*February 2020 – for immediate release Further information: Chris Pockett, +44 1453 524133*

**Raman spectroscopy of biological tissue for rapid classification of brain gliomas**

Researchers used a Renishaw RA816 Biological Analyser to identify the genetically different subtypes of brain gliomas in a neurosurgical setting. By understanding the genetics of a tumour during the operation, the clinician would be able to map out the best surgical and treatment strategy. This could help improve survival rates and treatment response of the patient.

**What are brain gliomas?**

Gliomas are brain tumours that start in glial cells - the supporting cells of the brain and the spinal cord. A third of brain tumours are gliomas; there are different types of glioma which require different treatments. Doctors must understand the type and stage of the glioma to decide the best treatment for each patient. The current process for classifying gliomas requires laboratory tests using chemical stains, fluorescent labels and other expensive equipment. This can take several days to complete, delaying the start of treatment, causing discomfort to the patient and reducing the efficacy of any post-surgical treatment.

**Fast, accurate results**

The research team consisted of experts from the University of Oxford and Renishaw plc led by Dr James Livermore, a neurosurgical specialist based at John Radcliffe hospital in Oxford, UK. They tested a total of 62 fresh tissue samples using a [Renishaw RA816 Biological Analyser](https://www.renishaw.com/en/the-renishaw-ra816-biological-analyser--43607). Each sample was cut in half; one half was tested with the Biological Analyser, and the other by a pathologist using traditional methods for comparison with the Raman results.

The team found good agreement between the Raman and pathologist results. Also, the ratio of protein and lipid content varied between the different samples, enabling them to distinguish between genetic subtypes when using the Biological Analyser. Dr Livermore said, “We found that the Raman tests were highly accurate when compared to the traditional testing methods, achieving up to 100% sensitivity and 95% specificity. These results demonstrate that surgeons in the future will be better equipped with tools to tailor the surgical strategy and any post-surgical treatment to the patient’s specific tumour genetics.”

The team also designed a workflow to set out how the system could be used for intra-operative analysis. Dr Livermore said, “The Renishaw Biological Raman Analyser can allow for quick and cost-effective analysis of tissue without the need for specialist staff or expensive equipment. It is very easy to use, and we have been able to design a workflow which could be carried out in an operating theatre without the need for laboratory input. Using this workflow, surgeons could remove the tissue sample, place it in the Biological Analyser and get the results in under 15 minutes. This could really change the way we diagnose and treat gliomas.”

The next step in this research is to perform larger, multicentre studies to increase the size of the patient population and test the robustness of the validation of the system at multiple hospitals.

A paper published by Livermore *et al* provides further details of the study: [*Rapid intraoperative molecular genetic classification of gliomas using Raman spectroscopy*](https://academic.oup.com/noa/article/1/1/vdz008/5499267).

Watch a movie to find out more about Dr Livermore’s research using the Renishaw RA816 Biological Analyser: <https://www.renishaw.com/media/video/en/2600ab0041fd4607a93bea6182b04221.mp4>

**The Renishaw Biological Analyser**

The Renishaw RA816 Biological Analyser is a compact, benchtop Raman imaging system, designed exclusively for biological and clinical research. The system provides a practical solution for analysing biological samples with easy-to-use hardware and software and minimal sample preparation with no need for stains or labels.

To find about more about how the Renishaw Biological Analyser could benefit your research visit: [www.renishaw.com/ra816](http://www.renishaw.com/ra816)

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**Notes to editors**

UK-based Renishaw is a world leading engineering technologies company, supplying products used for applications as diverse as jet engine and wind turbine manufacture, through to dentistry and brain surgery. It has over 4,500 employees located in the 36 countries where it has wholly owned subsidiary operations.

For the year ended June 2019 Renishaw recorded sales of £574 million of which 94% was due to exports. The company’s largest markets are the USA, China, Japan and Germany.

Throughout its history Renishaw has made a significant commitment to research and development, with historically between 13 and 18% of annual sales invested in R&D and engineering. The majority of this R&D and manufacturing of the company’s products is carried out in the UK.

The Company’s success has been recognised with numerous international awards, including eighteen Queen’s Awards recognising achievements in technology, export and innovation.

Further information at [www.renishaw.com](https://renishawplc-my.sharepoint.com/personal/lp138190_renishaw_com/Documents/www.renishaw.com)