

Our Thiel cadavers

Since the start of the project 11 cadavers have been Thiel embalmed.

Flora and Henry are nearing the end of their time with us.

Johanna and Lester are currently being dissected by our MSc students while Iris, Kate, Milly and Norma are in regular use for courses and research projects.

Three more recent cadavers (Oswald, Pauline and Queenie) are still maturing and are expected to be ready near the end of the year. The plan is to embalm at least two more bodies in the upcoming months.

DID YOU KNOW?

The cadavers are given names that are easier to remember than their cadaver numbers. These names bear no relationship to the individual's name! They are assigned alphabetically (but we missed out the 'G')



This issue

Moving forward **P.1**

Building plans **P.2**

Cadaver planning **P.3**

Session costs **P.4**

Moving forward

From the moment we took our first Thiel cadaver Flora out of the submersion tank the Thiel embalming project has moved forward at an amazing speed. In this newsletter we showcase some of the ongoing training and research, and discuss our future plans.

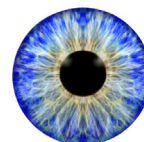
That first year, 2009, was a year of exploration and discovery. We learned how many different people were interested in using Thiel embalmed cadavers, how well the cadavers were received, and got to grips with the practical issues surrounding Thiel embalming and working with the cadavers.

The current year has seen the transition from a small scale pilot to a slightly larger (but still small scale) operation. A second (larger) tank was installed so that more cadavers can be embalmed and stored, and our plans for dedicated facilities have been further developed.

While continuing with pilot studies and evaluations the cadaver sessions increasingly contribute to regular courses and research projects:

- 21 research sessions related to MRI and vascular procedures
- 5 research sessions related to ultrasound guided regional anaesthesia (UGRA)
- 6 sessions for the evaluation of new products
- Courses in thyroidectomy, laparoscopic colorectal surgery, UGRA, MRI guided procedures, rhinoplasty, postgraduate ankle anatomy, dental local anaesthetics and laparoscopic upper GI surgery.

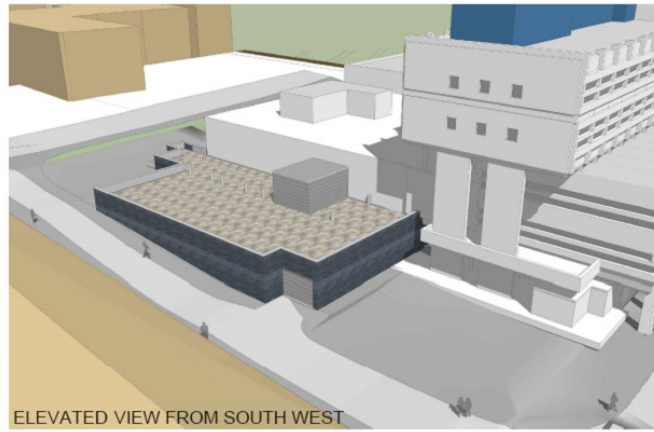
This work has resulted in two papers (see P.2) and a large number of conference posters and presentations; two MRC-DPFS projects involving Thiel cadavers have been funded (see P.3).



**Centre for Anatomy &
Human Identification**



ELEVATED VIEW FROM NORTH WEST



ELEVATED VIEW FROM SOUTH WEST

Rev	Description	Date
1	Initial Issue	11/07/10
2	Revised to include changes to the building footprint and internal layout.	11/07/10
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Building plans

Building work for the first phase of our extension is planned to start in January.

The extension will be placed on the West side of the Medical Sciences Institute connecting to the loading bay.

Replacing our current out of date and small facilities this will provide us with a mortuary space dedicated to Thiel embalming. The new facilities will contain two embalming tables, storage for chemicals, tanks for 48 cadavers and plenty of shelf space for longer term storage of cadavers.

There will also be a number of smaller rooms dedicated to plastination, maceration and other procedures.

We are hoping to move into the new mortuary facilities by the end of 2011 and from then on all cadavers will be Thiel embalmed. This means that from mid 2012 onwards we will have a lot more Thiel cadavers available for training and research.

Until that time the number of cadavers is limited and work has to be carefully planned to optimise the use of each individual cadaver.

Future phases of our extension will include additional facilities for working with cadavers and more office space.

New staff

On September 1st Seaneen Tennent joined the project. She will undertake a 4 year PhD looking at mechanisms underpinning Thiel embalming.

Seaneen holds a Bsc in Human Anatomy and an MSC in Human Identification, followed by a New Lecturer Course in Medical Education. She has worked as a Surgical Resources Technician with the Royal College of Surgeons of England and later as anatomy demonstrator with CAHId.



Seaneen Tennent

Recent publications

McLeod G, Eisma R, Schwab A, Corner G, Soames RW, Cochran S (2010)
 "An evaluation of the Thiel cadaver for ultrasound based regional anaesthesia training and research."
 Ultrasound 18, 125-129.

