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HTECH NEWS

MARYLAND TECHNOLOGY ENTERPRISE INSTITUTE

What's Inside

Biotech

Bioprocessing, education, workforce training and consulting for biotechnology companies.

BSF Gets $775,000 to Upgrade Purification Capabilities

The State of Maryland awarded the Bioprocess Scale-Up Facility $775,000 to upgrade its capabilities. A premier MTECH laboratory, the BSF develops and scales up biotechnology products and processes. Upgrades for the laboratory will include:

- Renewed fermentation and cell culture capabilities
- Greater capabilities for product purification

"This will make a huge difference in the breadth of services we offer Maryland firms," said Ed Sybert, director of MTECH's Biotechnology Industry Program. "We now have balanced capabilities for both purification and production, up to 250 liters," he added.

The BSF, founded in 1985, has accelerated the R&D of companies such as:

- Human Genome Sciences
- MedImmune
- Martek Biosciences
- Digene Corporation

Biotech Program Trains MedImmune's Production Workforce

MedImmune's staff members are receiving specialized trainings on the fundamentals of the entire bio-production process—through a contract with the MTECH Biotechnology Program.

The training series will "help MedImmune's staff understand the science and engineering fundamentals underlying the actions and decisions we make in everyday operations," said Dan Pappas, MedImmune's director of cell culture operations.

MedImmune employees will also better understand their individual roles, and how they fit into the larger production process.

The MedImmune trainings consist of:

- Eight, three-day workshops
- 10-12 employees for each training

The workshops are funded by MedImmune and the Maryland Department of Business and Economic Development.

Sybert Re-Joins Biotech Program as Industry Director

Edward Sybert re-joined the MTECH Biotechnology Program as industry Director in October, 2003.

Sybert, former director of the Technology Advancement Program, now leads the Biotech Program's industry outreach activities, including: bio-processing, workforce training, and lean bio-manufacturing consulting.

MTECH first recruited Sybert from industry in 1984. He designed and built the Bioprocess Scale-Up Facility and launched it in 1985, a laboratory that has since conducted more than 678 fermentations for many Maryland-based companies and research facilities—including Human Genome Sciences, Martek Biosciences, NIH and MedImmune.

Martek, the BSF's first client, used the facility to scale up its products. The company also utilized Sybert's team for training their personnel and selecting equipment. Now one of Maryland's most successful biotechnology companies, Martek has licensed its oil additives to 80 percent of the world's infant formula manufacturers.

Sybert's biotech resume also includes:

- Bringing the National Cancer Institute's fermentation facility in Fort Dietrich, Maryland into Good Manufacturing Practice (GMP) compliance, so its products could be used for human cancer tests; and
- Leading the design and building of the Baltimore-based Maryland Bioprocessing Center, the first GMP facility of its kind in the country.

Sybert directed TAP for seven years.

New Biotech Program Service: Productivity Enhancement

Successful bio-manufacturing companies utilize resources efficiently. They bring products to market faster, meet production deadlines, and minimize waste. The Biotech Program's Productivity Enhancement service applies "Lean Manufacturing," an operating philosophy focusing on eliminating mistakes and non-value adding activities, to bio-manufacturing.

Biotech Program consultants' areas of expertise include facility design and layout, process optimization and load balancing, material handling, logistics, and cellular manufacturing. They can also help companies be more productive with:

- Workforce practices
- Equipment selection/upgrades
- Bioprocess monitoring and control
- Process optimization
- Cleaning and changeover time reduction
- Maintenance practices
- Mistake-proofing and standardization
- Quality procedures and policies
- Information flows

MIPS Project Spurs Navmar to Award $10 Million in Contracts, Launch New Companies

The MAKO unmanned autonomous vehicle (UAV), produced by Lexington Park-based Navmar Applied Sciences Corporation, is a revolutionary aircraft, related to the Predator UAV used by the U.S. military during missions in Afghanistan. The MAKO is light, inexpensive, can travel long distances, can carry substantial payloads, and importantly—is expendable.

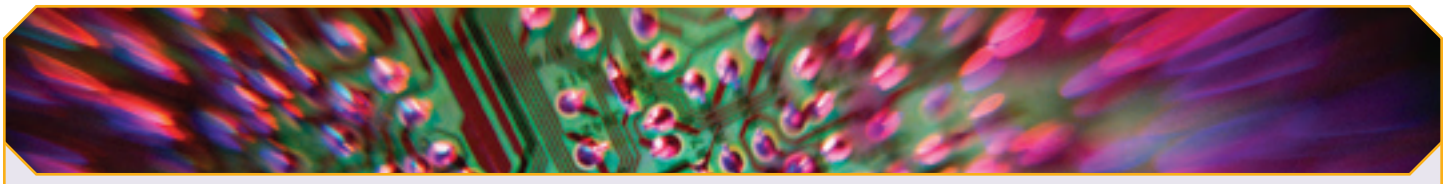
MAKO development was a Department of Defense (DoD) Assistant Secretary of Defense (ASD) Advanced Concept Technology Demonstration (ACTD), and has transitioned, being flown by an active U.S. Navy operational squadron. The MAKO can suit many missions, from intelligence to surveillance and reconnaissance.

Through MIPS, five UM aerospace engineering faculty members—led by Dr. Daryll Pines—evaluated the aero dynamics of the aircraft, flight control system, propulsion analysis, wing loading design analysis, and glide ratios. UM faculty also helped select a design for the final vehicle. MIPS' project with Navmar gave the company access to lab space and the Glenn L. Martin Wind Tunnel.

Navmar is manufacturing approximately one MAKO per week, with 26 already shipped to the U.S. military.

Navmar's MIPS project, which played a key role in developing the MAKO, enabled the company to:

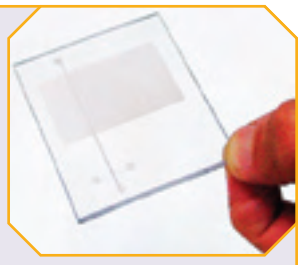
- Award $10 million in subcontracts to nine Maryland companies, including Brandebury Tool (Gaithersburg), BAE (Easton), API (Baltimore), Sullivan Products (Baltimore), Ship Point (Patuxent River), Neany Inc. (Patuxent River), Rugged (Patuxent River), Titan (Patuxent River), and Compass Systems (Patuxent River)
- Open three facilities in Maryland (Lexington Park, New Carrollton, and Chestertown)
- Launch two new companies — Neany Inc. and Rugged, both in the Patuxent River area
- Hire 12 new employees and open avenues to new technology and expertise



MIPS by the Numbers (since 1987)

Signed contracts and amendments	705
Companies working on MIPS projects	300
MIPS funds leveraged	$24,419,526
Company funds contributed	$98,004,881
Total MIPS projects value	$122,424,407
Leverage of MIPS funding	4.1

MIPS Awardee Calibrant Developing Portable Biological Warfare Agent Detection System



Rockville-based Calibrant Biosystems Inc. and Mechanical Engineering Professor Don DeVoe, from the University of Maryland, College Park, are jointly developing a portable lab-on-a-chip system for detecting biological warfare agents, with the support of MIPS.

Calibrant and DeVoe's MIPS project involves developing a tiny chip—centimeters in diameter and a millimeter thick—that can detect multiple pathogens extracted from many environments, including air, water, and tissue samples. The chip will be used as a portable pathogen detection system, although it could be integrated into existing or planned systems.

One example is a new U.S. soldier uniform under investigation—which could combine a micro-needle with Calibrant's product to regularly analyze blood samples for exposure to biological agents—including anthrax, botulism, and smallpox.

"Our system will be compact and universal," said DeVoe. "We'll ultimately be able to detect nearly every pathogen out there."

Current detection systems often utilize gene chip or protein chip technologies, which require biologically-active reagents and tend to be very slow, according to DeVoe. Calibrant's system will separate and identify proteins signatures from viruses, bacteria and toxins, often within 15 minutes—in a compact, low-power system.

Calibrant's MIPS project has already yielded benefits beyond the forthcoming research. "We've leveraged the MIPS award for an $850,000 Small Business Innovation Research (SBIR) grant from the Defense Advanced Research Projects Agency (DARPA) to expand upon this work," DeVoe explained, "so the immediate impact of this project cannot be overstated."

Martha Connolly Named Director of MIPS

Dr. Martha Connolly is the new director of the Maryland Industrial Partnerships (MIPS) Program.

Connolly's accomplishments in both academe and economic development uniquely qualify her to lead MIPS. Her credentials include:

- First biotechnology representative for the Maryland Department of Business and Economic Development;
- Former faculty member and director of an independent research laboratory at the University of Maryland, Baltimore (UMB), with NIH-funded research and 37 authored full-length, peer-reviewed publications;
- Facilitated technology transfer as a specialist at UMB;
- Directed business development activities at EntreMed Inc.;
- Co-founded start-up Clairus Technologies Inc.

"MIPS is one of the most viable programs in Maryland for early-stage technology commercialization," said Connolly. "We want to continue spurring the latest cutting-edge innovations."

MIPS Project Helps Epitaxial Technologies Capture Over $3 Million in Contracts, Grants and Sales

Baltimore-based Epitaxial Technologies LLC secured over $2 million in Small Innovative Business Research (SBIR) awards and government contracts in the past five years, as well as $1 million in sales, thanks in part to MIPS.

