Participant Information Sheet

Long title: An investigation of short-chain fatty acid uptake in solid tumours as assessed by [^{18}F]fluoropivalate positron emission tomography and its relationship with tumour proliferation.

Short Title: [^{18}F]FPIA PET/CT imaging in patients with solid tumours.

We would like to invite you to consider taking part in an imaging research study.

- Please take your time to read this information sheet carefully and discuss it with friends and relatives if you wish.
- The information sheet explains your rights and our responsibilities to you. Before you decide, it is important for you to understand why this research is being done and what it will involve.
- Please ask the research team if there is anything that is unclear or if you would like more details.
- You are free to decide whether or not to take part in this study. If you choose not to take part, this will not affect the care you receive from your own doctors.

Thank you for reading this information sheet.

Why have I been invited?

You have been invited to consider joining this study because you have a diagnosis of cancer and you are due to have surgery for your cancer. We would like to study cancer in patients like yourself using a special imaging scan.

What is the purpose of this study?

New types of imaging scans can help doctor's better check the spread of cancer throughout the entire body and help with diagnosis as well as showing how the disease is responding to treatment.

Cancers have increased energy demands to allow for their rapid growth compared to healthy cells. Glucose is the main source of energy for many cells in the body, and we routinely use a scan which looks

at glucose metabolism to assess if cancer treatment is working. However, some cancer cells can create energy to survive and grow in a different way, using fatty acids. Fatty acids are the building blocks of the fat in our bodies and they have important functions, including energy storage. In addition to glucose, cancers can use fatty acids for energy.

In this study, we are using a PET/CT scan to look at a variety of cancer types to see which cancers use fatty acids for energy and if we can measure it. You will be offered two PET/CT scans as part of this study. The second PET/CT scan is optional and, if you agree, would be carried out on a separate date. Performing two separate scans allows us to check that both scans are giving us the same result.

We hope that the information from this study can provide us with important information to help us understand more about how cancers grow, so that we can develop new medical tests in the future.

What is a PET/CT scan?

PET/CT stands for Positron Emission Tomography (PET) and Computed Tomography (CT). A PET/CT scan combines a PET scan and a CT scan into one. PET/CT scanners look similar to conventional CT scanners that you might have seen before.

The CT part of the scan uses X-rays to provide images of the anatomy of the body and helps doctors find and measure cancer. The PET part of the scan uses a very small amount of an injected, radioactive substance called a “tracer”. Different PET tracers are useful for looking at different things. The PET/CT scanner can detect the tracer in your body and produce images from the radioactivity which is taken up. These images can show how certain cells function in the body and can help doctors to identify where in the body cancer cells are active. Put together, the PET and the CT provide very detailed information about how a cancer is behaving.

We have developed a new scan tracer called [^{18}F]fluoro-2,2-dimethylpropionic acid ([^{18}F]FPIA), which will allow us to assess fatty acid metabolism.

Do I have to take part?

No. It is up to you to decide whether or not to take part. If you decide not to take part, your relationship with the doctors and nurses looking after you will not be affected. Your treatment will take place as recommended by your doctor in line with best current practice.

If you do decide to take part, you will keep this information sheet and be asked to sign a consent form. If you decide to take part, you are still free to withdraw at any time and without giving a reason.

If you decide not to take part or if you change your mind once you have started, it will not affect the standard of care you receive.

How many patients are involved?

This study will involve 21 patients from a number of hospitals.

What will my participation in the study involve?

If you agree to take part in the study, you will be asked to attend a screening visit to assess your suitability for the study. If you are suitable, you will be offered a total of two PET/CT scan visits as part of the study. The second PET/CT scan visit will be optional. If you are agreeable, and we are able accommodate two PET/CT scans before your surgery, the second PET/CT will be between 2 and 15 days after the first PET/CT. Both PET/CT scans will be performed before you start any treatment. You may be able to have the first PET/CT scan visit on the same day as your screening visit. Your visit timings will be discussed and agreed with you. The PET/CT scan(s) will be organised to fit in with your normal treatment plan and before the surgery is carried out. The PET/CT scan visit(s) will be performed at one of the centres participating in the study. If your local centre is unable to accommodate the PET/CT scan visit(s) before your scheduled surgery date, it may be possible for you to have your scan(s) at one of the other centres participating in the study. This will be discussed with you in advance and you will be given time to make your decision. The travel costs associated with transportation to any of the participating centres will be reimbursed.

The standard operating procedures for COVID secure pathways will be followed at all times.

