

BY PAMELA ZOLDA

# Novel minimally invasive treatment for patients with metastatic gastrointestinal stromal tumours

A multidisciplinary consortium will develop and validate an innovative closed-loop molecular environment to effectively treat patients with metastatic gastrointestinal stromal tumours (GIST) that are resistant to medication.

Gastrointestinal stromal tumour (GIST) is a rare disease frequently affecting young patients. Its high potential for metastasising often leaves patients with a life expectancy of less than three years. Currently, there is only one class of effective medication – tyrosine-kinase inhibitors – but tumours frequently develop drug resistance after a few years.

The objective of the four-year EU-funded project MITIGATE is to develop and validate a targeted, personalised and integrated, closed-loop process to effectively treat patients with metastatic GIST resistant to current medication. The innovative treatment concept combines new strategies for biopsy, inline tissue analysis, molecular tumour characterisation, and theranostics with imaging technologies (PET and MRI) and companion radiopharmaceuticals. This is followed by assessment of biodistribution, dose calculation and measurement of therapeutic effectiveness. In addition, synergistic concepts of minimally invasive treatment will be applied.

The project consortium, which is coordinated by the Ruprecht Karl University of Heidelberg and the European Institute for Biomedical Imaging Research (EIBIR), comprises three European universities, three research organisations and four SMEs.

MITIGATE recently entered its third year, and the consortium is proud to already present notable achievements:

- » An integrated endoscopic biopsy and tissue dissociation system was developed. Mass spectrometry of biopsies revealed that cells which are responsive and non-responsive to drugs can be distinguished and differ from other types of cancer.

- » The synthesis and *in vitro* evaluations of precursor tracers targeting GIST are in progress. A reproducible procedure for radiolabelling peptides with high affinity for somatostatin and bombesin receptors using Gallium-68 was developed.

- » GIST xenograft animal models, which enable the preclinical evaluation of potential new radiotracers, were successfully established.
- » MRI protocols for tumour microenvironment characterisation have been set up and validated *in vivo* in different GIST animal models. A dedicated and optimized protocol for sequential acquisition of MRI and PET images has been validated.

- Abdomen array developed by Rapid Biomedical GmbH for optimised <sup>23</sup>Na/<sup>1</sup>H imaging of the abdomen at a field strength of 3T
- » A concept study design for minimally-invasive treatment for patients with metastatic GIST was set up, and a robotic assistance system is being developed.

In the upcoming period, the project will focus on:

- » Non-invasive MRI techniques allowing earlier detection of treatment response and tumour progression in clinical routine.
- » Creation of PET probes for detecting drug-responsiveness.
- » Creation and testing of companion radiopharmaceuticals applying therapeutic radionuclides with alternatives modes of action. These will not only affect tumour cells expressing their target, but also surrounding tumour cells within the range of the irradiation.
- » Minimally-invasive percutaneous thermal ablation and irradiation, guided by molecular PET imaging and a robotic assistance system.

- » A clinical trial in patients with drug-resistant GIST is set to start in summer 2016. The trial will provide data on GIST tumour visualisation and characterisation as well as dosimetry of novel radiopharmaceuticals.

In the upcoming years, the MITIGATE consortium is looking to continue its success and ultimately ensure an accelerated decision-making process and improved treatment concepts for the individual patient. Together this will result in a personalised, combined multimodal treatment approach in patients with advanced disease.

Participate in our End-User Survey and help us to bring MITIGATE's innovative results to the European patient!

In order to gain a better understanding of how the community might want to exploit innovative results, we have created a set of short and user-friendly surveys tailored to end user interests and fields of research. The survey can be accessed via our website ([www.mitigate-project.eu](http://www.mitigate-project.eu)) or at the EIBIR booth in the entrance hall.

### MITIGATE SESSION AT ECR: WHAT DOES IT TAKE TO PERFORM CLINICAL TRIALS IN INTERVENTIONAL RADIOLOGY?

The session aims at presenting an overview of the clinical trials in interventional radiology in Europe. A member of the Scientific Programme Committee of the Cardiovascular and Interventional Radiological Society of Europe (CIRSE) will present the overall situation and challenges ahead. Two successful case examples of respective investigator-initiated and industry-sponsored trials will be introduced. Finally, the concept of a clinical trial in oligometastatic GIST,



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which will start in mid-2016, will be presented by a partner from the MITIGATE consortium. MITIGATE is an FP7 co-funded project that aims at developing new protocols and guidelines to effectively diagnose

and treat patients with metastatic GIST resistant to current treatment.

Learn more about MITIGATE and visit the project website: [www.mitigate-project.eu/](http://www.mitigate-project.eu/)

### Joint Session

Friday, March 4, 14:00–15:30, Room L8  
EIBIR Session 2 (European Institute for Biomedical Imaging Research)  
MITIGATE: What does it take to perform clinical trials in interventional radiology?

#### » Introduction

S.O. Schönberg; Mannheim/DE  
W.R. Jaschke; Innsbruck/AT

#### » Overview on clinical trials in interventional radiology in Europe

A. Gangi; Strasbourg/FR

#### » How to implement investigator-initiated or industry-sponsored trials in interventional oncology: SORAMIC vs SIRFLOX

J. Rieke; Magdeburg/DE

#### » Design of a clinical trial in oligometastatic GIST: results from the MITIGATE consortium

C. Decristoforo; Innsbruck/AT

#### » Discussion

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### Visiting Scholarship Programmes (Europe)

residents in training years 3-5  
three months

### Visiting Scholarship Programmes (USA)

residents in training years 3-5  
three months  
MSKCC, New York  
Case Western Reserve University, Cleveland

### Exchange Programmes for Fellowships (Europe)

board-certified radiologists within their first  
three years of practice  
three months

### One-year Fellowships (Europe)

board-certified radiologists within their first  
three years of practice  
12 months

### Exchange Programmes for Fellowships (USA)

board-certified radiologists (three to six years  
professional experience)  
at least a one-year involvement in breast imaging  
six months  
MSKCC, New York

For further information on the detailed programmes  
and application, please visit [myESR.org/esor](http://myESR.org/esor)

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