

The name of SCIENCE



It's a little science fiction, a little macabre and, for some, just too grotesque to want to think about. The invention of plastination has delivered equal measures of controversy and curiosity – and it's coming to UTS.

Corpses have always been highly prized in learning institutions that teach anatomy. The opportunity to intimately study the inner workings of the human body provides students with an unparalleled learning experience. Up until the early nineteenth century in England, it was against the law to dissect a body unless it was the corpse of an executed criminal. This was a major problem for fledgling anatomical sciences and, as is often the case when demand dramatically outweighs supply, a black market trade emerged, which was largely bolstered by grave robbing.

Thankfully, modern-day attitudes have shifted. Laws now reflect the important role dead bodies (referred to as cadavers in the medical profession) play in furthering education, and in most countries a person can now bequeath their body to medical science. But demand continues to eclipse supply.

As well as scarcity, the environmental conditions required to house specimens and maintain their integrity add to the challenge. Strict regulations govern the transport of cadavers. At UTS, new specimens must be brought in 'under cover of darkness (late at night when security has shut down the building).

The specimens must be kept at a consistent temperature with fresh air pumped through the labs at regular intervals to prevent the build-up of formalin. A pungent chemical by-product from the method of preservation, formalin becomes carcinogenic in high doses and its odour is infamous for permeating nostrils, hair and skin long after exposure.

According to UTS Laboratory Manager Mohammed Shareef, this creates obstacles to the learning process. "At the moment a dissected specimen still emits formalin into the surrounding environment and the specimen doesn't look real as all the colour has been lost during the embalming process."

Students will be able to learn using cadavers that have every organ, muscle, blood vessel – every part of the body – almost exactly as they would have appeared in life

UTS plans to remedy this with a new lab dedicated to the groundbreaking process of plastination. Set to open in early 2012, the lab forms part of wider plans to introduce a biotechnology education program in the UTS Faculty of Science.

Plastination is a method of preserving the body that involves a process of replacing the body's cellular

fluids with plastic (polymer) in order to preserve its structural integrity.

"What plastination allows us to do is to eliminate the chemical smell completely... you don't feel nauseous or anything like that," says Shareef.

Plastinated specimens can then be used to teach anatomy in less controlled environments like normal science labs or classrooms. Students will be able to learn using cadavers that have every organ, muscle, blood vessel – every element of the body – almost exactly as they would have appeared in life.

Shareef has been studying plastination since initial planning for the new lab began. Last year, Shareef travelled to Germany to attend classes at Dr Gunther von Hagens' plastinarium,

where he spent time learning the theory behind the process and getting hands-on experience in cutting-edge plastination techniques.

If you've heard of plastination, you've heard of Dr Gunther von Hagens – the German scientist who invented plastination in 1977; Dr von Hagens is to plastination what Sigmund Freud is to psychoanalysis.

Hagens created headlines all over the world for his controversial *Body Worlds* exhibitions, where human and animal plastinates are displayed in life-like poses. For the first time, the public could see inside the human body in a way that had previously been reserved for those in the medical profession. More than 32 million people have seen the exhibitions to date.

Shareef says that the Faculty of Science has big plans for the plastination lab, which will be the first in New South Wales, and will potentially supply specimens to surrounding universities.

As well as supervising the project, Shareef is conducting research to improve the polymers used in the process as part of a Master of Science.

"The process of plastination makes the specimen quite rigid, so you can't move the structures as easily as you can in a 'wet specimen'," Shareef says. "So what we're trying to do is find newer ways or other alternatives to make sure the specimen is still quite malleable."

Of course, all of this would not be happening without one critical ingredient: bodies. The University will be launching a body bequest program to coincide with the opening of the lab next year. If you would like more information about the bequest program or the new lab, please contact the Faculty of Science on + 61 2 9514 9703. Updates on the project will also be announced via www.science.uts.edu.au

The state's first plastination lab has been fast-tracked thanks to the support of Plastic Surgeon and philanthropist Dr Jerry Schwartz. As well as giving professional guidance to the project, Dr Schwartz has generously donated \$50,000, saying he was eager to be involved. "The specialists of tomorrow are educated today... Education helps

the individual to function better in their society."

If you would like to help further education by supporting the Faculty of Science, please email Liz.Hardy@uts.edu.au or visit www.alumni.uts.edu.au/give for more information about becoming a financial supporter of the University.

