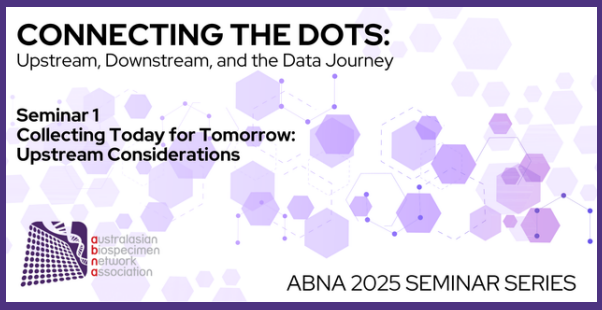
MARCH 2025

ABNA EXCHANGE

OFFICIAL NEWSLETTER OF THE AUSTRALASIAN BIOSPECIMEN NETWORK ASSOCIATION

2025 Seminar Series



Our 2025 Seminar Series kicks off on April 8, 12:00PM AEST

Seminar 1 focusing on upstream considerations for sample collection for future use. It will feature 3 speakers including:

Dr Darren Miller, viral immunologist and vaccinologist from the School of Animal and Veterinary Science, The University of Adelaide

Carly Steen Data Manager at Terrestrial Ecosystem Research Network (TERN) where she oversees the management and curation of soil and vegetation data

This seminar series offers a fantastic opportunity to gain valuable insights into the complexities of sample collection and its long-term implications for biobanking and future research.

Click HERE to register for the three virtual seminars

Marching into Green

And just like that... March is here, and I hope many of you had a chance to celebrate St. Patrick's Day! The newsletter sub-committee has done an excellent job curating biobanking-related articles for the month, including a fascinating piece about one of Ireland's tallest men, Charles Byrne, the "Irish Giant." This article delves into gigantism and the ethical considerations surrounding the collection of remains from affected individuals for scientific research and museum display. The return of human remains is a sensitive issue, and we hope to soon bring you an article that addresses the return of remains within Australian/Indigenous populations.

Staying on theme for March, there is a link to an editorial on Green Biobanking, an important and timely topic that we can all work towards for the benefit of the environment.

The ABNA 2025 seminar series is kicking off and our "5 minutes with a biobanker" session features Seminar 1 speaker Dr. Darren Miller, a viral immunologist and vaccinologist from the University of Adelaide. Don't forget to register! Please note the Seminar Series will be using Currinda V2, the new version of the application we use for managing our events and membership. Be aware the registration portal will look a bit different to usual and bear with us as we iron out any issues, please get in touch if you are having difficulty registering.

Lastly ISBER has announced new regional ambassadors, and I'm excited to share that one of ABNAs own is among them - but I'll leave that surprise for you to read about!

That's all for March - we'll see you next month for more ABNA Exchange!

5 Minutes with a Biobanker

We approach a different professional in the biobanking arena with the same questions each month.

This month we feature Dr Darren Miller, lecturer and researcher in viral immunology and vaccinology, School of Animal and Veterinary Science, The University of Adelaide.
Dr Miller will be one of the speakers at the first of ABNAs 2025 Seminar Series

THE QUICK QUESTIONS

Are you left or right handed?
Right - but after so many years working in the lab I could say I am ambidextrous

Would you rather play it safe or risk it all?
Somewhere in between, it's all about calculated risks. Life's too short for all safe plays

Should pineapple go on pizza?
Absolutely!
Although this causes a lot of debate in my household

Do you prefer to type or hand-write meeting notes?
I prefer to handwrite my meeting notes, even if I can't read what I wrote later

Dark vs milk chocolate, which one would you chose?
Dark chocolate, the darker the better, no question. Don't get me wrong, milk chocolate's great too!

