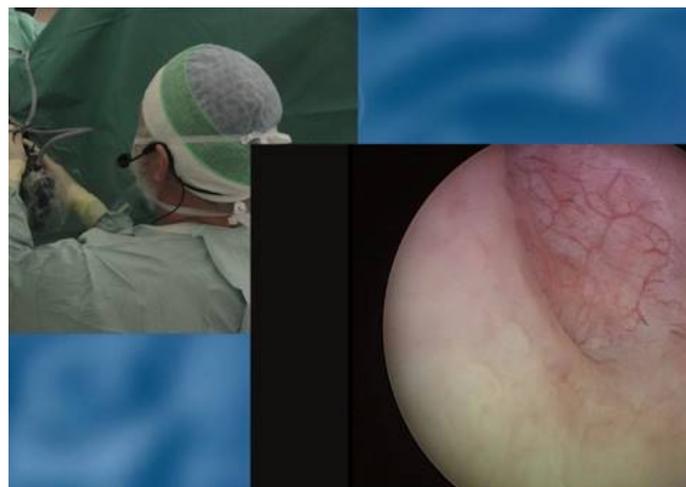




**MERRY CHRISTMAS TO ALL OUR PARTNERS!**



**NORMIT NAVIGATION NOW BEING USED IN BOTH NEURO AND ORTHOPEDIC SURGERY!**



**Outstanding feedback to course with live transfer of surgery!**

On 21-23 November, a “Scandinavian course in Transurethral Resection of Bladder Tumors” was held at St. Olavs hospital / NTNU. This course has previously been held in Copenhagen and at Lund University Hospital and has as target group young doctors who are in teaching positions and aim to become specialists in urology. There were participants from Finland, Sweden, Denmark, Croatia and Norway. Lecturers and operators from all over Scandinavia were recruited. 9 live operations were performed by the "best" in Scandinavia so that participants could see experts at work and get detailed insight into these procedures. The expectations for the course were high.



Experiences with previous live TUR courses have been poor and the streaming quality was not good enough, highly undesirable when experts from all over Scandinavia were participating. This time, Jan Gunnar Skogås, Gabriel Kiss and Jan-Magne Gjerde, from FOR-NorMIT, were consulted and involved early in the process. They promised that everything would work this time. We prepared for the live transfer of surgeries from operation room 6 at Gastrocenter both to 1902 building and to KA11 auditorium in the Knowledge Center.

Tests were performed on 3 different endoscopy systems including (Wolf, Olympus and Karl-Storz) and we thought everything would work and this was how it was. Never have we received so many positive feedbacks from both course participants and guest operators. A live surgery course was held at St. Olavs with international standard. We are looking forward to using FOR-NorMIT and their expertise in future live-surgery courses!



Carl-Jørgen Arum,  
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## Ultrasound Used for The Treatment of Glioma in Mice



Einar Sulheim and Andreas Åslund discuss the MRI-findings in mice. The MRI is used in combination with ultrasound from FUS instruments. Photo: Geir Morgen ©SINTEF

In an ongoing study by Catharina De Lange Davies, Andreas Åslund and Einar Sulheim (NTNU/SINTEF) they have observed the delivery of the drug Jevtana to glioma tumors in the brain of mice. They encapsulated the drug in a nanoparticle to reduce toxic effects and to increase the delivery of the drug. To deliver nanoparticles to the brain, they used an MRI-guided focused ultrasound equipment from FUS instruments available through NorMIT's infrastructure. This instrumentation makes it possible to accurately expose selected areas in the brain to ultrasound. They found that the drug and free drug encapsulation reduced tumor growth to a similar extent, and significantly reduced tumor growth compared to untreated tumors. They also found that the patient-based glioma model we used had down-regulated P-glycoprotein in the capillary wall, ie, drugs are being pumped to a small extent by endothelial cells back to blood. This is probably the reason why free Javanta was so effective in reducing tumor growth.

## NorMIT Navigation in Neurological and Orthopedic Surgery



NorMIT Navigation is now being used in both neurological spine surgery as well as in orthopedic surgery. The clinical environments are happy to having the possibility to use the Brainlab CURVE system, as well as the Brainlab KICK optical and electromagnetic systems for navigation. If you have questions or would like to discuss how navigation could help you as a physician, please visit our website at [normit.no](http://normit.no)!



The research infrastructure Operating Room of the Future (FOR-NorMIT) invites you to the annually FOR SEMINAR on the 31st. of January to the 1st. of February 2018 in Røros Hotel.

To participate, use this link:

<https://ntnu.eventsair.com/forfagseminar2019/pamelding>



We would like to thank all of our partners for a great 2018, and the best wishes for 2019. May you all enjoy a merry christmas, and a happy new year!

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