

# Researcher is an Open Book: First to Share Lab Notes in Real Time

February 26 2016, by Carolyn Morris

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This is a picture of researcher Rachel Harding. Credit: Melissa Hooper

University of Toronto researcher Rachel Harding will be the first known biomedical researcher to welcome the world to review her lab notes in real time. The post-doctoral fellow with U of T's Structural Genomics

Consortium (SGC) is also explaining her findings to the general public through her blog. She hopes her open approach will accelerate research into Huntington's disease.

"This should drive the process faster than working alone," Harding says. "By sharing my notes, I hope that other scientists will critique my work, collaborate and share data in the early stages of research." Her research at SGC is funded by CHDI Foundation, a non-profit drug-development organization exclusively dedicated to Huntington's disease. Both organizations aim to accelerate research by making it open and collaborative.

Her approach is intended to leverage the experience of a community of scientists. Individual researchers often still work in relative isolation and then publish only their positive discoveries, usually years after the experiments were actually done. Thus, scientists often pursue similar ideas in parallel and miss many opportunities to learn from each other's mistakes.

She has started by publishing [raw data](#) and play-by-play details of her first effort on the CERN open digital repository [Zenodo](#). She also posts regular updates on her blog [Lab Scribbles](#), where she includes an experimental summary written in lay terms.

Harding hopes this will speed up research into Huntington's disease, which despite decades of effort researchers have yet to uncover the mechanisms behind the neurodegenerative disorder. It's known that a mutation in the huntingtin gene leads to progressive cognitive decline and physical deterioration, usually beginning between the ages of 35 and 50. But, the exact structure of the huntingtin protein encoded by this gene remains a mystery. Understanding what the protein looks like will give insight into how it causes disease and potentially reveal ways of reducing its harm.

"This is a very large protein and difficult to study. It is significantly larger than most other proteins in the cell," says Harding. It also has an especially complicated structure with few similarities to other known proteins, which makes learning by comparison more difficult.

Considering the challenges and the high stakes, Harding will take all the help she can get. She hopes that by opening her notebook to the research community, she will open new channels of communication and collaboration. She also invites people who aren't necessarily scientists, including patient communities, to get involved in the process.

"This is what research is really like," says Harding. "It's not so much about big breakthroughs and polished results, but about incrementally getting closer to an answer. I think by being more open about our research we can all learn how to do the experiments better."

This same community-based philosophy underlies CHDI's drive to be a "collaborative enabler," bringing scientists from diverse disciplines together and sharing resources and expertise to advance Huntington's disease research. It's also why the SGC provides open access to an array of data and reagents—from chemical probes that enable drug discovery in cancer research to raw data on huntingtin.

"By providing access to raw data as well as the enabling research tools, we will help the community perform more robust experiments, which will accelerate the drug discovery process and potentially the development of new medicines," says Aled Edwards, a Professor in the University of Toronto's Department of Medical Biophysics and Director and CEO of the SGC.

Harding announced she was opening her lab notes to the public at CHDI's 11th Annual HD Therapeutics Conference, which was held this week.

Provided by University of Toronto

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