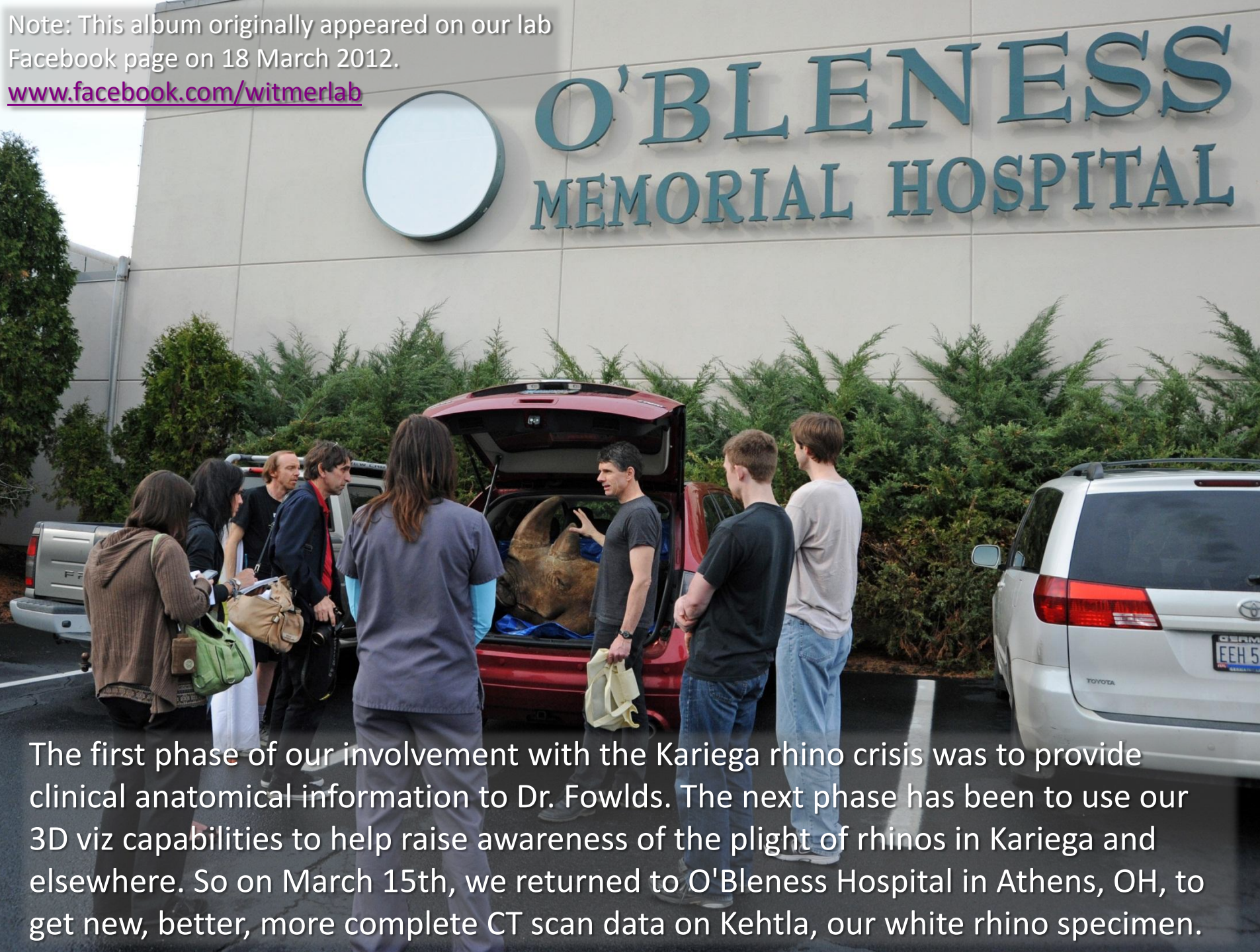
Note: This album originally appeared on our lab Facebook page on 18 March 2012.
www.facebook.com/witmerlab



The first phase of our involvement with the Kariega rhino crisis was to provide clinical anatomical information to Dr. Fowlds. The next phase has been to use our 3D viz capabilities to help raise awareness of the plight of rhinos in Kariega and elsewhere. So on March 15th, we returned to O'Bleness Hospital in Athens, OH, to get new, better, more complete CT scan data on Kehtla, our white rhino specimen.

