



# HYPMED

## Digital Hybrid Breast PET/MRI for Enhanced Diagnosis of Breast Cancer

Welcome to the first issue of the HYPMED project's newsletter. Our four year EU-funded collaborative project aims to develop a new hybrid PET/MRI technology to improve the detection and diagnosis of breast cancer at significantly lower radiation dose. We are designing, building and testing a positron emission tomography (PET) insert with integrated radiofrequency (RF) coil that can be utilised with any MRI machine to enable high-resolution PET/MRI imaging.

In the first year we have finalised the mechanical design of the PET-RF insert, achieving the project's first milestone. You will find more in-depth information on this task in the below article from our colleague Sebastian Aussenhofer.

We would also like to encourage you to attend a special session on EU-Funded Cancer Imaging Research at the European Congress of Radiology in Vienna next March. HYPMED's Scientific Coordinator Christiane Kuhl will present information and updates on the project, making it an ideal opportunity to learn more about the ground-breaking technology and to ask questions about our research and its potential applications.

We hope you enjoy reading this newsletter and we look forward to sending you further updates in the months to come, including information on the novel reconstruction techniques being developed by our researchers and the validation of the HYPMED technology in a multicentre clinical trial.

### Prof. Christiane Kuhl

Scientific Coordinator

University Hospital Aachen  
Aachen, Germany



### Dr. Pamela Zolda

Project Manager

EIBIR  
Vienna, Austria



## HYPMED Project at ECR 2017

The HYPMED project will feature in a special EIBIR session on EU-funded Cancer Imaging Research at the European Congress of Radiology in Vienna/AT.

Scientific Coordinator of the HYPMED Project, Prof. Christiane Kuhl, will speak about the project at the session, making it a must for any congress attendee interested in hybrid imaging and the ground-breaking PET/MRI technology being developed by HYPMED.



ECR ONLINE

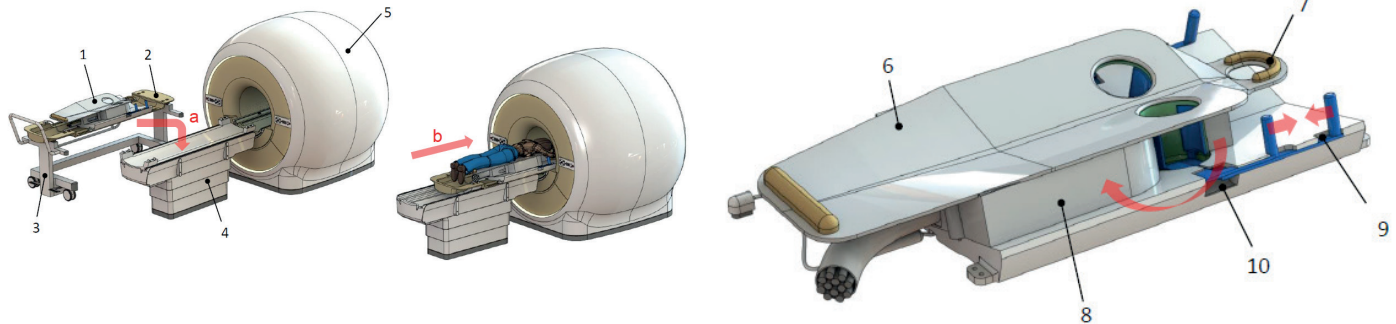
**Friday, March 3, 08:30-10:00, Room M2**



## Designing the PET/RF Insert

Sebastian Aussenhofer  
NORAS MRI Products

HYPMED has completed its first milestone for the mechanical design of the PET-RF insert. The partners from TU Delft, UKA Aachen, Futura B.V. and NORAS MRI products GmbH have successfully designed the first prototype of the HYPMED device. The mechanical design is the result of extensive research in the areas of material science, nuclear science, radiofrequency technology and medical science. Each partner put their full expertise into the project and a design that carefully balances all needed disciplines was created. We are now able to realise a design that was technically not possible before.



The HYPMED device (1) is fixed on the standard table top (2) and transported with the Flextrak trolley (3) to the fixed table (4) of the Philips Ingenia MRI machine (5). The patient can be moved into the MRI for a combined PET/MR scan. After the patient is placed on the HYPMED device, both breasts can be independently accessed by pushing the outer detector parts aside (8). For optimal diagnostic

imaging, the breasts are immobilised in cranial-caudal direction by a clamping mechanism (9). When a biopsy needs to be performed, the diagnostic clamp can be replaced by a biopsy one by inserting it into the designated slot (10). The patient bed is an ergonomic, thin table on which the patient is placed in prone position (6). The head holder with cushioning provides a clean open view (7).

The high level of integration of several engineering disciplines enabled by the unique consortium of world-leading experts will open new insights in breast cancer care in the future. So far, the consortium has been able to solve all technical challenges and no major feasibility risks are foreseen at the moment. Initial experiments of subcomponents were successfully conducted, proving the viability of the newly designed subcomponents in the harsh environment of the MRI. Based on the current results and the experience of the consortium the project is well on track to deliver a device with the expected performance. The consortium continues to work with high enthusiasm on the realisation of the unique HYPMED device for breast PET/MRI hybrid imaging.



The European Institute for Biomedical Imaging Research (EIBIR) was established in 2006 as a non-profit organisation dedicated to fostering and coordinating biomedical imaging research in Europe. EIBIR has its Head Office in Vienna, Austria and a network of member institutions across Europe. The Head Office Team supports researchers by drafting, coordinating and managing international research projects and clinical studies, as well as by recruiting consortia of excellence from its Network Members. EIBIR has gained an excellent track record as project coordinator of many European projects under the European Commission's Horizon 2020 and FP7 funding programmes.

NORAS MRI products is responsible for designing and manufacturing the MRI coil part of the project in collaboration with the HYPMED consortium. The company has more than 30 years of experience in manufacturing MRI Products. It has built a solid reputation due to its customer-oriented service. In addition to its standard products, its slogan "we build your vision" reflects exactly what they offer customers: a competent partner for planning and realising individual ideas and concepts. Their development and production is based mainly in Germany, with final assembly and inspection done manually by skilled employees to ensure the best quality.