The company, which produces semiconductor wafer and chip materials and solutions for fiber optic components and telecommunications applications, worked through MIPS to develop a testing infrastructure for its materials with Dr. Terrance Worchesky, an associate professor in the department of physics at the University of Maryland, Baltimore County.

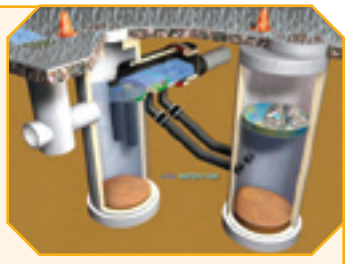
"Every time we produce material we have to test it according to our customers' specifications," said Leye Aina, president of Epitaxial. "When we first started our MIPS project, we did not have the equipment, software and expertise to comprise a full testing infrastructure. Through our MIPS collaboration, however, we have developed it."

Aina credits MIPS for directly contributing to Epitaxial's sales and contracts, as well as for helping retain five jobs and adding four new employees.

The company's government contracts—including 12 SBIR's—are with organizations such as the Defense Advanced Research Projects Agency, the Air Force Research Laboratory, the National Institute of Standards and Technology, and the Missile Defense Agency. Epitaxial's customers include the Department of Defense, several major defense contractors, and academic and commercial customers worldwide.

Epitaxial is a graduate of the University of Maryland, Baltimore County incubator, called techcenter@UMBC. The company's first MIPS project started in 1998, while its last project was completed in June 2002.

BaySaver Technologies Generates $1.8 Million in Sales, Creates and Retains Jobs with Help of MIPS



Mt. Airy-based BaySaver Technologies, Inc. generated $1.8 million in sales, created eight jobs, retained eight jobs, and exported $80,000 with the help of a MIPS project.

The company's main product, the BaySaver® Separation System, removes sediment, oils, trash, and other substances from storm water. Storm water sediment is the single largest waterway pollutant by mass of any worldwide.

BaySaver worked with Dr. Allen Davis, a professor in the department of civil engineering at the University of Maryland, College Park, to analyze the company's system through physical and mathematical modeling, controlled field tests, and samples during storms.

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"The MIPS Program allowed BaySaver Inc. to bring an environmental product to market effectively by providing technical resources to assist in qualifying our technology," said BaySaver Director of Operations Austin Meyermann. "This was very important due to the regulatory environment in which BaySaver's product exists."

The BaySaver® separation system is driven by gravity. Stormwater flow enters a primary manhole for initial separation. The flow is then treated a second time in an off-line storage manhole, where oils, fine suspended solids, and floatables are collected. Since the water flow is regulated into the secondary manhole, resuspension risk is minimal during higher flows. Inspectors and maintenance contractors can also gain unobstructed access to the bottom of the manholes—resulting in more efficient maintenance and lower costs.

The BaySaver® separation system is engineered to strict stormwater standards—yet its unique design keeps it highly affordable and easy to spec, install, and maintain.

BaySaver's MIPS project enabled the company to acquire regulatory approval and sell over 700 of its systems to date—with 200 in Maryland alone—and installations as far as Brazil and Guam. The John F. Kennedy Airport bought 30 BaySaver systems to accommodate its American Airlines expansion, while the City of Pensacola, Fla. bought a similar number for its storm water treatment.

BaySaver expects a 100 percent sales growth in 2004. More information: http://www.baysaver.com.

MedImmune's Synagis Sales Reach $849 Million in 2003

Worldwide sales for MedImmune's Synagis® product in 2003 were $849 million, up 26 percent from the previous year, according to a recent company financial report.

Synagis® prevents the respiratory syncytial virus (RSV) in infants. RSV is the most common cause of lower tract respiratory infections in infants and children worldwide—typically occurring during the fall and winter months.

MedImmune's total revenues were up 24 percent, to $1.1 billion.

In September 2003, the U.S. Food and Drug Administration (FDA) approved an expanded label for the use of Synagis® in children with congenital heart disease (CHD).

"Infants and young children with significant CHD are at high risk of serious RSV disease," said Dr. Edward M. Connor, MedImmune's senior vice president for clinical development. "We are pleased that the FDA has expanded the label for Synagis® to help protect these patients from a potentially life-threatening RSV infection."

MedImmune has a long history with the University of Maryland. Since 1996, the Maryland Industrial Partnerships Program has jointly funded six different research projects with MedImmune—including three directly related to Synagis®.

MIPS

Matching funds for collaborative research projects between Maryland companies and faculty.

MIPS Round 32 Award Recipients

Below is a list of projects funded by MIPS for its 32nd round of contract awards. Round 32 commenced in July, 2003.

American Dehydrated Foods, Inc. (Princess Anne)

Biosorbents from Agricultural Residuals

Dr. Jennifer G. Becker, Biological Resources Engineering, UMCP

Calibrant Biosystems, Inc. (Rockville)

Field-Effect Flow Control

Dr. Donald DeVoe, Mechanical Engineering, UMCP

Chondros Inc. (Baltimore)

Cartilage Cell Culture Scale-Up

Dr. Nam Sung Wang, Chemical Engineering, UMCP

DataStream Conversion, LLC (College Park)

Software Engineering Best Practices

Dr. Marvin Zelkowitz, Computer Science, UMCP

GenVec, Inc. (Gaithersburg)

Gene Transfer to the Inner Ear

Dr. Hinrich Staecker, Otolaryngology, UMB

Hughes Network Systems (Germantown)

Broadband Internet

Dr. John Baras, Institute for Systems Research/Electrical and Computer Engineering, UMCP

InTank, Inc. (Laurel)

Ultrasonic Nondestructive Inspection of Tanks

Dr. K. J. Ray Liu, Institute for Systems Research/Electrical & Computer Engineering, UMCP

Intradigm Corporation (Rockville)

Gene Delivery Optimization

Dr. A. James Mixson, Pathology, UMB

Intronn, Inc. (Gaithersburg)

RNA Trans-Splicing in Plants

Dr. Stephen M. Mount, Cell Biology & Molecular Genetics, UMCP

Kirkegaard & Perry Labs, Inc. (Gaithersburg)

Delivery of Interact Therapeutic Proteins

Dr. Nick Ambulos, Microbiology & Immunology, UMBC

LumenLink, Inc. (Rockville)

Communications

Dr. Stuart Milner, Institute for Systems Research, UMCP

Mad Dog Control, Inc. (Frederick)

Focused Ion Beam Bar Coding

Dr. John Melngailis, Electrical and Computer Engineering, UMCP

MedImmune, Inc. (Frederick)

Training for Bioprocess Production

Edward Sybert, Biotechnology Program, UMCP

Norris Electro Optical Systems Corp. (Ellicott City)

UV Visibility in Fog and Mist for FAA Landing and Runway Applications

Dr. Douglas G. Currie, Physics, UMCP

Phoenix S &T, Inc. (Elkton)

Nanospray System for Proteomics

Noel Whittaker, College of Life Sciences, UMCP

Quantum Sail Design Group Manufacturing, LLC (Annapolis)

CAD/CAE Development of Sails

Dr. Jewel B. Barlow, Wind Tunnel, UMCP

Systems Planning and Analysis, Inc. (Greenbelt)

Monitoring Turbine Engine Exhaust

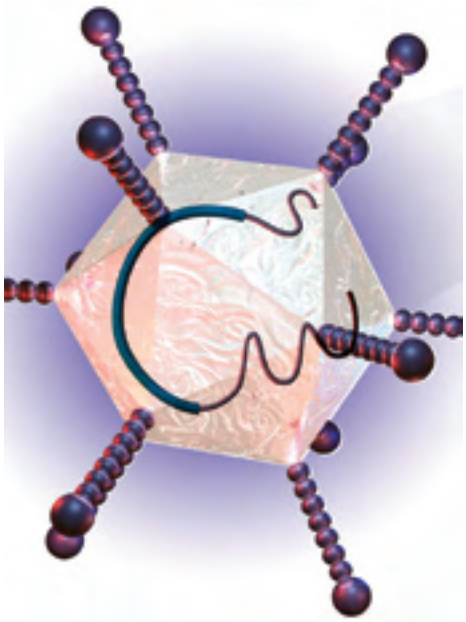
Dr. Steven G. Buckley, Mechanical Engineering, UMCP

Techno-Sciences, Inc. (Lanham)

Active Pitch Link Technology

Dr. Inderjit Chopra, Aerospace Engineering, UMCP

KEY: USM = UMCP = University of Maryland, College Park; UMBI = University of Maryland Biotechnology Institute; UMB = University of Maryland, Baltimore; UMBC = University of Maryland, Baltimore County; Towson = Towson University; UMES = University of Maryland, Eastern Shore



MIPS Round 33 Award Recipients

Below is a list of projects funded by MIPS for its 33rd round of contract awards. Round 33 commenced in February, 2004.

