

# University of Toronto scientists map entire yeast genome

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University of Toronto scientists have devised a tool to help understand and predict the state of a cell by successfully mapping all 70,000 nucleosomes in yeast. Nucleosomes wrap DNA before it is transformed into proteins and are critical indicators and regulators of a cell's state.

Led by Corey Nislow, a U of T Assistant Professor with the Banting and Best Department of Medical Research and Department of Molecular Genetics, the team created a complete, three-dimensional map of the yeast genome. This information was fed into a computer to build a software program that can predict where nucleosomes should be. The program worked remarkably well, and its accuracy will only improve with more data.

“When control is lost, cells make inappropriate proteins or divide inappropriately, which is what happens in diseases like cancer,” says Nislow, whose team worked closely with U of T Professor Timothy Hughes on the project. “Knowing where nucleosomes are is the first step in identifying what is going on in a cell and what the cell plans to do next, so this initial research could have big implications down the road for early detection of certain diseases.”

Scientists can tell by the presence of nucleosomes which genes are actively being converted into protein, and this information can function as an important first clue to disease detection.

Source: University of Toronto

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