



UMB Champions of Excellence

Microbiome Service Laboratory Team



Put to the Test

***On the Front Lines:
UMB Champions of
Excellence
Microbiome Service
Laboratory Team
Institute for Genome
Sciences, School of
Medicine***

Even before the COVID-19 pandemic unfolded in Maryland in March 2020, Mike Humphrys, MSc, and his Microbiome Service Laboratory (MSL) team got to work on addressing the novel coronavirus. The mission: Transform a genomics lab into a large-scale COVID-19 testing platform.

“We were discussing COVID-19 testing in late February and early March, and we bought the supplies we’d need to kind of play around with the test and figure it out,” said

Humphrys, director of MSL, which is part of the Institute for Genome Sciences (IGS) at the University of Maryland School of Medicine (UMSOM).

“Once you have a swab sample in the lab, you have to extract nucleic acids — DNA and RNA —do a couple of purification steps, and then do the actual test. We use programmable robots for that, so we took the robots and built an assembly line, then bought a bunch more robots with state funding and programmed all of them to run just COVID tests.”

Once the system was functional, the lab was capable of processing 1,000 samples a day, but it wasn't receiving that many because of the initial struggles setting up COVID-19 test collection. After those front-end issues resolved and tests started pouring in, the lab could process 10,000 or more samples a day coming from various collection sites around Maryland and other nearby states.

"Our capabilities have progressed a lot since the start," Humphrys said. "During the Thanksgiving and Christmas surges, the system was able to adjust to about 1,000 to 1,200 samples an hour, just churning through them. It was pretty cool to see it in action.

"I think the most we've done recently is 11,000 samples in a 10-hour day," he added. "I don't think that at any time along the way we've really hit our capacity or been totally overloaded."

Humphrys says the MSL team worked long hours, with some staff working on-site and some remotely. It was common for employees to work 12- to 18-hour days, six or seven days a week. Because of these yeoman efforts and the success of the testing initiative, the MSL team was named a University of Maryland, Baltimore (UMB) Champion of Excellence.

IGS collaborated with University of Maryland Pathology Associates, UMB, the state of Maryland, and the city of Baltimore on the project, and IGS director Claire Fraser, PhD, who also is the Dean's Endowed Professor at UMSOM, called the MSL team's work "extraordinary."

"The Microbiome Service Laboratory has overcome many technical and logistical challenges to make this testing program a success," Fraser said. "With Mike's calm and steady leadership and the staff's work ethic, ingenuity, and collaborative approach, the lab has inspired all of those involved in this effort across campus and across the state."

In normal times, MSL supports research studies designed to characterize the bacteria that compose the human microbiome, essentially anything on Earth that is inhabited by bacteria and microorganisms. And while most of the nearly 40-person team is still working on COVID-19 research — including the study of coronavirus variants in positive test samples — a few have shifted back to other research studies.

No matter the project, Humphrys says his team is up to the challenge, and he appreciates MSL's recognition as a UMB Champion of Excellence.

"Everybody has worked tirelessly and selflessly to get this done, and I'm proud of them all," he said. "Robotics and molecular biology are familiar to us, because we are all researchers. This clinical component was very new to us, but we basically shed our previous lives and switched over to combat this virus. And that's pretty remarkable."

- Lou Cortina

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Mike Humphrys, MS, Technical Director



