

Faculty: graduates motivated, creative and problem-solvers

Some words professors use to describe the 14 students affiliated with the Iowa State University (ISU) Department of Genetics, Development and Cell Biology (GDCB) who graduated in 2022 include problem-solver, motivated, multi-talented and creative.

The 14 GDCB-affiliated graduate students who earned master's and doctorates in 2022 include:

- Keting Chen and Maggie Sodders (spring 2022)
- Priyanka Bhandary, Travis Hattery, Jing Li, Sharu Paul Sharma, Pallavi Sinha-Roy and Brian Zebosi (summer 2022)
- Shofi Andari, Pongrat Jaisil, Ping Kang, Ching-Yi Liao, Ting Miao and Jie Tang (fall 2022)

Just as the words the professors use to describe their former students vary, the career paths of these alumni differ. These alumni hold positions such as postdoctoral research associates, a scientific lead, faculty, visiting scientist, Ph.D. student and more in places as diverse as Harvard University's Harvard Medical School, Iowa State, Grinnell College, the University of Pittsburgh, the University of Michigan, Integrated DNA Technologies, Cedars-Sinai Hospital and Loxo Oncology at Lilly.

The goals of these alumni also differ. One alum hopes her research "can help people live longer and healthier," while another alum hopes to improve patients' lives through the "development of novel cancer therapeutics." Other alums hope their research addresses food insecurity and climate change or helps educate future scientists.

Spring 2022

Two of the 14 students (Chen and Sodders) graduated in spring 2022.



Genetics, development and cell biology graduates are on to their next adventures. Photo by Christopher Gannon, Iowa State University.

A former student in the College of Agriculture and Life Sciences (CALs), Chen received her doctorate in the bioinformatics and computational biology major. She worked in the lab of GDCB Associate Professor Marna Yandea-Nelson.

Upon her graduation, Chen landed a position as a postdoctoral researcher in the Yandea-Nelson lab.

About Chen, Yandea-Nelson said, "As a graduate student, Dr. Chen pioneered new approaches to answering our research questions, and her work has laid the foundation for many new directions our team is taking. Her collaborative spirit and research creativity have been a true asset to our team. I am very fortunate to work with her now as a postdoc on the team!"

A student in the College of Liberal Arts and Sciences (LAS), Sodders earned her master of science degree in genetics and genomics.

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About his former student, GDCB Associate Professor Hua Bai said, “One key feature that separates Maggie from her peer students is that she always plans her experiments ahead of time, and she schedules her experiments nicely using a custom-designed calendar.”

Sodders works in the lab of Abby Olsen as a research assistant at the University of Pittsburgh.

Summer 2022

Six of the 14 students affiliated with GDCB earned degrees in summer 2022. The six include Bhandary, Hattery, Li, Sharma, Sinha-Roy and Zebosi.

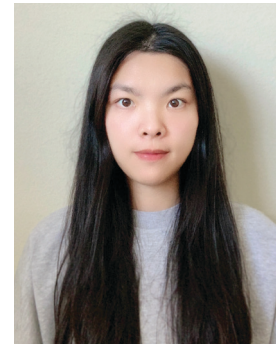
Bhandary earned her Ph.D. with a major in bioinformatics and computational biology (BCB) and a minor in statistics (STAT). While in LAS, she worked in the lab of Eve Wurtele, GDCB Professor Emeritus. Bhandary currently works as a research bioinformatician at Cedars-Sinai Hospital in California.

Bhandary described her experience in Wurtele’s lab as “transformative,” allowing her to gain “invaluable hands-on experience” in plant genomics and bioinformatics.

“Thanks to this solid foundation, I now work as a bioinformatician in one of the top hospitals in the country, where I continue to apply the knowledge and expertise that I acquired at Iowa State,” said Bhandary.

Another former student in the Wurtele lab graduating in summer 2022, Li earned her Ph.D. in the genetics and genomics major with a minor in statistics as a student in LAS. She conducted research under the direction of her major professor, Wurtele.

A bioinformatics scientist at Integrated DNA Technologies, Li expressed her gratitude for the experience she received in the Wurtele lab. Li hopes her work as a scientist helps “accelerate the development of NGS [next-generation sequencing] products and/or contribute genetics therapy in the future.”



Genetics, development and cell biology graduates from spring and summer 2022 include top row, from left: Keting Chen, Maggie Sodders, Priyanka Bhandary and Jing Li; and bottom row, from left, Travis Hattery, Pallavi Sinha-Roy, Sharu Paul Sharma and Brian Zebosi.