20/20 GeneSystems, Inc. (Rockville)

Membranes for Biomolecular Detection

Dr. Timothy Barbari, Chemical Engineering, UMCP

Advanced BioNutrition, Inc. (Columbia)

Probiotic Treatment in Atlantic Salmon

Steven G. Hughes, Maryland Cooperative Fish & Wildlife Research Unit, UMES

Advanced Oxidation Systems, Inc. (Gaithersburg)

Remediation of Organic Compounds in Aqueous Waste

Dr. Mohamad Al-Sheikhly, Materials and Nuclear Engineering UMCP

Archivex, Inc. (Baltimore)

Secure Storage and Dispensing System

Dr. M. (Appa) Anjanappa, Mechanical Engineering, UMBC

Astrox Corporation (College Park)

Inward Turning Scramjet Design and Testing

Dr. Kenneth Yu, Aerospace Engineering, UMCP

Atlantic Biomass Conversions, Inc. (Frederick)

Bioconversion of Sugar Beet Pulp to Methanol

Dr. Nam Sung Wang, Chemical Engineering, UMCP

Automated Precision, Inc. (Rockville)

Auto Body Inspection Sensor System

Dr. Satyandra K. Gupta, Mechanical Engineering/Institute for Systems Research, UMCP

BDS Dental Laboratory (Lutherville)

CAD-CAM Generated Dental Crowns

Dr. Douglas Barnes, Dental School, UMB

Cereplex, Inc. (Gaithersburg)

Tracking Hospital Antibiotic Usage

Dr. Anthony Harris, Epidemiology and Preventative Medicine, UMB

Delmarva Foundation for Medical Care, Inc. (Easton)

Training for Healthcare Quality Improvement

Dr. Yeong-Tae Song, Computer and Information Sciences, Towson

Guilford Pharmaceuticals, Inc. (Baltimore)

Controlled Intrauterine Drug Delivery

Dr. Kenneth Bauer, Pharmacy Practice and Science, UMB

Innovative Biosensors, Inc. (Gaithersburg)

Detection of E. coli in Food

Dr. Jianghong Meng, Nutrition and Food Science, UMCP

NEANY, Inc. (Hollywood)

Low-Cost, Expendable UAV Technologies

Dr. Ella Atkins, Aerospace Engineering, UMCP

Next Breath, LLC (Baltimore)

Enhanced Pulmonary Drug Delivery

Dr. Richard Dalby, Pharmaceutical Studies, UMB

Perdue Co-Product Technologies, Inc. (Salisbury)

Poultry Waste Odor Improvement

Dr. Allen R. Place,

Center of Marine Biotechnology, UMBI

Protiveris (Rockville)

Biodetector Fluidic Delivery Optimization

Dr. Benjamin Shapiro, Aerospace Engineering/Institute for Systems Research, UMCP

System Excelerator, Inc. (Crofton)

Software for Vehicle Environmental Data

Dr. Chris Wilkinson, Mechanical Engineering, UMCP

Systems Planning and Analysis, Inc. (Greenbelt)

Magnetorheological Automotive Suspension

Dr. Norman Wereley, Aerospace Engineering, UMCP

TeleContinuity, Inc. (Rockville)

Disaster-Proof Telecommunications

Dr. Steven A. Tretter, Electrical and Computer Engineering/Master's in Telecommunications Program, UMCP

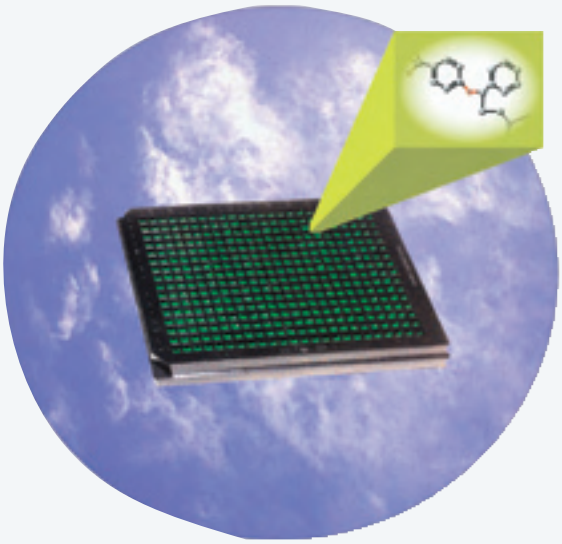
TRX-SYSTEMS, Inc. (Lanham)

Indoor Location and Emergency Alerting Technology

Dr. Neil Goldsman, Electrical and Computer Engineering, UMCP

TAP Graduate NOVASCREEN Biosciences Awarded $12.95 Million Biodefense Contract

NOVASCREEN Biosciences Corporation



TAP graduate NOVASCREEN Biosciences Corporation was awarded a five-year, $12.95 million contract by the National Institute of Allergy and Infectious Diseases (NIAID), a part of the National Institutes of Health (NIH).

The contract, "Innate Immune Receptors and Adjuvant Discovery," focuses on establishing a pipeline of new drug candidates that stimulate the natural capacity of the human innate immune system to initiate and sustain appropriate immunological responses.

The drug candidates will be selected for their potential to function as new and improved adjuvants, which are general immune-boosting agents. When combined with specific vaccine antigens, adjuvants can help generate protective immunity against a wide variety of infectious agents, including those that may pose threats to our nation from bioterrorism.

"We are gratified that the NIAID/NIH biodefense program has demonstrated its confidence in our screening and drug discovery capabilities by selecting us to perform this important project," said David M. Manyak, Ph.D., President and CEO of NOVASCREEN. "This award will provide NOVASCREEN with the resources to complete discovery-stage activities and pre-clinical evaluations of promising compounds that display adjuvant activity. This adjuvant development project is an important component of our drug discovery and development efforts and will build on NOVASCREEN's broad expertise in receptor pharmacology, high throughput screening assays, natural product chemistry, and in silico (computer-based) drug design."

The innate immune system is the body's first line of defense against infectious micro-organisms. In recent years, a group of molecules, called Toll-Like Receptors (TLRs), located on the surface of certain immune system cells, have been found to play a key role in the recognition of infectious microbes.

Under this contract, NOVASCREEN will develop a broad range of miniaturized tests, or screening assays, for identifying compounds that act through TLRs and can stimulate both a potential immediate defensive effect and a long-lasting, adaptive immune response of the type necessary for successful vaccination.

Hanover-based NOVASCREEN, a closely held private company, is a leading provider of drug discovery and development services and products, with a focus on in vitro (laboratory-based) screening assays and in silico (computer-based) predictive screening tools. With more than ten years of operating history, NOVASCREEN is widely recognized as a pioneer in the field of receptor pharmacology.

NOVASCREEN was a member of the Technology Advancement Program from December, 1988 to June, 1993.

Scott Magids Named Director of TAP

Scott Magids joined MTECH's Technology Advancement Program as Director in October, 2003. In this capacity, Scott directs a full-service incubator and accelerator for early-stage technical companies. He oversees the sourcing, screening, mentoring, monitoring, and graduating of three to four fledgling ventures each year.

Prior to joining the University, Scott served as Chief Executive Officer of Robert Charles Group (RCG), a private equity investment and consulting firm Scott founded in 1997. At RCG, he led investments in communications equipment, contract manufacturing services, and marketing firms. Scott also assisted high-net-worth families in establishing processes for private equity investments.

Prior to founding RCG, Scott served as President of an IT services and training firm he founded in 1993.

Scott is a co-founder of Aspirient LLC, a New York City-based brand research and marketing consulting company. In addition, Scott is Chairman of RCG, and a special advisor to Legend Advisory Services, a Canadian merchant and investment banking firm. Scott also teaches an annual technology entrepreneurship course at the University of Maryland. He has authored two texts currently used in the University's MBA program.

BioSET's Products to Include Bone Regeneration, Aneurysm Repair, and Chemotherapy/Radiation Protection

TAP company BioSurface Engineering Technologies Inc., maker of bioactive coatings for medical devices, is broadening its product offerings to include three peptide-based applications:

1. Bone regeneration
2. Neuro-vascular percutaneous repair of cerebral aneurysms
3. Gastro-intestinal protection from chemotherapy and external radiation exposure

Peptides for the device coatings are licensed from Brookhaven National Laboratory.

BioSET is actively pursuing its B Round of financing, as well as a phase two Small Business Innovation Research (SBIR) grant from the National Institutes of Health. The company's $2.8 million A Round of financing was completed in July 2001.

BioSET leverages over 15 years of research and development in chemistries designed to control the body's biologic response to medical device implants. BioSET's technologies are targeted in the converging markets of medical implants combined with bioactive growth factor treatments to improve clinical outcomes and patient health.

Former Washington Post Company Vice President and Publisher Joins DataStream

Valerie M. Voci, a former vice president and publisher for Washingtonpost.Newsweek Interactive, has joined DataStream Conversion Services, a company in the University of Maryland's technology incubator, as the vice president for business development.

Voci is an internationally known dot-com innovator—one of a handful of people who created successful technology brands on the Internet. She led the development of TechNews.com, Washtech.com, and the Newsbytes News Network—each part of the Washington Post Company.

While at the Post, Voci managed a group of over 20 journalists, as well as sales executives, marketing staff, designers, and technical personnel. She secured partnerships with the Financial Times and Associated Press, advertising accounts with IBM, Verizon, Microsoft, Intel and Computer Associates, and led over a thousand percent increase in audience at a web site with national relevance.

"I am thrilled to be with DataStream," said Voci. "We've completed numerous projects with some of the biggest names in online data information collection, and there's a reason—our product is solid for mission-critical work. We're accurate and timely. If you've haven't heard of us yet, you will soon."

"Valerie's reputation in the information technology industry, as well as her deep roots in the Baltimore-Washington Metropolitan Region, make her an ideal fit for DSCS," said Mark Anstey, president of DataStream. "She has a history of introducing new and profitable products, managing vibrant and successful teams, and bringing fresh perspectives to high-potential businesses. We will benefit from her expertise, leadership skills, and contact network in the commercial and government information technology communities."