Kehtla was a male white rhinoceros well known to generations of Phoenix, AZ, residents. In 1963, he was brought as a two-year-old from Natal, South Africa, to the Phoenix Zoo. He passed away from cancer in 2003 at the age of 42. At that time, his head was air-freighted to us for anatomical study.

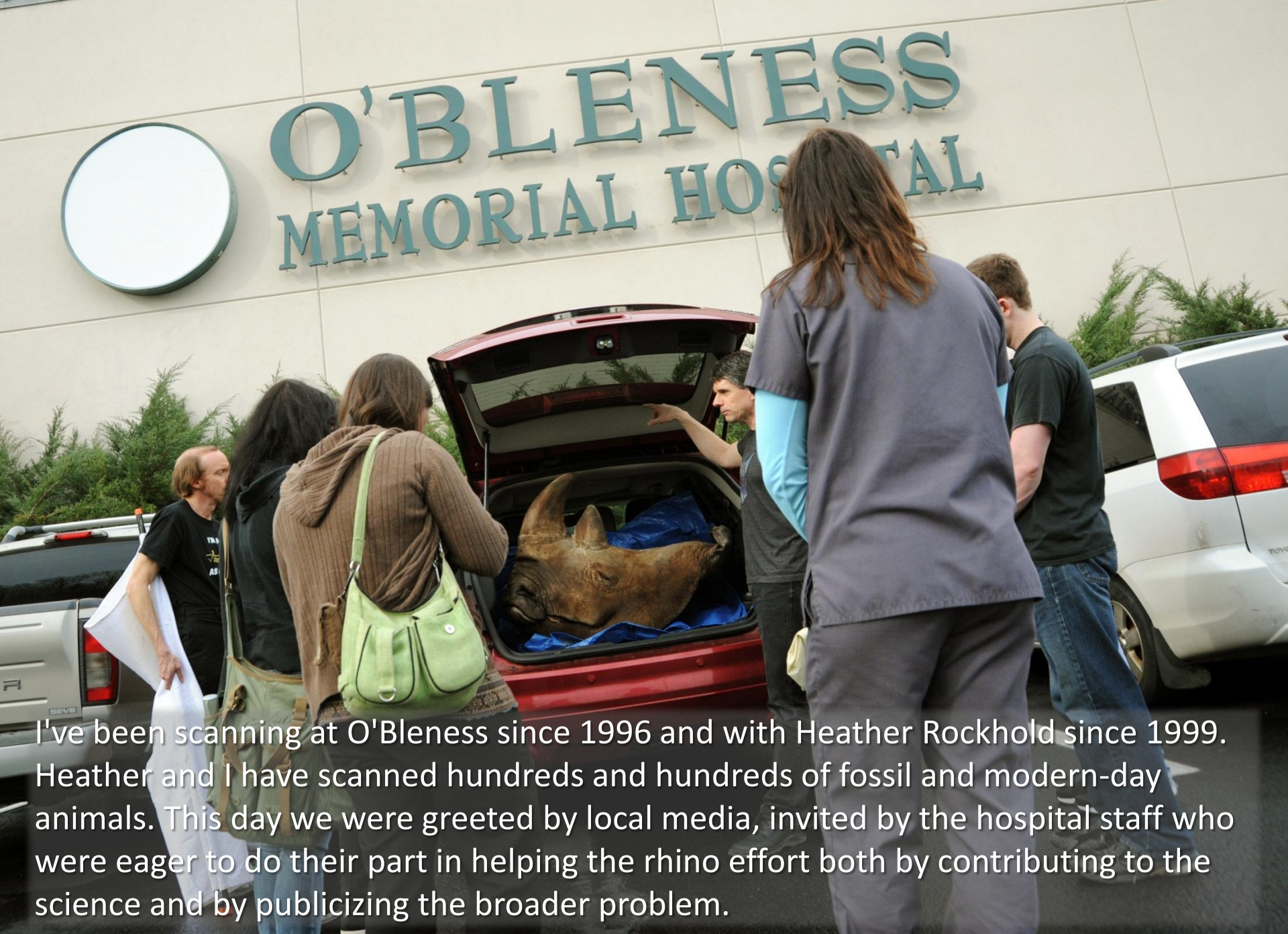
Kehtla has remained a popular destination on WitmerLab tours, residing comfortably in our walk-in freezer. We removed him once again for CT scanning.

