

Medical Collections at the University of Glasgow: History, Description and Mystery

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Abstract Some aspects of the history of medicine in Glasgow will be outlined to provide a setting for the assembly of anatomy/pathology collections at the University of Glasgow. As medical teaching at the University of Glasgow accelerated in the mid-18th century, the time period covered will be approximately 1750 – present day. Particular focus is given to the life and foundational collections of William Hunter (1718–1783), the Scottish anatomist, physician and man-midwife, with some reference to specimens that illustrate acquisition routes or preparation techniques. An intriguing ‘mystery’ collection of dry vascular dissection specimens, of uncertain provenance and under-known production will be described and new information offering clues to their origin and preparation discussed.

History and Description

The University of Glasgow, one of the four ancient Scottish Universities and the fourth oldest university in the English-speaking world, was founded in 1451 by Pope Nicolas V. Its curriculum largely consisted of the arts, theology and law. The original premises for conducting its business was the Blackfriars Church of the medieval Dominican Priory adjacent to Glasgow Cathedral.¹ Medical teaching began slowly at the University: though a professorship in medicine was created in 1637, almost 200 years after foundation, it was not until the 18th century that medicine was truly established at the University of Glasgow with the appointment of William Cullen (1710–1790), the Scottish doctor and chemist, as Professor of Medicine in 1751.² Related appointments to Regius Chair of Anatomy (a co-chair with Botany till the early 19th century) eventually supported medical teaching.

The earliest medical specimens identifiable in the University collections today are some made by James Jeffray (1749–1848), Regius Professor of Anatomy and Botany, 1790–1848. To date, there is no archival evidence of specimens made by earlier practitioners in medicine or anatomy associated with the University. In 1783, the University became set to greatly increase and enhance its medical collections with the bequest of William Hunter (**Fig.1**), its alumnus.



Fig.1 ‘Dr William Hunter’ portrait (enamelled miniature) by George Michael Moser, 1771–1783 (GLAHM: 42408) © The Hunterian, University of Glasgow

1 Haynes 2013.

2 Anon 2008, For online version of the history of medicine at the University of Glasgow see <https://www.gla.ac.uk/schools/medicine/mus/ourfacilities/history/> (15. 02. 2023).

Hunter was born in 1718, in East Kilbride, just south of Glasgow and, aged 13, was sent to the University to study for a theology/arts degree to prepare him for a career as a clergyman. He was not suited to divinity studies, left the University and instead in 1737 (aged 19) became apprenticed to the aforesaid William Cullen who at that time was medical attendant to the Duke of Hamilton, a local aristocrat.³ Hunter embraced medicine, and after working with Cullen for a couple of years, he then developed his career from 1739 to 1749, as follows:⁴

- 1739** Attended lectures at the University of Edinburgh
- 1740–1741** Moved to London and further apprenticed with fellow Scottish physicians/obstetricians William Smellie (1667–1763) and James Douglas (1675–1742)
- 1742–1744** Studied in Paris with Antoine Ferrein (1663–1769) and Henri Francois Le Dran (1685–1770)
- 1744–1747** Returned to the Douglas household and started lecturing in anatomy in London
- 1748** Returned to Paris and then onto Leiden where he met leading anatomists including Bernhard Albinus (1697–1770)
- 1749** Appointed to a surgical post at the British Lying-In hospital in London, left the Douglas household and launched his own Anatomy School and medical practice

William Hunter worked hard to achieve his very successful London-based career as a teacher, anatomist, doctor, man-midwife/obstetrician, researcher and collector. Having appreciated the beauty, value and utility of collections whilst working with the talented polymath James Douglas, he developed his own collections through gift, buying at sales or auctions, and making preparations. Eventually, around 1764, when he had built up his practice and had accrued sufficient funds, he extended beyond his professional medical preparations to acquire outstanding collections of books, manuscripts, art, coins, natural science and cultural objects. In 1768, these were installed in a purpose-built museum at his final residence and business premises at Great Windmill St in Soho, London.