1. **What was your first job in biobanking?**
   I have been involved in research for more than 30 years so during this time, I have supported and also established a lot of collections. But my first job in "biobanking" was in a cell culture facility maintaining hundreds of cell lines, storing and distributing them to the researchers that needed them. Back then it was all managed by a handwritten copy in a lab book which was later entered into excel, definitely no LIMS.
2. **How long has your biobank been operating and what is your 'elevator pitch' for your biobank/job?**
   I have been doing research for long enough to have a few collections under my belt. While I've worked on diverse collections over time, from animals to humans, the heart of what we do is focused on developing vaccines that not only improve the wellbeing of animals but also contribute to groundbreaking research that benefits humans too. It's like building a bridge between the animal world and human health.
3. **What is the craziest thing you have done to save a sample/s?**
   Well, there was this one time I was working with a critical cell line—back in the day when storage tubes were not exactly up to standards for liquid nitrogen storage. So, there I was, in the middle of the delicate process of bringing the cells up, when BOOM—the tube exploded right in my hand. The tip of my finger? What finger? Blood everywhere but I kept working through the blood and pain to make sure the cells were defrosted properly and still viable for distribution.
4. **What has been your favourite moment (so far) in your biobanking career?**
   It's hard to pick just one. I like seeing the impact of the work we do firsthand. Whether it's contributing to a major research study or knowing that the samples we've stored are helping advance important preventative and therapeutic treatments … it's all about the samples … and data, you can't forget about the data.

Newcastle Conference corner

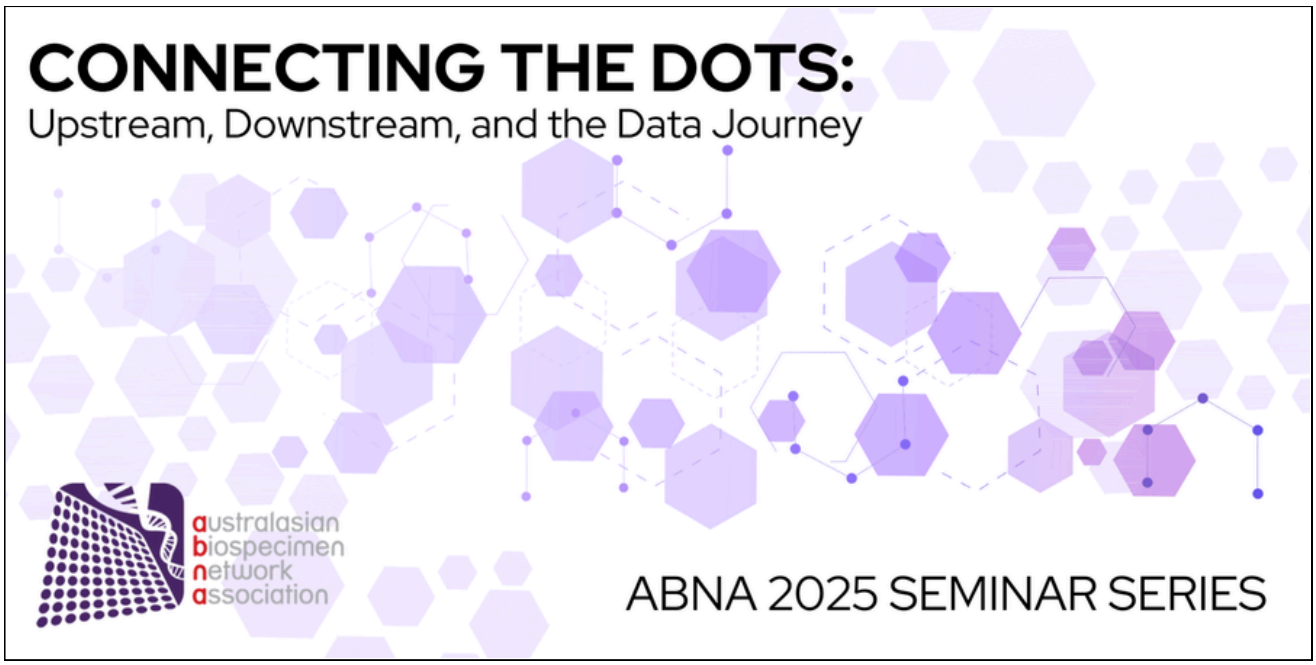
Get to know Newcastle our 2025 host city in bite size portions and a teaser for the conference sessions

As the Conference Organising Committee is planning the conference sessions and networking events, we have tasked ABNAs Past President Cass Griffin with providing us a tour of her home city which will be hosting ABNA 2025. Each month a new blog post will be added, giving insight into everything conference related from the scientific program, speakers and a little bit about Newcastle.

