

U.S. Scientists Count Down to LHC Startup

On September 10, scientists at the Large Hadron Collider (LHC) will attempt for the first time to send a proton beam zooming around the 27-kilometer-long accelerator. The LHC, the world's most powerful particle accelerator, is located at CERN in Geneva, Switzerland.

About 1,600 scientists from 93 U.S. institutions participate in the LHC experiments, which will analyze the LHC's high-energy collisions in search of extraordinary discoveries about the nature of the physical universe. The LHC experiments could reveal the origins of mass, shed light on dark matter, uncover hidden symmetries of the universe and possibly find extra dimensions of space.

Within this effort, about 150 scientists from three DOE Office of Science national laboratories — BNL on Long Island, Fermi National Accelerator Laboratory in Illinois and Lawrence Berkeley National Laboratory in California —

have built crucial LHC accelerator components. They are joined by colleagues from the Stanford Linear Accelerator Center and the University of Texas at Austin in commissioning and continuing R&D for the LHC. BNL led the development of the 32 muon detectors in the LHC's ATLAS detector. United States contributions to the LHC are supported by DOE's Office of Science and the National Science Foundation.

As Lab Director Sam Aronson noted in the Monday Memo of August 25, "This milestone is cause for celebration, and we will be doing just that here at Brookhaven, albeit six hours after the actual moment of initial injection in Switzerland, nearly 4,000 miles away. Starting at 9 a.m. here in Upton, we'll gather in the LHC remote monitoring room, in the Physics building, for a morning of talks and live video feed from the ATLAS control room."

More information is available at www.uslhc.us/first_beam.



In 2002, pictured with the first of 20 BNL-built superconducting magnets for CERN's Large Hadron Collider are some members of BNL's magnet-building team: (from left) Robert Medina, Roy Johnson, John Cozzolino, Frank Strelecki, Steve Plate, Dominic Milidantri, and Paul Kovach.



SOS: Blood Drive, 9/10

Give Life — Give Blood

The blood supply on Long Island is extremely low, and an emergency appeal calls for more donors. BNL will hold a Blood Drive on Wednesday, September 10, 9:30 a.m. – 3 p.m. in the Brookhaven Center. Donors must be 16 to 75 years of age, in good health and weigh over 110 lbs. Restrictions may apply to individuals from the UK and Europe. Donors should have a photo ID and know their social security number. To make an appointment, log on to the Human Resources webpage, click on "Blood

Drive" and select "Schedule an Appointment." If you do not have access to a computer, call Liz Gilbert, Ext. 2315.

Sweepstakes Prizes

New York Blood Center is offering all donors for the September 10 Blood Drive a chance for free sweepstakes to win a seven-day trip for four to Disney's Caribbean Beach Hotel, or a seven-day cruise for two on the Western Caribbean, or a trip to a vacation spot of your choice. For more information, see www.redcelladvantage.com.

New Series of Ballroom Dance Lessons Begins

Three new six-week sessions of weekly ballroom dance lessons, sponsored by the BNL Ballroom Dance Club and given by instructor Giny Rae at a cost of \$30 per person for each session, will start on Wednesday, September 24. The new schedule is as follows:

Beginner ONLY salsa/mambo lessons, 5:15-6:15 p.m.; beginner/intermediate foxtrot lessons, 6:15-7:15 p.m.; and intermediate hustle lessons, 7:15-8:15 p.m.

Pre-registration and practice sessions will be held on September 10 and September 17, 5:15-7:15 p.m.

Classes and practice sessions are held in the North Ballroom of the Brookhaven Center. Lessons are open to all BERA members: BNL employees, retirees, official BNL visitors and their immediate families (spouse and children). Each BERA member may bring a partner, but a partner is not necessary to participate.

For more information contact: Donna Grabowski, Ext. 2720; Vinita Ghosh, Ext. 6226; Gail Donoghue, Ext. 2838; Dean McDonald, Ext. 7239; or Kathleen Tuohy, Ext. 3845.

439th BSA Distinguished Lecture:

International Atomic Energy Agency And Nonproliferation Talk by Cooley

The recent renewed interest in nuclear energy and its projected expansion may pose increased proliferation risks as nuclear materials, technology and know-how are spread throughout the world. This projected "nuclear renaissance" would bring additional nuclear facilities, materials and activities under International Atomic Energy Agency (IAEA) safeguards.

Jill Cooley, the IAEA's Director of the Division of Concepts and Planning in the Department of Safeguards, will give a BSA Distinguished Lecture titled "Nonproliferation, Disarmament and the IAEA in Tomorrow's World," in Berkner Hall on Tuesday, September 9, at 4 p.m.

The IAEA works with its 144



member states — most countries in the world — to prevent the spread of nuclear weapons and to promote the safe, secure and peaceful use of nuclear technologies. During the last 50 years, the agency has evolved to become an integral part of the international nonproliferation regime and the global security system. Cooley will give an overview of the IAEA safeguards system and describe current verification

challenges and potential new roles for the agency.

Jill Cooley has 25 years of experience with international safeguards, particularly in the development of safeguards for uranium enrichment plants and the use of environmental sampling as a safeguards verification tool. She has worked for the IAEA for 13 years, and, in her present position, she is responsible for departmental strategic planning activities and for the development, design and standardization of safeguards concepts, approaches, procedures, and training.

The lecture is free and open to the public. Visitors to the Laboratory age 16 and over must bring a photo ID.

Cycletrons Motorcycle Club Family Picnic, 9/6

The Cycletrons, BNL's Motorcycle Club, in conjunction with the BNL Camping Club, invite all club members, their families, friends, and others who have an interest in motorcycles to their 12th annual Biker BBQ and Family Picnic on Saturday, September 6, at noon at the gazebo picnic area near the softball fields.