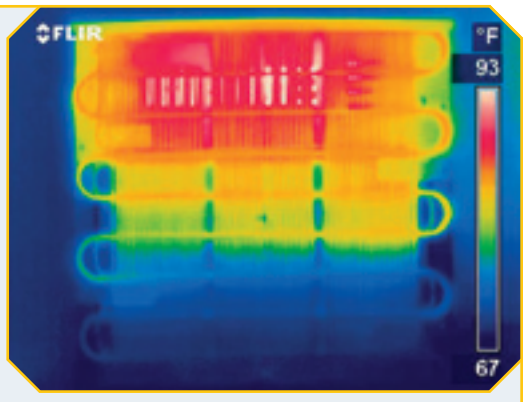
Chesapeake PERL Receives $2 Million ATP Grant

TAP company Chesapeake PERL, Inc. (C-PERL) received a $2 million, three-year National Institute of Standards and Technology (NIST) Advanced Technology Program (ATP) grant to genetically transform caterpillars to produce humanized glycoprotein modifications.

C-PERL manufactures recombinant proteins using a proprietary, orally infective baculovirus expression system in whole insect larvae. This system produced very high levels of proteins, which are either non-glycosylated or contain insect glycan patterns that are different than those produced in mammalian cell culture systems.

The planned work for the ATP grant is to enhance the C-PERL expression system by incorporating biological pathways into caterpillars (Transpillars™) that will produce mammalian glycoprotein structures rather than those naturally occurring within insects. Using Transpillars™ to manufacture therapeutic proteins will increase the number of likely drug targets available for production in the C-PERL system.

Start-Up Thermal Analysis Partners Joins TAP



Thermal Analysis Partners LLC, a start-up company developing software tools to both integrate and optimize thermal management systems, has joined TAP.

Launched in 2002, Thermal Analysis Partners is eyeing the $200 billion heating, ventilation, and air conditioning (HVAC) manufacturing industry with software tools that bring together disparate, industry standard software systems to make thermal management systems more cost-efficient.

HVAC manufacturers and engineers make parts and systems for buildings, automobiles, and airplanes. Designing optimized systems for these different applications is challenging for engineers. One problem is that no single software tool creates an infrastructure for integrating many different design variables and software systems. Thermal Analysis plans to fill that void.

"Five percent of the cost for HVAC system design is in engineering time," said Hans Huff, system engineer for Thermal Management. "Fifty percent of that time is spent on optimization. Our tools could reduce that time by 30 percent, yielding a potential $1.5 billion annual savings worldwide."

The company already has orders from York International Corporation, the largest independent supplier of HVAC equipment in the U.S., as well as a Japanese company and an HVAC research firm. Target customers could also include Carrier, Trane, Behr, Sanyo, and Samsung.

An example of how Thermal Analysis' software suite will work is in building design. Engineers might employ a software program for the HVAC system, along with a building energy analysis program such as EnergyPlus". "Integrating these programs to see the cost in the building over a year's time and then finding a design for the HVAC system that keeps costs down and maximizes efficiency and capacity—that's what our software will do," said Huff.

The company will release XProps in March, a software tool enabling engineers to take data from the National Institute for Standards and Technology's REFPROP, a refrigerant properties software program, and use it in applications such as Microsoft Excel, Matlab, and LabView.

Thermal Analysis has two full-time employees and six part-time consultants.

"TAP is excited to admit Thermal Analysis Partners into our program," said TAP Associate Sarah Djamshidi. "The company was founded by Dr. Reinhard Radermacher, a mechanical engineering professor at the university and a leading expert on using computers to aid the design of HVAC systems."

Thermal Analysis' technology was developed by Radermacher in the Center for Environmental Energy Engineering. Radermacher is an internationally recognized expert in energy conversion systems; in particular integrated Cooling, Heating and Power (CHP) Systems, heat pumps, air-conditioners, and refrigeration systems. His work has resulted in over 100 publications, including three books he co-authored, numerous invention records and nine patents. He was a visiting scientist and NATO scholar at the National Institute of Standards and Technology before joining the University of Maryland.

AnthroTronix Graduates, Named Technology Pioneer by World Economic Forum

AnthroTronix graduated from TAP in October, 2003. The company's new location is in Silver Spring, Md.

AnthroTronix was also named as one of 30 international Technology Pioneers by the World Economic Forum for 2004.

For the award, the Forum cited CosmoBot, AnthroTronix's rehabilitative robotic toy for children with disabilities combining physical, occupational and speech/language therapy, education and play. Children communicate with the robot by voice and through body movements translated by sensors. CosmoBot is backed by a sophisticated software system enabling therapists to remotely control the robot via an Internet connection, as well as track a child's progression through therapy.

AnthroTronix accepted the award at a reception in New York City. Selected companies were profiled in a supplement to the December 11 edition of "Time Magazine."

The company has secured $2.5 million in contracts and research grants from firms and organizations such as Lockheed Martin, the National Institutes of Health, National Science Foundation, Department of Education, Maryland Industrial Partnerships Program, University of Southern California, Defense Advanced Research Projects Agency, U.S. Army, U.S. Navy, and National Aeronautics and Space Administration.

The World Economic Forum designates Technology Pioneers as companies developing and applying the most innovative technologies. Awardees, who came from companies such as China, Germany, Ireland and South Korea, were judged for innovation, potential impact, growth and sustainability, proof of concept, and visionary leadership.

In addition to CosmoBot, AnthroTronix has developed both a video game console and therapeutic software games for children with disabilities, as well as gestural interfaces for military applications. The company's research also includes physiological and cognitive monitoring research, as well as the development of immersive virtual reality training systems.

The market segment for AnthroTronix's rehabilitation products is $1 billion, according to Buffalo-based market research firm AZTech. CosmoBot is slated for commercial release in 2004.

TAP by the Numbers

Historical

Applications received: 368
Companies admitted: 64
Companies graduated: 48

Investment in TAP Companies

SBIR and ATP awards: $54.3 million
Venture capital financing: $44 million
MIPS awards: $4.3 million
State awards: $2.6 million
Public offerings: $200 million
Private financing $473.5 million
Total : $778.7 million

Jobs Created by TAP Companies

Over 1,000 (full- and part-time)

Martek Generates $114.7 Million in Revenue in 2003

TAP graduate Martek Biosciences continues to be one of the top-performing biotechnology companies in Maryland.

The company's main product is Formulaid®, a patented blending of nutritional oils—docosahexaenoic acid (DHA) and arachidonic acid (ARA)—that aids in the development of the eyes and central nervous system in infants.

Martek has license agreements with 13 infant formula manufacturers, representing more than two-thirds of the world's wholesale infant formula market. Formulas containing Martek's oils are available in more than 60 countries worldwide.

In 2003, Nestle USA, part of Nestle S.A., introduced Nestle Good Start Supreme DHA & ARA infant formula in the US. The new formula contains a blend of Martek's DHA and ARA oils.

Martek's total revenues for FY '03 were $114.7 million, an increase of $68.7 million, or 149%, over FY '02—primarily due to higher sales of nutritional products to the company's infant formula licensees. Gross profit margin improved to 40% for FY '03, up from 35% for FY '02.

Three studies released in 2003 showed Martek's Omega-3 DHA provides significant cardiovascular health benefits by reducing triglycerides and increasing HDL cholesterol (known as "good cholesterol"), as well as decreasing small LDL particles highly correlated with coronary heart disease.

Martek initiated an extensive expansion for the fermentation and processing of the company's nutritional oils. The expansion should more than triple Martek's production capacity.

Martek employs 408 people.

Digene Advances in World Market

TAP graduate Digene Corporation's main product is a gene-based diagnostic test for human papillomavirus, or HPV. HPV is the primary cause of cervical cancer, found in more than 99% of all cervical cancer cases.

In March 2003, an FDA Advisory Panel approved DNAwithPap™, which combines the Pap smear and Digene's HPV Test. This landmark approval offers women age 30 and older the first objective measure of risk for one of the most common cancers, while expanding Digene's potential U.S. market to 30-35 million annual tests, worth $400 million.

Digene's HPV testing revenue is up six-fold over the last four years, to $51 million. In the U.S. market alone, HPV test sales increased 64% over the last fiscal year, to $40 million. Digene's revenue has grown 261% over the last four years.

In 2003, Digene established more direct sales companies, bringing the total number of European operating companies to six. HPV test sales in Europe increased 30% to $8 million.

Digene delivered more than 2.5 million HPV tests in 50 countries—a 55% increase—during FY '03. The company expanded coverage of the DNAwithPap™ test to more than 50 million covered lives.

The American College of Obstetricians and Gynecologists recommended HPV testing in July 2003.

DataStream Named Incubator Company of the Year

TAP company DataStream Conversion Services LLC was recognized as the Maryland Incubator Company of the Year in the Technology Services category for 2003.

The award marked a pivotal, $2 million year for the company, driven in part by new contracts with GuideStar, the U.S. House of Representatives Office of Legislative Counsel, and National Geographic. The company is also positioned to capture a top position in the data conversion market for online information providers, providing services to industry giants such as LexisNexis, the Bureau of National Affairs, and the U.S. Congress.

"This is an exciting time for us," said Mark Anstey, president of DataStream. "We're fortunate that many major players in our market are choosing us for their mission critical projects —but by no means do we plan on slowing down."