Did you know Newcastle is not only the second largest city in NSW but also the 7th largest city in the country? Do you know where the best spots to stop, revive and refresh yourself along the Newcastle waterfront are located? Do you want (no, need) insider tips on how to get to and around Newcastle while you are here for conference? Would you like some background on the different venues ABNA will use for this year's conference combined with information about sessions and speakers before they hit the conference website? If you answered yes to any (or all) of these questions, then this is the blog you have been waiting for!

Read the first blog on our conference website

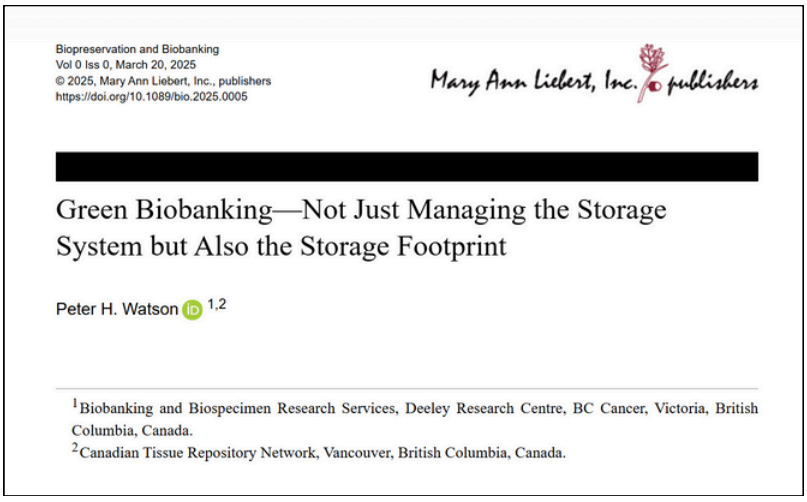
CLICK HERE

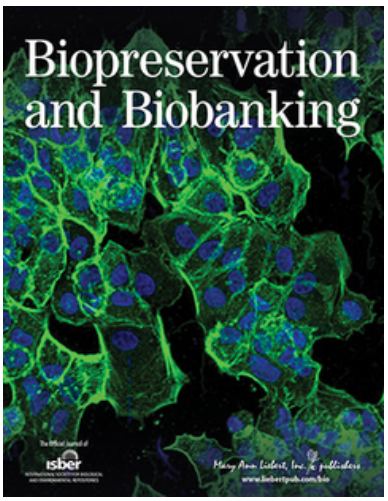


Green Biobanking

A recent editorial in Biopreservation & Biobanking by Peter Watson emphasises the importance of sustainable practices in biobanking, focusing on reducing the environmental impact of storage systems. It discusses strategies for minimising the carbon footprint, such as optimising energy use, implementing eco-friendly technologies, and adopting green building standards. But importantly also raises the issue of the sheer volume of frozen material that is currently underutilised and unlikely to be used in the future. The editorial discusses the importance of rationalising the inventory of stored samples to reduce environmental impact. It suggests that biobanks should regularly review and assess their collections to identify and remove redundant or low-value samples. Click on the image below to access the article.

ABNA's Quality Management & Improvement Special Interest Group has recently convened a Working Group that will focus on Specimen Retention and Disposal Guidelines. This Working Group aims to build resources to assist management and decision making regarding long-term storage/legacy specimens and other retention/disposal requirements. The working group is keen to have representations from all Australian states, NZ and further afield in Australasia. If you are interested in joining this SIG Working Group, please contact SIG co-chairs Beth (beth.caruana@health.nsw.gov.au) or Samantha (Samantha.Higgins@cancervic.org.au) .





FHRI Fund Distinguished Fellows 2024-25

For the attention of our colleagues in Western Australia!

The Future Health Research and Innovation (FHRI) Fund Distinguished Fellows program 2024-25 (the Program) aims to attract outstanding research leaders (the Fellows) to Western Australia (WA), to build capacity and lead high quality, globally recognised research in WA.