Tickets are \$10 each; children of 12 and under are free. Hamburgers, hot dogs, salads, soda and more will be available as well as various games, raffles and more. To purchase tickets, contact Tony Arno, Ext. 6153; Craig Diaz, Ext. 2350; Charles Gardner, Ext. 5214; Toni Hoffmann, Ext. 5257; or Tom Seda, Ext. 7578.

Vanguard Retirement Counseling

On Thursday, September 18, you may meet one-on-one with a licensed retirement planning counselor from Vanguard for an in-depth consultation, in the Human Resources office in Bldg. 400B. Go to www.meetvanguard.com or call 1-800-662-0106, Ext. 14500 to schedule your session. Financial questions you might want to discuss include: How much should I save for retirement? Am I saving enough? How do I choose the right investments? Can I afford to retire when I want to? The 45-minute session is free, and you do not have to be invested with Vanguard to meet with a counselor. Your spouse or partner is welcome to attend your meeting. Appointments are available from 8:30 a.m. through 4:30 p.m.

Arrivals & Departures

— Arrivals —	
None	
— Departures —	
Tamara Campbell.....	NLSL II
Joanna Ingraham.....	NNS
Erik Muller.....	CFN
Xiaowei Teng.....	CFN
Wen Wen.....	Chemistry

BERA Fitness

To add to the Aqua Aerobics and Pilates classes available to BNLers as announced last week in the Bulletin 8/22/08, all may keep fit in another way:

Jazzercise: 8 week session, \$90 for twice a week, Tuesdays and Thursdays, noon-1 p.m., Rec. Hall, Bldg. 317

Tuesday: Sept. 9, 16, 23, 30, Oct. 7, 14, 21 & 28

Thursday: Sept. 11, 18, 25, Oct. 2, 9, 16, 23 & 30

Advance registration is required. Mail your check, made payable to BERA, to Recreation Office, Bldg. 400.

Classified Advertisements

Furnishings & Appliances

5 DRAWER CHEST - 2-year old wooden chest for free. W31,H48,D17. Ext. 3577.

COMPACT REFRIGERATOR - 4.6 cubic ft. capacity, like new, \$100. 298-4570.

DINING RM TABLE - oval, w/2 inserts/6 chrs; Qwn metal bedframe, \$15; 2 bar chrs, \$20; Singer sewg mach. w/tbl, \$35. Ext. 7647.

DBLE DRESSER & ARMOIRE - White Fmica, 6 drwr dresser, 3 drwr armoire w/dbl drs, adj.shelf. Holds tv. \$175/both. 645-1349.

DINING ROOM - Thomasville Elysee, Pecan/ash wd, table, 2 arm/4 side chrs, mobile server, china closet. \$5,500. 764-4444.

GIRL BEDRM SET - 6 pc., washed, solid oak w/floral motif. Dsr., mirror, armoire, desk, nightstd. \$650. Ulysses, Ext. 3084.

KITCHEN TABLE, RECLINER - This End Up table with six chairs, \$75; Berkshire rocker/recliner \$50. Bill, Ext. 2627.

MOVING, ALL MUST GO - snow blower, appliances, misc. craigslist: <http://tinyurl.com/6jz9qx>. Ext. 6047 or 294-3858.

ORIENTAL RUG - beautiful, w/pad, 9' x10', v. good condition. \$200. Ext. 2346.

VACUUM WITH SHAMPOOER - Kirby, purchased 3 yrs. ago for \$1300, asking \$700. Ulysses, Ext. 3084.

Audio, Video & Computers

36 - Tau, silver cabinet, 2 component inputs, S-video, rem. contrl, 36 3/4"Wx29 1/4"Hx23"D, \$400 neg. 744-4061.

COMPUTER E-MACHINES - dsktp pc T-5088, 3.2ghz, pntium 4, 160 gb, dvd brnr, xtr ram, ntgear wires crd, \$250. Ext. 2567.

IPOD - 30 GB, white, new battery, gd condition, 2 cases, \$75. 331-4820.

STEREO TV, 32-INCH - Mitsubishi, works v. well. \$50 or b/o. Dave, 513-7906.

Sports, Hobbies & Pets

5-IN-1 GAMETABLE - soccer, air hockey, pool, ping pong, basketball, \$100. 298-4570.

BICYCLE - 18" Dyno NFX Freestyle, red-wicker basket. \$50. 286-8664.

CELLO - Excell, \$4700.00 with hard shell case. Stephen, Ext. 4475 or 929-3251.

FOOSBALL TABLE W/METAL LEGS - Nordic brand; about 3 ft. 2 ft., Excel. cond. Ask \$20. Ron, Ext. 4553.

METS TICKETS (2) - vs. Phillies 9/7, 8:05pm. Mezz Sec 27 Row E Seats 3 & 4, \$80/pr. Ext. 8709.

NORDIC TRACK - Classic steel & hardwood x-country ski exercise machine, low mi, vg cond. \$99. 433-9205.

Tools, House & Garden

CONCRETE - High Strength Sakrete 80 lb. bags. 22 bags avail. \$2 each. Beeper 4406. Rich, Ext. 5741.

EMBROIDERY MACHINE - Brother PE 700 w/PE design software, 60 spls of thread w/holder, Ask \$800. 987-4281.

LAWN MOWER - Craftsman lawn mower, 7 HP, 30" cutting deck, Mulching/bagging, like new \$100. P.K., Ext. 4416.

SAW - B&D circular, 71/4" w/3 blades, \$35; Util. Scale, 24 oz, \$5; Dremel Moto-Shp Scrl Saw w/tablet 57-2, \$40. Ext. 7647.

Free

APPLIANCES - microwave, deep fryer, carpet sweeper, phone w/ans. machine, king bed frame, all gd. or new cond. Ext. 7245.

EXERCISE MACHINE, PRINTER - Weider Exercise machine, gd cond. HP 3-in-One printer 2100 series, needs work. 286-6858.

FILL - come & get it. In my backyard, mostly sand. Warren, Ext. 2080 or 732-0793.

