

CV Walter Stummer

Professor Walter Stummer MD PhD is the Chairman of Neurosurgery / Munster University Hospital. The staff of 6 neurosurgeons and 11 residents performed 2000 operations in 2011. They provide a full spectrum of neurosurgical care with state-of-art equipment, including 2 *microscopes with full fluorescence capabilities*. The department has one full research professorship and a *cell-biological laboratory with a focus on intra-operative fluorescence methodology*. The department has a distinct interdisciplinary vascular and neuro-oncological specialization. They routinely perform *intra-operative fluorescence imaging* for neuro-oncological and vascular disease and are highly involved in the development of these technologies.

Prof Stummer is a world leader in the introduction and implementation of advanced fluorescence-based diagnostic methods in the operation microscope and microneurosurgery. He developed the now widely used 5-ALA method in collaboration with Zeiss, a leading manufacturer of operation microscopes. Of his 93 articles, 26 focus directly on the 5-ALA method, from applied laboratory research to the operation room. A phase III multicenter trial under his leadership verified the clinical value of 5-ALA guided resection of malignant gliomas, demonstrating improved resection and progression-free survival rates. This experience will be pivotal for developing and testing the proposed multispectral imaging. It will include studies on autofluorescence and reflectance spectra studies in tumor and adjoining normal brain tissue correlated to final histology, helping to define algorithms for optical distinction of pathological from normal tissues. After adoption into the operating microscope, the technology will be studied intra-operatively for sensitivity, specificity, positive and negative predictive values of discerning tumor from normal tissues. Ischemic and non-ischemic states in cerebral tissue will be studied during surgery for malignant stroke as well as during temporary arterial clipping in vascular microneurosurgery.

5 relevant publications

Kamp MA, Slotty P, Turowski B, Etminan N, Steiger HJ, Hänggi D, **Stummer W**. Microscope integrated quantitative analysis of intra-operative indocyanine green fluorescence angiography for blood flow assessment: First experience in 30 patients. Neurosurgery 2011 [Epub ahead of print]

Stummer W, Pichlmeier U, Meinel T, Wiestler OD, Zanella F, Reulen HJ. ALA-Glioma Study Group. Fluorescence-guided surgery with 5-aminolevulinic acid for resection of malignant glioma: a randomised controlled multicentre phase III trial. Lancet Oncol 2006;7:392-401

Stummer W, Novotny A, Stepp H, Goetz C, Bise K, Reulen HJ. Fluorescence-guided resection of glioblastoma multiforme by using 5-aminolevulinic acid-induced porphyrins: a prospective study in 52 consecutive patients. J Neurosurg 2000;93:1003-13

Stummer W, Stepp H, Möller G, Ehrhardt A, Leonhard M, Reulen HJ. Technical principles for protoporphyrin-IX-fluorescence guided microsurgical resection of malignant glioma tissue. Acta Neurochir 1998;140:995-1000

Stummer W, Stocker S, Wagner S, Stepp H, Fritsch C, Goetz C, Goetz AE, Kiefmann R, Reulen HJ. Intraoperative detection of malignant gliomas by 5-aminolevulinic acid-induced porphyrin fluorescence. Neurosurgery 1998;42:518-25