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Intelligent platform for brain tumor diagnosis, treatment and recurrence monitoring

Submission date 31/03/2026	**Recruitment status** Recruiting	[_] Prospectively registered [X] Protocol
Registration date 06/04/2026	**Overall study status** Ongoing	[_] Statistical analysis plan [_] Results
Last Edited 11/05/2026	**Condition category** Cancer	[_] Individual participant data [X] Record updated in last year

Plain English summary of protocol
Not provided at time of registration

Contact information

Type(s)
Principal investigator, Scientific, Public

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Study information

Scientific Title
Comprehensive end-to-end intelligent platform for brain tumor diagnosis, treatment and recurrence monitoring using multimodal datasets

Study objectives

Ethics approval required

Ethics approval required

Ethics approval(s)
approved 03/03/2026, University of Malaya Medical Centre Medical Research Ethics Committee (3rd floor, Menara Utama, Pusat Perubatan Universiti Malaya, Kuala Lumpur, 59100, Malaysia; +603 (0)7949 3209; ummc-mrec@ummc.edu.my), ref: 20251024-15771

Primary study design
Observational

Secondary study design
Cohort study

Study type(s)

Health condition(s) or problem(s) studied
Brain tumour

Interventions
This study employs a multimodal artificial intelligence (AI) approach integrating radiological and pathological imaging data for brain tumour diagnosis and treatment support. MRI scans will be collected and anonymised for data cleaning, preprocessing, and expert annotation. Other data collected include Whole Slide Image (WSI) reports, Isocitrate Dehydrogenase (IDH) reports, and clinical, demographic, radiological, pathological, and treatment-related data available in the medical records of patients diagnosed with brain tumours. All data will be anonymised before analysis.

Deep learning models will be trained using public datasets for pre-operative tumour diagnosis and postoperative recurrence prediction and validated using local clinical datasets from PPUM. Segmentation models will also be developed for tumour and blood vessel identification and integrated with a surgical navigation platform to enhance precision and safety. The outcome will be an end-to-end intelligent platform for multimodal analysis, recurrence warning, and surgical planning assistance.

Intervention Type
Other

Primary outcome(s)
1. Diagnostic and recurrence monitoring effectiveness measured using AI model evaluation at study completion

Key secondary outcome(s))

Completion date
31/12/2028

Eligibility

Key inclusion criteria

1. Patients diagnosed with primary brain tumour
2. Patients who underwent standard of care procedure at University of Malaya Medical Centre (UMMC)

Healthy volunteers allowed
Yes

Age group
All

Lower age limit
0 years

Upper age limit
99 years

Sex
All

Total final enrolment
0

Key exclusion criteria
1. Patients diagnosed with other types of brain disease

Date of first enrolment
01/04/2026

Date of final enrolment
31/12/2028

Locations

Countries of recruitment
Malaysia

Sponsor information

Organisation
University of Malaya

ROR
https://ror.org/00rzspn62

Funder(s)

Funder type

Funder Name
Kementerian Sains, Teknologi dan Inovasi

Alternative Name(s)
Ministry of Science, Technology and Innovation, Malaysia, MOSTI

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
Malaysia

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol file			11/05/2026	No	No