The recent momentum is built around the company's unique approach to data conversion and enhancement—providing accurate, fast and cost effective transformation of any volume of data from essentially any format into any other.

Congressional Quarterly was the first to take advantage of the company's services, employing DataStream to convert the entire Federal Register into a web-enabled, easily searchable format each day in less than an hour. Today, DataStream also processes the Congressional Record, U.S. House and Senate Committee Reports and Bills, and the Congressional Research Service's Bill Digest. DataStream's highly automated system completes these tasks within minutes, making the data available on the Internet before most people arrive at their desks in the morning.

DataStream recently inked a multi-year deal to build data for GuideStar, the national online database for information on every philanthropic organization in the U.S. The company's LexisNexis contracts involve developing and maintaining a variety of legal and international business data products. DataStream also built the U.S. Government a data bank of the entire body of legislation from the last two Congresses, along with a system for adding new legislation.

DataStream has completed projects across the complete spectrum of data types in the finance, business, legal, publishing, entertainment, insurance and defense sectors.

The Maryland Incubator Companies of the Year Awards recognize the achievements of current and graduate companies within Maryland's business incubators. Sponsored by The Maryland Technology Development Corp. (TEDCO), American Express Tax and Business Services and Saul Ewing LLP, awards are chosen in a number of categories by a committee of regional industry leaders and early-stage investors. Awards are based on the goals of the company and the company's success in achieving its objectives. Examples of other factors considered include development of a particular technology or product, increase in number of employees, engagement of a significant customer, growth in revenue or earnings, and successful technology transfers.

DataStream, which employs 28 people, has already hired six employees in 2004.

Knowledge Broadcasting Company Launched by Graham Bell's Great-Grandson Joins TAP

For Edwin Grosvenor, the conceptual roots of his company trace back to his great-grandfather, Alexander Graham Bell.

Among his many inventions, Bell created the concept of the first popular national membership organization—the National Geographic Society—with the mission of increasing and diffusing knowledge. Grosvenor discovered that a few years later, Bell also sketched ideas for "seeing by wire" into his journal.

Grosvenor's new company, StreamCenter Inc., the latest firm to join TAP, unites Bell's two ideas: aggregating knowledge and offering it via streaming video—with the goal of creating the largest repository on the Internet of professional education videos and associated documents.

StreamCenter's strategy is to offer associations and conference organizers videotaping, production, editorial, and hosting services at a nominal cost. The associations then receive royalties for each Webcast purchased through StreamCenter's "Webcast Store," a proprietary e-commerce system. StreamCenter also creates metadata about the content, which can be easily located thanks to a sophisticated search-and-retrieval system with customized taxonomies.

"This isn't just Webcasting," observed Reggie Henry, chief technology officer of the Greater Washington Society of Association Executives. "This is the content management and content delivery system of the future. You can use this for distributing anything."

The model, according to StreamCenter, is novel: it offers associations an affordable way to offer Webcasts of their conferences, generates additional revenue, extends their reach to members who couldn't attend, and preserves the content of their meetings.

"It's stunning to think how much knowledge is lost every year from conferences and meetings," said Grosvenor, founder and CEO of StreamCenter. "Thousands of conferences occur each year, but once they're over – the presentations and talks given, the panels, the information shared – much of it is lost."

The potential market is huge. Gale's Associations Unlimited database lists 450,000 U.S. and international organizations, including 22,500 national associations in the U.S. alone. Some of these associations, such as the National Education Association and the American Diabetes Association, have more than one million members.

StreamCenter's launch comes at the right time. The average association lost a staggering $100,300 on its meetings in 2002, according to a recent report by the American Society of Association Executives. Attendance at many conferences has dropped due to economic factors, fears of terrorism, and the general inconvenience and lost time from travel. StreamCenter estimates that only 5.6 percent of members are able to attend their association's annual meeting.

StreamCenter's offerings include: videotaping, encoding, PowerPoint slide conversion, editorial services, metadata creation for pushing to Internet search engines, customized media player layouts, links to additional material, differentiated pricing for members and non-members, and flexible digital rights management.

StreamCenter's current customers include the Urban Land Institute and the National Association of Seed and Venture Funds. The company is just completing a Series A round of financing.

Survey Results

This chart reflects the most recent survey responses of MTES clients, conducted by the National Institute for Standards and Technology's Manufacturing Extension Partnership.

MTES Expert Solutions Led to	
Reduced lead time	27%
Change in information systems	58%
Improved profit margin	43%
Increased sales	27%
Retained sales	33%
Cost avoidance	43%
Increased investment in equipment, software, training	80%

MTES' Two-Year Economic Impact

This chart reflects MTES' economic impact on Maryland companies during the past two and a half years.

Time Period	Increased Sales	Retained Sales Otherwise Lost	Saved Costs	Investment in Plant/Equipment	Unnecessary Investments Avoided	Saved Investments	Employee Retention/ Creation
2001 Survey Results	$6,130,000	$11,048,000	$1,822,500	$601,000	$7,082,000	$6,623,000	126
2002 Survey Results	$710,000	$3,050,000	$905,500	$716,200	$762,000	$351,000	48
Q1 & Q2 2003	$971,000	$3,236,000	$300,000	$503,000	$97,500	$110,000	31
Totals	$7,811,000	$17,334,000	$3,028,000	$1,820,200	$7,941,500	$7,084,000	205

MTES TOTAL TWO-YEAR IMPACT ON MARYLAND MANUFACTURERS: $44.8 million

MTES is Maryland's member of the National Institute of Standards and Technology's Manufacturing Extension Partnership (NIST MEP), a nationwide network of 61 not-for-profit centers providing manufacturers with the assistance needed to succeed. Based on NIST MEP evaluation metrics, MTES has consistently retained its ranking as a "Center in Good Standing."

MTES projects have involved 276 faculty and staff from university system institutions since 1996.

Garrett County Manufacturer Pioneer Conveyor Poised to Capture Fortune 500 Market with Improved Mining Roller

Pioneer Conveyor is aiming its sights at a larger share of the $100 million mining conveyer idler roller industry, thanks to an improved product it developed with the University of Maryland.

The company, which sells $3 million in idler rollers to mining companies each year, has re-engineered its manufacturing processes and developed a new, state-of-the-art roller through MTES and MIPS.

"We hit a boom in the mining industry and became successful very fast," said Pioneer Conveyor President Courtland Helbig. "But our products weren't engineered."

When some of the company's roller products started to fail, whether for structural, environmental or manufacturing reasons, Helbig decided to find out why. University of Maryland, Baltimore County Mechanical Engineering Professor Dwayne Arola had the answer.

"We looked at their current manufacturing practices and evaluated new ones," said Arola, whose work, along with that of two graduate students, was funded by the company and MIPS. "We found and suggested ways they could improve their welding, alignment, assembly and other processes. Then we engineered a vastly improved roller design."

Helbig incorporated nearly 80 percent of Arola's manufacturing suggestions. "The difference in problems we're having is night and day," said Helbig. "We just don't have them anymore."

This confidence in the company's products has Helbig looking at larger and new markets, even though Pioneer already ships 120,000 rollers per year—representing approximately 95 percent of the company's product line. "Before this, we were a low-priced producer of rollers," said Helbig. "Now we can go after the Fortune 500 companies like Consol and Peabody Holding. That's where our future lies, being able to sell to these markets."

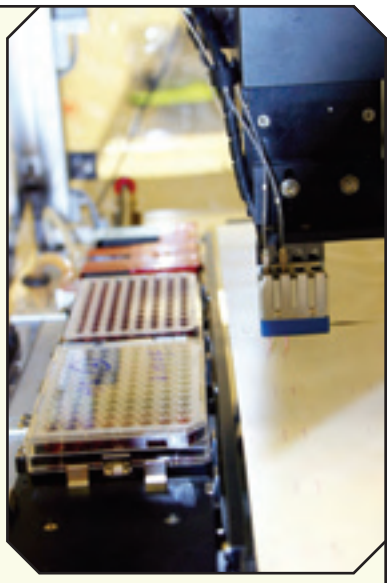
Pioneer has expanded into the expansive, above-ground aggregate market, where its rollers will help conveyors move products such as salt, gravel and limestone.

When the company incorporates Arola's new roller design, it could potentially edge out much of its competition, especially with the projected two-year lifespan increase of each roller. The new rollers will last up to five years, handling tons of coal or other products at any point in time—at up to 800 feet per minute.

Increased sales could also lead to growth and expansion for the 30-employee company—bringing additional revenue and new jobs to Garrett County.

"This is a great example of using State resources to help a company become more competitive," said Frank Shap, technology development officer for the Garrett County Office of Economic Development. "Economic growth is built one business at a time, and each company that succeeds ultimately leads to improved financial performance for the region, as well as job growth."

Pioneer was led to MIPS through the Maryland Department for Business and Economic Development, which referred the company to Robert Barazotto, the western regional manager for the Maryland Technology Extension Service (MTES), the university's consulting arm for manufacturers. Barazotto contacted Arola, who then—along with Pioneer—acquired MIPS funding.



SuperArray Increases Sales by $2 Million, Hires 15 New Employees with MTES' Assistance

SuperArray Bioscience Corporation, which develops and manufactures gene expression microarrays for biomedical research, was planning to triple its operations and expand its facility to meet quadrupled sales forecasts.