Lisa DeShong Sadzewicz, PhD, Director



Luke Tallon, Director



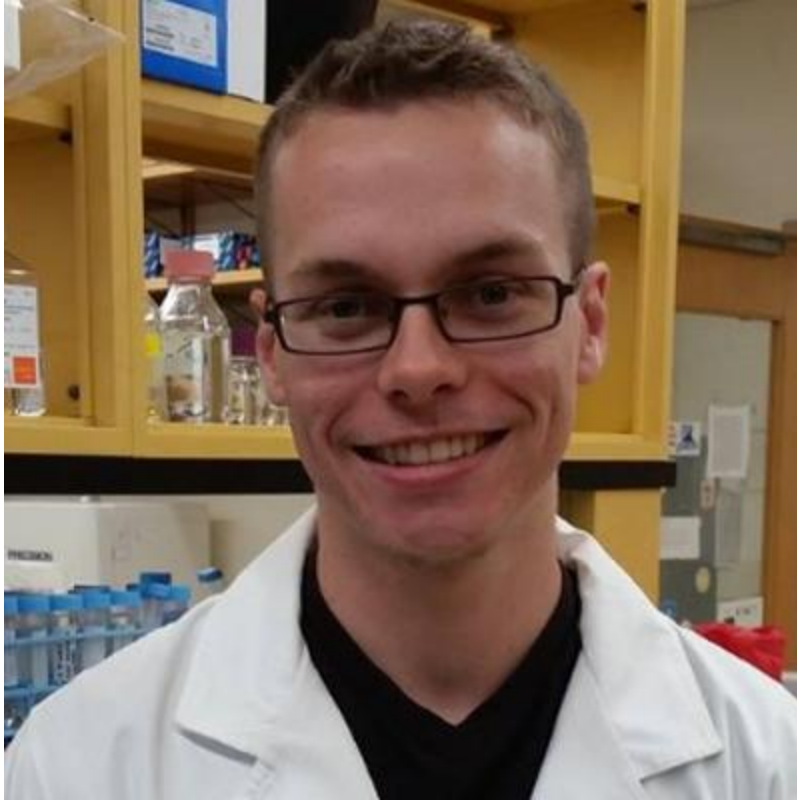
Lindsay Rutt, MS, Manager



Anup Mahurkar, MIM, Informatics Director



Nick Birckner, Lab Helper



Jack Boylan, Research Specialist



Alexandra Carrigan, Research Assistant



Jack Clifford, Research Assistant



Li Fu, Research Specialist



Brittany Niemann, Research Assistant



Sandra Ott, Shift Supervisor



Melanie Quain, Research Specialist



Holly Roussey, Research Specialist in Covid



Alex Sadzewicz, Lab Assistant



Adam Shahal, Lab Helper



Lorelie Soriano, Research Assistant



Sierra Spindler, Research Specialist



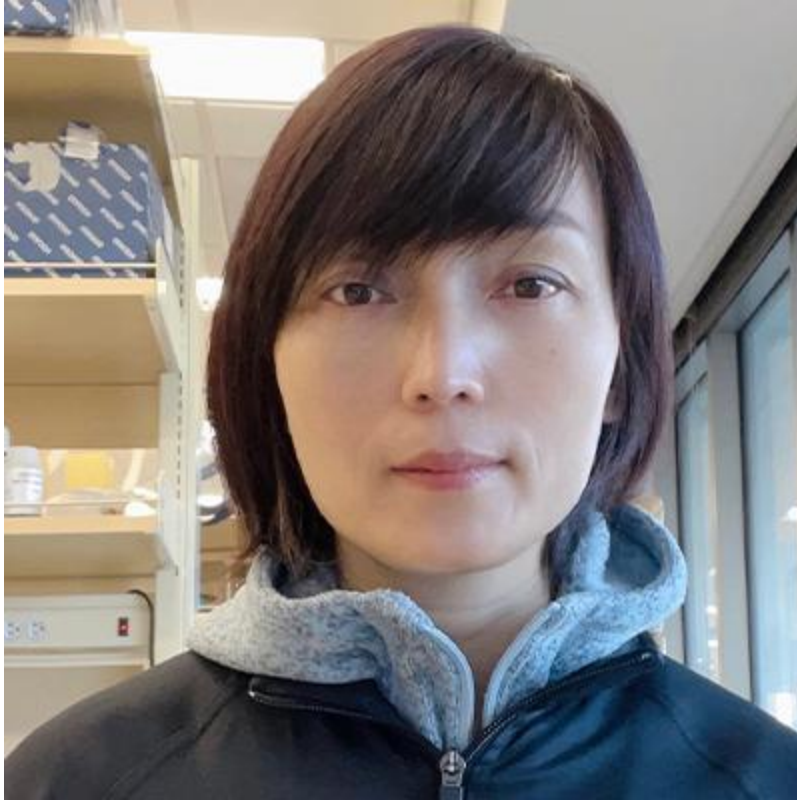
Tiffany Stevenson Yuen, Shift Supervisor



Tara Tadimalla, Research Assistant



Anthony Wiggan, Lab Helper



Hongqui Yang, Research Specialist



Logan Yates, Informatics Assistant



Lisa Bilski, College Project Manager



Bob Carter, Project Manager



David Shoemaker, Informatics Support



Aditya Mehta, Informatics



Kranthi Vavikolanu, Informatics



Dustin Olley, Informatics



Mike Schor, Software Development



Theresa Hodges, Informatics



Jonathan Lim, Informatics



Evan Lombardo, Research Assistant



Eric Robins, Research Assistant



Amy Wardrett, Lab Assistant**Tamunoseledia Brown, Lab Assistant**

Name	Title
Jacques Ravel, PhD	<i>Director, Prof, Associate Director, Genomics, IGS</i>
Lori McKay	<i>College Coordinator</i>
Angela Qian	<i>Lab Helper</i>
Sean Ravel	<i>Lab Assistant</i>
Charlotte Ravel	<i>Lab Helper</i>
Toni Ann Wiggan	<i>Shift Supervisor</i>
Victor Felix	<i>Informatics</i>
Pooja Shah	<i>Lab Helper</i>

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