It was with enthusiasm, and an earnest desire to educate that the faculty, staff, and students of both the Master of Biotechnology Program (MBP) and Biotechnology Training Program (BTP) sponsored this year's Biotechnology Day.

In conjunction with Northwestern's Office of STEM Education Partnerships (OSEP), Biotechnology Day welcomed Chicago Public Schools students, and life science graduate students in the Lurie Cancer Center on Northwestern's Chicago campus.

Balancing panel discussions with hands-on experiments, this festival of biological and chemical engineering brings seasoned professionals in contact with young, plastic brains.

Community science education groups (such as STEM Scouts and the Dribbly Pear) tabled in our exhibition hall as students participated in hands-on experiments led by MBP students. Do you know how to how to extract DNA from a strawberry? ‘Cause we do.

**MORE PHOTOS ON PAGE 2**

Northwestern's Center for Synthetic Biology draws from physics, engineering, and computer science to solve issues in cell-free systems, mammalian systems, enabling technologies, ethics and societal impact.

Three out of the six pioneering faculty at the center also happen to be MBP research preceptors—Michael Jewett, Joshua Leonard and Keith Tyo. (Clearly we're onto something.) Perhaps one our students will design and engineer a new biological system, and address a pressing social problem.
MEET OUR KEYNOTE
NICOLE FISHER

As a human rights and healthcare access activist operating on the world stage. Fisher’s varied career has taken her to political and legislative offices, the U.S. Congressional Budget Office, and the United Nations.

Despite an exemplary career in government service, Fisher left the public sector to create a private consulting firm focused on health and human rights: HHR Strategies, Inc.
S.T.E.A.M. PUNKS: THE (NOT SO) HIDDEN TALENTS OF MBP STUDENTS

From the age of four, Sana Ma has been playing music. As a toddler, Ma’s parents noticed her affinity for rhythm, and took swift action, engaging her in piano and violin lessons. Their insight proved accurate; By the age of twelve, Ma had already composed her own music (a creative answer to book report), and had a family friend arrange her piece for a bell choir. Writing or playing, Ma draws inspiration from Expressionist composers, explaining that “the notes aren’t as important, it’s about the feeling beneath them.”

Ma’s passion for performance brings her to a host of venues – benefit concerts, community orchestras, and the otherwise quiet living rooms of nursing homes. As a youngster she played in Kids for Bach, and the Multiple Piano Festival. Today she participates in not one, but two Chicago-area orchestras, the Lakeshore Symphony Orchestra and the Chicago Metropolitan Symphony Orchestra. “I like the performing aspect of music. I’d get really nervous, then play, then get really great feedback,” she said. “I’m sort of hooked to the adrenaline rush now.”

Now that she’s in graduate school, Ma struggles to make time for her music. For now, her research and scholarship comes first, but the impact her musical studies carries through to her scientific pursuits. “I think pedagogically there something there about training different parts of the brain. When I’m a musician, I am very technical. I break things down methodically.”

When Ma needs a break, she relaxes with some jazz music at Andy’s Jazz Club in River North or the Green Mill Cocktail Lounge in Uptown. “I’m really into jazz right now. It isn’t just about music, it’s about mood, hanging out and relaxing with your friends.”

Biotechnology offers the kind of creative flexibility she had been seeking since grade school. “In an ideal world I’d like to be an entrepreneur, then get a PhD, and start a company based on an idea I have.”

Blending the entrepreneurial with the inventive, Wiegel wins the respect of her peers as she pursues a research project with NanoCytomics. “I’ve found inventing to be the perfect balance of creative and analytical. I’m hoping to run with that a bit. Making things is what give me joy.”

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In an era dominated by specialization, Kenneth Wang’s pursuit of the well-rounded education appears decidedly classical. For years, Wang applied his analytical aptitude to the hard and soft sciences, and
IT’S A NEW DAY FOR EXTERNAL RELATIONS:
WELCOME NATALIE CHAMPAGNE

MBP is delighted to welcome Natalie Champagne to our ranks. As Director of External Relations & Career Management, Champagne prepares students for the daunting task of entering the workforce. Under her guidance, students compose and perfect their resumes, fine-tune their interview skills, and target that most illusive of animals-- the first job.