Eisma R, Mahendran S, Majumdar S, Smith D, Soames RW (2010)
 "A comparison of Thiel and formalin embalmed cadavers for thyroid surgery training."
 The Surgeon (in press).

Cadaver Planning

Over the past 6 months the demand for Thiel cadaver sessions has increased while the availability of cadavers is still very limited. Optimising the work that can be done on each cadaver is therefore essential.

Planning the work means balancing a number of potentially conflicting demands. We have commitments to our undergraduate and postgraduate students and the number of procedures that can be done on each cadaver intended for their classes is limited. A small number of cadavers will not go into our teaching programmes and can therefore be used for more invasive work. We cannot predict how many bodies will be donated in any given year, however!

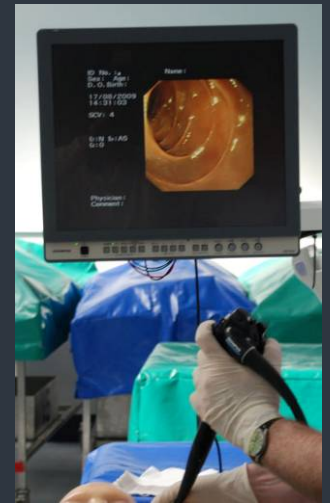
Ensuring that cadavers stay in a suitable condition for agreed upon future research and teaching, and that procedures are scheduled in increasing order of invasiveness means that we cannot always be as flexible as we would like.

One cadaver's timeline: Henry

May 2009: embalming
August 2009: MRI pilot; UGRA pilot
September 2009: parotidectomy pilot
December 2009: MR-guided focussed ultrasound pilot; MR robot pilot; thyroidectomy course; endoscopic ultrasound pilot
January 2010: angiogram pilot
February 2010: brain removal
March-June 2010: Vascular research
June 2010: laparoscopic colorectal surgery course; retractor evaluation.
July 2010: rhinoplasty course; start of dissection by a member of our teaching staff
August 2010: surgical ankle anatomy course; shoulder prosthesis evaluation
September 2010: dental local anaesthesia training; removal of artery, heart and lungs for research project

Future: further dissection, prosection of parts to retain for teaching purposes, and finally cremation.

Showcase



Endoscopy on a Thiel cadaver - pilot study by Dr Elaine Henry (NHS Tayside).



Angiogram on a Thiel cadaver - research by Prof. Andreas Melzer (director of IMSAT) and Prof. Graeme Houston (Chair of Clinical Imaging, Ninewells Hospital and Medical School)

GRANTS for work on Thiel cadavers

Extracorporeal system for provision of pulsatile flow and respiratory motion of Thiel embalmed human cadavers - a pilot study.

Melzer A, Houston G, Black SM, Soames RW, Cuschieri A

MRC Developmental Pathway Funding Scheme
£350K

This project aims to further develop Thiel cadavers for medical device development by re-establishing vascular flow and respiration

Ultrasound-guided regional anaesthesia with an optimised ultrasound transducer.

Corner G, McLeod G, Cochran, S

MRC Developmental Pathway Funding Scheme
£250K

This project will make extensive use of Thiel cadavers to evaluate prototypes of the ultrasound transducer.

Thiel facts

To fill our large tank (which holds up to 6 cadavers) we need 1250 ltr of hot water, almost 400 kg of solid chemicals and more than 300 ltr of liquid chemicals.

The fluid in this tank can be used to mature up to 8 cadavers. The tank then has to be emptied, cleaned and filled again.

Session costs

Earlier this year we introduced charges for work on Thiel cadavers.

While we continue to support pilot studies and similar work for no fee we now charge for regular courses and research using our Thiel cadavers.

Eventually we aim to cover our running costs.

The charges for each session cover the following components:

- Cadaver costs. Each procedure is assessed on aspects such as the number of incisions; it also covers gradual deterioration of the cadavers caused by handling and spending time out of the tank.
- Technical support. This covers the time spent by our support staff to take the cadaver out of the tank and prepare it for transport, or to bring it up to our dissecting room. It also includes things like body bags and cleaning of equipment.
- Transport costs. Cadavers can only be transported by a licensed transporter. We use JJ Gray funeral directors and directly pass on their charges.

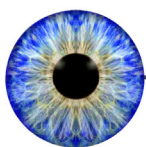
- Scientific support. This covers the time spent on discussing a session, planning the availability of cadavers, and interpreting the results.

Our charges are based on our current understanding of the durability of the cadavers, the number of procedures we can combine on a single cadaver, and the amount of work associated with various tasks. We will regularly review the charges when we gain more experience over time.

Showcase



Thyroid surgery course, December 2009.
Photo by Sam Majumdar (ENT surgeon,
Ninewells Hospital and Medical School)



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