My wife Patty made a stretcher for us a number of years ago to carry the various heavy animal heads we study.

Here's the stretcher at work, allowing the four of us to easily carry the awkward and heavy head.

Did I mention that the head is heavy? It weighs in at 256 lbs. We removed the horns for our 2006 study on how rhino horns grow and attach to the skull (http://bit.ly/bnlspj).

The WitmerLab as Team Rhino. Ashley Morhardt handled the photography, shooting over 700 awesome photos for me to sort through.



I've been scanning at O'Bleness since 1996 and with Heather Rockhold since 1999. Heather and I have scanned hundreds and hundreds of fossil and modern-day animals. This day we were greeted by local media, invited by the hospital staff who were eager to do their part in helping the rhino effort both by contributing to the science and by publicizing the broader problem.

I wound up giving an impromptu press conference in the parking lot. Here I describe the nature of the injuries to Themba and Thandi whereby the poachers cruelly sawed off large parts of the face to remove the horns.

At this point I was talking about the nature of the injuries and what those injuries meant for the nasal cavity and breathing, not to mention the risk of infection.

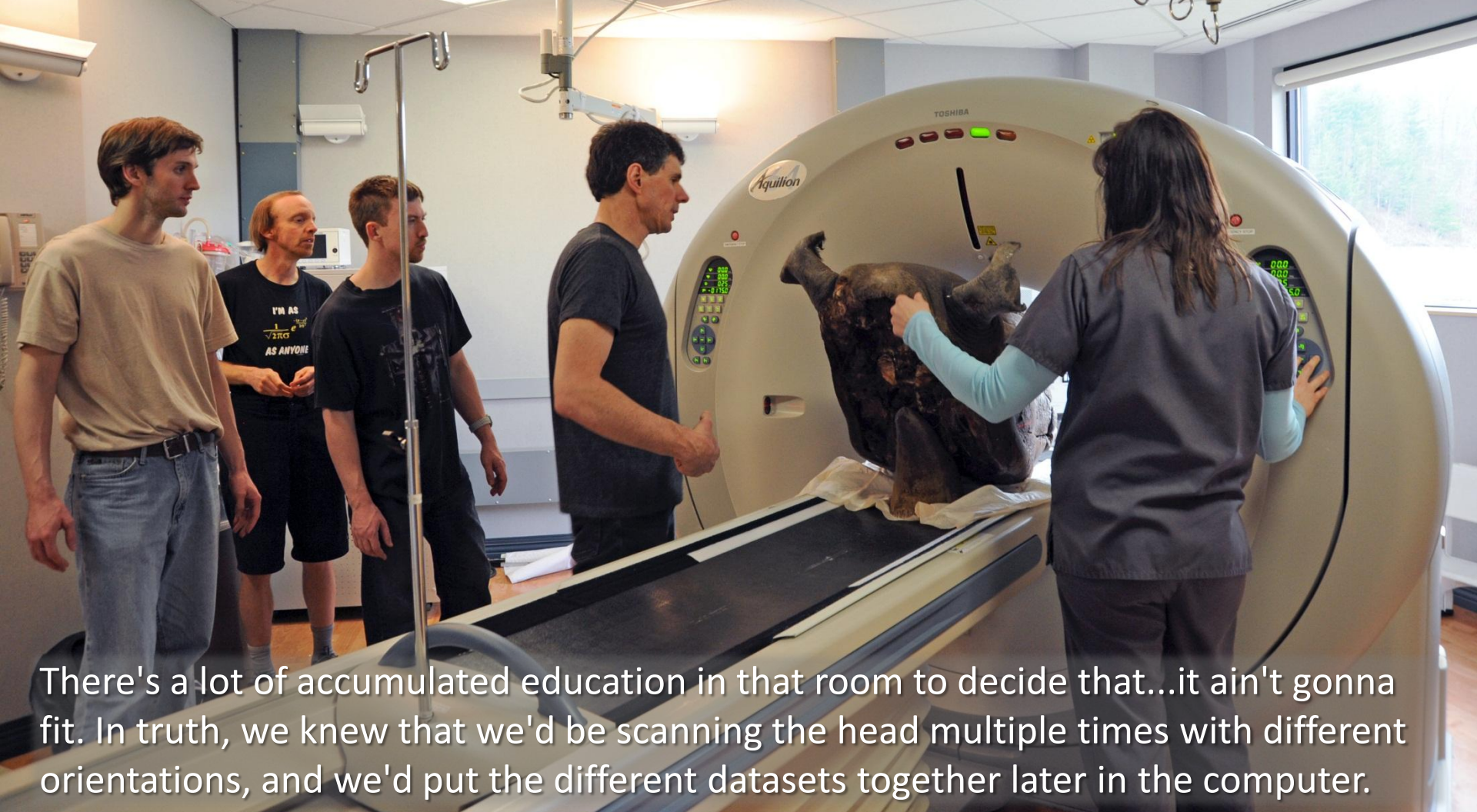
Here I show the reporters the base of Kehtla's nasal horn. As mentioned earlier, we sawed this horn off to study the detailed relationship between the horn, skin, and bony skull.