If you agree to participate in this study, you will have the operation to remove the tumour as part of your standard care. In addition to all the tests we routinely perform to examine these specimens in the laboratory, we will carry out some extra tests which look for specific substances in the cancer cells that are related to cancer biology and growth. We will then compare the results from these tests to the results of the scan to see if there is a relationship between them.

What happens at the screening visit?

At the screening visit, the study doctor will talk to you about the study and answer any questions you might have. If you are happy to go ahead, the doctor will ask you to sign an Informed Consent Form. You will be given a signed copy of the form to take home with you. We will then need to collect the following information and measurements:

- Medical History
- Cancer treatment history
- Height and Weight
- Blood test (performed by a trained phlebotomist) to check that your kidneys are working well (as the tracer will be cleared from the body in your urine) – we can use the result from a previous test if you have had this done recently OR we will ask you to have a new blood test (approximately 6mls - one teaspoon=5mls).
- Performance Status (how active you are in the day)
- Urine pregnancy test (if you are a woman who is still able to have children)

What happens at the PET/CT scan visit?

The PET/CT scan visit is expected to last approximately 2.5 hours in total. We will check your details and answer any questions you may have before the scans. At each PET/CT visit, you will have two scans (four scans in total for the study).

Unless your PET/CT scan visit is on the same day as your screening visit, we will then need to collect the following information and measurements:

- Cancer treatment history (to see if anything has changed)
- Height and Weight
- Urine pregnancy test (if you are a woman who is still able to have children)

Before the PET/CT scan, a very fine needle (cannula) will be inserted into a vein in your arm by a trained technologist. We will use this needle to inject the [^{18}F]FPIA tracer for the scan.

Once we have injected the [^{18}F]FPIA tracer for the scan, you will rest for almost 30 minutes.

You will then lie down flat on the scanner bed ready for the scan. The bed will move into a short tunnel which is open on both ends and then we will start scanning. The scanner does not touch you at any stage and most people find this very straightforward. You will have two scans, one at around 30 minutes and the second one at around 60 minutes after the [^{18}F]FPIA injection, but you will not leave the scanner between the two scans. The scans will last approximately 60 minutes in total and we will scan from the top of your skull to the middle of your thigh (unless it's a lower limb tumour). You will be asked to lie still during the scans, as movement may cause a blurred picture. You are free to fall asleep during the scan if you wish. You will be able to listen to music during the PET/CT scans. The scans will be stopped at any time during the procedure if you are unable to tolerate it. This procedure will be the same on both scan days.

You will also be given a simple questionnaire to complete before and after your first [^{18}F]FPIA PET/CT scan. This questionnaire will help us to understand your experience on the PET/CT scanner and your decision on whether to proceed with the second PET/CT scan. Completion of this questionnaire will be optional.

What will happen to the tissue samples?

Your tissue samples will be sent to a central histopathology Laboratory for analysis and kept in accordance with standard practice for specimens removed at surgery.

Follow Up Visits

You will continue to have your normal visits with your cancer therapy team. You will not need to come back for any research study visits after your PET/CT scan(s).

What are the potential benefits of being in this study?

You will not directly benefit from taking part in this study and there will be no direct change to your treatment. However, the study may benefit patients in the future because the information we gather could allow for better imaging and surveillance of cancer.

What are the possible risks of taking part?

1. **Radiation exposure:** If you take part in this study, you will have a maximum of four additional PET/CT scans (two scans per visit). However, the radiation dose at each visit is not increased by having the second scan as the procedures that give the radiation dose – the CT scan and the radiotracer injection – are only performed once per visit. All of these will be extra to those that you would have if you did not take part in the trial. These procedures use ionising radiation to form images of your body and provide your doctor with other clinical information. Ionising radiation can cause cell damage that may, after many years or decades, turn cancerous. The chances of this happening to you as a consequence of taking part in this study are 0.13% (or 1 in 787) where both PET/CT studies are performed (0.065% if one PET/CT is performed). For comparison, the natural lifetime cancer incidence in the general population is about 50%.

   The total radiation exposure from taking part in this study is equal to about 11 years of natural background radiation in the United Kingdom where both PET/CT studies are performed (5.5 years if one PET/CT is performed), which we get from sources such as the sun, the ground, and the food we eat.

   The radioactive fluorine in the tracer used in the study is broken down rapidly which means that little will remain in your body by the time you leave the scanning centre. You have a radioactive injection, but this is a small amount and the radiation decays very quickly (the radiation halves every two hours). After your PET-CT scan you should not have close contact with pregnant women, babies and young children for about 6 hours afterwards.

   Pregnant or women who are breastfeeding must not take part in this study. If you are of childbearing potential, you will be asked to take a pregnancy test before having the study scan.