To return to Hunter's anatomical and pathological collections: these were wide-ranging and included human and animal subjects ranging in age from foetal to adult and included normal and pathological anatomies. There were bones, teeth and soft tissues, whole and dissected preparations, wet and dry preserved specimens, injected tissues, taxidermy and models.⁵ The history of any specimen may or may not be known to us today but occasionally there is information traced from archives, literature sources

3 Brock 1983.

4 Campbell M., Flis N., Sánchez-Jáuregui M. D., 2018.

5 Reilly and McDonald in Campbell et al, *op.cit.*

or the style of the specimen which provides clues on its preparator or purposes. It is important to acknowledge the help that Hunter had in making his own specimens i.e. not those ready prepared and acquired by purchase or gift. He had four principal professional assistants in his career, all of whom contributed to his collection. Of course, he had other less well-known assistants and staff and indeed it is most important to acknowledge the largely anonymised people from whose bodies his preparations were made. His main medical assistants were his younger brother, John Hunter (1728–1793) also a famous anatomist, surgeon, scientist and collector; William Hewson (1739–1774): anatomist specialising in lymphatics and haematologist; William Cruikshank (1745–1800); anatomist specialising in lymphatics and surgeon; and Matthew Baillie, pathologist, and Hunter's nephew.

Some particular preparations warrant mention to indicate the diverse sources and types of specimens (**Fig. 2**).

There are a series of fine dissections of the human eye revealing its layers and structures – Hunter bought the collection of the anatomist Francis Sandys (d. 1771) who had a special interest in the eye.⁶ Other notable specimens include limb bones inherited from James Douglas's collection that had been described and illustrated by William Cheselden (1688–1752) in his famous work "The Osteographia", published in 1733.⁷ There are series of teeth specimens that were prepared by John Hunter who later in his career, in 1771, wrote 'The Natural History of the Human Teeth.'⁸ Amongst William Hunter's most famous specimens are a series of life-size plaster models of dissections of pregnant women. He had these dramatic and extraordinary replicas made as part of his life's work on the study of maternal/foetal relationship and the anatomy of the gravid uterus.

This group of three, possibly experimental, specimens of short lengths of intestine injected to show the fine arteries of the gut wall demonstrate different preparation techniques (**Fig. 3**). One, on the left, is coiled section of gut with the lumen hollow, the tissue is suspended and preserved in spirit. In the middle specimen, the gut is inflated, dried and sealed loose into the jar. In the right-hand specimen, the gut lumen is filled with a white injection mass, coiled, suspended in the jar and preserved wet in turpentine.

Other specimens (**Fig. 4**) such a spirit-preserved cow placentula show injection and corrosion of the maternal tissue leaving only the foetal interdigitations. There are a considerable number of mercury injections to show the lymphatic system, reflecting a principal research interest of Hunter and his associates. The mercury injection of the porpoise gut demonstrates the fine lymphatic vessels of the gut mesenteries.

6 Thomson, 1942.

7 Flis p. 218 in Campbell et al, *op cit*.

8 <https://www.rcseng.ac.uk/library-and-publications/library/blog/john-hunter-the-natural-history-of-the-human-teeth-1771/> (15. 02. 2023).



Fig. 2 Top left: Dissections of the eye attributed to Francis Sandys (GLAHM: 119889, 119886, 119911, 119900, 119906). Top right: Teeth specimen by John Hunter (GLAHM: 119742). Bottom left: James Douglas specimen used by Cheselden (GLAHM: 122400). Bottom right: Obstetrical plaster cast (GLAHM: 125630) © The Hunterian, University of Glasgow



Fig. 3 Three specimens of injected intestine (GLAHM: 123050, 119490, 119489) © The Hunterian, University of Glasgow



Fig. 4 Left: Cow placenta (GLAHM: 119875). Right: Porpoise intestine (GLAHM: 122868) © The Hunterian, University of Glasgow

Hunter produced a manuscript catalogue of his medical collection. A working document, it is not complete, does not list all specimens individually and often has only brief descriptions. J. H. Teacher (see below) in the preface (pp.vii–xix) to his catalogue of Hunter’s collection⁹ fully describes the limitations of the manuscript catalogue. It is difficult to know exactly how many specimens Hunter had in his collection – it was however in the order of a few thousand. He listed his specimens coded A–Z (then AA–ZZ) by subject e.g. A ‘The blood’ to Z ‘Vesicula Seminales’.

