

Press release

Publication of the technology behind Nanovi's liquid fiducial markers reveals broad application potential in radiation therapy and surgery

- **A unique carbo-gel based liquid soft tissue marker system**
- **Bridging high-resolution imaging with therapeutic intervention for better cancer care**
- **Patents co-owned by Nanovi and the Technical University of Denmark (DTU)**
- **Nanovi holds global commercialization rights in radiation therapy and surgery**
- **First products, BioXmark® and PetXmark™, developed and marketed by Nanovi**

Copenhagen, 16 September 2020 - Nanovi informs that the platform technology behind the company and its portfolio of liquid fiducial markers has been published in Science Advances. Science Advances is one of the world's top-ranked scientific journals with an impact factor of +13 (2019).

Under the title "Multimodal soft tissue markers for bridging high-resolution diagnostic imaging with therapeutic invention", the publication presents a unique, adaptable liquid soft tissue marker system based on functionalized carbohydrates (Carbo-gels). The publication also reveals broad medical application relevance for the system in radiation therapy and surgery.

The soft tissue marker technology is a co-invention between Nanovi and the Health Technology department of the Technical University of Denmark, DTU. Under a collaboration agreement with the DTU, Nanovi holds global development and commercialization rights to the technology in the fields of photon and proton-based IGRT and surgery.

"The publication of our invention is a major milestone", said **Thomas L. Andresen, professor at DTU Health Technology, co-author on the publication and member of Nanovi's Board of Directors.**

"It shows encouraging proof-of-concept for the image features, the physical properties and the tolerance profile of fiducial markers from this unique liquid marker system. I am confident that multimodal markers have broad potential to improve both IGRT and surgical inventions, including robotic procedures."

Nanovi has developed its first two liquid fiducial markers based on the technology to enhance target visibility on imaging and enable high precision radiation therapy of cancer patients:

BioXmark® is marketed in Europe to radiographically mark soft tissue in humans

PetXmark™ is marketed in the US to radiographically mark subcutaneous tissue in dogs and cats

"With the market entries of BioXmark® in Europe and PetXmark™ in the US, this novel liquid marker system has already demonstrated its clinical relevance in cancer care," **Jesper Boysen, CEO of Nanovi,** added, *"Our fiducial markers offer customizable implantation, positional stability and visibility as well*

as photon and proton compatibility as tools to empower healthcare professionals to continuously improve the treatment of cancer patients.”

Carbo-gel: A unique liquid multimodal marker system

Carbo-gel is a unique liquid marker system, which is based on functionalized carbohydrates and intended for use in soft tissues to translate high-resolution imaging into optimal therapeutic intervention. The carbo-gel system forms the basis for the development of adaptable liquid soft tissue markers with multimodal imaging properties to guide radiation therapy and surgical interventions.

The liquid properties of the markers allow for percutaneous and endoscopic injection using small-gauge needles, with placement accuracy and precision ensured by image guidance. After injection into soft tissue, the liquid changes viscosity and forms positionally stable markers.

The synthetic chemical functionalization of the carbohydrates permits the inclusion of unique visibility features, including computed tomography (CT), Cone Beam CT, ultrasound (US), magnetic resonance (MR), Near Infrared (NIR) fluorescence, colored dyes, single photon emission computed tomography (SPECT), and positron emission tomography (PET). Further, the physical properties of the markers can be optimized on the basis of the chosen carbohydrate scaffold resulting in either highly viscous markers or solid markers for in situ palpation.

Relevant medical application fields described for carbo-gel soft tissue markers:

- Radiographic contrast soft tissue marking (BioXmark® and PetXmark™)
- Palpability marking for surgical guidance
- Fluorescence guided surgical procedures
- Surgical radio guidance via PET and SPECT imaging

The relevance and potential of multimodal liquid fiducial markers

The publication discusses the following in terms of the relevance and potential of multimodal liquid fiducial markers:

Soft tissue markers are becoming increasingly important to translate the high sensitivity of modern diagnostic imaging technologies into improved therapeutic interventions. In current clinical cancer practice for example, high performing markers are in demand to provide accurate and safe guidance for Image Guided Radiation Therapy and surgery.

The carbo-gel marker system was developed to meet these market demands forming the basis for with excellent imaging characteristics and minimal invasiveness due to its liquid state before injection.

Reference to the publication:

Hansen AE, Henriksen JR, Jølcck RI, Fliedner FP, Bruun LM, Scherman J, Jensen AI, Rosenschöld PM af, Moorman L, Kurbegovic S, Blanck SR de, Larsen KR, Clementsen PF, Christensen AN, Clausen MH, Wang W, Kempen P, Christensen M, Viby N-E, Persson G, Larsen R, Conradsen K, McEvoy FJ, Kjaer A, Eriksen T, Andresen TL. **Multimodal soft tissue markers for bridging high-resolution diagnostic imaging with therapeutic intervention.** Science Advances. 2020 Aug 1;6(34): eabb5353.



Nanovi contact:

Jesper Boysen, CEO

Phone: +45 24 65 60 33

E-mail: jb@nanovi.com

About BioXmark®

BioXmark® is a liquid fiducial marker, developed by Nanovi for use to radiographically mark soft tissue and enable high precision radiation therapy across cancer types.

BioXmark® has the following features and benefits:

- *Liquid nature* for customizable implantation
- *Sticky and soft markers containing a proprietary contrast agent* for positional stability and visibility on relevant imaging modalities, including MRI
- *Non-metallic* for a low level of artefacts and low dose perturbation ensuring photon and proton compatibility

BioXmark® offers radiation therapy workflow benefits in the form of

- A fast and easy implantation procedure
- Less risk for procedure related complications
- No need for additional training nor special equipment

About Nanovi

Nanovi A/S is a Danish medical device company specialized in precision marking for better cancer therapy. Our corporate dedication is to empower healthcare professionals with the best possible tools to support the delivery of high precision radiation therapy and surgery for the benefit of cancer patients and for healthcare efficiency.

We have a portfolio of unique in-house developed liquid fiducial markers for both human and veterinary use.

All our products are derived from a patented biomaterial technology platform, co-invented with the Department of Health Technology at the Technical University of Denmark, DTU.

The company's corporate offices are situated in Kgs. Lyngby, north of Copenhagen.

For more information, please visit: www.nanovi.com