The Frederick-based company, which operated in a laboratory environment—not a production environment—wasn't sure how to make the expansion. MTES had the answers.

"We helped SuperArray set up their manufacturing facility for productivity," said MTES senior consultant Paul Vinikoor, the lead engineer for the project. "Productivity is how many goods you produce for how much labor you put in."

Vinikoor, along with MTES Lean consultant David Rizzardo, analyzed the scale-up of SuperArray's production facility and applied the principles of Lean Manufacturing to a new design. MTES worked with architects, engineers and the general contractor for SuperArray's new production space.

Lean Manufacturing establishes a systematic approach for eliminating waste (non-value-added activities) and creates flow throughout the entire company. It also helps firms develop and implement long-term plans to streamline their operations for success.

SuperArray needed a flexible Reagent Preparation and Kit Assembly area for handling future products. MTES applied Cellular/Flow design to the area. Cellular/Flow Manufacturing is the linking of manual and machine operations into the most efficient combination to maximize value added content while minimizing the waste of motion and valuable resources. Cell construction can attain shorter lead-times, improved product quality, reduced inventories, simplified scheduling, and minimized material handling.

"If someone has to walk all the way across the room to perform a task, they're wasting time," said Vinikoor. "By having everything close when you set up, you're eliminating non-value-added labor as a product flows. The next operation is always nearby"

MTES' final layout eliminated wasted labor, so SuperArray never has to pay for labor that doesn't go into its final products.

To help scale-up SuperArray's processes, MTES recommended equipment for mixing tanks, mixers, heaters, flow meters, and automatic dispensers.

"We introduced SuperArray to automatic and semi-automatic dispensing equipment," said Vinikoor. "The company purchased a system that fills up bottles for kits of assays or reagents. It will save SuperArray a great deal of manual labor."

MTES' solutions helped SuperArray increase its sales by $2 million. The company also created 15 additional jobs—two of those in manufacturing, as a direct result of MTES' expert assistance.

MTES worked hard at minimizing the company's investment costs for new equipment. SuperArray reported a $200,000 savings while investing $300,000 over a 15 month period.

"With MTES' expertise in plant layout, lean production, and automated

continued on next page

equipment, we have effectively scaled-up and significantly improved our productivity in the manufacturing process," said Dr. Sean X. Yu, Vice President of Operations for SuperArray. "Our overall facility and work areas have been set up for efficient flow and labor productivity. MTES is a valuable technical resource we can count on."

MTES Helps Clamp Manufacturer Purchase New Software, Move Towards $3 Million Increase in Sales

Hunt Valley-based Murray Corporation, manufacturer of metal hose clamps, wanted to increase its sales by $3 million in three years, but the company couldn't economically realize that level of growth without a new business/manufacturing control software system.

Murray, which sells clamps to appliance, auto and truck manufacturers, as well as to part distributors, was using an antiquated, DOS-based control system to manage sales and manufacturing. Service support for the DOS system was no longer available, and finding DOS compatible hardware to replace aging computer terminals was being increasingly difficult. The problem was where to begin.

"From a user's standpoint, there are hundreds of programs out there," said Thad Schippereit, vice president and general manager for Murray. "We needed independent, unbiased help organizing our thoughts and needs for a new system."

MTES offers a manufacturing software selection process that guides companies through nine steps for choosing the best enterprise resource and material requirements planning software to fit their needs. Over a period of several months, MTES' John Songster directed Murray through the software selection process.

Murray selected a new system, and quickly realized gains in efficiency and sales. The bottom line for Murray in choosing a new control system was providing comprehensive user functionality in customer account management, shop floor control, inventory management, and accounting. "Our new system has functionality that enables us to streamline all areas of our business, which results in lower costs for us and improved service for our customers."

MTES' manufacturing software selection process produced final candidates that were matched 90 percent or better with Murray's needs, according to Schippereit. "We felt confident that what we were getting was a good fit for us," he said.

Murray might never have gone through the process if MTES hadn't offered its assistance, according to Schippereit. "If we had to go out and do this on our own, it still wouldn't be completed," he explained. "More people should know about MTES—especially small businesses like ours."

LaMotte Company Increases Productivity at Least 50% with MTES Lean Manufacturing Solutions

Chestertown-based LaMotte Company, one of the country's largest manufacturers and distributors of water testing equipment contacted MTES for assistance in resolving ergonomic issues in its shipping department.

MTES consultants Barry Frey and Ron Hawkins visited LaMotte, met with company officials, and studied its shipping department. Their analysis determined that, in addition to ergonomic issues, product flow was a problem, as well. Product would pile up on LaMotte's conveyor system to be processed, then rushed to meet deadlines.

Dave Rizzardo (MTES Lean Manager), with the assistance of Frey and Hawkins, arranged a new cellular flow for LaMotte's product processing and shipping. Cellular or Flow Manufacturing, a principle of Lean Manufacturing, links manual and machine operations into the most efficient combination to maximize value-added content, while minimizing wasted motion and valuable resources. Cellular Manufacturing is one of the primary techniques used to obtain the Lean benefits of: shorter lead-times, improved quality, reduced inventories, simplified scheduling, and minimized material handling.

MTES incorporated LaMotte's request into its plan for a two-line conveyor system, using one line for unregulated material and the other for material that had to be processed and documented. Further down the line, the product was combined and sent through the manifest system.

LaMotte also purchased lift tables, which allow the packers to adjust their work to a height comfortable—regardless of the carton size and material being packed. These lift tables are also integrated into the conveyor system.

MTES' solutions made a difference. According to Herman Wefelmeyer, LaMotte Company's Director of Manufacturing, "Order packing productivity has improved at least 50%. Material flow has improved dramatically by reducing the number of order pickers and reassigning people to the packing operation to reduce queue time. Productivity in the picking operation has improved as well."

Wefelmeyer added, "Morale in the department has improved. The employees are more efficient and productive, and are working well together in the cell."

LaMotte

Before and After

Before: Long conveyor.

Before: backed up queue.

After: shorter conveyors, less prone to queue.

After: new lift tables, adjustable to height of both user and conveyor.

MTES Realigns Offices to Serve Maryland Manufacturers

The Maryland Technology Extension Service (MTES) is newly aligned to better serve Maryland manufacturers—through three, consolidated regional offices.

The newly established regions will: maintain an MTES presence and availability statewide; locate the majority of MTES resources in two areas of highest industrial concentration (markets), i.e., Baltimore City/County and Gaithersburg/College Park; form clusters of engineers/consultants to enhance customer service and facilitate penetration through synergetic interactions for marketing, problems solving, and resource identification; and connect counties with highest concentration of biotech companies to the biotech resources at UMCP.

The new MTES regional offices are:

MTES Potomac Region

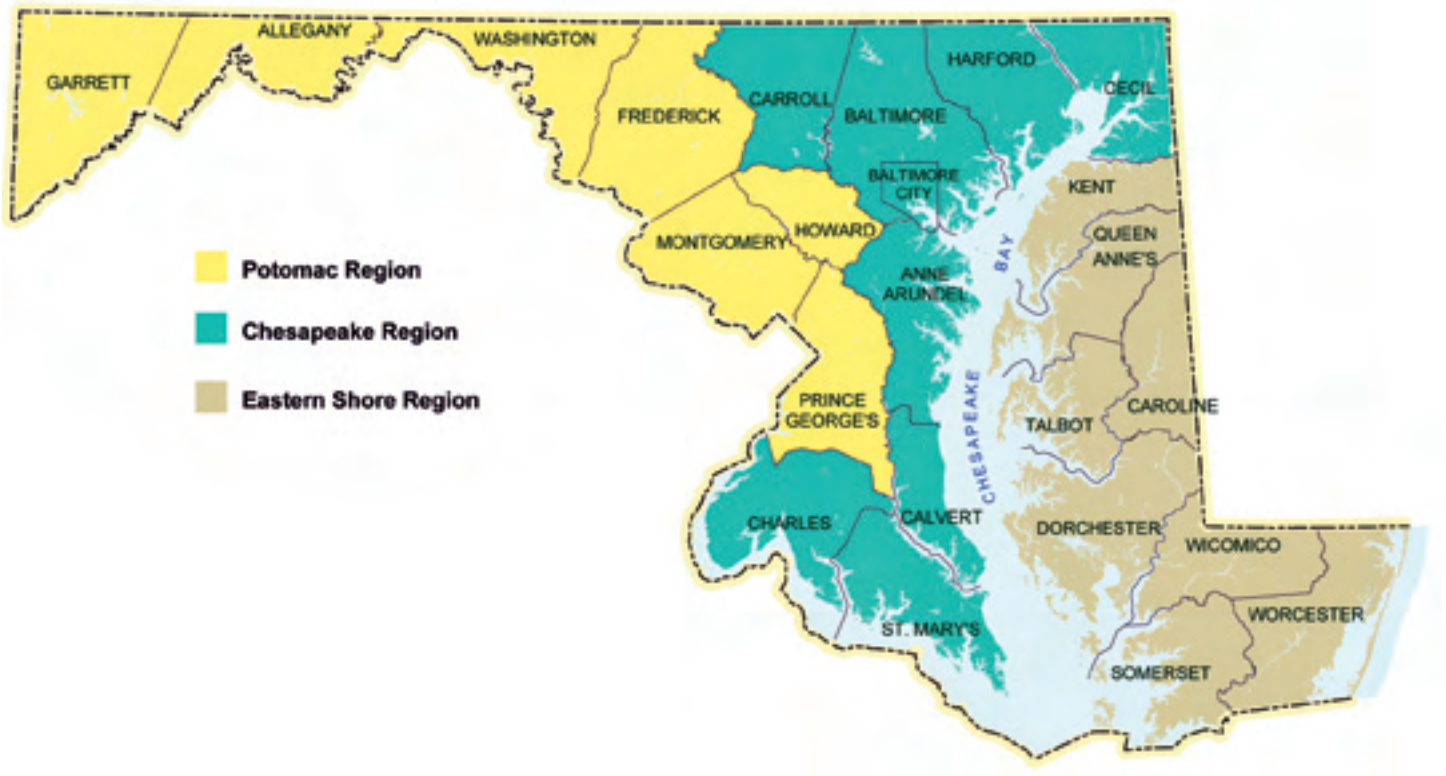
University of Maryland, College Park
Potomac Bldg. 092
College Park, MD 20742-3415
Phone: 301-405-3883

