

MERIT Internship Report

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Host institution: Nanotis Inc.

Abstract

I participated in the internship at Nanotis Inc., which is a venture company founded in June 2016. Nanotis Inc. has developed new diagnostic devices for influenza using proprietary technologies. In this internship, I was engaged in the development of new diagnostic devices, such as the structural design of new diagnostic devices. In addition, I helped to research the market of influenza diagnosis devices and commercially available devices for product sales. Through these activities, I experienced how to proceed R & D and management strategy in a venture company that was established shortly after its establishment.

Activities

As the main work, I was engaged in the research and development of a new influenza diagnostic device. In particular, structural optimization of diagnostic devices aiming at improvement of diagnostic sensitivity and diagnostic speed was carried out. In order to efficiently carry out structural optimization, research and development was conducted by reviewing and comparing commercially available diagnostic kits. Conventionally, it is necessary to examine all the possible factors and consider the scientific cause, but it is considered that the process is not efficient in venture companies, which is required to be quick in establishing technology. In fact, it is very useful to carefully examine commercially available diagnostic kits, and it was quite useful for not only proposing materials used for our own products in the development stage, but also clearly grasping the advantages and disadvantages of our products. We also considered whether our product can be produced in the same way in mass production. Even if there is no problem at the laboratory level, there may be a problem in mass production. In this way, by reviewing the potential risks, it was possible to modify the development plan and efficient product development was carried out.

In addition, I was engaged in researching the market size and commercially available existing products, and was involved in building research and development plans based on it. We planned the design with a strong awareness of how to uniquely establish the

advantage of our products.

Summary

I realized the speediness and the light footwork through my internship at Nanotis Int. established within one year. For example, while researches at universities are usually carried out according to a certain order by accumulating results and theories one by one, it is difficult to pay attention to all data in venture companies, which have to establish own technologies as soon as possible. If a venture company cannot show good data within deadline, it will be difficult to procedure funds, and eventually everything will come to naught even if a venture company has innovative technology. In order to avoid such a situation, I strongly realized that the balance between the speed of progress and careful consideration have to be kept well.

Another important thing is considering mass production with maintaining its quality. The researches for our own PhD are conducted in small scale experiments. On the other hand, products can be used by everyone and guaranteed the quality in all cases. In other words, it is necessary not only to improve the maximum value of the product performance, but also to consider how the performance is guaranteed at the lower limit. I clearly felt the difference with academic research in that point.

Through the experience in a product development, I was able to learn values which cannot be considered in research activities at university, and I could recognize that there is a difference between academic research and product development. As the collaboration between industry, government and academics is strengthened, researchers are required to respond to the difference. Therefore, this internship was a very meaningful experience for me, and provided me with valuable opportunities for my future carriers.

Acknowledgment

I would like to express my sincere gratitude to Ms. Sakashita, CEO of Nanotisu Int. for receiving company in spite of being busy soon after its establishment. Also, I would like to express my heartfelt gratitude to my professor, Prof. Horacio Cabral, allowing me to participate in this internship. Finally, I would like to express my gratitude to the MERIT program stakeholders for setting up valuable opportunities for long-term company internship.