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Chapter 71: The Conqueror of AIDS (5)

The conference room at the Conrad was filled with silence. Everyone was confused because it was such an outlandish idea.

Tedros was the first one to speak and break the silence.

“First of all, our organization does not seek profit,” he said. “The World Health Organization is a specialized agency of the UN for healthcare. It is our job to guide and coordinate international health affairs to ultimately improve health universally. Your project to eradicate HIV… Of course we will do it. But what I’m curious about is…”

Tedros bit his lip.

“Is that really possible? You said you would eradicate HIV, but the idea of making a vaccine is shocking, but to lower the production cost to 0.1 percent of the current treatment?”

“Both ideas are possible. We will develop the vaccine using the facilities at A-Gen and start clinical trials this year. Karamchand can produce the treatment in mass quantities.”

“About that treatment. You said it was called Karampia? The one we are selling.” Sachet interrupted and asked.

“Yes,” Young-Joon replied.

“You said that you will synthesize the drug within yeast cells?”

“To be exact, we are only extracting and using the materials involved in the polymerization system in the yeast cell.”

Sachet was lost in thought. Karampia was a replica drug of Fuzeon, Roche’s AIDS treatment. It interfered with the mechanism of the cell membrane and the structure on the surface of the virus fusing together as HIV infected the white blood cell. It was in the spotlight in many countries as it had minimal side effects, it worked well, and there was minimal drug resistance as well.

But the production process was extremely picky. This drug was a very large, complex chemical that had a long centipede-like molecular structure. Each part was one chemical molecule, and they had to be synthesized one by one through chemical reactions, like building Lego. After thirty-six steps, it was complete. It had thirteen steps that took about a month, and countless scientists were worked to the bone for this.

'And he's going to reduce it to two steps that only take thirty-six hours?'

Was this how European people at the transition point to modern times felt when they heard about steam engines for the first time?

If it was anyone else, Sachet would have snickered and told them to stop talking nonsense, but the person who said it was a monster who had achieved unrealistic results one after another, such as induced pluripotent stem cells, a glaucoma cure, and a clinical trial for an Alzheimer's treatment. He was the biggest rising star in the scientific community. It didn't seem like he was bluffing; he probably did have that technology. But Sachet had one concern.

"To be honest, the problem arises from the moment we lower the production cost to 0.1 percent of what it was before. I don't have the slightest clue as to how I should alter the price because the price break is so severe."

"Lower it so that all AIDS patients can survive," Young-Joon said. "Once Karamchand's factories begin working with our new yeast cell synthesis technology, I don't want anyone dying from AIDS anywhere in the world."

"It might be possible if the production cost is 0.1 percent. But… I don't know. I've never seen such a big technological innovation. I also can't imagine producing big enough quantities to supply the entire world," Sachet said.

"It probably won't be easy, given how huge the job is. That's why the Director-General of the WHO is here right now."

Tedros' eyes widened.

"Me?"

"Isn't it the WHO's role to coordinate the global health industry?" Young-Joon asked. "If we have this kind of technology and Karamchand's facility, the WHO must take responsibility to help Karamchand and supply Karampia to every AIDS patient in the world."

Tedros slowly nodded with a surprised look on his face. He said, “Although I need to do some calculations, it should be possible with the production cost falling to 0.1 percent. If it’s not possible with Karamchand’s facilities alone, we can partner with other pharmaceutical companies.”

“Yes. and we have to distribute the mass-produced drugs as well. Like Africa, there are a lot of poor developing countries that are at war or have divided governments due to civil wars,” Young-Joon said. “As the government isn’t properly carrying out its duties, it will be that much harder to distribute the drugs. The WHO must make sure to solve that problem.”

“I see. I will do whatever I can,” Tedros said with a stern look.

“But Doctor Ryu, if this really succeeds and we destroy AIDS, how long will that take?” Sachet asked.

“I don’t know. It depends on how many countries our Director-General can get support from and how active he can get them to be,” Young-Joon replied. “If it’s really fast, three years. If we’re slow, it’ll take decades.”

“Let’s just say that it takes three years. If HIV is eradicated, wouldn’t one of our pipelines disappear?” Sachet said. “And to be honest, I’m not confident that we will be able to secure our livelihood in three years. Unlike A-Bio, we don’t have the monstrous pace of research that can print out new drug candidates every few months.”

“That’s true. You could be put in a difficult position.”

“I’m sorry for being so crude, but if the technology you told us about is really true, this is a very dangerous variable for us, not good news.”

“I understand, and that’s why it’s a relief, right? You found out right now that a technology that can destroy your company,” Young-Joon said. “Some places like Roche might be unsuspecting and take a huge hit to their sales, but Karamchand has time to prepare.”