As of 12th April 2021 we have already scanned 55 subjects in various studies with this new FPIA tracer and there have been no adverse events related to the tracer.

2. **Cannula Insertion and removal:** Some discomfort or bruising may occur where the needle is inserted into your arm, but this should resolve within a few days.
3. **Other scan related discomfort:** Rarely, you may feel dizzy after the scan due to lying flat, but this is normally short lived. The scanner may feel claustrophobic for some patients. Please let us know if you are worried about this and we can discuss the best way to help you at every step.
4. **Incidental findings:** You should be aware that if we find anything unexpected during your clinical examination or scans which may have relevance to your health, we will discuss this with your G.P. and your consultant and, if necessary, provide any support that you may require, such as arranging follow-up tests and/or treatment/counselling.

Any new findings from this that could affect your decision to continue in this study will be provided to you and your treating doctor. You should let the study doctor know straight away if you have any unusual or unexpected symptoms in the 24 hours after each study scan.

Involvement in the study has no effect on your access to NHS services either during the study participation or after.

What happens if there is a problem?

Every care will be taken in the course of this study. However, in the unlikely event that you are injured by taking part or if you have concerns about any aspect of this study, please contact a member of the study team on XXXX XXX XXXX, who will do their best to answer your questions.

If you remain unhappy or wish to complain formally, you can do this through the NHS Complaints Procedure. If you wish to speak with someone who is independent of this research study, or if you have questions about your rights, you can contact the hospital Patient Advice and Liaison Service (PALS) on XXXXXXXXXXXXXXXX or XXXX XXX XXXX.

The study sponsor has appropriate insurance in place. The sponsor will be responsible for financial compensation for any injury related to participation in the study in accordance with guidelines, and this

applies in cases where such injury results from the experimental procedures carried out in accordance with the study protocol. The details of the Sponsor's insurance can be provided to you if you request it.

Participation in this study does not affect your normal rights to complain about any aspect of your treatment and care.

What will happen if I don't want to carry on with the study?

You are free to withdraw from the study at any time and do not have to give a reason. We would however keep any data or samples already collected. Your future treatment will not be affected and your treating doctor will discuss this with you.

What happens when the research study stops?

You will continue to be seen by your treating doctor throughout the study and after it has stopped. This would be the same as if you were not taking part in the study.

What about data protection and will my taking part in this study be kept confidential?

All information collected about you during the research will be kept strictly confidential and stored in a password protected secure data repository facility. If you agree to take part in this research, relevant parts of your medical records (in order to confirm eligibility for the study: e.g. renal function, routine scan results) will be seen by your specialist and the research team.

Additionally, the lead research team will request that copies of your relevant routine scans are transferred via the Image Exchange Portal, a secure and established pathway that NHS organisations use to transfer non-anonymised data, to Imperial College Healthcare NHS Trust PACS server. The images will then be pseudonymised and stored on the Research PACS server. The research PACS server will not contain any personal identifiable information and will instead be labelled with your unique study code. The information stored on this server will only be accessed by authorised members of the lead research team.

The original non-anonymised data will subsequently be removed from the Imperial College Healthcare NHS Trust PACS server.

The research team will abide by the General Data Protection Regulation 2018 and the rights that you have under this. Your information will be only identified by a unique study number so that you cannot be recognised from this number. Any information about you which leaves the hospital will have all personally identifiable data removed. Information would only be transferred to other researchers after all necessary approvals were in place. Patients' privacy is safeguarded at every stage. No individual patients will be identifiable when the results of the study are published in the medical literature.

Your GP will be notified that you are taking part in this research.

In order to monitor and audit the study, we will ask for your consent to access your medical records and data collected during the study, where it is relevant to taking part in this research. Only the researchers, study monitors on behalf of the study sponsor and representatives of regulatory authorities and research ethics committees may have direct access to the study information.

University College London (UCL) is the sponsor for this. We will be using information from you and/or your medical records in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly.

Imperial College Healthcare NHS Trust and Imperial College London will keep identifiable information about you for the purpose of the study for 20 years after the study has finished in relation to data subject consent forms and primary research data.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally identifiable information possible.

Local Data Protection Privacy Notice

The controller for this project will be University College London (UCL). The UCL Data Protection Officer provides oversight of UCL activities involving the processing of personal data, and can be contacted at data-protection@ucl.ac.uk. This 'local' privacy notice sets out the information that applies to this particular study. Further information on how UCL uses participant information can be found in our 'general' privacy notice.

