ADVANCES IN DRUG DEVELOPMENT

Current Developments in Oncology Drug Research

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Moving From Academia to Industry in the Field of Oncology

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H&O What is your background, and why did you switch from academia to industry?

JS My commitment to improve the conditions of people with cancer was established early in my career. Like many families, mine has had to deal with this devastating disease. I was trained as a medical oncologist at Paris University. I obtained a PhD in molecular biology, and did a postdoctoral fellowship at MD Anderson Cancer Center in Houston. In 2001, I was appointed a full-time physician at the Gustave Roussy cancer center in France, the largest cancer center in Europe. My responsibilities encompassed treatment of lung cancer patients and development of early drug compounds. In 2006, I was promoted to professor at Paris University. In 2013, I became chairman of the drug development department, where I was responsible for 120 full-time employees. Our work focused on phase 1 and phase 2 trials. We enrolled approximately 500 patients per year in phase 1 trials and profiled another 500 patients with molecular portraits. I was closely involved in the development of immuno-oncology therapies and targeted therapies.

My move to industry stemmed from my desire to increase the number of patients I was helping. With the right drug development process, it is possible to develop a medicine that will help thousands, if not hundreds of thousands, of patients.

H&O For an oncologist, what are the opportunities in academia vs industry?

JS In academia, there are several opportunities. For example, one can become a physician scientist or a clinician who focuses on the treatment of patients. One can be involved in the management of a hospital or a research center. Academia also offers clear, strong mentorship and teaching opportunities.

Industry encompasses a kaleidoscope of activities that is not always fully grasped. There are opportunities for clinical drug development for early or late assets. Physicians can be involved in safety, regulatory interactions, medical affairs, commercial activities, business development, and investor relationships.

H&O Are there any differences in the skill sets needed to succeed in academia vs industry?

JS Industry requires an increased attention to interpersonal relationships, particularly within large-scale pharmaceutical companies. Many different components make a pharmaceutical company function, and it is necessary to skillfully interact with colleagues from multiple departments to move projects ahead.

H&O How does a typical workday differ in academia vs industry?

JS The biggest difference concerns patients. In academia, one has direct interaction with patients. In my experience, those interactions followed me all of the time, throughout my day. It is a very strong interaction. Patients are putting their lives in their doctor's hands. In medical oncology, the responsibility is immense because the diseases are often lethal. However, while industry often lacks that direct interaction, both settings do share the same end goal: to bring innovation to the service of patients.

H&O How does the drug development process differ in academic vs industry settings?

JS The industry setting is unique because of the multiplicity of stakeholders. For a drug to become a commercial medicine, it is necessary to embrace all of the facets of the kaleidoscope that I referred to. The magnitude of teamwork in industry is very large. Up to 1000 people are involved in moving a drug from development to commercial availability.

H&O Have you learned anything about the drug development process since moving from academia to industry?

JS The technical challenges of developing a medicine are immense. The complexity is significant, especially for biologics and antibodies. Excellence is demanded in all dimensions for a successful journey to drug approval. As expected, there is much more interaction with the regulatory world.

H&O What are some ways in which academia and industry can work together in drug development?

JS Collaboration is key in developing new compounds. We seek to work with places that have the best science and that provide the best patient care. We recently launched a compound called moxetumomab pasudotox-tdfk (Lumoxiti, AstraZeneca/MedImmune) following a collaboration with the National Cancer Institute. In 2018, the US Food and Drug Administration approved moxetumomab pasudotox-tdfk for the treatment of adult patients with relapsed or refractory hairy cell leukemia.

We are also collaborating with Washington University to develop so-called personalized neoantigen vaccines, which draw from the individual sequencing of a patient's tumor.

For a fruitful collaboration, it is important to implement best practice, the cornerstone of which is transparency. There must be transparency concerning the goals that academia and industry each bring to the collaboration. Transparency leads to more tangible results.

H&O Were you surprised by anything in your move from academia to industry?

JS One element surprised me: the reality that a great deal of published academic research is not reproducible. More frequently than one might expect, some scientific experiments from academia are unable to be reproduced in industry laboratory facilities. Failure to reproduce results wastes time and resources. Other researchers have also identified this problem, and it is necessary to find a way to address it. Funding agencies and various bodies, such as the Center for Open Science, are trying to support efforts to understand and improve reproducibility in science. This goal is very important.

H&O What advice would you have for physicians who are considering a move from academia to industry?

JS I would strongly encourage them to take advantage of the many possibilities that exist to explore this move. For example, there are fellowship opportunities in industry, such as those promoted and funded by the American Association for Cancer Research. We have at least 3 fellowships in that setting. Some of them involve basic science, and others are for clinical work. MedImmune is working with Johns Hopkins to facilitate such interactions.

I would encourage physicians considering this change to reach out to peers in industry, visit potential companies, and arrange interviews. It is important to comprehend the tangible reality of a particular place by learning about the people who work there, becoming familiar with the workload, and understanding the content that is produced. They should take some time to contemplate their decision, and have a clear sense of their interests and ambitions in order to select the best fit in an industry setting.

Disclosure

Over the last 5 years, Dr Soria has received consultancy fees from AstraZeneca, Astex, Clovis, GSK, GamaMabs, Lilly, MSD, Mission Therapeutics, Merus, Pfizer, PharmaMar, Pierre Fabre, Roche/Genentech, Sanofi, Servier, Symphogen, and Takeda. Dr Soria has been a full-time employee of MedImmune since September 2017. He is a shareholder of AstraZeneca and Gritstone.

Suggested Readings

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