



## Sanford Health Partners with Dordt in Research

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# SANFORD HEALTH PARTNERS WITH DORDT IN RESEARCH

Dr. Tony Jelsma, a biology professor at Dordt, is partnering with researchers at Sanford Health to study oxidative damage on cells.

The collaboration is part of what inspires Jelsma when getting students involved in research.

“It helps students think about what they want to do after Dordt, and it gives us an understanding of biology that is deeper than we can get in the classroom,” Jelsma says.

The research focuses on the Thioredoxin-1 gene, which corrects bodily oxidative damage.

“Oxygen is essential for life, and it is intimately involved in our metabolism. However, oxygen is also a reactive molecule and can cause damage to other components of our cells when it reacts with them. Our bodies are designed with many mechanisms to repair that damage, and thioredoxin is a protein that repairs one such type of oxidative damage,” Jelsma explains.

To study oxidative damage, Dr. Bethany Mordhorst, a post-doctoral fellow at Sanford Health, engineered a special mouse. She injected it with a drug to turn off, or “knock-out,” the gene. The mouse’s organs were collected, sliced, and put into slides so that Jelsma’s histology class could analyze their cell structure.

Members of the class analyzed the organs of Mordhorst’s mouse but found few results. Receiving more organs later in the semester, they began to find additional abnormalities. As the semester concluded, biology majors Sydney Faber (’20) and Michaela Schotanus (’19) decided to continue the research into the

JONATHAN FIORE (19)



By examining organs from genetically engineered mice, students Sydney Faber and Michaela Schotanus learned about biomedical research and the disease process.

## GOT IDEAS?

Know of a similar collaboration that Dordt might pursue? Email Dr. Tony Jelsma at [Tony.Jelsma@dordt.edu](mailto:Tony.Jelsma@dordt.edu).

summer. They conducted a blind study of the mice, not knowing whether the organs were from engineered or normal mice. Their most significant result was finding abnormalities in the stomach structure of the engineered mouse.

“This is real research, and we’re learning new things that we didn’t know before,” says Jelsma.

In August, they presented their findings at a small research symposium at Sanford.

“Presenting at the conference at Sanford was an amazing opportunity,” says Schotanus. “Being able to present all of our hard work was exciting.”

Jelsma, Schotanus, and Faber are still studying the stomach structure, kidneys,

and brain this fall.

According to Mordhorst, Dordt’s research has been instrumental to her project at Sanford.

“One of my favorite parts of our collaboration has been conversing with Dr. Jelsma and his students about their theories of how these pathologies might have started and how they progress,” says Mordhorst. “They are enthusiastic and passionate about these findings. Our lab was very impressed with Dr. Jelsma’s students and how well-versed they were in pathology and the relevant scientific literature.”

Partnerships like this give students like Schotanus and Faber valuable experience and allow them to explore career opportunities early.

“I’m grateful for the opportunity to take part in this project,” says Faber. “Dordt does a wonderful job of offering students internships with real-world applications.”

ERIKA BUITER (’20)