that supplies raw materials to the Immunodiagnostic industry and research community.

Once his company was established, McDermith spent a lot of time dealing with what he calls "like-minded" companies. He discovered that networking with business people in the industry can help you gain insight and direction and can put you in contact with others who can help you achieve your goals. During a conversation McDermith had with a businessman in Portland, ME, he learned about a revolutionary source of plasma, one that is not derived from controversial bovine sources. When he heard about the properties of fish serum, he immediately contacted the scientist who held the patent on the process of harvesting the plasma from the fish. McDermith then worked out a way to use fish plasma as novel new blocking reagents for immunoassays. It was this networking connection that helped him revolutionize East Coast Bio, Inc.

> Marine biotechnology & Immunoassay/ diagnostics are two of Northern New England's core life sciences technologies.

With the development of a line of products that utilize fish plasma, a partnership with a fish hatchery in northern Maine was established. Pens of mature, domesticated salmon are used for the purpose of extracting small samples of blood. The sample extractions do not harm the fish in any way, and fish are promptly replaced back into the growing pens. Plasma is then derived from the whole blood for ECB's Blocking Reagent Products, as well as their Cell Culture Products.

East Coast Biologics (ECB) has experienced rapid growth in a short period of time. With a steady and solidly increasing demand for fish plasma products, McDermith notes the potential for a market that is virtually untapped. What started out as a small, independent business venture has grown into an international supplier of critical plasma-based products. Reports McDermith, "The NIH has recently completed a new wing completely devoted to Zebrafish work. Two of our fish plasma products, SEA-BLOCK, an immunoassay blocking reagent, and SEA-GROW are used in their research work. These are our most promising products for the future."

McDermith also likes the fact that ECB is a "Maine-based company producing a product, and this product contains raw materials from another Maine-based company that we cooperate with, helping us both to prosper." It is synergetic relationships like these that help strengthen the Biotech industry in Northern New England.

Introducing Doug Struthers' Studio

Extraordinary biomedical & biotechnology imagery

For several years, Informagen, Inc. (Newington, NH) and the NH Biotech Council have partnered with Doug Struthers (www.dougstruthers.com) for illustrations representing our industry.

Doug Struthers is a new generation virtual painter, a true pioneer in the development of the 3D medium for illustration, animation, and QTVR. From a state of the art digital studio located on Whidbey Island just outside Seattle and working in association with a PhD. scientist, Doug is able to appreciate and represent accurately complex biotechnical processes in his extraordinary animation and illustration style.

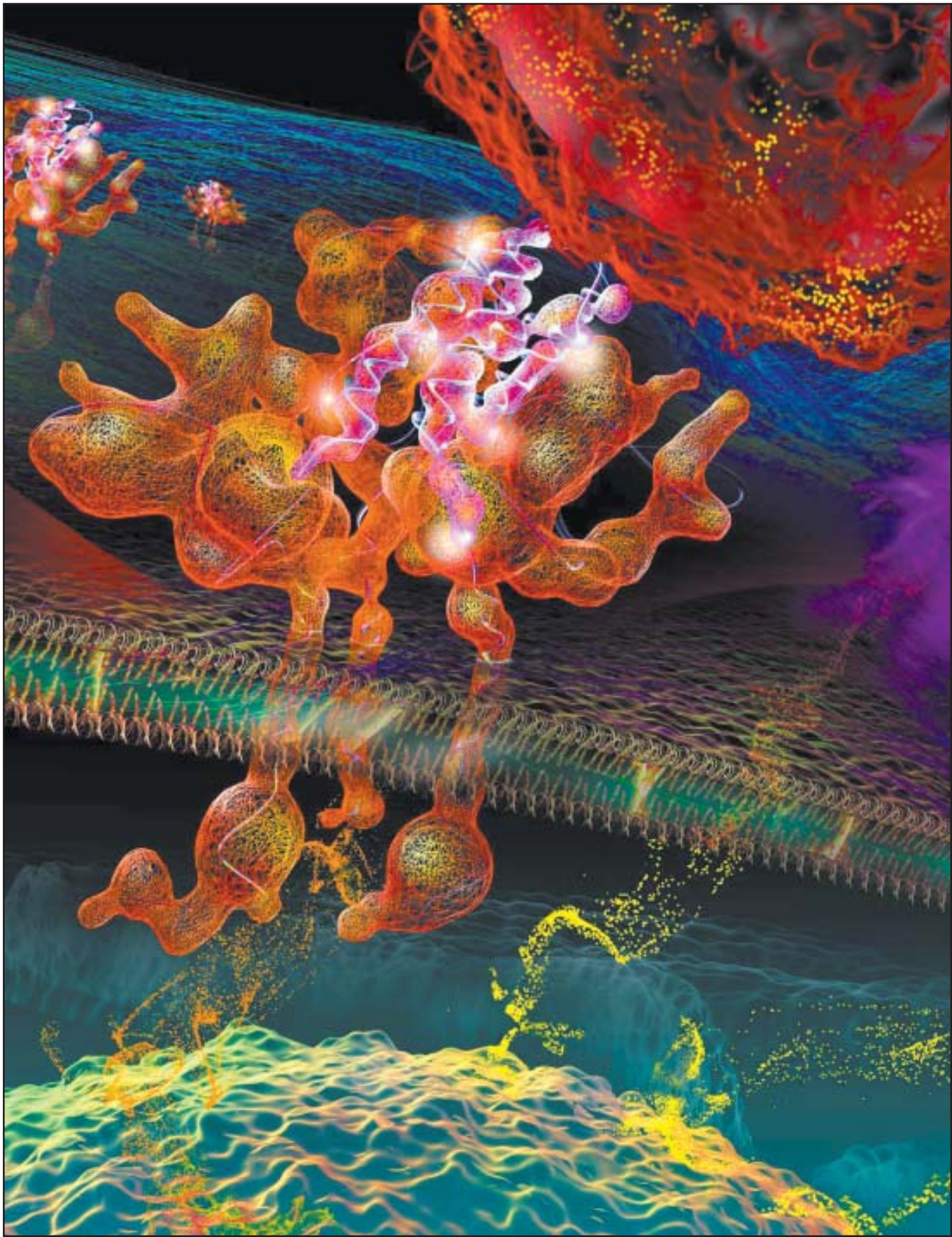
Doug has been chosen for numerous drug launches and prestigious assignments time and time again. Over the past twenty years he has worked with most of the major pharmaceutical agencies, completing animation and illustration materials for many of their largest advertising campaigns.

