

n-TRACK

NEWSLETTER

March · 2020



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n · TRACK STRIVES TO TRACK STEM CELLS IN REAL-TIME

There is a need of tools to evaluate and predict the safety and success of cell-based treatments in earlier stages. The current lack of methods providing real-time tracking of transplanted cells and knowledge on their early biodistribution and viability is one of the major weakness of the available cell-based treatments. These treatments can sometime be ineffective due to poor or unspecific targeting or lead to tumor developments. Therefore, to fulfil this need, nTRACK develops a safe and highly sensitive multimodal nanoimaging agent enabling non-invasive and quantitative stem cell tracking in the entire body.

The principle of nTRACK is to insert iron oxide nanoparticles with a gold shell in stem cells and inject those labelled stem cells in the body in order to foster muscle regeneration. The nanoparticles allow a precise tracking of the stem cells up to the injured organ of the body. This bimodal technology tracks cells with Computer Tomography (CT) thanks to the gold shell and with Magnetic Resonance Imaging (MRI) sensitive to the presence of iron.

The project focuses on four main domains of activities. First, the production of the

nanoparticles by using manufacturing methods that complies Good Manufacturing Practices (GMP), mainly by a German company, MJR PharmJet. The particles are loaded into the stem cells provided by Pluristem, an Israeli company. Two strategies have been developed due to differences in development velocities. One where the nanoparticles are only made of gold fulfilling the GMP standards but not compatible with MRI. The second one consists of the iron oxide nanoparticle with gold shell by the Bar-Ilan University (Israel), but their manufacturing method does not fulfil the GMP requirements, yet.

Second, the proof of concept aims to show that the contrasting agent is working correctly with the different imaging techniques such as CT and MRI. Depending on the strategy, stem cells with different types of nanoparticles are being used during in-vivo studies. BIOEMTECH, a Greek company develops an AI algorithm capable of counting the stem cells in the targeted body part and identify migration patterns.

Third, LEITAT is conducting in vitro and in vivo exploratory toxicological assays to provide insight for the the preclinical safety regulatory studies, that will be conducted by Vivotecnica. The studies in rats will allow selecting the most relevant administration method and animal model and adequate follow-up periods. From the data analysed up to now, no relevant in vivo toxic effects have been observed.

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VHIR (Vall d'Hebron Institute of Research, Spain) and Leitat are carrying out the generation of small and large animal muscle lesion models and the analysis of the medical images. VHIR have also developed a virtual model for muscle regeneration prediction algorithms based on the in vivo studies. Furthermore, they have recently submitted a publication where they have been able to predict the muscle regeneration of a small animal with an unusual radiological technique, such as TAC, which is a huge achievement.



RECENT DISSEMINATION ACTIVITIES

Lastly, the regulatory part prepares the market entry of the technology in direct contact with regulatory authorities. Discussions with the European Medical Agency (EMA) Innovation Task Force resulted in recommendations on the categorization of the nTRACK technology. Further work by Asphalion, a Spanish Consultancy on Scientific and Regulatory Affairs and RIVM, the Dutch National Institute for Public Health and the Environment, is currently being carried out with National Competent Authorities to seek scientific advice on the studies planned.



To stay updated about the activities of nTRACK, visit n-track.eu or follow us on Twitter @nTRACK_H2020!

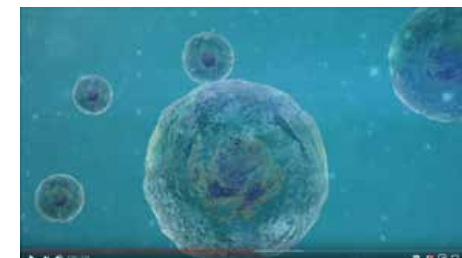
Open Day Workshop



The first nTRACK Open Day Workshop was organised by Cambridge Nanomaterials Technology Ltd in Cambridge, UK on 30th October 2019 with the aim to link the partners with new collaborators and to support further exploitation of the project results.

Partners were given the opportunity to present themselves and project results in front guest participating organisations such as Novo Nordisk, STEMCELL Technologies, Johnson Matthey, Wellcome – MRC Cambridge Stem Cell Institute, Cell and Gene Therapy Catapult, Great Ormond Street Hospital - UCL Institute of Child Health - Stem Cells and Regenerative Medicine Section and Dolomite Microfluidics, among others.

nTRACK Presentation Video – 3D animation



To promote the project and its highly ambitious objectives, the consortium released a presentation video including 3D animations. In less than three minutes, you will get a good insight of the project including precise biomedical details.

Enjoy the video!
<https://youtu.be/bhZoi8cwQB0>

nTRACK presented during EuroNanoForum in Bucharest

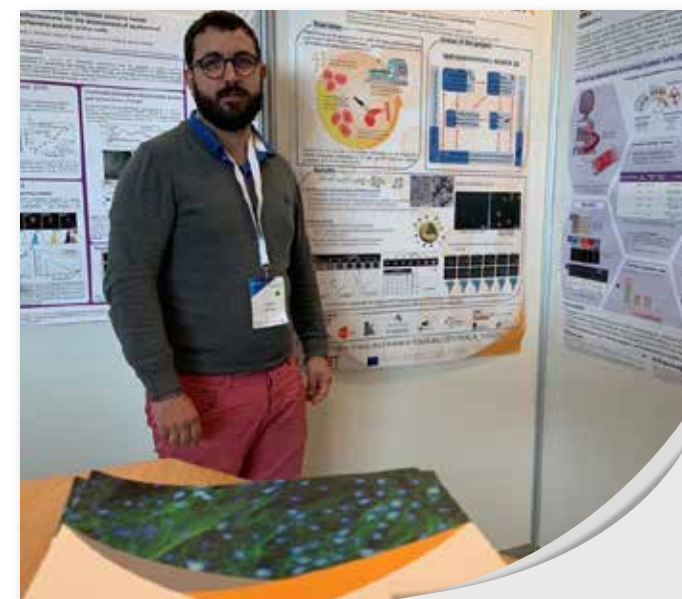
nTRACK took part in the 2019 edition of the EuroNanoForum held in Bucharest on the 12-14th June as part of the NanoSafetyCluster stand.

