

## TECHNOLOGY OFFERS

# System for Fluorescence-Guided Surgery (P-1254)

*A novel system for instrument navigation within a patient's body that combines low invasivity with robust and reliable behavior.*

## EXECUTIVE SUMMARY

The technology enables the surgeon to place and navigate e.g. a laparoscope, within an organ in an extremely precise, safe, and reliable manner.

The presented system uses 3D medical image information from a patient's body that additionally includes data regarding the spatial position of a purpose-made fluorescent marker. That data is processed and used in combination with an augmented reality visualization tool and a fluorescent detection device. The resulting information concerning the spatial relationship between the visualization tool and the marked structures of the body enables the surgeon to place and navigate the instrument, e.g. the laparoscope, within an organ in an extremely precise, safe, and reliable manner.



*Please note, header image is purely illustrative. Source: Kot63, stock.adobe.com, 84993434.*

### Category

Devices

### Indication

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### Development stage

Prototype

### Seeking

Licensing

## BENEFITS

- Novel and innovative method / system for instrument navigation within a patient's body
- Well suited for use in combination with fluorescent markers and tracers

## TECHNOLOGY BACKGROUND

One of the main challenges associated with laparoscopy is the exact placement of the instrument within the body of a patient. To address this issue, DKFZ researchers have developed a system for computer assisted surgery that combines low invasivity with robust and reliable behavior.

## DEVELOPMENT STAGE

The method is ready to use and reduced to practice. Current experiments use a novel fluorescentlabeled PSMA tracer developed at DKFZ for prostate cancer-specific laparoscopy.

## APPLICATIONS

The technology is particularly well suited for use in combination with fluorescent markers and tracers such as the new PSMA-HBED-fluorescent compounds (P-1124).

## INTELLECTUAL PROPERTY

Patent application submitted.

- A European patent application (application number EP15193169.8) was filed on November 5, 2015.
- The international PCT/EP2016/073856 has been published as WO2017076571A1.
- The European patent equivalent EP3370599A1 is pending.
- The US patent equivalent US20190059736A1 is pending.

## PUBLICATIONS & REFERENCES

- “Robust augmented reality guidance with fluorescent markers in laparoscopic surgery.” Wild E, Teber D, Schmid D, Simpfindörfer T, Müller M, Baranski AC, Kenngott H, Kopka K, Maier-Hein L., Int J Comput Assist Radiol Surg. 2016 Jun;11(6):899-907. doi: 10.1007/s11548-016-1385-4. “
- A Baranski, et. al. PSMA-11–Derived Dual-Labeled PSMA Inhibitors for Preoperative PET Imaging and Precise Fluorescence-Guided Surgery of Prostate Cancer”, J Nucl Med 2018 2017 (10.2967/jnumed.117.201293).
- Ali Majlesara, et. al. “Indocyanine green fluorescence imaging in hepatobiliary surgery” in Photodiagnosis and Photodynamic Therapy vol 17, 2017, <https://doi.org/10.1016/j.pdpdt.2016.12.005>.

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## ABOUT THE DKFZ INNOVATION MANAGEMENT

Working at the interface of research and industry, the Innovation Management of the German Cancer Research Center (DKFZ) helps to get new cancer medications, diagnostic tests, and research instruments onto the market as quickly as possible.

The DKFZ with its more than 3,000 employees is the largest biomedical research institution in Germany. At the Center more than 1,300 scientists investigate how cancer develops, identify cancer risk factors and endeavor to find new strategies to prevent people from getting cancer. They develop novel approaches to make tumor diagnosis more precise and treatment of cancer patients more successful. DKFZ is a member of the Helmholtz Association of National Research Centers, with ninety percent of its funding coming from the German Federal Ministry of Education and Research and the remaining ten percent from the State of Baden-Württemberg