Several of Doug's illustrations can be seen in the banners at the Resource Informagen Internet portal (Informagen.com). Doug also created the "Unlocking the mysteries of life" graphic used by the NH Biotech Council. His art is outstanding, and we are very happy to be working with him again on our Movers & Shakers newsletters.

Doug employs a unique 3D computer style he has perfected over his twenty-year career. A large body of his art is available to the industry as a **stock image library** on his website. We encourage you to explore this library for your image needs or for your visual interest. If you are unable to find exactly the image you need, Doug will adapt the art to suit or create your own unique custom illustrations or animations.

Whatever the forum: websites, print, tradeshows, drug launches, publishing, laptop presentations, or in-house presentations, Doug Struthers' art can satisfy the unique visual needs to represent your products and processes in the very best light.

Doug recently moved his studio from Half Moon Bay in California to Whidbey Island in the state of Washington. In this issue of Movers & Shakers, his art can also be found on the cover.



This graphic by Doug Struthers shows the extraordinary landscape of a cell - up close and personal. The parallel lipid bilayer of the cell membrane runs across the middle of the image, it's outside surface undulating into the distance. Crossing the membrane is a multi-subunited cell surface receptor that is receiving a signal from the cell at the top of the image. This interaction induces changes in the receptor that are transmitted inside the cell to affect the cell nucleus at the bottom. And that's how cell signaling works!

NEWS from the NH Biotechnology Council

Michael Bergeron of the NH Dept. of Business & Industrial Development is the newest member elected to the board of directors of the NH Biotech Council

2004 Elections Results

New Hampshire Biotech Council

The NH Biotechnology Council is proud to announce the following new board members and officers.

ELECTION OF DIRECTORS
3-year term 2004-2007

Mike Bergeron
Valerie Mahar
Paula Newton

ELECTION OF 2004 OFFICERS
1-year term

President	Lulu Pickering
President-Elect	Paula Newton
Treasurer	Brian M. Gallagher
Secretary	Tim Noonis

ELECTION OF 2005 OFFICERS
Effective Jan. 1, 2005, 1-year term

President	Paula Newton
President-Elect	C. Davis Farmer
Treasurer	Brian M. Gallagher
Secretary	Tim Noonis

CURRENT DIRECTORS:

Mike Bergeron	–	State Industrial Representative, NH Office of Business and Industrial Development
C. Davis Farmer	–	Managing Partner, Genesis Biomedical Ventures
Kevin Farrell	–	Partner, Pierce Atwood
Brian Gallagher	–	Business Development Manager, DACON Corporation
Valerie Mahar	–	Associate Vice-President of Community and Corporate Education, Director of the Pease Emerging Technology Center, NH Community Technical College
Anne Moschella	–	Director, Marketing & Communications, Lonza Biologics
Paula Newton	–	Market Research & Information Specialist, NH International Trade Resource Center
Tim Noonis	–	Economic Development Specialist, Unitil Corporation
Lulu Pickering	–	President, Informagen, Inc.

The buying power of local companies

UniClean joins the NH Biotech Purchasing Consortium

The NH Biotech Council is proud to announce that UniClean of Nashua, NH is the newest member to join our Purchasing Consortium. UniClean has been a member of the NH Biotech Council for a number of years, and we are very happy to partner with them in support of their products and services.