Additionally, and most usefully from a modern collection management point of view, the specimens are coded by preparation type (**Fig.5**) thus – S (spirits), T (oil of turpentine), D (dried) P (on a pedestal under a glass cover, M(microscopic object) and tantalisingly, the final entry ‘I. &c ... refers to a book of reflections on the preparations’. Frustratingly, this book is not present today – it surely would have furnished fascinating insights into preparation practices?

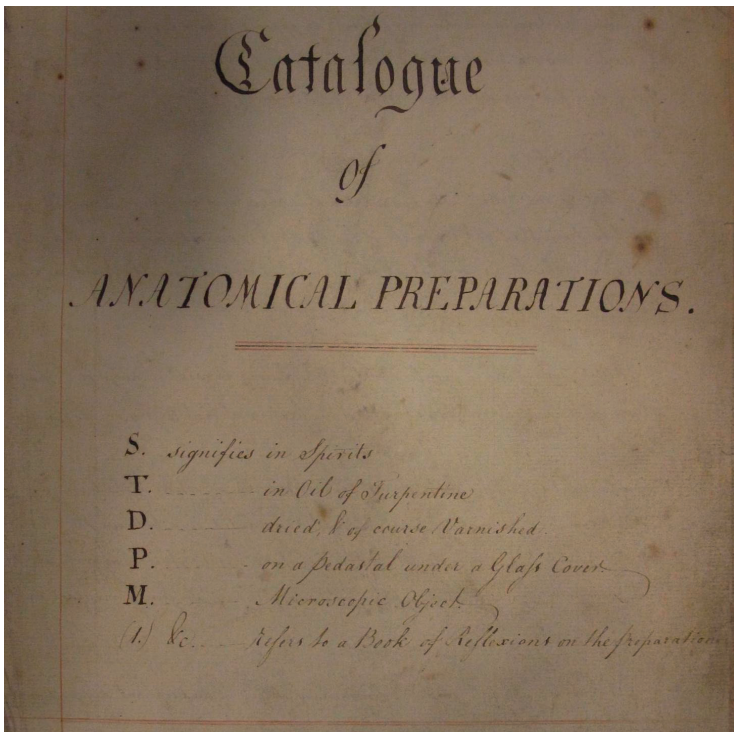


Fig.5 An extract from mss. MR19 Catalogue of the Anatomical Preparations, Glasgow University Library, Archives and Special Collections

William Hunter died in 1783, aged 64. He left his collections and funds to build a museum to house them, to the University of Glasgow. After a period of use, until 1800, in London by his heir, Matthew Ballie, the collection was sent to Glasgow and the newly-built Hunterian Museum, the first public museum in Scotland, opened in 1807 at the

⁹ Teacher, 1900.

old University site in the centre-east of Glasgow. There was no catalogue or guide to the museum produced by the University, but a few years after opening, naturalist and antiquarian Captain John Laskey (176?–1829) privately produced and published an account of the museum.¹⁰ It was intended apparently as a visitor guide and is the nearest there is to a contemporary ‘catalogue’ of Hunter’s museum. As for the other parts of the collection, Laskey describes only choice specimens in the Hall of Anatomy. He draws attention to 19 special specimens placed on a table and then lists the highlights of the spirit-preserved material thereafter. Ten of those 19 ‘table’ specimens are corrosion casts and the text implies they are dry preserved. They do not appear to have survived to the present day.