For participants in health and care research studies, click here or visit

https://www.ucl.ac.uk/legal-services/privacy/ucl-general-privacy-notice-participants-and-researchers-health-and-care-research-studies

The information that is required to be provided to participants under data protection legislation (GDPR and DPA 2018) is provided across both the 'local' and 'general' privacy notices. The lawful basis that will be used to process your personal data are: 'Public task' for personal data and' Research purposes' for special category data. Your personal data will be processed so long as it is required for the research project. We will pseudonymise the personal data you provide and will endeavour to minimise the processing of personal data wherever possible.

How will we use information about you?

We will need to use information from you and your medical records for this research project.

This information will include your year of birth. People will use this information to do the research or to check your records to make sure that the research is being done properly.

People who do not need to know who you are will not be able to see your name or contact details. Your data will have a code number instead.

We will keep all information about you safe and secure.

Once we have finished the study, we will keep some of the data so we can check the results. We will write our reports in a way that no-one can work out that you took part in the study.

What are your choices about how your information is used?

You can stop being part of the study at any time, without giving a reason, but we will keep information about you that we already have.

Where can you find out more about how your information is used?

You can find out more about how we use your information

- at www.hra.nhs.uk/information-about-patients/ ;
- by asking one of the research team;

- by sending an email to data-protection@ucl.ac.uk .

The data custodian is the Chief Investigator (CI):

Dr Tara Barwick

Charles Bell House, UCL

43-45 Foley Street,

London, W1W 7TY

By signing the consent form, you are giving permission for the storage of this data, even if you subsequently withdraw from the study. Your data will be stored for 20 years at the hospital.

What will happen to any samples I give?

The blood sample to test kidney function is identifiable as yours as this is necessary for processing and testing. It is disposed of as per local hospital policy.

Urine samples taken for pregnancy testing will be coded and disposed of immediately after testing.

Tumour tissue taken during surgery will be transferred to a central histopathology laboratory for further testing as part of the study. This laboratory will handle and store the tumour tissue during the study and will dispose of it at the end of the research. All handling, storage and disposal of tissue will be done in accordance with the Human Tissue Act and Local Tissue Bank regulations. The tumour tissue will not be transferred to any party not identified in the study protocol and this information sheet and will not be handled and/or transferred other than in accordance with your consent. By signing the consent form, you are giving permission to the research team to have access to the tumour tissue for testing according to the study protocol.

Tumour tissue will be coded so that only the research team can link it back to your identity and no personal identifiable data will be used.

No identifiable information will be sent and the people who analyse the information will not be able to identify you and will not be able to find out your name, NHS number or contact details.

What will happen to the results of the research?

A copy of the published study results will be available to you or your family on request. Please note that if any inventions resulting in commercial gain emerge from any of the above research, you will not be eligible to benefit financially from these discoveries.

After completion of the study the results may be presented at national/international scientific meetings or published in a leading medical journal and internal reports. You will not be identified in any report/publication. You should be aware that the results of some of the tests done as a part of this research may not be available to you individually. Data and images obtained from your scans may be used in an anonymous form for future research, including that carried out by commercial healthcare companies. You will not be contacted by any companies carrying out such research and they will not be given access to your medical records. Please note that if any inventions resulting in commercial gain emerge from any of the above research, you will not be eligible to benefit financially from these discoveries.

Who is organising and funding the research study?

University College London and Imperial College London are organising the study. The study is funded by the Cancer Research UK (CRUK). No member of the research team is being paid based on the recruitment of people for the study.

Will I get paid for taking part?

There is no payment for taking part in this study, but if you incur any travel costs for any research visits, we will reimburse reasonable travel expenses. If we provide a taxi, we will need to give the taxi company your name, address and contact number. We would do this by email or e-booking or by telephone.

Who has reviewed the research study?

This study has been through a peer review process. A peer review involves the examination of an author's work by other experts in the same field. These referees each return an evaluation of the work which may include suggestions of improvements if necessary. Your local NHS Trust has been given approval for the study to take place at your hospital. The study has also been reviewed by the South Central-Hampshire B

Research Ethics Committee and Health Research Authority. The South Central-Hampshire B Research Ethics Committee has given a favourable opinion of the study.

Who can I contact for further information?

When you have read this information, your doctor will discuss it with you further and answer any questions you may have. If you require any more information or have any questions, please contact the study team below.

CONTACT NUMBERS (9am to 5pm Mon - Fri)	EMERGENCY/OUT OF HOURS (after 5pm)
XXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXX

Is there someone I can talk to independently about research trials in general?

YOU CAN TALK TO ANY OF THE XXXXXXXXXXXXXXXXXXXXX IF YOU HAVE ANY CONCERNS ABOUT TRIALS OR CONTACT PATIENT ADVICE AND LIAISON SERVICE (PALS) ON XXXXXXXXXXXXXXXXXXXXXXX.