The NH Biotechnology Council launched the Purchasing Consortium in June 2003. Its purpose is to encourage local companies to buy products and services from other local companies in order to enhance the economy of our state and region. To participate in the Purchasing Consortium, a company must be a member in good standing with the NH Biotechnology Council.

UniClean is a full service cleanroom laundry provider specializing in garment rental processing, cleanroom cleaning, cleanroom testing and support services. A division of UniFirst Corporation, UniClean operates Class 1 facilities in Nashua, NH, Maplewood, NJ, Clearwater, FL and Portland, OR.

"UniClean will extend a 15% discount to all members of the NH Biotechnology Council," says Kevin R. Stultz, General Manager. "The entire UniClean team looks forward to working with you."

UniClean
Product & Services Summary:

- Full line of reusable and consumable cleanroom garments.
- Sterile, BSL 1-2 and non-sterile services.
- Sale and rental of cleanroom equipment (tables, benches, chairs).
- Cleanroom contamination control services (Cleaning and testing of cleanrooms).
- Nationwide service through 170 parent company affiliated locations.
- IS0 9001 registered.

Members of the Purchasing Consortium

NH Biotech Council Sponsored

Business Wire disseminates full-text news announcements to news media, financial markets, disclosure systems, investors, information web sites, databases and other audiences.

CustomScoop is a leader in the online news clipping industry that supplies organizations with market intelligence through a daily, customized news briefing.

Human Resource Partners LLC and **Alice Buckner Consulting** have teamed up to offer comprehensive human resources support and services.

ISIS Studios specializes in the mediums of television and film production, interactive media and traditional book publishing.

Middlesex Gases & Technologies, Inc. is distributor of specialty gases, semiconductor gases, medical gases, industrial gases and cryogenics

PC Connection sells computer equipment and supplies.

UniClean is a full service cleanroom laundry provider.

2004 Survey Results

New Hampshire Biotech Council

Thank you to those who participated in our recent survey for prioritizing the Council's 2005 activities. The activities that were of most interest were the Movers & Shakers newsletter (87% positive response), attending a regional tradeshow (83%), BioBrew networking meetings (78%) and strengthening industry - academia ties (78%).

These were followed closely by the NHBiotech.com website (74%), sponsoring a Life Sciences day (74%), publishing an updated industry guide (70%), developing the BioSeacoast Life Sciences Cluster (65%), Northern New England regional development (65%), and attending the BIO tradeshow (65%).

Activities of interest to specialized groups included the Medical Devices Consortium (52%), Purchasing Consortium (44%), attending a medical devices tradeshow (43%), and attending a European trade show (17%).

If anyone would like to help organize or participate in any of these activities, please email info@NHBiotech.com or mail to NH Biotech Council, PO Box 279, Greenland, NH 03840.

IN THE NEWS

Precise-Pak, Inc. praises the NH Biotech Council Network

By Marcia Howell Freer

With the growth of the biotech industry comes the need for highly skilled contract manufacturing services. Allan Schwinn, president and CEO of Precise-Pak, Inc., heads a successful FDA registered, GMP compliant facility with class 10,000 and other controlled environment work areas. Precise-Pak, Inc. provides both sterile and non-sterile formats for the manufacturing, packaging, and distribution of medical devices and biotechnology products. Services include package engineering, product development, process engineering, assembly, and packaging of products for both patient and industry use.

Planned growth of the company resulted in the necessity of a recent move into a building that doubles their production capacity. With business expanding to serve both national and international companies, their new location will better accommodate increased industry demands.

"The NH Biotech Council raises awareness of companies in New England that require services," explained Schwinn. "Biotech Council meetings provide avenues for information and technology exchanges and make it possible for companies to network and meet key people in the industry." He describes the council as being "mutually beneficial" to all members and looks forward to continued involvement. As Precise-Pak continues to grow, Schwinn hopes to gradually increase staff and expand the company's technology base in biomedical and biotechnology areas.

New Biotechnology Training Initiatives

NHCTC Biotechnology Education & Training Center

With a 10-year history and a recent grant from the Department of Labor, NHCTC is positioning itself to be a One Stop Center for Biotechnology Education and Training in New Hampshire and the Northeast Region. The funding will support the creation of a National Center of Expertise in Biomanufacturing. NHCTC's Pease International Tradeport Campus in Portsmouth currently offers the following credit programs in Biotechnology: a two year Associate in Science Degree, a one year Diploma, a one year Academic Certificate and a two semester Certificate.

This year, we are introducing a Biomanufacturing Apprenticeship program for 2005 high school graduates entering the Associate in Science Degree in Biotechnology in Fall 2005 and the start of the Northeast Biotechnology Institute offering Advanced Short Courses for Incumbent Workers starting in January 2005. Also offered will be a week-long hands-on workshop in Biopharmaceutical Production for faculty the first week of August, 2005.

Brochures and more information on NHCTC's Biotechnology Education and Training programs may be had by talking to Dr. Sonia Wallman, Director of Biotechnology at NHCTC by telephone at 603-334-6306 x23 or by e-mail at swallman@nhctc.edu.

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