FISH TANKS - 1-55 gallon and 1-30 gallon tank with stand, gd cond. You P/U. Stanley, 909-2642.

WATER PUMP MOTOR - & pump parts, all used, for camper domestic water supply 12 VDC, Peter, Ext. 5551 or 772-4751.

WEIGHT SET & BENCH - 76 lbs., 5' and 2 18" bars, exercise bench. Good cond. You pick up (Bellport). Gerry, 286-8747.

Wanted

CERAMIC TILE SETTER - To repair ceramic tile floor. 631-744-8386.

CRATES FOR ANIMAL RESCUE - New, gently used, or donations toward purchase of new crates. Kathleen, Ext. 3161.

ENCLOSED TRAILER - Size (5X8) or (6X10) in gd cond. Must have clear title. Reasonable. Ext. 7664 or 706-224-2338.

RIFLES - Starting a gun collection and looking mostly for rifles. Bob, 603-7261.

ROOM MATE - Doctoral student looking for a female roommate to share an efficiency apartment at BNL for 2 months. Gulgun, Ext. 5778 or 566-5822.

Lost & Found

BABY BLANKET STILL IN PLASTIC - Found by Police Headquarters. Douglas, Ext. 4660.

For Rent

BAYSHORE - lrg. one rm furn studio, 2nd floor, fridge, hotplate, bath, no smokers or pets, one mo sec. \$625/mo. 206-0167.

BELLPORT VILLAGE - lrg 1-bdrm apt, 1st flr of 2-fam. house; Pvt. ent., LR, DR, Full Bath, use of yd. No pets/smkg. Call after 6 pm. \$1,275/mo. 275-0745.

BROOKHAVEN HAMLET - New 1 bdrm, l/r, kit, bath, priv. ent., off street parkg, all util & cable incl. Single occup., ref/sec. \$1,200/mo. 286-9045.

EAST SETAUKET - Two bdrm. bsmt.. nr. shops. Network, cable, heat, elect.+ phone in US. Furn./unfurn. Pvt. ent, No pets/smkg, for 1 pers. \$900/mo. 828-8509.

MASTIC - 3-bdrm., finished basement, half-acre, fenced yard. \$1,800/mo. plus sec., utilities not included. 998-3163.

MILLER PLACE - Furn. Col. house in prof. residential area, internet, central a/c, TV cable, own bdrm. 10 mi. to BNL. Responsible non-smoker \$675/mo. 744-8386.

PORT JEFF STATION - Upstairs, Lg. 1

bdrm, full ba., LR/EIK, carpeted, rent incl all. \$950/mo. 525-4416.

RIDGE - spacious 1br/1ba apt., bright l/r, eat-in kit, priv. ent. & dr. way, 5-10 minutes to BNL, incl. utilities & washer/dryer, no smoking. \$1,175/mo. Marie, 236-9114.

SHIRLEY - 1RM, stove kitchenette, full ba, sep ent., tv, heat, cable, int. 1mo. sec, nr/ stores/beach/LIRR, no smkng/pets. \$700/mo. Regis, Ext. 8321.

SOUND BEACH - Excel. 8-rm. Col. house, furn., 2 ba., bsmt. 15-20 min. to Lab, Miller Pl. Schls. \$2,300/mo. 631-849-3767.

SOUTHAMPTON VILLAGE - 2 bdrms, 1.5 ba cottage, all renov. w/ss appli. & windows, low util., nr. vilg. & station, avail. mid Sept. \$1,800/mo. 516-220-1967.

ST. JAMES - 2BR,2BA, EIK, L/R, D/R, pvt. deck, updated appl. 55+ Fairfield gated community, in/outdoor pools, tennis, clubhouse, nr town/mall \$1,800/mo. 584-3656.

For Sale

MASTIC, NY - Pristeen 3bdrm, mch, l/r, eik, ingr. irrig cac, oakwd flrs, all appli., fin. bsmt, 2 car gar, landscaped fin. yd., 6 mi to BNL, many extras. \$325,000 John, 281-3342.

MIDDLE ISLAND, NY - 4BR ranch EIK/DR, 2 Ba., Den w/wet bar, fin. basmnt w/wet bar, 2 frplces, lg.deck, koi pond, and more. Great for entertaining. \$349,990 Ext. 2705.

MIDDLE ISLAND, NY - 1BR Spacious Cop. Large LR/BR/DR, Ba, Kitch.,Patio. Open flr. plan. 2nd Flr., Appl. Comm. IGP/Tennis. Many Extras. Must see. \$124,500/neg. Vatsal, Ext. 5453.

RIDGE, NY - Cust Victorian; 3000 sq ft, 4/5 BR; 2.5 ba; jacuzzi; h/wd flrs, CAC, f/bsmt w/sep. ent, 2-car gar, 1 acre, adjac. to protectd land, mins to Lab \$549,000/neg. 255-8445.

SMITHTOWN, NY - Great oldie on dead end street, close to town/train/park/commuting. 3 ba., 5 bdrms., low taxes, Smtwn. schools, poss. income w/permit. \$459,000/neg. Ext. 5090 or 821-2558.

2008 OEP EDITION

Office of Educational Programs

Through the Office of Educational Programs, more than 230 high school and college students and faculty worked with BNL mentors this summer to discover the excitement of science at a world-class laboratory.

Sam Aronson,
Lab Director

The educational programs are one of the cornerstones of our workforce development, diversity, and public outreach activities at the Lab. It is rewarding to see the students, the faculty, and our DOE mission benefit from the collaborations that emerge from these programs.

Marge Lynch,
Associate Lab
Director for
Community,
Education,
Government and
Public Affairs

Viewpoint From Ken White, OEP Manager

After the intense activity of the past ten weeks, more than 230 students from across the country have completed summer programs, BNL showcased their accomplishments at the recent internship symposium, and are off to new horizons, inspired by their hands-on experience of forefront science at Brookhaven Lab. We at the Office of Educational Programs (OEP) and the many dedicated scientist mentors and support staff who have helped the students achieve

research goals have a sense of accomplishment as many of these talented young people will continue on a path to scientific careers.

