Bridging Science and Patients

DR. VICTORIA RICHON, VP of discovery and preclinical research oncology at Sanofi Oncology, discusses how translational medicine efforts are moving the company forward.


Dr. Victoria Richon

PV: *How do you define translational medicine?*

RICHON: Translational medicine in its broadest sense is any research linking basic science to human disease. With more than 200 different kinds of cancer, we need to understand the molecular mechanism leading to that type of cancer and then personalize the treatment to provide the right medicine to that patient. This approach starts with a deep understanding of cancer, and this understanding provides the foundation for the identification of new targets and guides our discovery efforts for the development of therapies. We start at the bedside with the patient and then move to the bench with our drug discovery programs and then go back to the bedside to treat defined cancer patients with the therapies that we develop.

PV: *Can translational medicine be used in disease areas other than cancer?*

RICHON: This is an approach that can be applied to other disease areas as well. With cancer we have been able to have a better understanding of the disease because we have access to human cancer tissue. In other diseases, this access can be more challenging. Also, typically the pathophysiology is more complex in cancer than other diseases that may have a more subtle pathophysiology.

PV: *What are some of the biggest challenges in translational medicine?*

RICHON: One of the remaining major challenges is aligning the relevant preclinical models to the human cancer subtype in order to be able to identify and evaluate the therapies we develop in the appropriate models. We are making progress and are able to assemble a variety of models including well-characterized, patient-derived xenograft models of cancer. These improved models should enable us to translate what we find in a preclinical study and into the clinical setting.

Another continuing challenge is access to tumor tissue to enable characterization of the tumor at the time of treatment and to evaluate the effect of the treatment on the tumor. Often we are limited to using archived patient samples taken at the time of diagnosis rather than samples taken at the time we start the new treatment. We continue to make improvements in our methods including decreasing the amount of sample required for our analyses and incorporating imaging technologies.

PV: *How is Sanofi Oncology applying translational medicine?*

RICHON: Several years ago, Sanofi made a commitment to building a strong translational medicine group. This group partners with both the discovery and development departments. For all of the projects in our early portfolio we have biomarkers that measure target engagement and also patient selection markers to enable testing of these hypotheses. This group serves not only as a bridge but also to create a continuum throughout our early research.

We have many exciting programs. Of note, in our JAK2 program we have conducted studies that include the determination of the JAK2V617F allele burden in a Phase II study of patients with myelofibrosis treated with the JAK2 inhibitor SAR302503. In this study we used a sensitive and robust allele-specific qPCR assay. Additionally, we have studied the tolerability, pharmacokinetics, and pharmacodynamics of the oral JAK2 inhibitor SAR302503 in healthy volunteers and carried out studies to evaluate the development of resistance and its impact on clinical outcome.

PV: *What are some best practices for using a translational medicine approach?*

RICHON: A best practice is to have a seamless integration from the identification of the target to the ultimate testing of the new therapeutic in the clinic. We identify new targets by starting with an understanding of a cancer subtype and the key pathways on which that cancer subtype is dependent. Previously, we would start a search for new targets using model systems without a true understanding of the cancer subtype they represented.

Today, because of large-scale omics efforts, we have a much greater understanding of the diversity of human cancers and how our model systems are representative of human cancer subtypes. This allows us to align our preclinical models early in the drug develop process and develop relevant assays and pharmacodynamic assays to be able to evaluate the therapeutic agent in the clinic.

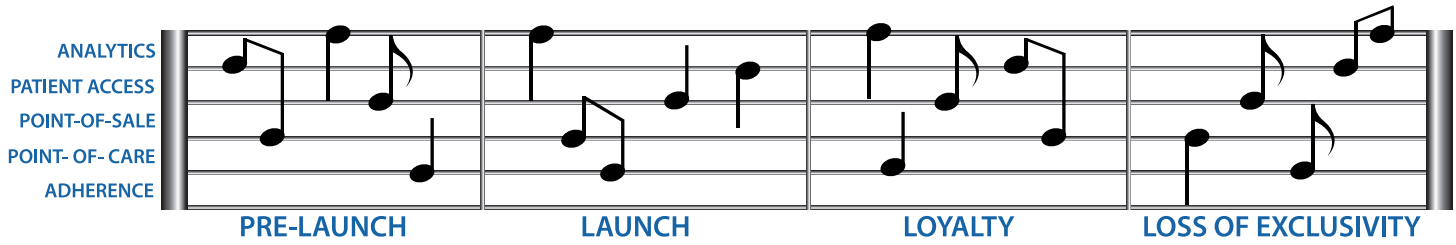
Incorporating translational and experimental medicine into our drug discovery and development programs will improve the speed and probability of success of developing transformative cancer therapies for patients. PV