The Program will provide attractive Fellowship packages consisting of salary support as well as other research personnel salaries, direct research funding and relocation costs up to the value of $5 million over 5 years with 75 per cent of the costs provided by the FHRI Fund. The program of research will need to align with at least one of the strategic areas of the WA Health and Medical Research Strategy 2023-2033, which include: Aboriginal health, precision health, regional and remote, digital health, and prevention.

The Program is now open, applications close 1.00pm (AWST), Wednesday 25 June 2025

A Tall Irish Tale

The Story of Charles Byrne, the 'Irish Giant'

By Dr Carmel Quinn

As many of you will know, the 17th March marked the celebration of St Patrick, the patron saint of Ireland, and a day on which Irish culture is celebrated within Ireland as well as by the Irish diaspora around the world. In this month's edition of ABNA Exchange we are taking the opportunity to bring you the story of Charles Byrne, one of the tallest men to have ever come out of Ireland, and to discuss the thorny issue of retaining human specimens within museum collections.

Charles Byrne was born in County Derry, also known as County Londonderry (in modern-day Northern Ireland), in 1761. Little is known of his modest, early life except that by his late teens he had reached the exceptional height of 2.31m or 7ft 7". It was at this time that Byrne set off for Scotland where he made an instant impression and began making a living from entertaining paying audiences. Byrne's celebrity increased when he moved to London shortly afterward; known as the "Irish Giant", he featured in the major newspapers of the day.

Gigantism or Acromegaly?

Gigantism and acromegaly are sometimes used interchangeably, and both result from an over production of growth hormone from the pituitary gland. However, gigantism (sometimes known as paediatric acromegaly) is specifically the result of excess growth hormone during childhood, before growth plates in the bones have fused, and leads to extreme height. Acromegaly is a condition that can arise in adults, where excessive bone growth occurs but this does not lead to an increase in height – rather enlarged hands, feet, nose, jaw and forehead; there are approximately 1200 people living with this condition in Australia. Both conditions have a number of associated health problems including pain, fatigue, and problems with the heart and airways.

The world's tallest-ever man, Robert Wadlow, pictured with his father; Wadlow lived with giantism and reached the height of 8 ft 11.1 in (2.72 m)
Image source: Wikipedia

An example of excessive bone growth experienced with acromegaly
Image source: Endocrinology Advisor

Although of course not appreciated at the time, we now know that Charles Byrne's extraordinary height was the result of a medical condition, gigantism. In fact, examination of Byrne's skeleton in 1909 by American surgeon, Harvey Cushing, identified that Byrne had a pituitary adenoma which Cushing deduced due to an enlarged pituitary fossa. Complications resulting from his condition led to a sharp deterioration in Byrne's health while still living in London, aged 21. At this time Byrne, who carried his accumulated wealth on his person (£700, equivalent to ~Au$300K today), was robbed, and his reduced circumstances further contributed to his failing health. Within a couple of months, at the age of just 22 years, Charles Byrne was dead.

During his time in London, Byrne had come to the attention of the renowned Scottish surgeon, John Hunter, a famed anatomist who had compiled a large private collection of anatomical specimens. Hunter offered to pay Byrne, to be able to anatomise his corpse after his death, a prospect that horrified Byrne.

At that time, it was usually only executed criminals who 'officially' encountered this fate, though as the numbers of these were limited, it was common for surgical trainees to acquire bodies by other means. Byrne, knowing his health was failing, made arrangements with his friends to ensure he would not fall into Hunter's hands; he requested to be buried at sea, reasoning that then his body could not be dug up and delivered to the surgeon.

A custom 9ft 4" long, lead-lined coffin was made, and Byrne's friends were en route to the seaside town of Margate for the burial at sea when at an overnight stop, the body was stolen and rocks placed within the coffin; it has been suggested by some that Hunter paid Byrne's friends the sum of £500 for the corpse. Ultimately, Hunter acquired Charles Byrne's remains against his known wishes and subsequently published his description of Byrne's anatomy and skeleton.

John Hunter's extensive anatomical collection inspired the eponymous Hunterian Museum collection which is now housed in the Royal College of Surgeons, in Lincoln's Inn Fields, London. The skeleton of Charles Byrne is by some distance, the best known and most contentious exhibit and had been on display for over 200 years. While the skeleton is no longer on public display, being removed in 2023, it is still retained within the collection.