This year, we had more programs to suit more students than ever before, thanks to new partnerships and increasingly important inclusion in grants with BNL scientific staff and the university faculty members developing collaborations at BNL.

We are excited that several programs that were started over the past several years are now a sustained part of the choices that are

available for bright young researchers-in-training and their teachers. Diversity is one of our high priorities; for example, many new opportunities are being developed through the emerging collaboration between the Historically Black Colleges and Universities and our National Synchrotron Light Source.

Another benefit to all students is the chance to network among their fellows from participating schools and other Lab scientists. To promote such relationships and a community spirit, OEP staff also organize social events such as softball games, trips, and the annual talent

show as icebreakers. One of the best acknowledgements for our work is that many students return in a more advanced program having already developed enthusiasm for science.

Now, come September, OEP returns to the yearly program, which includes providing classes for about 25,000 kindergarten through sixth graders who visit the Science Learning Center with their class teachers.

In the near future, several thousand students, grades six through 12, will attend hands-on science demonstrations at BNL. Programs reinforce science principles learned in school, and provide an experience that makes science fun. Preparations also begin for the many annual contests OEP runs for schoolchildren: the Elementary School Science Fair, in which about 500 Long Island children typically enter science projects; the DOE Regional Science Bowls, the Bridge Building contest, and many more.

Recruiting for next year begins now as well. Grant writing to augment the Lab-funded activities also picks up during this time of year as researchers prepare to submit their proposals with educational components incorporated into them with help from OEP.

As you read the articles contained within this issue, many written by a science-writing student intern, know that any effort you may have made toward helping these programs succeed is greatly appreciated and makes a difference for the students. Time and again, we hear from students who have benefitted greatly from their experience, and from school administrators who say their students come back transformed. They have



Ken White

matured and display a new enthusiasm for their studies, particularly in science and mathematics.

I take this opportunity to also thank the many funding sources for these programs. The primary funding comes from DOE's Office of Science and the National Science Foundation, with additional support from Brookhaven Science Associates, the National Nuclear Security Administration, Howard Hughes Medical Institute via Stony Brook University, the National Institutes of Health and the New York State Collegiate Science and Technology Entry Program.

— Ken White



James Wishart (fourth from right in back) and Sharon Lall-Ramnarine (right) with their research groups.

Programs Build Mentor And Faculty Productivity

Hard-working, committed, and engaging mentors are essential to the success of the internship programs managed by BNL's Office of Educational Programs (OEP). Without them, OEP could not reach out to students and teachers with programs like the Science Undergraduate Laboratory Internships (SULI), Community College Institute (CCI), Faculty & Student Teams (FaST), Pre-Service Teachers (PST), the DOE Academies Creating Teacher Scientists Program (DOE ACTS), and others. Two of these dedicated mentors are described below: Subramanyam Swaminathan, Biology Department; and James Wishart, Chemistry Department.

Wishart and Queensborough Community College (QCC) professor Sharon Lall-Ramnarine have co-mentored students at BNL for the past four summers as part of the FaST program. Their year-round partnership includes the mentoring of CCI, SULI, and PST summer students and collaborating with another FaST team from Howard University. Wishart's work in ionic liquids and far-ranging collaborations with other ionic liquid researchers benefit greatly from the partnership with Lall-Ramnarine.

"I bring in students from my

institution through the FaST, CCI, and SULI programs and Jim takes students from other schools," Lall-Ramnarine said. "We mentor them together. OEP has been fantastic in facilitating our students' visits to BNL. The local students come back during the year to work in Jim's lab, often with assistance from the BNL Diversity Office."

Their success has enabled Wishart and Lall-Ramnarine to expand their program.

"Using the model that Jim and I have established, QCC's Chemistry Department submitted a grant proposal to the National Science Foundation Science, Technology, Engineering, & Mathematics Talent Expansion Program (NSF STEP) last year," said Lall-Ramnarine. QCC won the five-year, \$2-million grant, which supports QCC students and faculty to do research at BNL, QCC, and Queens College.

"This program is especially great for community college students who would not otherwise have a chance to do research," Lall-Ramnarine said. "As a community college faculty member, I have had an excellent opportunity to collaborate with BNL scientists on research that I could not do at my home campus."

See *Mentors* on pg. 2

Graduate Students Attend Conference at Lab

Conference Encourages Students To Pursue Ph.D.s in Science

More than 80 of New York and Puerto Rico's most promising graduate students and their professors met at Brookhaven National Lab August 14-16 for the Fifth Annual Fellows and Mentors Meeting of the Central New York-Puerto Rico Alliance for Graduate Education and the Professoriate (CNY-PR AGEP).

The organization is an alliance among Cornell University, Rensselaer Polytechnic Institute, Syracuse University, and University of Puerto Rico at Mayagüez. Funded through a National Science Foundation program, AGEP alliances work to increase the number of domestic African-American,

See *Conference* on pg. 3



HS research student William Marsiglia (second from left) in the lab with teacher Mike Vaccariello (right), and researchers John Piyis (left), and Mike Michaelides (second from right).

Sachem High School Student Wins Fellowship for Research at BNL

This summer, William Marsiglia, a senior at Sachem High School East, came to BNL with an Arthritis Foundation Summer Student Fellowship for research on inflammation, with guidance from BNL mentor Peter Thanos, Medical Department. This \$2,000 fellowship was awarded competitively to only six researchers this year — with Marsiglia as the only high school student among them.

Marsiglia won the award through a proposal based on an independent research project he conducted in ninth and tenth

grades. He was already familiar with BNL, having participated in the Office of Educational Programs (OEP) High School Research Program (HSRP) last summer. At that time, he worked with Thanos on a meta-analysis of immunohistochemistry procedures — a technique used to localize proteins in tissue using antibodies.