In the 1870s, the University gave up its city centre premises and moved to a new (the present day) site, Gilmorehill, in the west of the city. The Hunterian Museum was prominently re-installed in the impressive new building, now known as the Gilbert Scott Building (named after its architect).¹¹ However it seems the medical collections were assigned to some attic spaces with poor access and fall into a measure of disuse.¹²

University pathologist and Honorary Keeper of the Anatomy and Pathology collections, John Hammond Teacher (1869–1930) rescued, conserved, restored and meticulously researched the collection between 1895 and 1900. In 1900 he published a revised and much augmented edition of Hunter’s manuscript catalogue. This is a critically important work to this day, essential to understanding Hunter’s collection.

Over the 20th century many other changes happened. A new Anatomy building opened in 1901, Hunter’s collection was moved there and installed in a purpose-built museum room alongside other collections added over the 19th century. Teaching and research in Anatomy continued to expand and thrive and the Anatomy Museum and its collections remain in active use.¹³ In the 1950s, the Pathology specimens were transferred to the Pathology Department of the large teaching hospital, Glasgow Royal Infirmary but were transferred back to the Anatomy Department in 2013. For most of the 20th century, care of the collections was in the remit, *ex officio*, of the Departmental Regius professors and any delegated staff. However in 2000, the Hunterian Museum (drawn together as a single administrative entity in 1977) resumed responsibility for the Hunter medical collection. As there was no anatomy curator or conservator, the zoology curator was tasked with this role. A grant-funded collection audit¹⁴ was carried out in 2002 to establish baseline data on location and condition of the collection. Around 3000 Hunter specimens were inventoried and a further 2000 non-Hunter his-

10 Laskey, 1813.

11 Keppie, 2007.

12 Maylard, 1884.

13 Reilly and McDonald, 2009. See website for more information on the Anatomy Facility – <https://www.gla.ac.uk/schools/lifesciences/anatomy/> (15. 02. 2023).

14 Reilly and Nicol, 2002.

toric specimens listed. Conservation was carried out on a number of the specimens in most serious need.

Mystery

In the 2002 survey, around 30 dissected, injected, varnished, dry, part skeletal/part soft tissue specimens, clearly historic in appearance, were found and inspected (**Fig. 6**).

No labels or markings of any kind were attached to the specimens and no information was available on their origin, preparation or purpose other than “they had always been around the Department”. The subjects shown include blood circulation, head and neck, nerves and single organs e.g. heart or liver and the dissections were very skilled.

These specimens presented a challenge on how to proceed. The 2002 survey prioritised the Hunter material and there was no resource left over to follow up on other historical material, particularly specimens with no provenance. Checking with other UK anatomical collections at the time revealed little – similar looking specimens were reported at Barts Hospital Museum¹⁵ but there was scant information on those specimens too. However over the last twenty years, other specimens in a few institutions have been brought to our attention e.g. Liverpool University Museum (*pers. com.* Leonie Sedman, Curator); Bradford City Museum, (*pers. com.* Gerry McGowan, Curator); Royal College of Surgeons of Edinburgh Struthers collection (*pers. com.* Cat Irving, Conservator). Apart from improving the storage of these mystery preps as it was evident they had suffered neglect and damage, a passive approach was taken and further research was shelved due to lack of resource.

In 2014, new information in the form of papers published in 2010 by the curator of the Musée Fragonard in Paris, and his co-workers¹⁶ were found in *ad hoc* research. The Fragonard specimens looked similar to our mystery preparations. Some speculation arose as to whether these specimens had been part of the Hunter collection – after all it was now known that Hunter had over 100 dry injected specimens in his collection¹⁷, though Teacher in his thorough and meticulous work makes no reference to anything resembling these mystery preparations. Could Hunter in his time in Paris have learned the techniques? Honoré Fragonard was born in 1732 and created many of his famous preparations between 1766 and 1771. However, Hunter visited Paris twice, in 1742 and 1748, so the dates do not align and this idea appears incorrect.