To be honest, Sachet knew as well; he didn’t have a choice in this matter. It seemed like Young-Joon was asking for his cooperation, but Young-Joon was giving Karamchand, who was destined to become unemployed from more advanced technologies, a last chance.

Young-Joon had nothing to lose. He could just push back their three-year plan to eradicate HIV for fifteen years and do it himself at A-Gen. It will take a long time for A-Gen to do it as they had never touched the AIDS drug industry, but that also meant that it wouldn't affect their company sales even if AIDS was destroyed. The reason why Young-Joon was presenting Karamchand with this offer was because it was the shortest way to eradicate AIDS and a way to save time.

If Karamchand lost Young-Joon, it was obvious that the one who would be unsuspecting and take a huge hit to their sales would be Karamchand, not Roche. But unlike Roche, Karamchand wouldn't be able to recover from that kind of damage.

"But you don't have to be that worried," Young-Joon said with a smile.

"We don't have to worry?"

"Right now, medicine is moving onto the magic

Chapter 72: The Conqueror of AIDS (6)

Gero Hutter had an interest in Young-Joon and the next-generation hospital for a long time. In particular, he wanted to work at the next-generation hospital from the moment he heard about the plan to build it. But he didn't think he could live in the unfamiliar East Asian culture, and the patients he was in charge of in Germany weighed on his mind.

"You don't have to go to Korea because this is an international project," Horkheimer said. "Stem cell technicians from A-Bio will be dispatched around the world. They are going to design stem cells and hematopoietic cells from a patient sample and manipulate CCR5. But the hospital facilities will have to be changed a little for them to use."

"Then can it be done at our hospital as well? Is it turning into a next-generation hospital? "We can't go that far because we lack the know-hows, and it's not like we hired any stem cell technicians. But we can get A-Bio scientists to use this place if we change the facilities a little. Then, AIDS patients in Germany won't have to go all the way to Korea."

"..."

“The WHO said that they will fund the renovation of hospital facilities around the world. In other words, we are using it as an outpost so that the A-Bio headquarters can use it for the eradication of HIV.”

“I see.”

For some reason, Gero Hutter felt very moved.

“This is a war on HIV. The WHO declared war, and the commanding officer is Doctor Young-Joon. Karamchand Pharmatics is supplying the munitions,” Horkheimer said. “You are the only doctor who has destroyed that virus before. If you join them, the hospital will fully support you. How does that sound? Will you accept the new technology?”

Doctors were different from scientists. Scientists discovered truths hidden in the natural world, and they found joy in inventing a new technology. On the other hand, doctors were more interested in treating patients than new things; they were quite conservative towards new technology, just like how Hong Ju-Hee, the doctor from the newborn intensive care unit, contemplated for a long time before using Veratex on Blue. It was because it was their fault if something went wrong with the patient.

It was true that the patient could live with drugs like Karampia, and if they were a citizen of a developed country like Germany, they could live for a very long time. But what if they pushed for a bone marrow transplant as treatment and something went wrong? It was pretty common to see drugs that were successful in clinical trials failing in actual hospital settings. On top of that, if it was a unique new drug that had undergone high-level techniques of designing stem cells and manipulating genes?

As a doctor, Gero Hutter knew that there were risks. Horkheimer was asking him because he knew that as well. Usually, they would see if it went well in other hospitals before adopting it. But he still remembered the feeling he felt when he could no longer see HIV in Timothy’s body. It was a great elation and joy, and an infinite sense of victory at the fact he destroyed a difficult enemy like AIDS. That was more intense and stronger than any other reward he had ever gotten in his life as a doctor.

“I will go.”

Gero Hutter made a decision. He was going to take on a part of this project. There were definitely risks and it wasn't going to be easy, but he wanted to do it. As a doctor, he had to do it.

"Please make a stem cell research facility at our hospital. Please tell Doctor Ryu that the medical school at LMU[1] in Germany is with him."

* * *

As Young-Joon's three papers published in *Science* blew up in a row, the world began to focus on A-Bio again. Everyone now knew where HIV eradication, the huge project of the WHO, began from. In fact, the project proposer on the official documents released by the WHO was Young-Joon as well. His name was being discussed on many broadcasting networks.

This project drew a lot of attention from the general public. After the WHO's announcement, AIDS ranked higher in the Google's searched term ranking as compared to porn. Of course, the web was going crazy over the paper as well.

—This science is out of this world.

—I'm getting so high on national prestige I don't even have to get drunk or smoke. All I have to do is watch the news.

—I woke up to see Ryu Young-Joon permanently eradicating something that was incurable up until yesterday. Did he take a time machine again?

—A HIV vaccine, treatment, and cure all at once! It's all-inclusive.

—A man who makes the WHO move… Who are you?