This summer, Marsiglia focused on dopamine receptors and the immune system. With the help of Stony Brook University students John Piyis

See *HS Researcher* on pg. 4

OFFICE OF EDUCATIONAL PROGRAMS OPPORTUNITIES

Elementary School Students

Elementary School
Science Fair

Open Space Stewardship
Program - for K-12

Science Learning Center
Programs

Middle School Students

MagLev Contest

Middle School Hands-On
Laboratory Programs

Open Space Stewardship
Program - for K-12

Quarknet home at Fermilab

Regional Science Bowl

Science Learning Center
Programs

High School Students

Bridge Building Contest

STEP - Science & Technology
Entry Program

CSSP - Community Summer
Science Program

Hands-On Laboratory Pro-
grams for Middle and High
School Students

HSRP - High School
Research Program

Inner City Outreach Program

MHSAP - Minority High
School Apprentice Program

Open Space Stewardship
Program - for K-12

College & University Students & Recent Graduates

College Mini-Semester

CSTEP - College Science &
Technology Entry Program

CCI - Community College
Institute

CSSP - Community College
Summer Science Program

DHS - Homeland Security
Scholars and Fellows

FaST - Faculty and
Student Teams

GRIP - Graduate Research
Internship Program

International Atomic Energy
Agency Junior Professional
Officer positions

Nuclear Chemistry Summer
School in Nuclear and Radio-
chemistry

PST - Pre-Service Teachers

Regional Science Bowl

SULI - Science Undergraduate
Laboratory Internship

SCCC - Suffolk County
Community College
Cooperative Experience

Teacher Programs

DOE ACTS - Department of
Energy Academies Creating
Teacher Scientists Program

Teacher Development Work-
shops

For more information, go to
www.bnl.gov/education

BNL Summer Internship Programs Symposium Celebrating Our Future Scientists

With summer drawing to a close and students preparing for their return to school, this year's summer interns joined with mentors, directors, policy makers, and representatives from DOE during the 2008 annual internship programs symposium on August 13 and 14.

More than 230 students, teachers and faculty from local high schools and universities across the country completed this year's summer internship programs, which are managed by Brookhaven National Lab's Office of Educational Programs (OEP). Mentored by Lab scientists and professionals, interns participate in many aspects of the ongoing scientific research and experiments conducted at the Lab.

The annual summer internship programs, including Science Undergraduate Laboratory Internships, Faculty and Student Teams, the Graduate Research Internship Program, and the High School Research Program, are primarily funded by DOE's Office of Science and the National Science Foundation. Additional funding support is provided by agencies including the National Nuclear Security Administration, Howard Hughes Medical Institute via Stony Brook University, the National Institutes of Health and the New York State Collegiate Science and Technology Entry Program.

Day One

The two-day symposium began with a panel discussion titled "Graduate School Admission." This session was designed to help interns understand how to compare, select, and secure sufficient funding to attend a graduate school. "Never cut off an option," ad-



Summer interns present their research at a poster session.



Jeff Pon, DOE's Chief Human Capital Officer and Keynote Speaker, commends interns during the closing ceremony.

vised George B. Robbins, Senior Associate Dean of Admissions at Rensselaer Polytechnic Institute, who encouraged students to find a school with programs that interest them and apply—whether or not they meet every requirement.

Berkner Hall buzzed with excitement following the panel discussion as interns presented posters that highlighted their summer projects. Eager to discuss their research, the interns mingled with scientists, administrators and passers-by, sharing the results of their experiments as well as future plans, many of which included continued involvement in science.

Meanwhile in OEP's auditorium, more than 27 high school researchers presented their summer work as well. "These high school students are the best of the best," said Scott Bronson, OEP's Educational Administrator. "Our scientists hate to lose these young scientists when they go back to school in the fall."

The first day of the symposium concluded with a graduate school fair in Berkner Hall, which featured representatives from several graduate schools and foundations.

Day Two

On day two of the symposium, selected students gave 15-minute oral presentations to Lab mentors, scientists and administrators. Afterwards, students again showcased the results of their summer work at another poster session in Berkner Hall.

Next, OEP manager Ken White welcomed interns to the closing ceremony in the auditorium.

First to speak was U.S. Congressman Tim Bishop, a member of the House Education and Labor Committee who has

shown great support for the Lab over the years. Bishop commended the interns for their recent work, stating that "all on Long Island and throughout the nation should be grateful for you and your work at the Lab. There is a deficit of students, and we need you to be the next generation of scientists."

Lab Director Sam Aronson added his congratulations and spoke of the Lab's role in cultivating new scientific leaders. "Whether you go on to be a top researcher or simply a scientifically literate member of the nation's citizenry, that's good. After seeing the posters and attending some of the sessions, I see there is a very bright future for science," he said. Aronson also recognized the programs' mentors and their contributions, which provide extraordinary experiences for so many students.

DOE's Site Manager Mike Holland then praised the summer internship program as well as the students' commitment. He noted, "You come from diverse backgrounds and have transcended social and economic boundaries to be here. I'd like to extend to all a congratulations from DOE and its Office of Science."

Concluding the symposium, keynote speaker Jeff Pon, DOE's Chief Human Capital Officer, assured interns of DOE's commitment to create opportunities for them to continue working in science. He also referred to the nation's energy challenges and its need for good scientists and stated, "Science will bring economic prosperity to our nation. Coming back to a national laboratory to work is to be a patriot."

— Kirsten Dorans and
Joe Gettler



(From left) Student Richard Deane, Fort Berthold professor Thomas Abe, and student Xavier Driver

Mentors from pg. 1

The partnership with faculty and students is also beneficial to Wishart. "I can expand my research program, because I have so many extra hands," he said.

