

## ABSTRACTS

### - PLENARY SESSIONS -

#### **Science Park: Sara Landuydt**

##### **Building Business on Science**

When your research leads to a therapy, service or product, and you are taking steps to actually enter the market, a lot of new things come into play. You may need your own lab or office, you want to test your ideas with experienced experts in the field, you want advice on starting up a business, on regulation or on protecting your IP, you want to broaden your network in a targeted way, learn from the experiences of other start-ups, ...

As a campus and community for innovative, research-driven companies active in Health & Environment, the Science Park University of Antwerp is there to help you overcome these barriers.

#### **Sightera Biosciences: Hendrik Verkammen - Maxim Le Compte**

##### **AI powered, patient-centric solutions**

Sightera Biosciences, located in Incubator Darwin, is a spin-off project from the University of Antwerp in collaboration with the Antwerp University Hospital. Sightera focuses on developing innovative small molecules for oncology and regenerative medicine by combining patient-relevant models with artificial intelligence.

Sightera's mission is to significantly accelerate traditional drug development by integrating an alternative and complementary technology into conventional small molecule discovery, known as SPAR technology. Through our unique SPAR (Structure-Patient-Activity-Relationship) technology, we combine chemical structures with patient-relevant models to create more effective and relevant therapies from scratch. Sightera aims to enhance the efficiency of traditional drug development by designing highly patient-relevant small molecules from the start of the drug discovery process. Here, we will present the discovery of our potential first-in-class compound, SIGHT001-18, which demonstrated promising results, progressing from initial development to positive in vivo efficacy studies in less than 6 months.

#### **Laboratory of Experimental Hematology, University of Antwerp**

##### **Diana Campillo Davó**

##### **The search for the Holy Grail TCR: A crusade against cancer**

In the past 20 years, immunotherapy has improved cancer treatment tremendously. However, anti-cancer T-cell receptor (TCR)-T-cell therapy, in which potent TCRs are introduced into T cells to target cancer cells, has slowly progressed. Compared to CAR-T therapy, which was approved first in 2017, the first TCR-T therapy was approved in 2024, forty years after the discovery of the TCR. The main reason for this slow therapeutic progression is the difficulty associated with finding effective antigen-specific TCRs with therapeutic potential. While TCR repertoires are immensely large and diverse, tumor-

reactive T cells with their desirable TCRs are sparse and difficult to detect. Moreover, distinct therapeutic TCRs are usually required for different (sub)cancer types and, more importantly, for individual HLA alleles. Despite these challenges, there are notable therapeutic opportunities, especially compared to CAR-T therapy, such as the possibility of better targeting intracellular antigens and solid tumors, overcoming challenges posed by the tumor microenvironment, and lower toxicities related to treatment. These advantages have led to a recent exponential growth in the TCR therapy market, with several companies leveraging the specific properties of TCRs to target different diseases, especially cancer. Many other companies aiming to enter the market are reaching out to research labs with extensive experience in TCR discovery and validation, such as the Laboratory of Experimental Hematology (LEH) of the University of Antwerp, to help them find suitable TCR candidates. In this talk, I will discuss our experience at the LEH in collaborating with industrial partners searching for TCRs in our joint fight against cancer.

## **ZAS**

**Michaël Claessens**

**Iridium – RaySearch Laboratories collaboration:**

**Automation as a standard for radiotherapy cancer treatments**

### Introduction

Iridium is an organization in the region of Antwerp consisting of four different radiotherapy centers that perform 6000 treatments each year. To achieve a high quality of treatment for every patient, an automated and standardized workflow is crucial. To establish this, Iridium signed an agreement with RaySearch Laboratories to develop and implement together different products to realize this automation. Today, two main products are installed in our clinic: RayCare and RayStation. Since 2019, RayCare gradually assumed the functionalities of a co-existing Oncology Information System (OIS). In parallel, the treatment planning system RayStation evolved from the limited use for stereotactic treatments to the platform for automated creation of treatments for all pathologies.

### Materials and Methods

During the years, a strong collaboration strategy was defined between Iridium and RaySearch Laboratories with the focus on implementation of customer-based clinical products. Previously, until 2023, RayCare's functionality was confined to the clinical workflow of stereotactic treatments. However, it now handles the flow of all treatments. To fully utilize its capabilities, elements such as appointment scheduling, treatment course management, and prescriptions had to be incorporated into the OIS, along with the clinical workflow. The main focus was to create templates reflecting the working principles of the clinic and implement RayCare scripting possibilities towards automation of tasks. Additionally, RayStation offered the possibility to automate treatment plan generation based on scripts and artificial intelligence. The latter was developed for auto-segmentation and planning models for prostate and breast cancer, along with quality assurance methods to monitor misbehavior of automated tasks.

### Results

Currently, the clinical flow in RayCare incorporates the patient scheduling, prescription templates and integration of the treatment course management. The scheduling templates are assigned to a proper group, whether it is for stereotactic treatment or conventional radiotherapy. Via scripting and AI, set-up of beams and calculation of treatment doses are automatically performed for prostate and breast patients, resulting in time gain and consistency in quality.

### Conclusion/Future perspectives

The research collaboration with RaySearch gave Iridium the opportunity to develop solutions for its own challenges. The foundation has now been laid for RayCare to operate as a robust, sole Oncology Information System (OIS) in our clinic. The next focus point will be to gradually add building blocks and optimise the current functionalities. Development of personalized AI models for segmentation and planning will be augmented for all pathologies. Finally, the upcoming RayCare and RayStation interconnectivity will increase automation efficiency and pave the way for fluent treatment adaptations and analysis across different pathologies.