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Methylation analysis for soft tissue lesions and rapid classification

Submission date 14/05/2025	**Recruitment status** Recruiting	[X] Prospectively registered [_] Protocol [_] Statistical analysis plan [_] Results [_] Individual participant data [X] Record updated in last year
Registration date 21/05/2025	**Overall study status** Ongoing	
Last Edited 20/06/2025	**Condition category** Cancer	

Plain English summary of protocol

Background and study aims
To find out the cause, soft tissue lumps are often investigated with a biopsy or removal of the lump and examination of the cells under a microscope. However, in some cases, diagnosis is challenging based upon the appearance of the cells alone. In these cases, DNA testing to find out the genetic make-up of the lump may be requested by doctors. However, currently, the results of DNA tests can take weeks or months to be available, delaying diagnosis. In this study, we wish to test the accuracy and reliability of a novel genetic (DNA) test which may diagnose and classify soft tissue lumps more rapidly than conventional NHS practice. If this is successful, this could reduce the delays sometimes experienced by patients and hopefully improve treatment and outcomes.

Who can participate?
Adults with a soft tissue lump requiring either biopsy or surgical excision will be invited to take part.

What does the study involve?
In this study, we wish to collect a sample of tissue from participants undergoing biopsy or surgery of a soft tissue lump, for additional DNA analysis. Participants will not need to attend any additional appointments or visits with the research team.

What are the possible benefits and risks of participating?
There will be no direct benefit to participants from taking part, but the information we get from this study may help diagnose soft tissue lumps more quickly and easily in future. This may help us to identify treatments for patients and improve outcomes for patients going forward. At present, the analysis performed as part of this study is for research use only, and as such, cannot be used by the clinical team or benefit clinical care. As no separate, standalone, additional interventions or procedures are planned in this study, the risks of taking part are minimal. For participants having tissue samples taken during a biopsy procedure, they may feel more discomfort or pain during the procedure as two additional passes will need to be taken by the radiologist.

Where is the study run from?
This research is being managed by the University of Nottingham.

When is the study starting and how long is it expected to run for?
This study is expected to start recruitment in July 2025, and run until June 2027.

Who is funding the study?
This research is being funded by the National Institute of Health and Care Research Biomedical Research Centre, Nottingham.

Who is the main contact?
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Contact information

Type(s)
Public

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Additional identifiers

Integrated Research Application System (IRAS)
353961

Protocol serial number
25015

Study information

Scientific Title
Nanopore-based methylome classification and next-day comprehensive tumour profiling for ultra-rapid tumour diagnostics in soft-tissue sarcomas

Acronym
MASTERClass

Study objectives
The main purpose of this study is to demonstrate the feasibility of a novel nanopore-based adaptive targeting protocol for methylation-based sarcoma classification, in parallel with long-read SNV, fusion and CNV analysis. Primary endpoint comparison will be against current standard-of-care histopathological assessment, as per standard NHS clinical practice. The hypothesis of this study is that methylation analysis provides accurate diagnosis and classification comparable to current standard-of-care techniques.

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 12/05/2025, Nottingham 2 REC (Health Research Authority, 2 Redman Place, Stratford, E20 1JQ, United Kingdom; +44 207 104 8009; nottingham2.rec@hra.nhs.uk), ref: 25/EM/0096

Study design
Single-centre prospective observational study

Primary study design
Observational

Study type(s)
Diagnostic

Health condition(s) or problem(s) studied
Diagnosis of sarcoma in adults

Interventions

Participants will have one tissue sample collected, either from an additional core biopsy taken at the time of diagnosis, or via sampling of the surgically resected lesion at the time of its excision.

Tumour DNA methylome analysis will be performed in parallel with long-read SNV, fusion and CNV analysis, using the PromethION platform (Oxford Nanopore Technologies, Oxford, UK).

Intervention Type
Genetic

Primary outcome(s)
Percentage of sarcoma diagnoses correctly predicted by methylation-based classification, at 12 months post-biopsy or surgery

Key secondary outcome(s))
Percentage of sarcomas in which known pathognomonic molecular features are correctly identified by nanopore long-read sequencing, at 12 months post-biopsy or surgery

Completion date
30/06/2027

Eligibility

Key inclusion criteria
1. Considered to have sarcomatous soft-tissue lesion requiring biopsy or surgical excision
2. A good comprehension of the English language
3. Age ≥18 years old
4. Ability to give informed consent

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
All

Key exclusion criteria
1. Patients in which the usual care team believe the lesion to have low risk of malignancy (i.e., most likely a benign lesion based on clinical history, examination and investigation findings)

Date of first enrolment
20/06/2025

Date of final enrolment
30/06/2026

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Nottingham University Hospitals NHS Trust - Queen's Medical Centre Campus
Nottingham University Hospital
Derby Road
Nottingham
United Kingdom
NG7 2UH

Study participating centre
Nottingham University Hospitals NHS Trust - City Campus
Nottingham City Hospital
Hucknall Road
Nottingham
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Study participating centre
University of Nottingham
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Sponsor information

Organisation
University of Nottingham

ROR
https://ror.org/01ee9ar58

Funder(s)

Funder type
Government

Funder Name
NIHR BRC Nottingham, MSIR theme

Results and Publications

Individual participant data (IPD) sharing plan
The data-sharing plans for the current study are unknown and will be made available at a later date.

IPD sharing plan summary
Data sharing statement to be made available at a later date