

Anatomy study aids



Plastinated bodies can be repeatedly handled by students without deterioration, said Assistant Professor Dinesh Srinivasan, who heads the school's teaching of anatomy. ST PHOTO: JAMIE KOH

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HOME | B3

Anatomy studies to get hands-on at NTU medical school



Plastinated bodies and body parts are very durable and can be repeatedly handled by students without deterioration, said Prof Srinivasan of the Lee Kong Chian School of Medicine. Equipment that displays 3-D life-size images of the human body will also be used in classes, he added. ST PHOTO: JAMIE KOH

Plastinated bodies and other aids will be used to enhance learning

By SANDRA DAVIE
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SINGAPORE'S newest medical school at Nanyang Technological University (NTU) will pioneer the use of plastinated bodies in Singapore. These are real human cadavers donated to science but preserved using plastic, making them far more durable.

With the use of plastinated bodies, traditionally preserved cadavers, which are in short supply here, will not be needed by the Lee Kong Chian School of Medicine.

The school, jointly set up by Imperial College London and NTU, has ordered \$1 million worth of body parts and whole bodies from Germany. Prepared to the school's specifications, the bodies will be ready for its first batch of 54 medical students who will start classes in August.

Plastination is a process of taking organic tissue and replacing the water in it with a liquid silicone polymer.

The polymer is then hardened, permanently preserving the body.

As teaching aids, plastinated organs offer advantages over models and organs preserved in formaldehyde, the traditional method.

Plastinated organs are non-toxic, extremely durable, dry to the touch, and have no smell. They can be custom-dissected to highlight specific structures.

"These highly detailed, plastinated human specimens are very durable and can be repeatedly handled by students without deterioration, and they

can be stored just like any inert object," said Assistant Professor Dinesh Srinivasan, who heads the school's teaching of anatomy.

He added that plastinated human specimens can be used to highlight structures which are normally difficult to dissect, such as the blood vessels in the brain, in "high definition".

Such intricate details will degrade in traditionally preserved cadavers after repeated use.

Along with plastinated human bodies, Prof Srinivasan said a US\$100,000 (S\$126,500) Anatomage Table, which displays life-sized 3-D images of full body anatomy, will also be used in classes.

The NTU medical school is the only one in South-east Asia to use the Anatomage Table, which arrived from the United States in March.

Microscope slides will also be used to help students understand the microscopic anatomy of cells and tissues of humans.

"The combination of the plastinated human specimens, Anatomage Table and histology slides will enable students to learn about the entire human body from the outside to inside, and down to the cellular level," said Prof Srinivasan.

The National University of Singapore's (NUS) medical school still uses traditional cadavers, 3-D models and multimedia software developed by the school. But students have stopped dissecting cadavers since 2003, partly to pre-

vent their further deterioration.

Instead, they merely observe the pre-dissected cadavers during classes.

Earlier this month, NTU reported that more than 800 A-level and diploma holders had applied for the 54 places that it is offering this year at its medical school, which will include other novel study aids.

It had previously announced that it will use actors to simulate real-life settings, and allow students to learn how to communicate with patients, and how to react in an emergency.

Classes will also be small, providing close supervision and mentoring.

The school has also put together a distinguished faculty comprising a mix of local and international clinicians and scientists.

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The plastination process

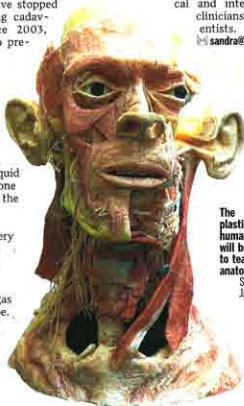
■ A body, which has been embalmed in formaldehyde, is put in a freezing solution of acetone, which replaces the water in the cells.

■ The body is submerged in a pool of liquid plastic, such as silicon rubber. The acetone boils and evaporates, and is replaced by the polymer solution.

■ The body is positioned as desired. Every anatomical structure is aligned with the help of wires, needles, clamps and foam blocks.

■ The plastic is hardened by UV light, gas or heat, leaving the body in a fixed shape.

■ The process costs between US\$30,000 (S\$38,000) and US\$50,000. Plastination of an entire body requires about 1,500 working hours and takes about one year.



The plastinated human bodies will be used to teach anatomy. ST PHOTO: JAMIE KOH