Champagne also serves as MBP’s first point of contact for our external partners, and alumni. (Don’t be a stranger.)
GAINFUL EMPLOYMENT FOR THE CLASS OF 2014

Breathe. Despite economic downturn, MBP gradautes find jobs

Lu Bai
Research Associate, Moderna Therapeutics

Aditya Basrur
Quality Assurance Compliance Specialist, Alcon

Xinyi (Claire) Che
Research Associate, Conagen

Kuan-Wei Chen
Production Associate, Moderna Therapeutics

Ankit Gandhi
Assay Development Research Associate, T2 Biosystems

Chia-Jung (Joy) Han
Senior Associate, Amgen

Mingyang Jiang
Research Associate, Dimension Therapeutics

Catherine Nguyen
Regulatory Manager, USC Norris Comprehensive Cancer Center

Durga Nyayadhish
Research Associate II, Ohmx Corporation

Ajinkya Patil
Research Technician II, Feinberg School of Medicine

Rahul Shroff
Operations Strategy & Planning Intern, Baxalta

Michael Verleye
Research Engineer, Nanocytomtocs

Paul Weingarden
Research Associate II, Broad Institute

Henry Weiss
Scientist, Analytical Development Fresenius Kabi

Oliver Weisser
Analyst, Deloitte Consulting

Tzung-Mao Wu
Process Development Associate, Novavax

Xiujuan Xie
Marketing Specialist, GenScript

Yingjie Xu
Mass Spectronomy Research Assistant, NantOmics

Demin (Grace) Zhao
Research Technologist, Feinberg Cardiovascular Research Institute

Si Zhao
Research Assistant, Institute for BioNano-technology in Medicine

CURRENT INTERNS

WORKIN’ FOR THE MAN (EVERY NIGHT AND DAY)

At the bench or at the desk, MBP students gain critical work experience.

Taylor Graff
Nanocytomtocs

Alex Li
Unnamed San Diego Firm

Rick McMahon
Fresenius Kabi

Krishna Sidhartha
Virology, Eli Lilly

Dora Wu
Cell Culture, Eli Lilly

Jiyang Zhang
Academic Internship Woodruff Lab

Xu Zhang
Academic Internship Wells/Gray Lab

Ge Zhou
Academic Internship

Karen Zuo
Unnamed San Francisco Firm
In an effort to bring unique professional development opportunities to its students, MBP will organize a site visit to Research Triangle Park (RTP) in North Carolina this summer.

In the pinewood forests between Chapel Hill, Durham, and Raleigh, the RTP was established in 1959 to retaining the local research talent from Duke University, North Carolina State University, and the University of North Carolina.

Today, RTP is home to 170 companies, including Biogen Idec, Syngenta, United Therapeutics, Cisco, Bayer CropScience, Eisai, BASF, the U.S. EPA, NIH’s National Institute of Environmental Health Sciences, and the original research institute that launched the park, RTI International.

Our trip organizers are in the process of establishing connections in the RTP, and will announce companies selections in early summer. Students with leads should contact Natalie Champagne.

Eleasa Wilson (Class of 2005) plans, designs, and optimizes experiments for astronauts on the International Space Station.

Remember that scene from Apollo 13 where the engineers from mission control dump a bunch of parts on a table, and are told “we gotta find a way to make this, fit into the hole for this, using nothin’ but that.”?

Well, MBP alumna Elesea Wilson (formerly Elesea Kim) might not face the same life-and-death drama that spurred on NASA engineers in 1970, she knows a thing or two about limited resources. Working from her station at Teledyne Brown Engineering, Wilson helps scientists accomplish their research objectives.

Wilson’s aptitude for design and communication bring her to the vanguard of space exploration, working with specialists from NASA’s Marshall Space Flight Center, Johnson Spaceflight Center, the Canadian Space Agency and the European Space Agency.

“I transpose their needs into timeline schedules, visuals and detailed activities to help ensure that science objectives are met given the limited resources available on ISS.”

MBP is proud to report that on March 29, 2016 Jessica Yu (class of ‘14) received a National Science Foundation Graduate Research Fellowship for her work in “Predicting complex cancer dynamics using multi-scale agent-based models.”

Designed to support students in research-based Masters degree and PhD programs, the award is the oldest graduate fellowship of its kind. (And she’s in good company. Previous recipients include Nobel prize-winners, cabinet officials, and pulitzer prize-winning authors.) NSF fellows receive a three-year annual stipend of $34,000 along with a $12,000 cost of education allowance for tuition and fees. Yu will also receive opportunities for international research, professional development, and best of all, the freedom to conduct her own research at the school of her choice. Fortunately, she’s chosen Northwestern.
WINTER 2015 SITE VISIT: SAN DIEGO

MBP Alumni Anne Thiel and Peter Zhang find meaningful work in Southern California

The balm of Gilead was a rare medicinal perfume purported to cure all ailments in all people. Primitively effective and broad in focus, we might regard its production as an early attempt at drug development, (if not marketing). Though the knowledge has grown, and methods have changed, the ambition to find cures remains constant as the aptly-named Gilead Sciences sets the pace for new treatments and anti-viral therapeutics.

When MBP visited Gilead’s facility in Oceanside, CA, students and faculty gained access Gilead’s laboratories, guided by Anne Thiel (’12), and Peter Zhang (’13), two alumni currently working in the company's fast-growing biologics division. Though he’s only been with the company for a year and a half, Zhang is considered the veteran in his team—that’s how rapidly Gilead has been onboarding new hires. Growth has been so consistent, that the company’s three-building site will soon relocate into one large facility—directly across from their tech park neighbors, Genetech.