Eager to praise her former students (Li and Bhandary), Wurtele said, “Both combine an understanding of biology with the ability to analyze big data and develop new code.” She added her students moved from studying plant biology to human biology.

While at ISU in CALS, Hattery worked in the lab of his major professor, Yandeau-Nelson. He majored in molecular, cellular and developmental biology (MCDB). After earning his Ph.D. at ISU, he became an assistant professor at Grinnell College in Iowa.

“As a grad student, Dr. Hattery conducted large-scale interdisciplinary research that is revealing important connections between weather and the plant cuticle,” Yandeau-Nelson explained. “His strengths in teaching and mentorship of high school students and undergrads allowed for the engagement of many high schoolers and undergrads in field and benchtop-research.” The Yandeau-Nelson lab team looks forward to Hattery and a Grinnell College undergraduate rejoining the lab for one week this summer.

Another former CALS student, Sharma earned his doctorate in genetics and genomics. He worked under the direction of Thomas Peterson, now GDCB Professor Emeritus.

Peterson described Sharma as “a multi-talented scientist and a quiet achiever.” In the lab, Sharma “quickly picked

up the intricacies of classical maize transposable element genetics, and before long isolated a dazzling array of novel transposon-induced mutations in the p1/p2 genes.”

Peterson continued his praise for his former student. “Few graduate students have mastered such a broad range of experimental approaches as Sharu Paul Sharma!”

Sharma also praised ISU and his experience in the Peterson lab. “The Ph.D. program at ISU was as rigorous as any, and through this, I developed confidence in my abilities. My research experience with Dr. Peterson was incredibly valuable in preparing me for my scientific career.”

Sharma works as a visiting scientist in ISU’s Genome Informatics Facility. Through his work, Sharma hopes “to make a positive impact on society by advancing our understanding of biological systems.”

Like Sharma, Sinha-Roy praised the experience acquired in her major professor’s lab. She described her studies and research as “instrumental in preparing me for my scientific career.”

Sinha-Roy earned her Ph.D. in the molecular, cellular and developmental biology (MCDB) major while working in the lab of GDCB Associate Professor Mohan Gupta. She said, “Throughout my six years at the university, I received valuable support from both the institution and Dr. Gupta, including funding, leadership development opportunities, guidance for participating in an industrial internship, and chances to present my research at conferences.”

She added, “The research conducted in Dr. Gupta’s lab helped me develop as a scientist focused on the bigger picture of research topics.”

Gupta described his former student as “a talented and motivated graduate student, and now she is a talented and motivated Ph.D.”

Sinha-Roy works as a scientist focusing on cancer target discovery in Loxo@Lilly. “As a scientist in the early discovery biology team at Loxo@Lilly, I now focus on credentialing oncogenic targets, which involves investigating the mechanism of action of various cancer therapeutics by studying protein-protein interactions and the effect of certain oncogenic mutations on these interactions,” she said.

Her goal “is to contribute toward the development of novel cancer therapeutics that will improve the lives of patients.”

A current Ph.D. student at ISU majoring in genetics and genomics, Zebosi received his master of science in CALS with a major in genetics and genomics under the direction of his major professor, GDCB Professor Erik Vollbrecht.

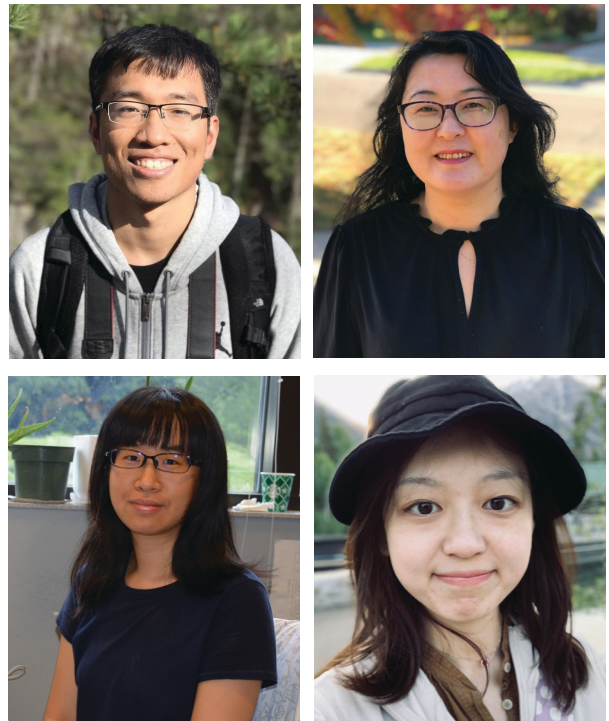
Vollbrecht said Zebosi showed “creativity and perseverance while accumulating a variety of basic bench, computational and field genetics skills, and established and elaborated a mutually productive collaboration as he completed the MS [master of science].”

