

'Virtual liver' could help save lives; Allows what-if testing of drugs' effects, dosages

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Illustration: Colour Photo: CanWest News Service, Edmonton Journal / Rebecca Marsh with her computer simulation of a liver. ;

EDMONTON -- As computer simulations go, Rebecca Marsh's new "virtual liver" doesn't offer the fun of learning to shoot a gun or fly a plane.

Yet despite its lack of video-game potential, the graduate student's creation could be destined for great things in the health-care industry.

With its ability to closely mimic the behaviour and function of a human organ, the computerized liver could one day be used to test new medicines and help doctors determine the best drug dosage for patients.

"People have developed simulated organs before, but this is a dynamic simulation," said Marsh, who recently completed her PhD in biophysics at the University of Alberta.

"It's the first one of its type. What makes it different is that we can actually perform experiments of flowing blood and drugs through our virtual liver and then look at how the drugs react with it."

The simulation was created through an internship in which grad students are linked with an Alberta company and asked to apply their research to help solve industry problems.

In Marsh's case, she got the chance to work with Computer Modelling Group, a Calgary-based company that had developed its own simulation software.

That software, however, was designed to help in the exploration of oil and gas deposits, so Marsh had to adapt it for the human body.

"Instead of modelling the flow of oil and gas through sediment, we can watch blood flow through liver tissue," she said.

The virtual liver uses detailed information taken from scans of a patient's abdomen.

"You could have several virtual livers, one healthy, one with hepatitis and one with alcohol damage," said Marsh.

-- Edmonton Journal