John Hunter, Surgeon and Anatomist

John Hunter (1728-1793) could be viewed through modern eyes as the 'villain' in the sad tale of Charles Byrne. However, in his day, Hunter was highly regarded for his contributions to science, teaching, and the fields of surgery and anatomy; Hunter was appointed to the prestigious position of surgeon to King George III, and one of his most notable students was Edward Jenner, who went on to become famous in the field of vaccine development.

Born in Scotland, Hunter spent most of his career in London. He was elected as a Fellow of the Royal Society in 1767, and he built up his extensive anatomical collection, displaying this as a teaching museum for use in research, and by medical students. In contrast to his contemporaries who focused solely on human anatomy, Hunter studied and taught 'comparative anatomy', the relationship between structure and function in all members of the animal kingdom – this is regarded as an early stage in the modern field of evolutionary biology. Indeed, as his reputation grew, Hunter was gifted more and more unusual exhibits for his collection – including kangaroos from Dr Joseph Banks, acquired on Captain Cook's expedition to Australia during 1768-71.

Painting of John Hunter, with the skeleton of Charles Byrne partially visible in the background. Image source: Wellcome Collection

In recent years, there has been a campaign to remove Charles Byrne's skeleton from the Hunterian Museum and bury it at sea according to Byrne's wishes, though opinions are split. A poll was conducted in 2012 through the British Medical Journal's website and of the more than 500 participants, 56% voted for the skeleton to be buried at sea, 13% for it to be removed from display (but retained for research) and 31% for leaving the skeleton on display in the museum.

Left: The skeleton of Charles Byrne on display at the Hunterian Museum. Image source: The Guardian

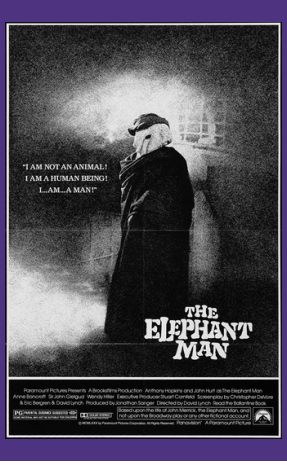
Right: Queen Elizabeth II visiting the Hunterian Museum in 1962 Image source: The Guardian

The trustees of the Hunterian Museum have refused to release the bones for burial, as they believe the educational and research benefits of retaining the skeleton are paramount (a statement outlining their decision is available on their website). One research study which supports their argument, is the 2011 publication by Chahal *et al.* in the New England Journal of Medicine which used DNA extracted from one of Charles Byrne's teeth; a causative mutation was identified in the aryl hydrocarbon-interacting protein (AIP) gene which was subsequently matched with a mutation in 4 modern-day Northern Irish families with members experiencing conditions similar to that of Byrne. The study proposes that these affected individuals all descended from a common ancestor who lived 57-66 generations earlier. This example highlights the dilemma that museums are increasingly recognising: do the scientific and educational benefits of retaining human specimens outweigh the known or perceived wishes of the people from whom the specimens have been acquired?

Joseph Merrick, "The Elephant Man"

Amongst the most well-known human skeletons retained for scientific and educational purposes is that of Joseph Merrick, better known as The Elephant Man, whose tragic life story has been portrayed multiple times on stage and screen.

Born in 1862 in Leicester, UK, Joseph Merrick spent much of his life spurned by Victorian society, eventually forced to make a living by exhibiting himself as a 'freak' in Britain and Europe. Even today the nature of Merrick's condition is not fully understood, but it is thought he may have suffered from Proteus Syndrome, in which extreme asymmetrical tissue growth can occur. At one stage, Merrick was put 'on display' at a shop in Whitechapel, opposite the Royal London Hospital, from where many of the medical students went to view Merrick - it was here that he met a senior surgeon, Frederick Treves. Although originally believing Merrick to be an "imbecile" as his language was largely unintelligible due to his facial deformities, Treves went on to befriend Merrick, and ultimately through Treves' intervention, Merrick took up residence in the London Hospital where he lived out his remaining years, dying at the age of 27.