In the hospital, carrying Kehtla into the CT scan suite.

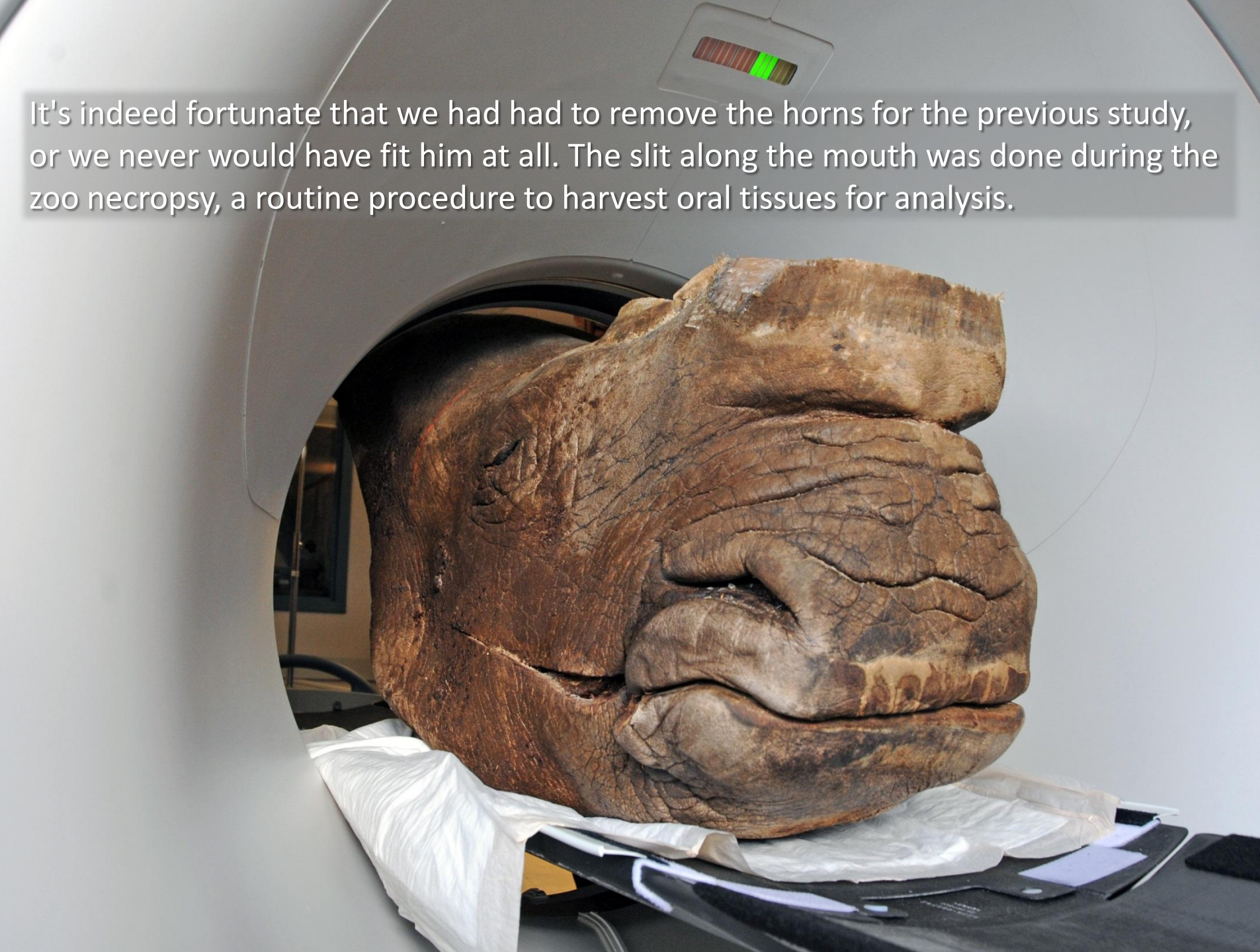
Heather and I survey Kehtla on the scan table.

