Training to be the best of the BEST

In a global jobs market, where biomedical science graduates are entering a wide range of roles, Dr Ambika Mathur, Dean of the Graduate School and Dr Christine Chow, Professor of Chemistry at Wayne State University (WSU) in Detroit, are leading the call to reimagine training programmes so that they equip students with the skills they need. BEST (Broadening Experiences in Scientific Training) is part of a nationwide effort to explore ways of improving biomedical career development.

There is a global trend of increasing numbers of students studying for a post-graduate qualification. This is particularly true of the biomedical sciences which have seen a steady rise in applicants to places on graduate training programmes. Few of these graduates are pursuing the classic post-graduate career tracks of biomedical or research-intensive academic; WSU research has shown that as few as 25% of PhD students ultimately obtain tenure-track faculty positions, for example.

RISING TO THE CHALLENGE

"Recognition of this gap has motivated us to design an innovative initiative," says Dr Mathur, "whose specific purpose is to transform our biomedical doctoral training to appreciate and celebrate diverse career opportunities." This starts with enabling both faculty and students to recognise the myriad of career options available to a modern post-graduate student. The long-range goal is for the students themselves to become the ambassadors and innovators within the biomedical community.

Often students are presented with few choices at post-graduate level, with current faculty in many establishments expecting that talented researchers identified at this level will go on to post-doctoral positions in research institutions. In actual fact, these doctoral graduates are likely to take up posts in areas as diverse as governmental positions, scientific communication and law. Employers in regulatory science, the biotech and pharma industries and public policy organisations are also

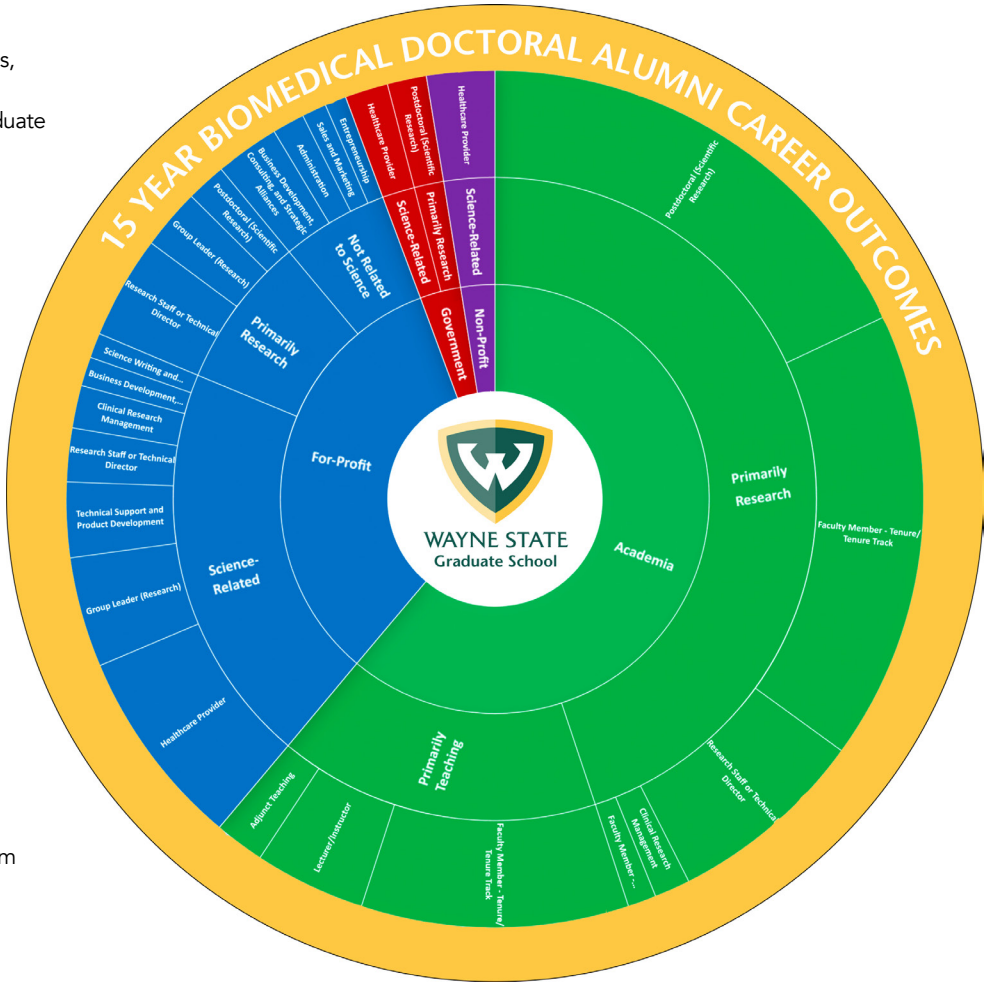
Doctoral trainees involved in interactive discussions workshops with industry professionals. Photo credit: Sarah Mexicotte.

keen to employ biomedical graduates, because of the valuable transferrable knowledge and skills which post-graduate training instils.

NATIONWIDE COORDINATION

Seventeen institutions across the US have recognised this need for specific skills training and career development for their graduates, sparking the formation of a nationwide initiative to coordinate their efforts. The BEST training programmes at these locations are developing innovative approaches to prepare students and postdocs for a range of career options. These are funded by the National Institutes of Health Common Fund and are experimental in nature, so the sharing of experiences is vital in assessing their impact.

The BEST website creates a space to bring together the lessons learned from all these institutions. With the aim of improving career development for all involved in biomedical training, it provides faculty and staff with tips on how to build a career development programme, while students and postdocs have their own section of the site for resources and sharing of experiences.



15 years of career outcomes of Wayne State University's biomedical doctoral alumni care. The innermost circle shows distribution by Employment Sectors, the middle by Career Types, and the outermost by Job Functions.