Mentors Subramanyam Swaminathan, a BNL biologist whose recent research has resulted in finding an inhibitor for the deadly botulinum neurotoxin type A, and Ann Brown, a biology professor from Medgar Evers College in Brooklyn, are particularly interested in providing opportunities for the students they mentor to continue with research once they finish school. For example, Arshad Mahmood, a Medgar Evers graduate mentored by Swaminathan and Brown last

summer, returned to work with Swaminathan as a biology associate for a year before attending medical school.

"The students go back and talk about their experience. That can influence others to want to go to a place like Brookhaven to pursue research."

— Ann Brown

gar Evers, a teaching institution, a chance to join in high-level research. Then, they recruit their fellows. "The students go back and talk about their experience," Brown said. "That can influence others to want to go to a place like Brookhaven to pursue research."

Brown and Swaminathan's team is supported by the National Institute of Health Protein Structure Initiative II, New York Structural Genomix

OEP Secures NNSA Grant to Bring Native American Students and Faculty to BNL

The Faculty and Student Team (FaST) from Fort Berthold Community College, a tribal college in North Dakota worked with BNL environmental research engineer John Heiser this summer thanks to a grant from the National Nuclear Security Administration (NNSA). Fort Berthold professor Thomas Abe and students Xavier Driver and Richard Deane explored the path of perfluorocarbon tracers (PFTs) — inert manmade gases that can be easily detected — when the PFTs were released into the air. PFTs, which are safe and have no environmental consequences, have been used since the early 1980s to study air movement and leak detection.



The Faculty and Student Team (FaST) from Medgar Evers College (from left): Ann Brown, Mohammad Baig, and Charlyn Thomas with S. Eswaramoorthy (right back), a member of BNL's Structural Genomics Group.

Consortium. Since Brown started working with Swaminathan last year, the team has already determined three protein structures and is on their way to solving more.

"We're hoping that we can come out with a breakthrough

in medicine and win the Nobel Prize somewhere down the road!" she said.

To find out more about OEP's many programs, visit: <http://www.bnl.gov/education/programs.asp>.

— Kirsten Dorans

FaST Team Works Fast On Large Synoptic Survey Telescope

Ray H. O'Neal, Jr. from Florida Agriculture and Mechanical University and students Mark Bryant and Zephra Bell from Southern University at Baton Rouge worked on the Large Synoptic Survey Telescope (LSST) project as an Office of Educational Program's (OEP) Faculty and Student Team (FaST) this summer. BNL researcher Paul O'Connor mentored the team in analyzing the optical characteristics of the charge-coupled device, a detector that will be used as an image sensor on the telescope. The experience was made possible through a collaborative National Science Foundation proposal initiated by OEP with the LSST Corporation serving as the lead investigator.

O'Neal, an associate professor of physics and director of Florida A&M University's Astroparticle and Cosmic Radiation Detector Research and Development Laboratory (APCR-DRDL), has gained a lot from being a FaST mentor, he says. "Since I became part of the FaST program in 2005, our university has obtained grants that allow us to continue and build upon collaborations with BNL's Helio Takai on the Mixed Apparatus for Radar Investigation of Atmospheric



Joseph Rubinio D0809088

Cosmic Rays of High Ionization (MARIACHI) experiment. We also hope to make this year's program long-lasting and provide continuing opportunities for students to contribute to unraveling the mysteries of dark energy and dark matter, which will be explored by the LSST."

This experience at BNL will not be his last, O'Neal hopes. In summer 2006, he met Robert Opila from the University of Delaware—they found they had a common interest in research on materials, which included work at the nanoscale. Opila and O'Neal now collaborate as technical consultants for Ubiquitous Technologies Incorporated. In the future, they hope to collaborate with researchers at BNL's Center for Functional Nanomaterials on further materials research.

— Kirsten Dorans



Roger Stoutenburgh D0810108

Open Space Stewardship Third Annual Teacher Workshop at BNL

BNL's Office of Educational Programs (OEP) held the third annual Open Space Stewardship Program (OSSP) Teacher Workshop at the Lab, July 14-18. Led by OSSP leader teachers Amy Meyer and Ivan Suarez from William Floyd and Longwood School Districts, respectively, the workshop was designed for teachers who will be participating in the program for the first time during the 2008-09 school year. During the week, 14 teachers from local schools learned how to use equipment such as GPS — global positioning systems — tracking devices, and soil and water test kits that they will use with their students during the year.

"The goal for today will be to get you into a feeling that 'I can do the fieldwork myself, and I can do the fieldwork with my students,'" explained Suarez, before participants left for Longwood Estates, where they took pond water samples.

The teachers appreciated learning about techniques and research themes. "I think this workshop is great," said Aaron Factor, a high school science research teacher at Middle Country Central School District. "One of the big reasons I'm taking this class is to get research ideas to do with my students. I will definitely take them out into the field, and if they just learn how to take

data during the first half of the year, it will be excellent."

OEP launched OSSP in 2006 under the leadership of Mel Morris. Starting the program required coordination and support from many grant funders and school districts.

"This program provides a chance for students in grades K through 12 to be out in their local environment, doing science research," said Morris. "It also prepares the future generation of environmentally literate citizens and environmentalists."

During the school year, students do environmental research on undeveloped land within their school district that is owned by either a public or private agency. Past classroom projects have included fifth graders tracking black squirrel populations at the Robert J. Henke Memorial Nature Preserve and fourth graders studying an interdunal swale habitat at Harper's Preserve in Southold. Each spring, the students present their work at a student symposium held at BNL. For more information about OSSP, visit: <http://www.greenosp.org/> or contact Morris at (631) 344-5963 or mmorris@bnl.gov

— Kirsten Dorans

For a more detailed account of the workshop, see *The Bulletin*, July 25, 2008, www.bnl.gov/bnlweb/pubaf/bulletin.asp.



Roger Stoutenburgh D0810108

Kirsten Dorans interviewing BNL biologist Subramanyam Swaminathan.