The major professor explained that as Zebosi progressed in his graduate studies, he “decided to separate one of his research threads as the basis for completing an MS, which may be important to have under his belt if he eventually chooses international career options.”

About his studies in the Vollbrecht lab, Zebosi commented, “Dr. Vollbrecht has patiently trained and provided me with a conducive and inclusive environment in terms of mentorship, which has been fundamental to my Ph.D. path.”

In the future, Zebosi plans to become a “trait discovery scientist and plant geneticist who discovers plant traits and innovations that would improve crop production and yield to address food insecurity and mitigate climate change effects using genetics.”

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Genetics, development and cell biology graduates from fall 2022 include top row, from left, Jie Tang and Ping Kang; and bottom row, from left, Ching-Yi Liao and Ting Miao. Students affiliated with GDCB and graduating in the fall also include Shofi Andari and Pongrat Jaisil.

Fall 2022

Six students affiliated with GDCB earned their master's and doctorates in fall 2022: Andari, Jaisil, Kang, Liao, Miao and Tang.

Andari, a former Department of Statistics student in LAS, earned her Ph.D. in the BCB program under the direction of her major professor, Karin Dorman (a professor in GDCB and statistics). Andari currently works in a faculty position in Indonesia.

A former CALS student in the ISU Department of Biochemistry, Biophysics and Molecular Biology (BBMB), Jaisil earned her master of science with a major in neuroscience under the direction of her co-major professors: BBMB Associate Professor Stone Chen and GDCB Professor Jeff Essner. She works at the University of Michigan.

Of his former student, Essner said, "She is a very careful and kind scientist."

Kang, a former LAS student, earned her Ph.D. in genetics and genomics under the direction of her major professor, LAS Associate Dean for Research and GDCB Professor Jo Anne Powell-Coffman.

When Kang entered the Ph.D. program, Powell-Coffman described her as "an accomplished scientist," who "approached her thesis work with experimental courage and sophistication."

Kang said her studies "not only extended my knowledge on biology research technical skills, but it also established my confidence and independence in moving forward with my academic career." In her research, Kang attempts to understand the "endocrine hormone in human aging."

Kang, who recently became an adjunct assistant professor in GDCB, stated, "Eventually, I hope my research can help people live longer and healthier."

Another former student in LAS, Liao earned her Ph.D. in plant biology while conducting research in the lab of Distinguished Professor Diane Bassham.

About her time in the Bassham lab, Liao said, "This experience motivated me to pursue a research career to decipher more secrets of plant growth-stress tolerance."

Liao added, "By studying the foundational knowledge for engineering and breeding more stress-resilient, high-yield crops for food and bioenergy purposes, I hope to design more

efficient, environmentally friendly, and profitable crops to alleviate the impact of climate change."

While earning her Ph.D., Miao studied genetics and genomics in the Bai lab. She works in Dr. Norbert Perrimon's lab at Harvard Medical School with another former member of the Bai lab, Kerui Huang '20.

In the Bai lab, Miao studied fat metabolism. "The training I received in the Bai Lab, including experimental design, critical thinking, funding application ... is incredibly important for my scientific career," Miao said. Through her work, "I hope my studies can expand our understanding of fundamental mechanisms of metabolic regulation and help to develop therapeutic strategies to combat disease in the long term."

Bai described former LAS student Miao as someone with a "get the job done" attitude. "She is always willing to go the extra mile at work. I am very impressed by her problem-solving, and she has the ability to quickly find solutions for any new problems that occur during her research."

Another former LAS student, Tang majored in plant biology while pursuing his Ph.D. in the lab of GDCB Distinguished Professor Bassham.

The alum praised his former major professor. "Dr. Bassham's dedicated working attitude, outstanding research ideas, and passion for science have been inspiring me to explore the unknowns, think creatively, and enjoy doing science." He hopes his studies "help solve food insecurity and hunger around the world." A postdoctoral research associate in GDCB Assistant Professor Michelle Guo's lab, Tang also hopes to educate students.

Whether solving world issues such as food insecurity or climate change, educating future scientists, helping humans live longer and healthier lives, or developing novel cancer therapeutics, these 14 alums hope to improve life on Earth.

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