LEADERS IN THEIR FIELD

WSU's Graduate School is helping to lead this initiative with the NIH-BEST grantee consortium to transform biomedical graduate education by drawing on their urban location and urban mission. Partnering with local employers to provide mentored internships, WSU ensures alignment between the expectations of diverse employers and the skills of their trainees. In addition to specific partnerships, students also have the opportunity for cross-training to develop a variety of skills. Dr Chow believes that this, "allows them to work effectively in multidisciplinary teams and to solve complex problems in an institution with urban motifs and research emphasis."

Once such success story was picked up by WSU itself. Dulmini Barupala joined the BEST programme at WSU in 2014–15, exploring the business and industry career track. Having spent time in a biotech company as part of the programme, she realised that industry was not for her.

DEVELOPING THE WHOLE PERSON

Thankfully the experience at WSU developed other skills that she wasn't aware she had, particularly in communication and people skills, "I always thought I was an introvert," she said, "but I think I realised that I should come out of my shell during the BEST experience." She now works in an administrative position at WSU and enjoys the dynamic and organisational aspects of the role, as well as interacting with a wide range of people. She advises graduate students to start early in considering their future, and to make the most of the opportunities to investigate their options that the BEST programme at WSU provides.

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It's just this sort of discernment about which particular career path is the best fit, and which are not, that is at the heart of the WSU ethos. Information about each career domain is provided by professionals in the specific career trajectory, either from WSU alumni or industry partners, and the course is delivered in such a way as to make the process as natural for the students as possible.

SciPhD Bootcamp spring 2017: *It's all about the team.* Students learning to make successful transitions to careers in business. Photo credit: Sarah Mexicotte.

A PHASED APPROACH

Split into three phases over the course of an academic year, it provides trainees with the critical thinking, reasoning and communication skills that not only help them make informed decisions about their career options but are exactly what potential employers are seeking.

Phase one introduces them to the broad professional domains of government, business, industry, law, communication and undergraduate teaching. Using panels of industry experts teamed up with faculty members, the aim is to encourage them to think more broadly about how they view their possible career options and trajectories. The 90-minute panel discussions give ample opportunity for students to interact with the experts and each other, focussing their ideas onto the area which is of most interest.

Phase two consists of more in-depth learning about a particular career area, with day-long workshops providing the space for trainees to explore the field in detail. This is in preparation for exploration of that sphere during the mentored field experiences of the phase three internship. These experiential learning opportunities are tailored to the specific student-placement arrangement, to ensure that both parties get the most possible out of the interaction, boosting the relationship between the university and local industry.

BUILDING A COMMUNITY OF SUCCESS

This holistic approach to guiding students through their careers feeds into the broader aims of WSU in general and Dr Mathur and Dr Chow personally. They are both deeply committed to the advancement of all aspects of training, having already been nationally recognised for masterminding an ambitious project to collect data on the career outcomes of 90% of WSU's 3,000 doctoral alumni who graduated in the last 15 years. Dr Mathur is also known as a champion of diversity in the student and faculty body, reminding them that, "Research shows that diverse teams working together and capitalising on innovative ideas and distinct perspectives outperform homogenous teams."

WSU has a broader aim of making a positive impact on the Detroit area, both in terms of the businesses it supports and in providing opportunities for the bright young minds which the city produces. BEST is part of this, as is the related ReBUILDetroit programme, which is working with Detroit colleges to build a pipeline of undergraduate students from diverse backgrounds for careers in research. Dr Mathur is on the leadership teams of both programmes.

BEST is part of an exciting journey that WSU is taking to establish itself as a leader in creating a more diverse scientific workforce, prepared for the opportunities and challenges of the 21st century jobs market. Dr Chow says that their ultimate goal is to, "recruit, retain and advance diverse and well-trained individuals to create a robust STEM and medical workforce for Michigan and beyond." On the evidence of the existing success stories from their post-graduate cohorts, they are already well on the way to achieving that goal.

[The programme's] specific purpose is to transform our biomedical doctoral training to appreciate and celebrate diverse career opportunities.

Behind the Research

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Research Objectives

WSU's Broadening Experiences in Scientific Training (BEST) programme aims to better equip biomedical doctoral students for the changing job market.

Detail

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Bio

Ambika Mathur is a cancer immunologist by training. She has dedicated her career to training a diverse body of students for successful careers in a variety of employment sectors. Christine Chow is a chemistry professor in the field of nucleic acids. She trains numerous students at various levels and disciplines.

Funding

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Collaborators

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- Dr Mathew Ouellett
- Dr Janice Green
- Dr Elizabeth Delores Dungee-Anderson
- Dr Timothy Stemmler
- Ms Nisansala Muthunayake
- Distinguished panellists

WAYNE STATE UNIVERSITY

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www.nihbest.org/about-best/

https://gradschool.wayne.edu/best

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Personal Response

Dr Chow, what do you think is the primary benefit of the BEST programme for students and how does that feed into the university's aims?

"Providing students with resources for career exploration and opportunities for experiential learning allows them to develop skills outside of their specific disciplines. Involvement of alumni and experts in sectors outside of academia plays an important role in content delivery as well as providing students with networking opportunities and individualised mentoring. These BEST goals are consistent with the university's mission to prepare all students to thrive in a continually changing workforce."

Dr Mathur, what is the most rewarding aspect of this area of your work?

"I personally take great satisfaction in the fact that we have created a culture at our institution in which students are now comfortable speaking with their research mentors about their true career aspirations. Faculty appreciate that not every student automatically wishes to pursue a career in academia and that all biomedical careers are successful. This open and honest relationship provides an environment in which students feel confident as they prepare for careers in the employment area of their own choice, knowing that their choices and contributions are valued and respected."