Introducing Kirsten Dorans

Stories in this special edition are mostly written or co-authored by Kirsten Dorans, who joined Community, Education, Government & Public Affairs this summer as a Media & Communications intern.

Dorans, who graduated from McGill University in Quebec, with a degree in chemistry, will start a new internship with the American Chemical Society this fall in Washington, DC.

Conference from pg. 1

Hispanic, American Indian, Alaska Native, Native Hawaiian, and other Pacific Islander students receiving Ph.D.s in science, technology, engineering, and math.

The theme of this year's conference, the first to be held at the Lab, was "Innovation and Technology: Stimulating an Entrepreneurial Environment to Accelerate Technical Discoveries." The event, organized in partnership with the Lab's Office of Educational Programs, was held at the Lab to inspire the diverse group of attendees and their mentors by exposing them to the science, research, and state-of-the-art facilities at the Lab.

Members of CNY-PR AGEP, CUNY AGEP, and SUNY AGEP were welcomed by Lab Director Sam Aronson and keynote speaker Edward Reinfurt, Executive Director of NYSTAR, a New York State foundation providing support for new, innovative technologies that will benefit New York's economy. Throughout his speech, Reinfurt linked the future of innovation in New York State to an increas-

ingly diverse body of scientists, researchers, students, and mentors, stating, "I see a tremendously diverse student population—and a growingly diverse faculty—and we are being made stronger because of it."

In a separate conversation, Reinfurt noted his excitement that this year's conference was held at the Lab. "We particularly recognize BNL as a world-class facility, not only at the national level but for New York State as well. We [NYSTAR] promote scientific partnerships with universities and businesses. From the RHIC ring to the synchrotron to the supercomputer, the Lab has the ability to promote scientific advancement as well as economic advancement for the state and for all researchers, including those of different ethnicities," he said.

Through the next two days, AGEP members attended sessions and panel discussions that covered an array of topics ranging from the tactical — "The Importance of Developing Project Management Skills," and "Negotiating Your First Academic Position" — to the technical — "Imaging Addiction in the Hu-



Roger Stoutenburgh D0808088

(From left) NYSTAR Executive Director Ed Reinfurt, BNL Director Sam Aronson, Syracuse University's Gina Lee-Glausner, and BNL's Ken White.

man Brain," and "Why and How to Incorporate Synchrotron Measurements into Your Research Programs." Attendees also had time to network with peers and presenters at breakout sessions held to spur creativity and innovation.

Session presenters at the 2008 conference included representatives from General Electric, Georgia Institute of Technology, JPMorgan Chase, Lockheed Martin, Motorola, Mount Holyoke, and Syracuse University. Lab representatives also participated in several sessions and led tours that introduced AGEP members to the National Synchrotron Light Source and Center For Functional Nanomaterials.

According to OEP Administrator Noel Blackburn, one of the event's co-organizers, "Hosting this year's CNY-PR AGEP conference was important as it introduced new graduate students and their advisors from upstate New York and Puerto Rico to the Lab while building and strengthening their connections within the scientific community. The overall response from attendees was very positive as they all took advantage of the networking time and the exposure to our major facilities. We look forward to future endeavors with the New York AGEP alliances."

— Joe Gettler

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Science Educators Needed

The Office of Educational Programs (OEP) often needs part time per diem educators to assist in programs at grades K-12 and occasionally at the university level. Programs continue to expand in areas including basic elementary science and middle and high school physics, chemistry, biology, environmental science and atmospheric sciences. Those with strong content knowledge and/or strong teaching skills are desired. Those interested in working with OEP on a per diem basis should contact Ken White at (631) 344-7171.

NSLS Hosts 2nd Annual Historically Black Colleges & Universities Workshop

Expanded in both attendance and duration, the 2nd annual National Synchrotron Light Source (NSLS) Historically Black Colleges and Universities (HBCU) Workshop focused on strengthening existing research ties between Brookhaven and minority-serving schools as well as establishing new ones. Held July 23-25, the workshop attracted 17 participants from nine institutions to learn how to transform themselves and their students into successful synchrotron users. Also participating were representatives from the National Science Foundation (NSF) and DOE's Office of Basic Energy Sciences, Experimental Program to Stimulate Competitive Research (EPSCoR) program.

Participants in the workshop, which was organized by the NSLS and BNL's Office of Educational Programs (OEP), were welcomed by Lab Director Sam Aronson, who stressed



Joseph Rubino D1102708

the importance of reaching out to potential minority scientists early in their careers.

Brookhaven's Diversity Office Manager Shirley Kendall praised the participants for their efforts thus far.

"What we need to do is exactly what you're already doing — bring the graduate and undergraduate students to BNL," she said. "We won't stop trying to make a difference in having you as a part of our community, because, without you, we can't be certain we have the best talent."

During the three-day workshop, the participants received basic information about synchrotron mechanics, specific NSLS beamlines and techniques, and future plans for science at NSLS-II. In addition, NSLS staff members led a session on writing successful beam time proposals, and Sarah Lawrence College physicist Scott Calvin discussed avenues for developing a synchrotron curriculum for students.

The participants worked on a research proposal one-on-one

with BNL scientists with similar research backgrounds throughout the conference.

"The idea is to have the participants leave here with a near-final proposal in their hands," said NSLS Chair Chi-Chang Kao.

The group also participated in a videoconference with NSF program directors, and a teleconference with representatives from DOE's EPSCoR. Topics included scientific program information, administration, and the grants, awards, postdoctoral fellowships,

and undergraduate research opportunities available to the professors and their students.

In addition, the professors discussed business related to the HBCU user consortium, now called the Interdisciplinary Consortium for Research & Educational Access in Science and Engineering (INCREASE), which was created during last year's workshop. Some of the group's short-term goals include: placing at least one user at the NSLS from each school in the consortium; setting up a mentoring program with NSLS staff; and reaching out to other minority-serving institutions.

