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## Legacy Research technology saves woman's life

A woman in Blackfoot, Idaho credits medical technology developed at the Legacy Biomechanics Laboratory with saving her life.

Last fall, Cheryl Simper was training a colt on her farm in Blackfoot, Idaho when the horse suddenly threw her and then stomped on her, crushing her right rib cage completely and most of her left rib cage.

"I remember telling myself not to move because I knew I was hurt," says Cheryl.

Cheryl's daughters called 911 and she was rushed to Portneuf Medical Center in Pocatello, Idaho. The initial prognosis was not good.

"She was in bad shape," said Dr. Kirk Birkenhagen, PMC general trauma surgeon. "This was a particularly serious injury. Nearly all her ribs were broken and she suffered massive trauma. This was a life-threatening situation."

Dr. Birkenhagen decided to perform surgery that had never been done in Idaho before – reconstructing Cheryl's ribs with titanium plates. "We had to expand her chest and restore lung function," Birkenhagen said. "Without those plates, she would have died."

The plates hold the ribs in place. Previous rib-plating systems were made with stainless steel, which was rigid and did not expand with the rib cage, causing patients severe discomfort. The screws could also loosen over time, requiring additional surgery. The new titanium ribs expand and are in place permanently.

This new rib plating technology was developed by collaboration between Michael Bottlang, Ph.D., director of the Biomechanics Laboratory at Legacy Research, and Drs. William B. Long and Steven M. Madey of Legacy Trauma Services



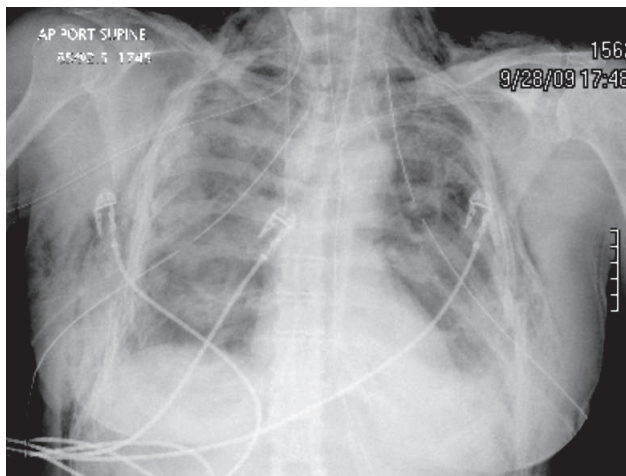
Cheryl Simper has been riding and training horses for most of her life.

at Emanuel Medical Center. They developed the technology with funding from Good Samaritan Foundation in 2000. "The lightweight titanium rib plating system was designed to match the complex shape and properties of ribs, enabling surgeons to stabilize broken ribs in a timely and reliable manner," says Dr. Bottlang. The device was licensed to a major international medical device manufacturer in 2007.

"Modern technology is wonderful, and if they wouldn't have had the knowledge that they had with these plates I probably wouldn't be here," said Simper.

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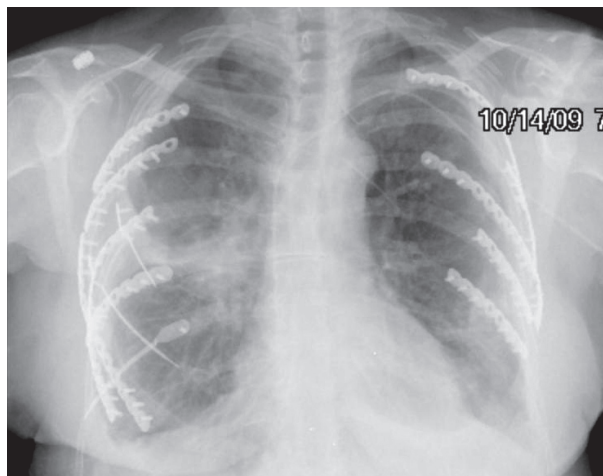
## Research Technology: Expandable titanium rib plates match shape, properties of ribs



*Cheryl's x-rays reveal the extent of her crushed ribs on both her right and left side.*

Cheryl says she's healing each day by walking around her farm twice a day, taking care of her horses and enjoying time with her family.

"It was a wake-up call. Our life can go in just an instant and we just never know. I'm just blessed and thankful to be here. Thankful I have more



*The titanium rib plates are clearly visible in her x-ray after the procedure.*

opportunity to enjoy my grandkids and my family," said Simper.

Simper says this accident was just a fluke and it doesn't change her love of horses. She has started riding again, but she has promised her family she won't be riding any more colts.

## About the Biomechanics Laboratory

Legacy's Biomechanics Laboratory is a key component of the Legacy Clinical Research and Technology Center. The mission of the lab is to design, test and evaluate new treatment options that will advance the quality of patient care and outcomes. Biomechanical engineering provides a key link between the knowledge base of expert scientists and clinicians and the development of new products by industry.

The director of the lab is Dr. Michael Bottlang, who received his Ph.D. in Biomechanical Engineering from the University of Iowa and came to Legacy in 1999 to develop the Biomechanics Lab. He has established a cutting-edge program with three major areas of operational focus: basic research, applied research and industry collaboration.

One aspect of Dr. Bottlang's research focus has

been to establish a close collaboration with Legacy orthopedic and trauma surgeons to develop a device to stabilize pelvic fractures in emergency situations following traumatic crushing injuries. The lab's developments in orthopedic biomechanics resulted in the design, development and patenting of the Pelvic Sling. The lab later licensed the Pelvic Sling to the Seaberg Corporation of Newberg, Oregon to manufacture and market. To date, more than 20,000 have been sold worldwide. The rib plating system was licensed to Synthes CMF.

Dr. Bottlang shares, "Both the pelvic sling and the rib plating system are life-saving solutions that were developed through multi-year research efforts. Without support from Good Samaritan Foundation, neither of these inventions would have been possible."