The stand featured 15 other Horizon 2020 nano-oriented projects.

The event gathered approximately 1000 participants from Europe and across the globe and offered opportunities for discussions on cross-sectorial challenges focusing on both the industrial application of research results and future strategic research priorities in the area of Nanotechnology and Advanced Materials of the Horizon 2020 NMBP Programme and beyond.



nTRACK participates in NanoMed Europe and ETPN Annual Event



The most important European event in the field of Nanomedicine was hosted by INL – International Iberian Nanotechnology Laboratory, in Braga, Portugal, from the 17th to the 19th of June, in a joint organisation from INL and ETPN, the European Technology Platform on Nanomedicine.

For the first time, the Scientific conference ENM and the 14th annual event of the ETPN were merged to create a new and unique event. During this event, Leitac presented a poster of nTRACK and its activities in the field of gold-nanoparticles.

CT-TRACS Committee Meeting in Washington: RIVM presenting nTRACK



On the 26th and 27th of September, the Cell Therapy – Tracking, Circulation, & Safety (CT-TRACS) Committee of HESI (Health and Environmental Sciences Institute) met in Washington.

This committee is specialised on cell therapy tracking and serves as a platform where an international network of experts from multiple sectors can collaborate sharing knowledge, experience and resources.

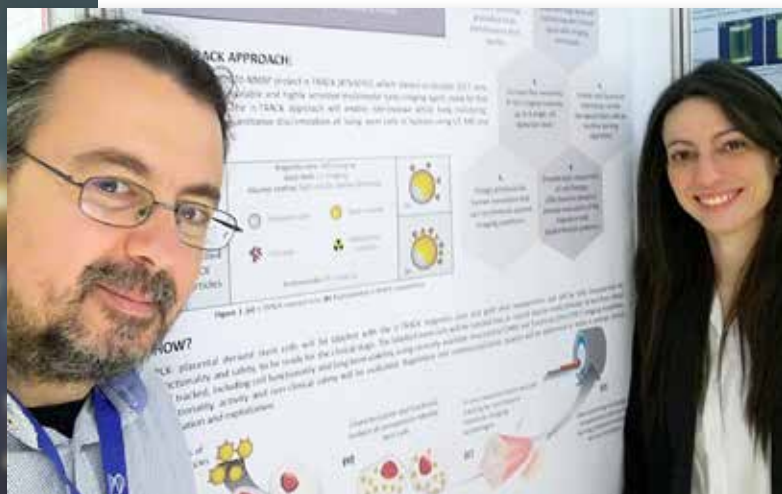
During this meeting, Dr. Margriet Park from RIVM presented the advances of nTRACK project and developed new partnerships that could help in the certification process of the nTRACK agent.

BIOEMTECH wins 3rd Best Poster Award at 24th Greek Interdisciplinary Radiology Conference



From the 14th to the 16th of November, the 24th Greek Interdisciplinary Radiology Conference took place in Patras (Greece) where BIOEMTECH was awarded the 3rd Best Poster Award.

nTRACK presented during 13th European Molecular Imaging Meeting



March 2018

The nTRACK project was presented by BET Solutions at the 13th European Molecular Imaging Meeting at San Sebastián. The conference attracted more than 700 participants from 31 countries and included more than 290 talks and 265 poster presentations. The conference took place from 20-23

nTRACK at Athens Science Festival

The nTRACK project was presented at the Athens Science Festival (ASF), which was held on 24-28 April 2018 in Athens Greece. The ASF is the biggest science festival in Greece, attracting hundreds of visitors of all ages every year.

The nTRACK concept was presented by BET Solutions.



nTRACK at HEALTHIO 2018 in Barcelona

nTRACK had the opportunity of having a stand at HEALTHIO 2018. This event, which shows the latest healthcare innovations, took place in Barcelona from the 16th to the 18th of October. It gathers at the same place citizens, patients, doctors, researchers and companies working in the health sector.

The stand received visitors who took part in the regenerative medicine circuit. It included patients, students and healthcare professionals.



High School Students Discover Applications of Gold Nanoparticles Thanks to EscoLab



A group of 20 high school students came to Leitat on the 23rd of October 2019 to discover the realm of nanomaterials. Leitat's team presented to the pupils how the nanomaterials have entered our daily lives. During the session, different projects from Leitat were explained, such as nTRACK. José Luis Muñoz, senior researcher explained how gold nanoparticles help to track stem cells aimed to regenerate injured muscle tissues, which impressed the students.

Back from the SNMICON 2017 in India



BET Solutions participated to the 49th Conference of the Society of Nuclear Medicine India (#SNMICON), that took place from the 14th to the 17th of December 2017. BET Solutions presented the nTRACK project and its activities it just started to work on. Within the project, BET Solutions develops an AI algorithm capable of counting the stem cells in the targeted body part and identify migration patterns. It provided a preview this technology, which met great interest by various development teams, especially labs currently performing ex-vivo biodistributions that can finally benefit from an affordable in-vivo imaging system right at their lab.

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