Though moving the main project forward is a part of each employee’s day, Gilead respects their employees’ ambitions. “The managers here are very good at trying to get your own personal development, Zhang said. “You have your own role, and own projects to work on.” This doesn’t just apply to senior members of the company, but to interns and contractors as well. “The pace is pretty quick around here,” Thiel laughed. “But it's nice, because then you can see things finish. The interns I've seen come through here have meaningful projects.” This contrasted with Thiel's previous position at an Eli Lilly pilot plant, where bench work tended toward the routine.

The training Thiel and Zhang received during their time in MBP set them up for success in their respective roles. Both cited Bill Miller’s bioprocess engineering course as highly relevant to the cell culture work they engage in at Gilead. The technical skills and concepts acquired in lab courses prepared them to take on bench work almost immediately, giving them an edge over other new hires.

A bachelor’s degree might be sufficient to start a career, but for those looking to advance their ideas beyond the entry-level, a master’s degree is critical to success. “I wanted to make myself more marketable,” said Thiel, “it was the network of companies eventually sold me on going to MBP. There was a clear path to where I wanted to be.”

There's something to be said for finding a good mentor.

Anne Thiel on her working relationship with Dimitra Georganopoulou

No matter who you are you will make presentations.

Peter Zhang
EVENT CALENDAR

THURSDAY APRIL 14
ChBE Seminar Series
9AM ITW Room 1350 - Ford

BME Seminar Series:
Sam Sia, PhD
4PM L361 - Tech

FRIDAY APRIL 15
SEGIM Seminar: Mohend Chaouche
12PM A230 - Tech
Civil & Environmental Engineering

Environmental Engineering Seminar: Nancy Love
2PM A230 - Tech
“The Interplay between Chemicals and Microbiomes: An Environmental Biotechnology Perspective”

TUESDAY APRIL 19
Achenbach Lecture 2016: Dean Mary Boyce
2PM ITW Room
Civil & Environmental Engineering

Colloquium: Austin Minnich
4PM L361 - Tech
Materials Science & Engineering

Medical Grand Rounds
7:30 AM 3rd Floor, Conference Room A
Northwestern Memorial Hospital

THURSDAY APRIL 21
Scanning Probe Microscopy Short Courses and Training Workshop
NUANCE Center
8:30AM Room 2058 - Cook Hall

ChBE Seminar Series
9:00 AM ITW Room 1350 - Ford

Lecture for Medical Humanities & Bioethics
12PM Searle Seminar Room - Lurie
Megan Crowley-Matoka, PhD

BME Seminar Series: John Wikswo, PhD
4PM L361 - Tech
“Organs on Chips: Bioreactors, Sensors, Controls and Interconnects to Support Constructionist Biology”

THURSDAY MAY 12
ChBE Seminar Series
9AM ITW Room 1350 - Ford

BME Seminar Series: Elizabeth Hillman, PhD
4PM L361 Tech
Elizabeth Hillman, PhD

TWE DAY EVENT : APRIL 19 & 20
Scanning Probe Microscopy Short Courses and Training Workshop
NUANCE Center
8:30AM 2058 - Cook Hall
REGISTRATION REQUIRED

TUESDAY APRIL 26
Microbiology-Immunology Seminar: Sara Cherry, PhD
12PM Baldwin Auditorium - Lurie
“Using Genetic Approaches to Study Host-Microbe Interactions”

Center for Molecular Innovation and Drug Discovery Seminar
4PM 4003 - Ryan Hall
“Metal-Catalyzed Alkene Functionalization: An Approach Towards Stereospecific Cross-Coupling”

THURSDAY APRIL 28
ChBE Seminar Series
9AM ITW Room 1350 - Ford

Lecture for Medical Humanities & Bioethics
12PM Searle Seminar Room - Lurie
Michael J. Schrift, DO, MA

BME Seminar Series: Elizabeth Hillman, PhD
4PM L361 Tech
Elizabeth Hillman, PhD

THURSDAY APRIL 28
LECTURE
4 - 6 PM
(TECH M164)
SECOND-YEAR STUDENTS WELCOME

RECEPTION
6 - 7 PM
AT COHEN COMMONS
(TECH L482)

TUESDAY APRIL 19
10AM-6PM
WEDNESDAY APRIL 20
7:30AM-6PM

Hilton Orrington
1710 Orrington Avenue
Evanston, IL 60208

Thus annual industry expo fosters meaningful partnerships in the growing Midwest life science and healthcare markets.

iBIO IndEx 2016 where thought leaders converge and connect to emerge with new insight.

ERIC FALLON
Director of Technology
Genentech, San Diego
PhD Chemical Engineering
Massachusetts Institute of Technology