15 General information on this museum at <https://www.qmul.ac.uk/pathologymuseum/about/> (15.02.2023).

16 Degueurce et al, 2010, Parts 1 and 2.

17 Teacher, p. xi, *op.cit.*



Fig. 6 Some examples of the ‘mystery’ specimens Top left: Upper torso of female subject (GLAHM: 123612); top right: two torsos (GLAHM: 122944), image courtesy of David Russell Glasgow University Anatomy Facility; bottom left: skull with teeth (GLAHM: 123611; bottom right: dissection of facial nerves (GLAHM: 123616) © The Hunterian, University of Glasgow

By 2016, further information emerged in the form of a Time magazine article¹⁸ on a travelling exhibition in the USA, of mummies which *inter alia* had specimens from the University of Maryland. This, in turn, led to the discovery of an article in the Medical Bulletin of the University of Maryland.¹⁹ The Maryland cadavers or mummies attracted our attention for two reasons – an unexpected Glasgow connection and some striking similarities in the preparations. The Medical School at the University of Maryland has clear provenance on their specimens – they are the Allan Burns Collection purchased in the 19th century from Granville Sharp Pattison – Burns and Pattison were both Glasgow anatomists.²⁰ Wade suggests that the Burns specimens ‘originally numbered in the hundreds’ and with reference to the preservation techniques, comments “... The specimens were mummified by a salt and sugar cure process: the exact manner and method is unknown.”

The Burns’s were a distinguished Glasgow family – medical men John (1774–1850) and Allan (1781–1813) were the sons of the Reverend John Burns (1744–1839), a Church of Scotland Minister at the venerable Barony Church. John, the elder son, was a licensed medical practitioner, held a surgeon’s appointment at the Glasgow Royal Infirmary, set up his own private Medical School (the College Street School), worked for the rival Anderson’s University and finally was appointed the first Regius Professor of Surgery at the University of Glasgow (1815–1850). Allan Burns had little formal medical training but aged 16, joined his brother John’s private school as a practical anatomist and preparator, excelling at both. Through his anatomical work and by observation of clinical cases, Allan Burns became especially interested in and knowledgeable on the head and neck, the cardiovascular system and the blood circulation. He published two books on these subjects, *Observations on Disease of the Heart* in 1809 and *Surgical Anatomy of the Head* in 1811. Sadly, after a period of ill health, Allan Burns died young of complications of an abdominal abscess.

Granville Sharp Pattison (1791–1851), also from Glasgow, was a licenced medical practitioner and student, assistant, protégé and friend to Allan Burns. Burns had bequeathed his preparations to Andrew Russell, another surgeon who had been his partner/assistant in making the anatomical specimens; to Pattison he bequeathed copyright on all his works. Pattison published a second edition of Burns’s book on the *Anatomy of the Head and Neck* in 1824 and included as a preface a warm account of Burns’ life, a eulogy that is still a principal source of information on the subject. In a glowing tribute to his mentor, Pattison writes of Allan Burns’s skills and innovations in making vascular preparations and declares these preparations to be the best in the world.

18 Strange Medical Mummies Displayed In Traveling Exhibit | Time.

19 Rooney, 2014.

20 Wade, 1998.

Often described as a controversial character, Pattison nonetheless had a successful medical career with posts in America and London. After Allan Burns' death, Pattison acquired Burns's medical preparations from Andrew Russell, and took them with him to America in 1818. He was appointed Professor of Anatomy, Surgery and Physiology at the University of Maryland in 1820. He sold the Burns specimens to the University for \$7800, a significant sum. This still begs the question – how might Glasgow University have obtained Allan Burns' preparations since apparently Pattison took them to America? Again, purely speculatively, it is possible that Pattison did not acquire all of the preparations from Russell or that Russell made more after Pattison's departure and that when John Burns subsequently joined the University staff, he brought the preparations from his private school with him. The University of Glasgow had subsumed all of the other medical training schools in Glasgow by 1947. Further research is required.

In 2018/19 Jakob Fuchs of the University of Fine Arts in Dresden requested research access to sample some of the historic dried specimens for technical analysis as part of his PhD study. Fuchs has identified (so far) around 60 institutions in Europe, six in the UK, holding historic vascular injection preparations.

