

Recent Achievements

Our PhD student, Michael Fu has recently published two papers on Hepatitis B



1

*Blood donation screening for hepatitis B virus core antibodies:
The importance of confirmatory testing and initial implication for rare blood donor groups.
Published in the journal Vox Sanguinis*

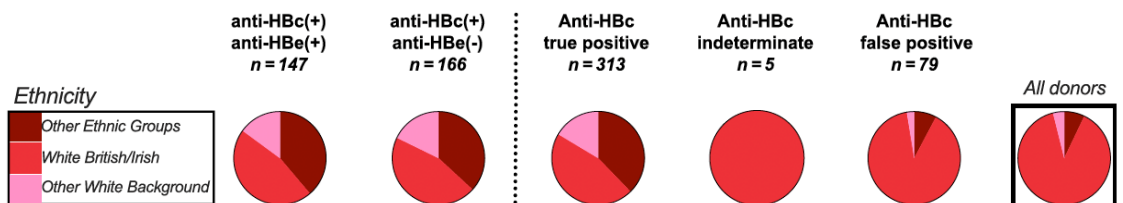
[Click here to read the paper](#)

LAY SUMMARY

Background In the UK, blood donations are subject to rigorous screening methods to ensure the safety of donated blood. In 2023, an additional test was added: hepatitis B anti-core (anti-HBc). This test was designed to determine whether a donor has had a previous Hepatitis B infection and could be considered potentially infectious since a small number of these donors have been shown to transmit HBV DNA despite undetectable DNA at screening. The current tests for anti-HBc are not very specific, and confirmatory testing is needed. However, removing donations from donors who have a confirmed anti-HBc test could lead to a significantly reduced number of donors able to donate.

Aim This study aimed to investigate how well the new confirmatory screening method for anti-HBc works. The study also investigated the representation of rarer blood groups in donations that are positive for anti-HBc.

Results Using a set of confirmatory lab tests, we found that the current confirmatory algorithm for anti-HBc is sufficient to pick out the true positive donors. However, **many donations which tested positive for anti-HBc were from minority ethnic backgrounds who have rare blood groups, so excluding these donors may impact the supply of our blood.** These results show that there may be a need to further consider the implications of the universal anti-HBc screening introduced in 2023.



2

*Biomarkers of transfusion-transmitted occult hepatitis B virus infection:
Where are we and what next?
Published in the journal Reviews in Medical Virology*

[Click here to read the paper](#)

LAY SUMMARY

Occult hepatitis B virus infection (OBI) can be hard to detect due to its complexity and the limitations of standard blood tests. This literature review summarised the latest research on blood biomarkers for OBI detection and explored new markers that could improve diagnosis in future:

- Current tests struggle because of the low levels of viral surface antigens (viral proteins that your body responds to) and mutations in the virus. This means highly sensitive tests are needed to detect it.
- While testing for viral DNA offers improved sensitivity, these tests can be hard to access.
- Other tests, like those that pick up anti-core antibodies, are effective at ruling out potentially infectious donations but lack specificity (and so may exclude donations from individuals who are not infectious). Additionally, tests for antibodies which prevent infectivity are not very sensitive.

These challenges underscore the pressing need for alternative biomarkers to better understand OBI, such as tests for viral DNA, specific viral antigens and markers of immune response. These can provide better information about viral activity in the liver.

With better diagnostic tools, we can reduce the risk of transmitting hepatitis B through blood transfusions, while maintaining an adequate blood supply

Recent Achievements continued ...

In March, we received an Oxford Policy Engagement Network (OPEN) Leaders award of £8000, to help strengthen and build connections with policymakers related to BTRU-GEMS research.



Kai Kean, one of our PhD students, recently won a £1000 grant from PCR Biosystems. Congratulations Kai!



Public engagement and involvement

Welcome to our new Patient and Public Involvement (PPI) committee! Our first meeting was held on 18 March 2024. We covered the terms of reference, confidentiality and the aims of the research group. Training is being organized for the PPI contributors in springtime.

In February, Kai Kean volunteered with the Wadham Project to give school children in Luton a flavour of scientific research and higher education.

'I delivered two 30-minute presentations to pupils at Challney High School for Boys, focused on blood transfusions and blood safety. I found it to be a very positive experience with the children asking many questions about blood safety and about attending University. I was able to share my experience and further opportunities for them to learn more' Kai Kean

We took part in the Cherwell Collective Christmas event in December, running blood safety related activities with members of the public (including making DNA code bracelets and 'fishing' for DNA magnets in a vat of fake blood)



A Conversation With ...



This issue we talk to **Cassy Fiford**, the new Patient and Public Involvement Manager

What motivates you about BTRU-GEMS?

Both the mission of BTRU-GEMS, to enhance blood safety and improve inclusivity in blood and organ donation, as well as the collective involvement of many different types of people to reach that mission, are motivating factors in my work.

Who is or was your role model in research?

There are many role models that inspire my approach to work, inside and outside of research. One role model for me was my PhD supervisor, Dr Jo Barnes, who gave me the everyday support, problem-solving and humour that saw me through my doctorate. My older brother's advice when taking on my first job, 'work hard and be kind,' has also stuck with me.

What are you looking forward to achieve from BTRU research?

I'm looking forward to getting our team of patient and public contributors up and running, so we can actively shape the research that GEMS does! We have invited people with lived experience of receiving regular blood transfusions, giving blood and/or being deferred from blood donation, to take part in our committee. Together with researchers, we will improve GEMS research, by making **what** we research more relevant to patients and by adapting **how** we do research to make it less burdensome for participants.

If you can travel anywhere (no limited budget) where would that be?

In a world where I could travel anywhere, with no time or budgetary limitations (and crucially, in a more peaceful time than at present) I would embark on an epic train journey, starting at my local station, Oxford. Changing in London to take the Eurostar, I'd eventually board Trans-Siberian express from Moscow, and take it all the way to Beijing. On the way I would see snowy Siberia, the Mongolian plains (with nomadic yurts and camels visible through the train window!) and mountainous Northern China. For train-travel inspiration I highly recommend the [Man in Seat 61 blog](#)

What is your favorite bug (pathogen) and why?

Anyone who knows me knows that I am a big animal lover, particularly cats – so the parasite *Toxoplasma gondii* is one of my favourite bugs. Studies in rats have shown that infection with this parasite causes them to behave in reckless ways, losing their fear of cats and making them more likely to get caught and eaten (where the parasite can then replicate). Some also believe that this parasite leads to personality changes in humans, which is how the media have given it the name the 'crazy cat lady' parasite.

To look forward to ...

Some of our upcoming events



25 April
NHSBT Genomics Workshop, Filton laboratories (invitation only)

30 May
BRC Open Day, Leiden Square Oxford, 10:00-16:00 (all welcome)

20 June, location and time TBC
Public talk on the science and policy making of blood donation
(all welcome)

10-11 September
BTRU-GEMS Annual Meeting, Pembroke College, Oxford
(invitation only)



Pembroke College, Oxford. Location for our BTRU—GEMS Annual Meeting