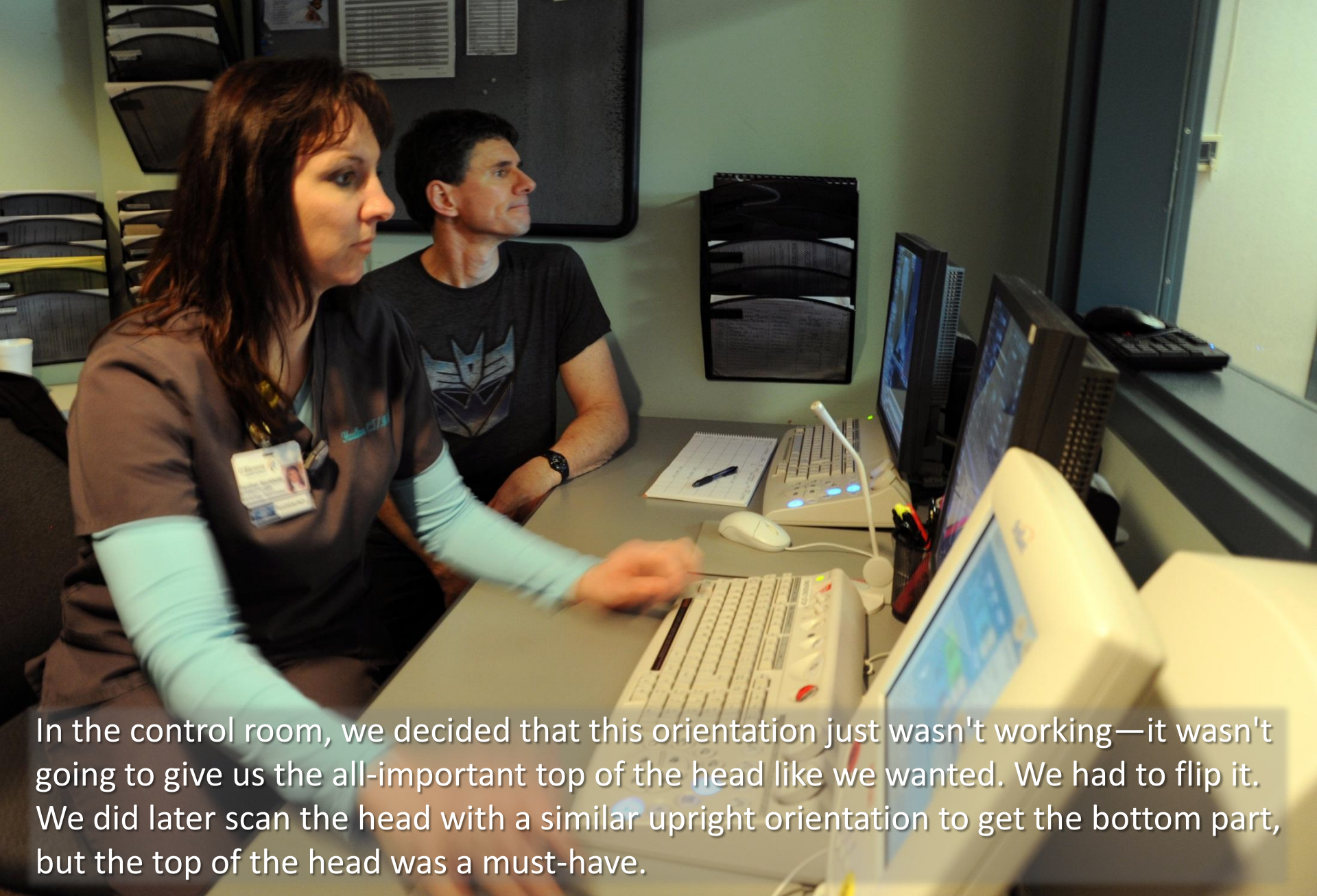
We've CT scanned three different rhino heads over the years, and this was Kehtla's second visit.