After Merrick's death, it was his friend Treves who dissected the body and mounted the skeleton for display. There is no evidence that Merrick gave explicit consent for this to occur, though the medical school at Queen Mary University of London where the remains are kept have stated "It is understood that Joseph Merrick expected to be preserved after his death, with his remains available for medical education and research. As custodians of his remains, the university regularly consults with his descendants over their care" The Guardian.

The Other 'Irish Giant'

At the same time as Charles Byrne was entertaining London audiences as "The Irish Giant", a contemporary of his named Patrick Cotter from Co, Cork in Ireland, stood at 8 ft (2.44m) tall and was making a living in a sideshow circus. Cotter died at the age of 46 and asked to be buried beneath 12 ft of rock, to minimise the chances that his corpse could be exhumed for scientific research. His grave was unintentionally discovered by workmen around 100 years later, but he was re-buried after measurements and photographs were taken of his remains. His body was exhumed once more in 1972, and despite his known wishes, one of his arms is now held in the collection at the Hunterian Museum, the same location as Charles Byrne's skeleton.

While the actions of the Hunterian Museum and others may be viewed as unethical, their actions are not unlawful; the UK Human Tissue Act stipulates that consent for use of human remains is only required if the individual has died within the last 100 years. However, standards and guidelines vary internationally – as well as the definitions of what qualifies as "human remains"; in the UK, hair and nails to not make the cut, whereas the German Museums Association regards all human specimens (including nails, hair and teeth), regardless of their age, as meeting their definition of human remains (see section 2.2 of the 'Recommendations for the care of human remains in museums and collections).

Along with many museums around the world, the Pitt Rivers Museum in Oxford, UK, is removing human remains from display.
Image source: BBC

Another problem faced by museums is that they don't always know what is in their collections, sporadically finding unidentified human specimens within their archives which were poorly catalogued in years gone by; determining the provenance of these specimens (including the legal and ethical conditions under which they were collected) is a resource-intensive pursuit which must be completed before the return of specimens for burial can be even considered.

Although conflicting views in this area remain, there is an increasing recognition that the old 'colonial style' museum which displays specimens acquired with little thought for their origins and no consideration of whether consent was given, are themselves being consigned to history. Indeed, both the British Museum and the Smithsonian in the US are amongst leading institutions reviewing their policies regarding human specimen retention. To remain relevant in modern society museums need be agile and to evolve in line with changing societal views. Perhaps if Charles Byrne, the 'Irish Giant' were alive today he may consider donating his body for scientific advancement, but this could not occur without fully informed consent on his part, something cruelly denied to him more than 200 years ago.

ISBER Updates

ISBER is thrilled to introduce its newest Regional Ambassadors, dedicated professionals who are volunteering their time to expand access to biobanking education and resources in their regions. Their leadership and expertise play a crucial role in strengthening our global biobanking community.

- CHINA: Henry Hong, General Manager, SERLNG Life Science Technology Co., Ltd., Shanghai, China
- EMEA: Kossi Kabo, PhD, Biobank Manager, Institut Pasteur de Dakar, Dakar, Senegal
- IPR: Ussha Powell, Biospecimen Services Technical Officer, University of New South Wales Sydney, Kensington, Australia

To read the bios of the new RAs

CLICK HERE

Biobanking in the News

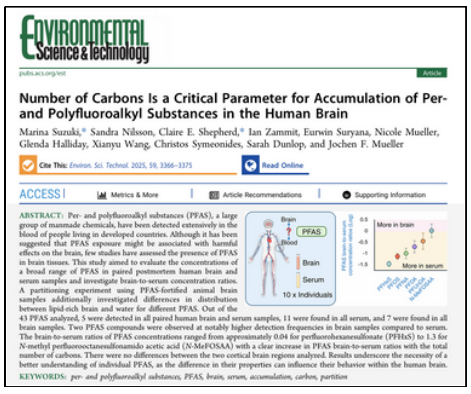
Forever Chemicals in the Brain

An Australian study is the first to conclusively establish the presence of per- and polyfluoroalkyl substances (PFAS) in human brain tissue. PFAS, a group comprised of over 14,000 synthetic chemicals, are commonly referred to as "forever chemicals" due to their exceptional persistence in the environment.