MTES Chesapeake Region

University of Maryland, Baltimore
410 W. Lombard St., Suite A
Baltimore, MD 21201
Phone: 410-706-3233

MTES Eastern Shore Region

Power Professional Building, 144
Salisbury University
Salisbury, MD 21801
Phone: 410-548-4372
Toll-Free: 1-800-245-5810



Barbe Receives American Society for Engineering Education Outstanding Entrepreneurship Educator Award

Dr. David Barbe, professor and faculty director for the Hinman CEOs Program, was recognized in June 2003 with the American Society for Engineering Education (ASEE) Outstanding Entrepreneurship Educator Award. The national award, sponsored by the Ewing Marion Kauffman Foundation, is given for leadership and innovation in engineering and high-technology entrepreneurship education.

"Dr. Barbe was the clear winner of the award," said Angus Kingon, the entrepreneurship division chair for ASEE. "He has been the driving force behind the establishment of a suite of entrepreneurship programs at the University of Maryland. He is probably most recognized for the innovative Hinman CEOs program, but has also had a broad impact with the technology venture club, technology start-up boot camp, business plan competition, technology venture accelerator, and his graduate courses. He is a most deserving winner of this first award."

Criteria for the ASEE Outstanding Entrepreneurship Educator Award included number of students involved, innovation, sustained support, assessed impact of the program/courses, and interdisciplinary focus.

Six Finalists Qualify for 2004 University of Maryland Business Plan Competition

Six finalists with the best plans for a new company will compete for $50,000 in prizes on May 7 at the University of Maryland Business Plan Competition. The finalists will present their plans to a live audience, as well as a panel of distinguished judges—which will include venture capitalists, attorneys, entrepreneurs, and related service providers. This year's finalists include:

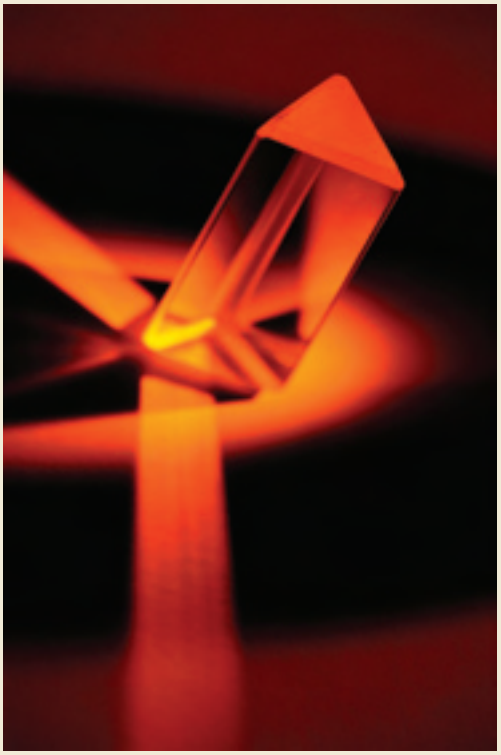
Undergraduate Student Category—MindSay Interactive (Web-based social networking/blogging); Squarespace, Inc. (intelligent Web site publishing).

Graduate Student Category—MacroPhage Networks, Inc. (distributed, cell-based, Denial of Service (DDoS) immunity for computer networks); Pervasive Technology Engineering, LLC (innovative, miniaturized acoustic fiber optic sensors, sensor arrays, and sensor networks).

Alumni Category—Maryland Data Recovery (hard disk data recovery and computer forensics with a patent-pending spin-stand imaging technology and intersymbol interference removal technology); TruGamerz, LLC (ergonomic thumb protector for video game controllers).

The Competition, open to students and recent alumni, was created to find new venture ideas and build successful businesses, as well as to provide education and networking opportunities for students.

MTECH Co-Hosts University Technology Visionaries Series for Venture Capital Community



MTECH, along with Gabriel Venture Partners and the Dingman Center for Entrepreneurship, is co-hosting a four-part lecture series for the venture capital community.

The invitation-only roundtable series, called "Investors Meet Technology Visionaries," features distinguished university faculty at the forefront of their fields. The objectives of the series are to:

— let investors look into the future of selected technology sectors through the eyes of these experts, who are on the front lines of developments; and

— introduce to the venture community the University's most prominent domain experts, who can become valuable due diligence resources.

Topics and dates for the series include:

— Nanotechnology and Small, Smart Systems (September 25, 2003)

— Security (November 18, 2003)

— Wireless Communications (February 17, 2004)

— Supply Chain Management (April 20, 2004)






20 Experts Teach Students and Faculty How to Start Companies During Day-Long Workshop

Venture capitalists, entrepreneurs, marketing experts and intellectual property lawyers gathered on October 25 to teach more than 250 students and faculty members how to start their own companies at the third annual University of Maryland Technology Start-Up Boot Camp.

The event, co-hosted by MTECH and the National Collegiate Inventors & Innovators Alliance, brought in attendees from 14 universities—including Johns Hopkins University, George Mason University, George Washington University, Howard University, Morgan State University, the University of Maryland Biotechnology Institute, the University of Maryland, Baltimore County, and the University of Maryland, College Park.

The goal of the Boot Camp is to teach researchers how innovation can be transferred into promising commercial ventures.

"This region is a hotbed for research," said Dr. David Barbe, executive director of MTECH. "The Boot Camp helps faculty and students get that research out of their laboratories and into the commercial sector."

Boot Camp speakers included venture capitalists and intellectual property attorneys from Ernst & Young, Fish & Richardson, SpaceVest, Gray Cary, Techno Venture Management, Telecommunications Development Fund, and New Vantage Group, as well as marketing experts from LM&O Advertising and Information Experts.

Topics for the event included: Is technology entrepreneurship for you?; Incredible idea...or real business?; Building teams and finding the right friends; Intellectual property and licensing; and The perfect business plan, slide show and elevator speech.

A "Finding the Money" panel featured representatives from Ernst & Young, SpaceVest, Mohr, Davidow Ventures and the New Markets Growth Fund, while a panel about the experiences of real-life entrepreneurs included speakers from DataStream Conversion Services, Spatial Software Solutions, Advanced Thermal and Environmental Concepts, and Citigal.

The Technology Startup Boot Camp was organized by the Maryland Technology Enterprise Institute. Sponsors included: NCIIA, Fish & Richardson P.C., Gray Cary, Telecommunications Development Fund, Techno Venture Management, SpaceVest, and Reed Smith.

Two Teams with Hinman CEOs Students, One Fostered in Tech Ventures Course Capture Top Slots in Undergraduate Business Plan Competition

Two teams with Hinman students tied for first place in the Robert H. Smith School of Business's Second Annual Undergraduate Business Plan Competition, while students from the Clark School of Engineering's Fundamentals of Technology Start-Up Ventures course captured third place.

Winners were selected from 17 submissions to the contest. First-place teams received $800, while the second-place winner netted $400.

First-place-winner Cyprus Precision, a company comprised of four Hinman CEOs students, is developing a Global Positioning Systems (GPS)-based product for athletes that will take measurements during training sessions and competition, giving them an edge in their specific sport by providing information necessary to optimize their performance. Using GPS, inertial sensing technology, and efficient algorithms to interpret acquired data, this device and its corresponding software will provide a novel method for obtaining speed, distance, and other measurements appropriate to specific sports—such as rowing, cross-country running, and downhill skiing.

Cyprus team members include CEOs students Eric Jones (junior, mechanical engineering); Sarah Vogel (junior, marketing and entrepreneurship; and Dennis Cinelli (junior, finance, general business, and entrepreneurship).

Jones secured a $12,500 grant from the National Collegiate Inventors and Innovators Alliance (NCIIA) in Spring 2003 to develop his company.

Exhibit A, which tied for first place, is developing a Video Expert Report (VER) service for legal professionals. VER's will contain a narrative documentary clarifying and explaining the complex issues of each case, similar to a news report on "60 Minutes."

Exhibit A cites two reports showing that presenters are 43 percent more persuasive when using visual aids, and retention increases by 400 percent. The company's team members include co-founder Brandon Bloch and Petar Raketic, a Hinman CEOs student and senior finance and accounting major.

Third-place winner E-core Partnership is creating a portable power system to charge electronic devices. E-core was fostered in the engineering course Fundamentals of Technology Start-Up Ventures, developed by Dr. David Barbe, executive director of MTECH, and taught during the Fall 2003 semester by Dr. Charles Heller, a retired partner of Gabriel Venture Partners.