The injection masses, blood vessel coloration and surface varnish of two of the specimens, both vascular injection partial body preparations of torso with head (**Fig. 7**), were sampled. A dried injected placenta specimen from William Hunter's collection was also sampled. The study used FTIR, Raman spectroscopy and gas chromatography-mass spectrometry analyses. A simplified summary of the results show that the putative Burns preps contain waxes, resins, oils and artists' pigment which are various heavy metal compounds, and the Hunter placenta similarly contains resins and ester wax.²¹ This is fascinating new information, important historically and for the care and safe handling of the specimens. To date this is the only such work done on the collection.

In the Fragonard papers referred to earlier, extensive analytical work revealed the use of natural wax, oils, animal fat, plant resins and painters' pigments in those preparations. Such materials and techniques were first developed by anatomists around 1670²² and proved a successful and useful method of dry preservation of bodies/body parts for teaching and display. In use for over 200 years, the techniques were inevitably experimented with over time to achieve new, different, more durable or clearer results.

21 Fuchs pers. com, unpublished PHD research. To be published in October 2023.

22 pers. com. Jakob Fuchs who also kindly adds the following 11. 03. 2022: 'The first instruction on the injection of coloured wax masses were published in 1672 (Swammerdam 1672: *Miraculum naturae, sive uteri*. Leyden). Further, partially very detailed instructions on the injection technique followed a few years later (e.g.: Schacher 1710: *De anatomica praecipuarum partium Corporis Humani administratione*. Leipzig.; Monro 1732: *An Essay on the Art of injecting the vessels of animals*, in: *Medical Essays and Observations published by a Society in Edinburgh.*; Cassebohm 1746: *Methodus secandi oder deutliche Anweisung zur anatomischen Betrachtung und Zergliederung des menschlichen Körpers*. Berlin.; Sue 1749/1765: *Anthropotomie, ou l'Art d'injecter*, Paris). Hunter was certainly aware of these publications. This could be one way he was able to develop his injection technique.'



Fig. 7 Top left and right: vascular preparations sampled for the Fuchs study (GLAHM: 123613, 122944); Bottom: the Hunter collection dried placenta specimen (GLAHM: 119048) © The Hunterian, University of Glasgow

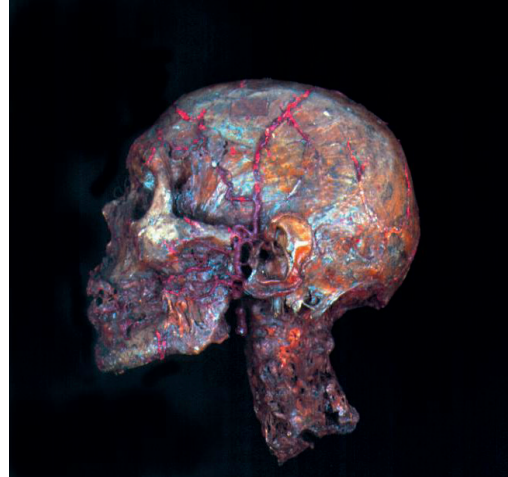


Fig. 8 The Maryland collection. Left: Allan Burns specimens on show in exhibition; Right: vascular skull preparation. See figs. 6 and 7 above for comparison. © Larry Pitrof and Adam Puche

Recent communication with the University of Maryland²³ reinforces the impressions of the striking similarities in these vascular preparations (**Fig. 8**) and opens the possibilities of comparative technical analysis to produce evidence to confirm or refute their common origin. In addition, there are considerable historical researches to be undertaken to elucidate the journey of these preparations into the collections of the University of Glasgow, a study which must be contextualised in the wider history of anatomical preparatory techniques and the history of medicine and anatomy in Glasgow.

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²³ pers. com. Prof. Adam Puche and Larry Pitrof, University of Maryland School of Medicine.

and kind permission to use images; Adam Puche and Larry Pitrof for information and kind permission to use their images.

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