Sanofi's Commitment to Translational Medicine

Several years ago, Sanofi made a commitment to building a strong translational medicine group. In 2010, Dr. Don Bergstrom joined Sanofi Oncology as the head of Translational and Experimental Medicine and today this group fully integrates the company's drug discovery and development efforts both within the company and with external partners.

In April, Sanofi and NextBio announced they were partnering for a multi-year collaboration aimed at using NextBio Clinical to incorporate patient omics and clinical data into Sanofi's drug research and development. NextBio is providing Sanofi with the NextBio Clinical platform for aggregation, standardization, and analysis of patient clinical data, next-generation sequencing (NGS), and other molecular data across public data sources, Sanofi clinical trials, and Sanofi hospital partners. NextBio's unique data integration platform, user interface, and real-time big data analytics is allowing Sanofi biologists and clinicians to tap into a growing collection of patient data as it becomes available, as a key enabling technology for translational and clinical research.

Dr. Victoria Richon, VP of discovery and preclinical research, at Sanofi Oncology, says the translational and experimental medicine group serves as a bridge to create a continuum throughout discovery and development.



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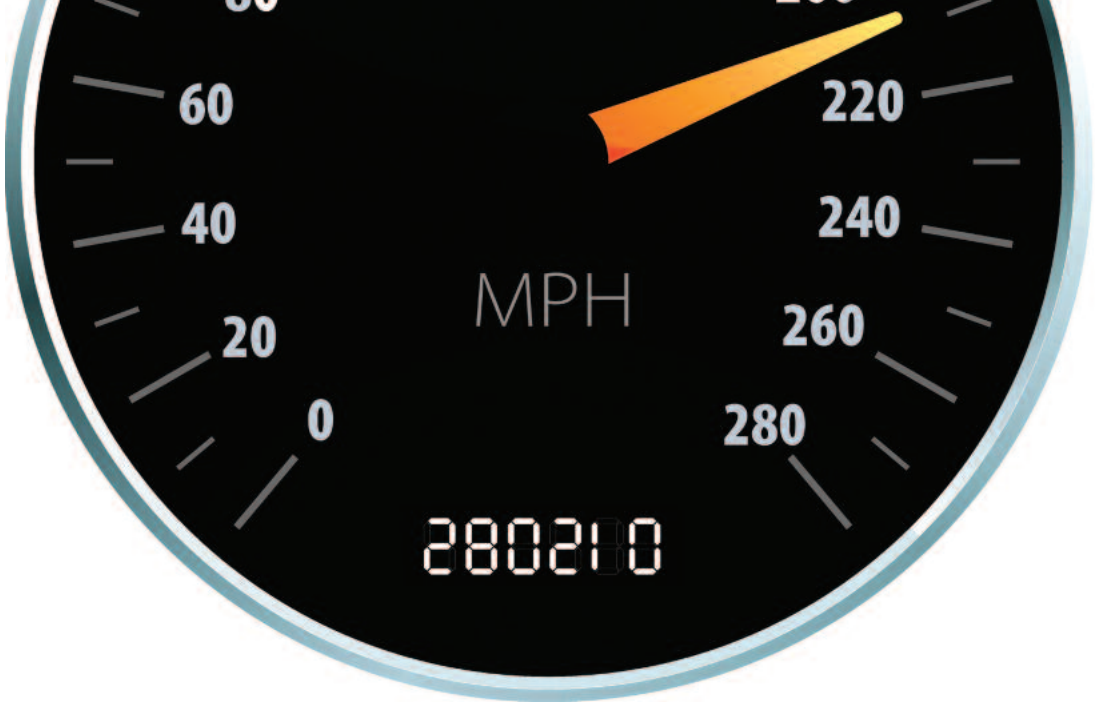

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