"Before coming here, I didn't really know what a synchrotron was," said Delaware State University chemistry professor Qiquan (Joshua) Wang. "Now I realize that it's something I can use to increase the value of my research. I'd love to bring some of my experiments to the NSLS in the future." — Kendra Snyder

HS Researcher from pg. 1

and Michael Michaelides, he used his grant money to study how blocking a specific brain receptor is responsible for neuro-inflammation impacts and the expression of dopamine receptors.

"Doing this research through HSRP last summer opened the door for Marsiglia to work with Thanos again this summer," said Scott Bronson, an OEP education-

al programs administrator who manages HSRP. "The HSRP is a great opportunity for high school students to experience research early and start on a pathway to a career in science."

Mike Vaccariello, Marsiglia's research teacher at Sachem also noted the importance of these educational research programs.

"It is great that Billy has had the opportunity to get a head-

start in research through this BNL program," Vaccariello said. "These programs are important because our country needs to strengthen science education."

— Kirsten Dorans

BNL's OEP offers the following programs for high schools: the Minority High School Apprenticeship Program (MHSAP), the Community Summer Science Program (CSSP), and HSRP. MHSAP is designed to

motivate ninth grade minority students with ability and potential in the sciences. The five-week program focuses on several different areas including: physics, biology, chemistry, and environmental science. CSSP is available for local high school students who have completed tenth grade and want to discover what to expect from a science career. HSRP is a research program in which students who have completed CSSP or

a similar advanced science program are paired with a BNL scientist. Department of Energy Academies Creating Teacher Scientists (DOE ACTS) is six weeks of special training and research exposure at BNL for in-service science, mathematics, and technology teachers. For more on the HSRP, DOE ACTS and other programs offered by BNL's OEP visit: <http://www.bnl.gov/education/programs.asp>.

OEP Partners with Local Institutions to Advance Science Education

BNL's Office of Educational Programs (OEP) serves as a liaison between the scientific community and the local academic community with the intent of connecting the two for mutual benefit. Collaborative partnerships bring students, teachers and faculty to the Lab where they can advance the DOE mission, and they also enable scientists to assist in professional development for teachers of the next generation of scientists. Several partnerships that focus specifically on reaching out to local universities include St. Joseph's College education students' visits to BNL and Pre-Service Teacher (PST) internships; Dowling College's Center for Minority Teacher Development and Training Summer Science Institute and Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP); the New York State Science and Technology Entry Program (STEP) and the College STEP (CSTEP), among others.

Outreach to St. Joseph's University

During the school year, BNL's Science Learning Center hosts teachers-in-training from St. Joseph's College. During their visits, these future teachers learn about the inquiry method of teaching—a hands-on approach. They also are invited to come back for more teaching observations or PST internships. Jennifer Elsmore, a PST student who

interned with the Science Learning Center this summer, had an opportunity to learn and teach science education programs, develop and test lessons, and conduct programmatic evaluation — all skills important to becoming a successful science teacher.

"My experience here has been great," Elsmore said. "I spoke to an assistant superintendent from a local school, and he said that science is the subject in which teachers are least educated when they go into the teaching field. My experience has made me more comfortable teaching science."

Dowling College Summer Science Institute

The Dowling College Center for Minority Teacher Development and Training's Summer Science Institute targets minority students who are studying education at Dowling College. This program is dedicated exclusively to encouraging minority students from disadvantaged circumstances to become teachers in under-served local school districts. The six-week summer program at BNL is designed to offer a hands-on science practicum experience for the teachers-in-training. During this internship, the participants become familiar with BNL's science; assist and teach at the Science Learning Center; and create hands-on learning modules and lesson plans for students based on



Roger Stoutenburgh D0830088

Clint Harris, a chemistry teacher in BNL's DOE sponsored program, leads the GEAR UP and Dowling College Summer Science Institute students.

lab research. This U.S. Department of Education-funded collaboration supports about six students a year.

Dowling College's Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP)

The GEAR UP Program is designed to help students to remain in school, and graduate from Wyandanch Memorial High School better prepared to enter college in terms of academic, social and fiscal preparation.

This is a discretionary grant program funded by the U.S. Department of Education. It is a partnership between Dowling College, the Urban League of Long Island, the Mentoring Partnership of Long Island,

and the Wyandanch Union Free School District. The students entered the program in seventh grade and are now entering tenth grade. For the past two summers, approximately 15 students have come to BNL to experience hands-on learning in science, math, and technology through the Science Learning Center's labs and field activities.

Frank Pomata, GEAR UP's Assistant Director, notes the importance of bringing the students to BNL. "We really like to expose the students to hands-on science," he said. "Many of the careers in the future will involve technical and scientific work. Coming to a great facility like BNL is a very valuable experience for these students."

New York State Science and Technology Entry Program (STEP) and the Collegiate STEP (CSTEP)

Brookhaven also partners with the New York State Science and Technology Entry Program (STEP) and the Collegiate STEP (CSTEP). These New York State Department of Education-funded programs bring cutting edge science to economically disadvantaged or underrepresented (in science) students. This four-year-old relationship has introduced over 300 junior high and high school students and over 75 college students to BNL research. Local partner schools include Hofstra University, SUNY Farmingdale, Stony Brook University, Suffolk County Community College, SUNY Old Westbury as well as the CUNY network of schools. Other schools from upstate New York also participate.

Sisters Rachael Millings, now at Stony Brook University, and Elizabeth Millings first joined the BNL community as CSTEP students in summer 2007 as part of DOE's Community College Institute (CCI) through Suffolk County Community College. They returned again this summer as Science Undergraduate Laboratory Internship participants.

"Coming to BNL has been a wonderful experience," Rachael Millings said. "Doing statistical analysis here has helped me discover what I like about math and what I want to do with it in the future."

— Kirsten Dorans