E-core team members include Kun Lin, a computer engineering and finance major, dual electrical engineering and management science and statistics major Ogbonia Orji, and electrical engineering major Daniel Senai.

Hinman Student Launches Next Generation Blogging/Internet Publishing Platform

Hinman student Anthony Casalena believes he is opening the realm once reserved for computer geeks to the entire world.

After seeing the limitations of popular blogging tools and the complexity of common Web page publishing sites, Casalena single-handedly created Squarespace (www.squarespace.com), an intelligent Internet content management system he believes is the next evolution of publishing on the World Wide Web—for everyone.

"People want to do more than publish blogs—and they want it to be easy," said Casalena, chief executive officer of Squarespace. "They want to create multiple pages with different content and cater it to different audiences—rather than just having one, big, long blog. People want to publish and share files, and easily protect them with passwords. They want to publish their journal to newsreaders in advanced formats and create discussion boards—without doing any programming. People want to track who's visited their site and what search engine words found them—without paying for expensive tracking services."

Launched in December 2003, Squarespace has already attracted political columnists, athlete fan sites, large organizations, small businesses, students, and home bloggers.

Harry Siegel, publisher of New Partisan (http://www.newpartisan.com), a richly textured online magazine covering politics, culture and the arts, chose Squarespace for his Web site.

"Prior to finding Squarespace, we spent six months dealing with excessively expensive solutions, and inflexible, free tools," said Siegel. "Squarespace allowed us—without any knowledge of HTML—to design a complex, content-rich Web site and then focus on putting out a magazine—not keeping our site running. It is highly advanced and flexible, but demands only a layman's knowledge of the Internet to operate. Technical support is responsive, quick, and intelligible. I can't imagine running New Partisan without it."

Squarespace's more expensive competitors are Typepad, Blogger and LiveJournal. Casalena believes an exhaustive, user-focused feature set, along with a simple, browser-based interface, sets his company's offering apart. "Publishing a photo online should be as easy as dragging a picture onto your browser window," said Casalena. "Squarespace makes this possible."

Casalena threw HTML editors and file transfer protocol (FTP) software out the window. With Squarespace, users log into their sites and configure everything with just a Web browser. "You can change the look, the organization, or the order of your site, and still—the system keeps track of all your content and puts everything in its proper place," Casalena explained. "It remembers this blog entry goes into this category, this photo goes with that Web album, or that text goes with this discussion."

It took Casalena one year to develop Squarespace. He's currently working on additional features for the service, including secure e-commerce solutions such as shopping carts, credit card handling, and PayPal compatibility. He's also planning more advanced project management features for corporate

users, much like Basecamphq.com—only better.

"Without a question, the longevity of the blogging trend is predicated on it being able to sustain professional and business users," said Casalena. "Squarespace's service attempts to break out of the copycat routine present in the blogging industry by providing a service that gives the intelligent publisher what they want: a flexible and streamlined way to maintain a multi-page site that also leverages the power of blogging."

"For a professional publisher to fully subscribe to the benefits of blogging," Casalena explained, "a compromise must be found between regular site publishing and holistic blog publishing. Blogging can only revolutionize professional publishing if it breaks out of its single-minded approach and embraces true flexibility for intelligent authors."

Squarespace's advisory board includes Edward Schauweker, a marketing executive with more than 14 years of experience, and founding principal of Tactile Marketing Group. Schauweker has held senior and executive marketing management positions with leading firms, including CSC, WeberShandwick and Ketchum. His clients have included Oracle, Intel, and GE, among others. The COO for Squarespace is Tony Casalena, owner of management consultant company Casal Enterprises Inc. Casalena's 20 years of sales operations and management experience includes senior management positions at companies such as Hewlett-Packard, Cisco Systems, Avici Systems and SkyStream Networks.

Hinman Program Receives Maryland Association for Higher Education Award

The Hinman CEOs Program received a Distinguished Program Award for 2003 from the Maryland Association for Higher Education (MAHE).

The award recognizes innovative and effective programs of superior merit that advance higher education in Maryland.

Selection criteria for the award includes:

- Innovativeness: How innovative or original is the program?
- Importance: Are the goals of the program important to advancing higher education?
- Demonstrated effectiveness: What evidence exists showing that the program works?
- Contribution to higher education: What impact is the program having?
- Replicability: Can the program serve as a model for implementation elsewhere?

The Hinman Program was showcased at the MAHE Fall Conference on Friday, October 17, 2003 at Villa Julie College. In October 2002, the Hinman CEOs Program also received the Price Foundation Innovative Educators Award.

Hinman CEOs

Vibrant living-learning program designed to help undergraduates start their own companies.

Hinman Student Launches Blogging Company, Attracts 15,000 Users

Created by Hinman CEO Adam J. Ostrow (senior, journalism) and UM graduate Brian Klug, MindSay (www.mindsay.com) was the first company to bring together the exciting areas of personal publishing ("blogging") with leading instant messaging (IM) software.

MindSay provides services that enable people to create an online weblog ("blog") that is highly personalized, attractive, and easy to maintain. A blog serves as a simple Web site that takes the form of an online journal and is updated by its respective author with anything from news commentary, to links, to a public diary.

Currently, the highlight of MindSay's publishing platform is the ability to publish a blog using third-party instant messaging networks such as AOL Instant Messenger and Yahoo Messenger. Instant messaging has become the communications tool of choice for many and is currently deployed in more than 40% of US households. It is also immensely popular with teens and young adults.

MindSay envisions blogging as a centerpiece of a revolution in content, communication, and entertainment on the Internet. By continuing to develop innovative tools that improve the publishing, organization, and interactivity of blogs, MindSay is positioning itself as a leader in this exciting medium.

"While blogs have received a lot of attention for their use in war coverage and more recently the Dean campaign, the real story lies in how blogging will change mass communications," said Ostrow. "While people are more connected than ever with e-mail, instant messaging, and cell phones, all of these communications take up valuable time in a one-on-one setting. Blogging allows friends, family, and professional contacts to keep up-to-date on a daily basis while greatly reducing the time the blogger spends on redundant communications. MindSay provides community-based blogging services that target Generation Y—the users that are consistently the earliest adopters of new communications technologies and are integrating blogging into their daily routines at a far greater pace than older audiences."

MindSay already boasts a rapidly growing user base of almost 15,000 members. The company was launched in Summer 2003.

MindSay has commenced work on its version three upgrade, which should be ready by Summer 2004, according to Ostrow. The new version will have many paid features (MindSay is currently free). Several paid features will likely be introduced before then, including image galleries and domain hosting.

Three Hinman Students Launch Cyprus Precision, Developing GPS-Based Product for Athletes

In a race, every second matters. Whether it's skiing, rowing, mountain biking, or running, knowing exactly where to put in that last bit of effort could mean the difference between winning and losing.

Cyprus Precision, formed by Hinman CEOs students Eric Jones (junior, mechanical engineering), Dennis Cinelli (junior, finance, general business, and entrepreneurship), and Sarah Vogel (junior, marketing and entrepreneurship), are developing a product to give racing athletes a competitive advantage.

The company's product, called Excero™, tells athletes precisely when they need to push harder, how fast they need to go, and what it will take to reach the finish line first. Excero™ uses highly developed GPS and inertial sensing technology to track and analyze motion—and subsequently help athletes optimize their performance.

"As a member of the University of Maryland men's crew team, I realized a need for a better system of measurement in athletic training equipment," said Jones. "The electronic training tools in the sport of rowing either lacked vital training information such as speed and distance over water, or obtained such data through obtrusive methods such as external hull attachments that caused a drag in the water and threatened the structural integrity of the boat. I saw GPS technology as a perfect solution to this problem, and began to develop this idea."

Using Global Positioning Systems (GPS), inertial sensing technology, and efficient algorithms to interpret acquired data, Excero™ and its corresponding software will provide a novel method for obtaining speed, distance, and other measurements appropriate to specific sports—including rowing, cross-country running, and downhill skiing.

Cyprus Precision is in the research and development phase of a start-up, although the team took first place in the University of Maryland's Undergraduate Business Plan Competition in Fall 2003.

Hinman Students Volunteer for Habitat for Humanity

Hinman CEOs students volunteered for the Habitat for the Humanity twice in the past year: once to help facilitate the Frostbite five kilometer running race (with proceeds going to the Habitat for Humanity); and once for a building renovation project.

MTECH
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The Maryland Technology Enterprise Institute (MTECH), an initiative of the A. James Clark School of Engineering, enables technology commercialization, strengthens companies, and catalyzes new ventures in Maryland—through six main programs offered to Maryland companies and the university community.

Director: Dr. Herbert Rabin | Executive Director: Dr. David Barbe | 301.405.3906 | www.mtech.umd.edu

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Director, Industry: Edward Sybert; Director, Academic: Dr. William Bentley | 301.314.7806 | www.mtech.umd.edu/Biotech

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Enabling technology commercialization in Maryland through jointly funded, university-company R&D.
Director: Dr. Martha Connolly | 301.405.3891 | www.mtech.umd.edu/MIPS

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Business incubator and accelerator that assists early stage, technology-based companies in achieving their goals.
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Hinman CEOs

The nation's first living-learning undergraduate entrepreneurship program—includes incubator-style facilities, mentoring, seminars, and academic components.
Program Director: Karen Thornton | 301.314.9223 | www.hinmanceos.umd.edu

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