

LUMOS: Low and Intermediate Grade Glioma Umbrella Study of Molecular Guided Therapies at relapse

The LUMOS trial was a pilot study, testing the feasibility of conducting a multicentre, national molecular screening in patients with recurrent grade 2/3 gliomas. It was conducted in Australia between 2020 and 2021.

We sincerely thank the participants, their caregivers and families and all staff members who contributed to the trial. Here is a summary of the trial and results.

What was the trial about?

Grade 2 and 3 (G2/3) gliomas at the time of relapse have a poor prognosis mirroring that of the more common high grade brain tumour, glioblastoma. G2/3 gliomas are known to transform over time, with a highly varied spectrum of genetic mutations which evolve due to disease itself as well as in response to treatment.

Despite the use of chemotherapy regimens that are commonly employed for higher grade glioma, the prognosis for recurrent lower grade glioma remains poor, with no standard-of-care treatment in many cases. The LUMOS study was designed to demonstrate the feasibility of a molecularly driven personalised medicine approach to the problem and the feasibility of obtaining contemporaneous tissue at the time of tumour recurrence to guide therapy.

Ten (10) participants were enrolled from 5 hospitals across Australia. Potentially targetable molecular alterations were identified in all participants. A Molecular Tumour Advisory Panel, consisting of oncologists, translational scientists, bioinformaticians and molecular pathologists was formed in order to interpret the results from the study and recommend matching drugs based on the patients' molecular profile. Two patients were matched with a targeted drug with therapies via a compassionate access scheme. In the rest of the group (total 8) patients received standard treatment in discussion with their treating clinician.

The LUMOS study demonstrated that a national coordinated approach to molecular screening of recurrent lower grade gliomas was feasible, with a median turnaround time of 7.0 weeks being similar to previous corresponding international studies.

How will the results help low glioma patients and their treating doctors in future?

The results from the LUMOS trial demonstrated that in spite of molecular targets for treatment being identified, many patients with recurrent lower grade glioma miss out on treatment due to lack of access to suitable therapies. It demonstrated the feasibility of using a personalised medicine approach and obtaining tissue at the time of surgery in order to guide targeted treatment choices. The national approach to this problem allows for a platform to test novel therapies in what is otherwise a rare cancer, making it more attractive to conduct trials of novel pharmaceutical agents.

What will the researchers do next?

The LUMOS trial is now closed. The results will inform the design of future trials in this field. A follow-on study designed and led by COGNO, the LUMOS2 study, will use a similar personalised medicine approach to the problem of recurrent G2/3 gliomas. However, the LUMOS2 study will seek to match patients to novel personalised targeted therapies based on their molecular profile or to drugs with novel mechanisms of action.

The final results of the LUMOS pilot study were presented at a local and international conference

Co-operative Trials Group for Neuro-Oncology Annual Scientific Meeting 2021:

Kong BY, Sim H-W, Amanual B, Day BW, Buckland ME, Verhaak RG, Yip S, Johns TG, Lwin Z, Rosenthal M, Nowak AK, Barnes EH, Scott AM, Parkinson J, Jeffree RL, de Abreu Lourenco R, Lau PKH, Whittle JR, Hovey EJ, Cher LM, Kichendasse G, Hall M, Robinson C, Thomas MA, Giardina T, Tu E, Mathur D, Khasraw M, Koh E-S, Gan HK: Low and Intermediate Grade Glioma Umbrella Study of Molecular Guided Therapies (LUMOS) Study

Society of Neuro-Oncology Annual Meeting 2021:

Kong BY, Sim H-W, Amanual B, Day BW, Buckland ME, Verhaak RG, Yip S, Johns TG, Lwin Z, Rosenthal M, Nowak AK, Barnes EH, Scott AM, Parkinson J, Jeffree RL, de Abreu Lourenco R, Lau PKH, Whittle JR, Hovey EJ, Cher LM, Kichendasse G, Hall M, Robinson C, Thomas MA, Giardina T, Tu E, Mathur D, Khasraw M, Koh E-S, Gan HK INNV-08: Low and Intermediate Grade Glioma Umbrella Study of Molecular Guided Therapies (LUMOS) Study *Neuro-Oncology* 2021, issue supplement_6, volume 23, pages vi106–vi107.

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Trial registration:

Australian New Zealand Clinical Trials Registry

Registration number: ACTRN12620000087954

<https://www.anzctr.org.au/Trial/Registration/TrialReview.aspx?id=378903>

Cooperative Trials Group for Neuro-Oncology (COGNO):

<https://cogno.org.au/content.aspx?page=currenttrials>

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