As we'll see, rhinos don't fit easily in CT scanners. Sometimes you scan what fits and be happy about it. This time we wanted as much as we could get, preferably the whole thing.



There's a lot of accumulated education in that room to decide that...it ain't gonna fit. In truth, we knew that we'd be scanning the head multiple times with different orientations, and we'd put the different datasets together later in the computer.


It's indeed fortunate that we had had to remove the horns for the previous study, or we never would have fit him at all. The slit along the mouth was done during the zoo necropsy, a routine procedure to harvest oral tissues for analysis.



In the control room, we decided that this orientation just wasn't working—it wasn't going to give us the all-important top of the head like we wanted. We had to flip it. We did later scan the head with a similar upright orientation to get the bottom part, but the top of the head was a must-have.

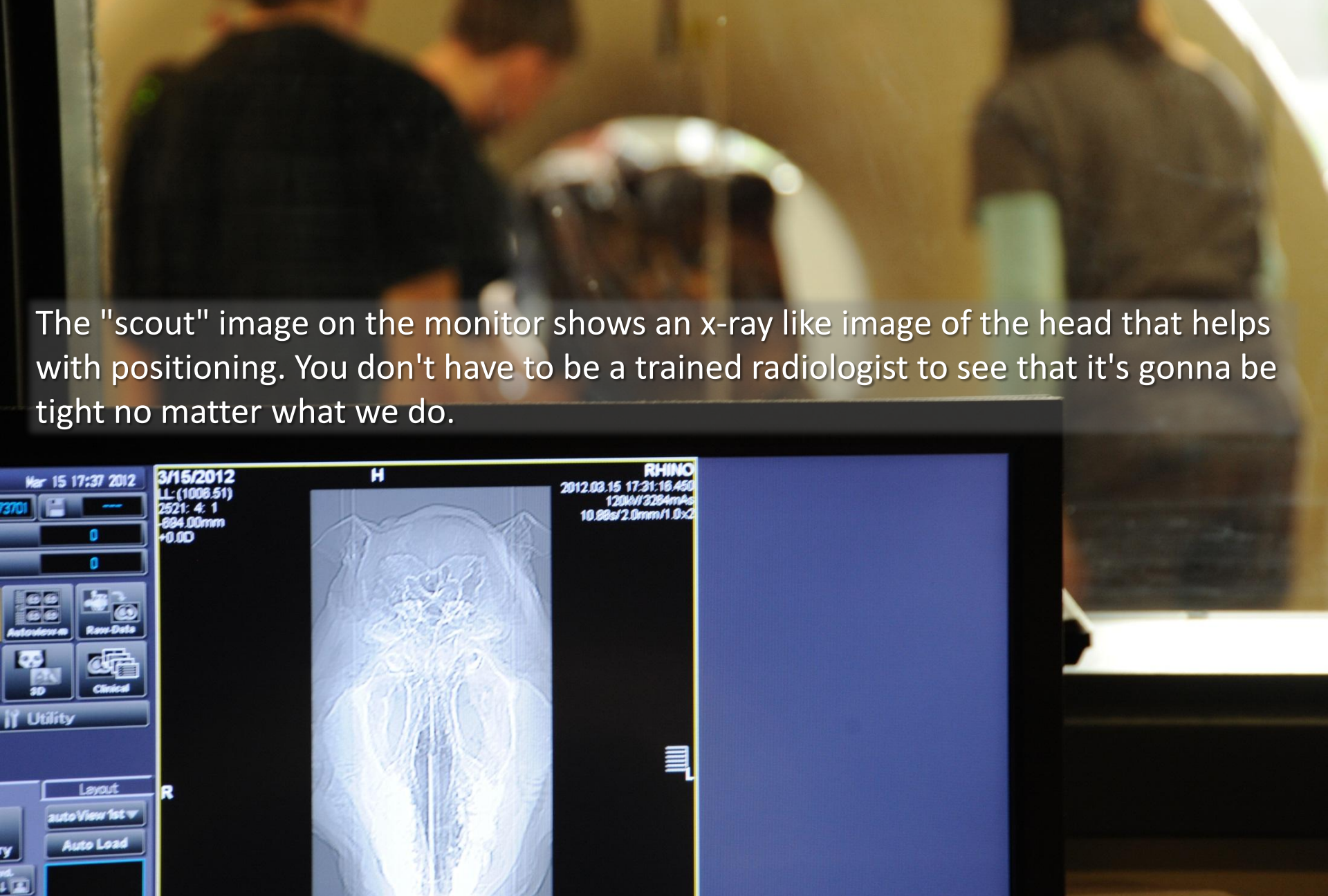
Once we had the skull flipped, we just had to stop and marvel at the crazy-thick skin. It's amazing to think that a dart could penetrate this armor-like skin.

Being upside-down, the top part of the head is closer to the center of the scanner's opening, which means we'll get good data...if the head will fit at all.

Back in the control room, we assessed whether we were getting what we needed. The person at left is Stephanie Stark, a reporter from the *Athens News*. I was very impressed with how the press hung in there for so long to get the story.

Back in the scan room, we scooched and ooched the head back and forth to get as much to fit as possible.


TOSHIBA
Aquilion
We kept at it...and at it...and pretty much got it all! Virtually the entire head!