The paper, published in the Environmental Science & Technology journal in February, is the first part of a University of Queensland research project investigating chemical contamination and potential links to neurodegenerative diseases, specifically Parkinson's Disease and Motor Neurone Disease.

Researchers compared the concentrations of 43 different PFAS in brain tissue and blood serum samples from the same 10 individuals, whose age of death ranged from 56 to 79 years. The samples were provided by the Sydney Brain Bank. This study was co-ordinated by Dr Claire Sheppard who is also the director of the Sydney Brain Bank at Neuroscience Research Australia. Dr Shepherd said this study is only the start of their investigation. "The next step is: what are they doing there, and what are the consequences for brain health?"

The ABNA newsletter featured Dr Claire Sheppard in our 5min with a Biobanker segment back in our July 2023 edition.


Environmental Science & Technology

Article

Number of Carbons Is a Critical Parameter for Accumulation of Per- and Polyfluoroalkyl Substances in the Human Brain

Marina Suzuki,* Sandra Nilsson, Claire E. Shepherd,* Ian Zammit, Eurwin Suryana, Nicole Mueller, Glenda Halliday, Xianyu Wang, Christos Symeonides, Sarah Dunlop, and Jochen F. Mueller

Cite This: Environ. Sci. Technol. 2025, 59, 3366−3375 | Read Online

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ABSTRACT: Per- and polyfluoroalkyl substances (PFAS), a large group of manmade chemicals, have been detected extensively in the blood of people living in developed countries. Although it has been suggested that PFAS exposure might be associated with harmful effects on the brain, few studies have assessed the presence of PFAS in brain tissues. This study aimed to evaluate the concentrations of a broad range of PFAS in paired postmortem human brain and serum samples and investigate brain-to-serum concentration ratios. A partitioning experiment using PFAS-fortified animal brain samples additionally investigated differences in distribution between lipid-rich brain and water for different PFAS. Out of the 43 PFAS analyzed, 5 were detected in all paired human brain and serum samples, 11 were found in all serum, and 7 were found in all brain samples. Two PFAS compounds were observed at notably higher detection frequencies in brain samples compared to serum. The brain-to-serum ratios of PFAS concentrations ranged from approximately 0.04 for perfluorohexanesulfonate (PFHxS) to 1.3 for *N*-methyl perfluorooctanesulfonamido acetic acid (*N*-MeFOSAA) with a clear increase in PFAS brain-to-serum ratios with the total number of carbons. There were no differences between the two cortical brain regions analyzed. Results underscore the necessity of a better understanding of individual PFAS, as the difference in their properties can influence their behavior within the human brain.

KEYWORDS: *per- and polyfluoroalkyl substances, PFAS, brain, serum, accumulation, carbon, partition*

Click on the image to access the article - if your institution does not have access please contact ABNA and we will provide you with a pdf.

First ISO20387 accreditation in the UK

The NHS Greater Glasgow and Clyde's biobank has become the first in the UK to receive an internationally recognised accreditation. The NHSGGC Biorepository was awarded the honour by the United Kingdom Accreditation Service.

The biobank, which supports research into conditions such as cancer, autoinflammatory diseases, and Alzheimer's, is the first in the UK to achieve accreditation against the ISO 20387:2018 'general requirements for biobanking' standard.

The biorepository, situated on the Queen Elizabeth University Hospital campus, serves as a storage and access point for various human tissue samples intended for medical research. It forms part of a network of four Biorepositories across Scotland, which are responsible for managing the collection, storage, and distribution of biological materials for research purposes.

These samples, obtained from living donors during routine medical care, consist of surplus materials collected during diagnostic and surgical procedures. They are utilised to advance researchers' understanding of the onset and progression of various medical conditions, as well as to identify potential therapeutic treatments.

A dedicated team of 13 professionals, under the leadership of Biorepository Manager Clare Orange, processes approximately 90 tissue requests annually from both academic and commercial researchers.

Congratulations to the NHS Greater Glasgow and Clyde's biobank from ABNA!

NHS Greater Glasgow and Clyde

If you have any suggestions for a short article for ABNA Exchange, please contact: info@abna.org.au

Content deadline for the April edition 18.04.25