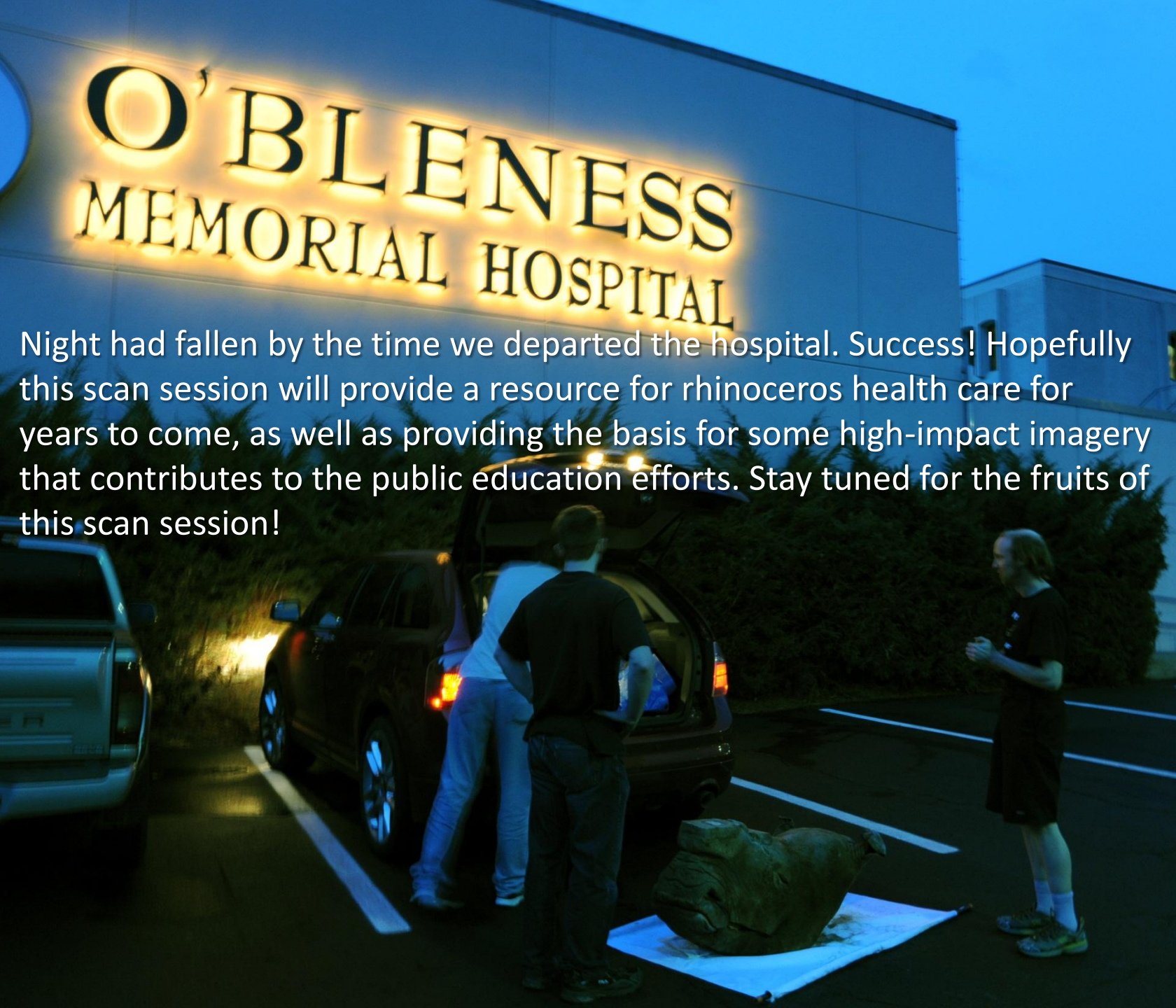


The "scout" image on the monitor shows an x-ray like image of the head that helps with positioning. You don't have to be a trained radiologist to see that it's gonna be tight no matter what we do.

Almost done! Just the tops of the horns to scan. When all was said and done, we had captured pretty much the whole head with four separate scans which Ryan Ridgely will reassemble (more easily said that done…but he'll figure it out).

Here's Team Rhino, exhausted and dirty but satisfied. We may have the most complete CT scan dataset ever collected for an adult rhinoceros head. We scanned the head completely from front to back with slices only 300 microns (= 0.3 mm = 0.0118 inches) thick. Over 3600 slices!

We should have had Heather in the Team Rhino picture, because Heather Rockhold has been a key part of our team for more than a dozen years, as has O'Bleness Memorial Hospital.



Night had fallen by the time we departed the hospital. Success! Hopefully this scan session will provide a resource for rhinoceros health care for years to come, as well as providing the basis for some high-impact imagery that contributes to the public education efforts. Stay tuned for the fruits of this scan session!