—At this speed, cancer will disappear in ten years LOL

—But people's sex lives are already promiscuous. Isn't it going to run wild when HIV is eradicated?magic

└It doesn't matter for you since you don't get any either way.

—I watched Bohemian Rhapsody yesterday. Freddie Mercury would have lived longer if Ryu Young-Joon was born a little bit earlier. How unfortunate.

—Ryu Young-Joon is actually an alien. I saw it for myself.

“Hey, your fan club is going crazy right now,” Park Joo-Hyuk said. He was having lunch with Young-Joon in his office.

“Do you want me to read it?”

“No,” Young-Joon replied briefly as he read something on his phone.

“This is super entertaining though. Hey, there’s a photo of you sitting in a time machine, too.”

“...”

“Are your eyes glued to your phone? Who are you texting? I’ll let you off the hook if it’s a girl.”

“I’m reading a paper.”

Park Joo-Hyuk peeked at Young-Joon’s phone, then sat back, clicking his tongue.

“You’re addicted to work, seriously. You’re either in a meeting or reading papers, aren’t you?”

“I do experiments now.”

“Oh, right. You have to draw chimpanzee blood, right?”

“I’m done with that one. It has to go into clinical trials now.”

“What’s going on with the vaccine? Is that in clinical trials?”

“It’s in the preclinical phase right now. But it will happen soon because we have all the strategies planned out. Good data, too. Actually, I have to go to a meeting in the afternoon because of that.”

“A meeting? With A-Gen?”

Park Joo-Hyuk tilted his head in confusion.

“A-Gen is in it, but there’s one more.”

“Where?”

“The International Vaccine Institute.”

It felt like international agencies would only be in places like New York or Geneva, but there were dozens of places that had offices in Korea. Surprisingly, there was an office that acted as the headquarters for an organization under the UN: it was the International Vaccine Institute located within the Research Park at Jungyoon University.

Like most public interest organizations, it wasn’t very big. There were also only one hundred forty scientists from sixteen countries, and thirty of them were Korean. To be honest, their research and development infrastructure was a little lacking compared to transnational pharmaceutical companies like A-Gen.

However, the International Vaccine Institute had excellent public confidence. It was convenient to carry out international clinical trials as they were an international agency, and people trusted in them because they were a public interest organization. On top of that, they had recently developed and gained approval for a new product that reduced the cost of the cholera vaccine, which was originally thirty dollars, to one dollar. They distributed that to citizens in cholera-stricken areas such as Asia and Africa in 2009 and gained considerable recognition from developing countries. Other than that, they had conducted programs like DOMI, the Diseases of the Most Impoverished, to destroy typhoid fever and dysentery. They were a successful international institute.

Then what about AIDS? The International Vaccine Institute hadn’t touched AIDS yet. But four years ago, Doctor Jason Kim was appointed as the new Director-General. He was a world-renowned expert on AIDS research and vaccine development. He had written over one hundred forty papers. He was someone who was selected by Vaccine Nation as one of the the Fifty Most Influential Persons In Vaccines. For a long time, he wanted to develop a HIV vaccine. Although, he hadn’t made any progress yet because it was so difficult.

“Director-General Jason and A-Gen will do collaborative research. A-Bio will provide the key technology, and A-Gen’s scientists will develop it using A-Gen’s facilities,” Young-Joon said. “And the International Vaccine Institute will take that to international clinical trials and supply it to the entire world.

* * *

Jason Kim, the Director-General of the International Vaccine Institute, was having tea with two visitors. It was Yoon Dae-Sung, the CEO of A-Gen, and Nicholas Kim, the CTO.

Jason said, “Karamchand and other Indian pharmaceutical companies will mass-produce treatment using a new production method, A-Bio will develop a bone marrow transplant treatment that can cure AIDS, and we will make the vaccine. It looks nice.”

“A-Gen has already developed two kinds of vaccines before. And we have sufficient facilities for vaccine development,” Nicholas said.

“But a vaccine for HIV was an unbeatable fortress. Will Doctor Ryu’s idea really work?” Yoon Dae-Sung asked.

The human body produced these things called antibodies when a pathogen entered from the outside. It was like a natural drug that was automatically produced in the body. Like how different medicine was prescribed for different diseases, the human body also prescribed different antibodies for different types of pathogens.

If it was the first time the pathogen was infecting the body? There were no antibodies for that pathogen in the body. As such, white blood cells would fight it to death, analyze the components, and design and produce new types of antibodies. This process took a bit of time, but the next time the same pathogen came into the body, it could be quickly taken care of as the body already had antibodies. People who were bedridden for two weeks and about to die during the first infection would just feel a little tired during the second, and they would feel fine after a good night’s rest. Simply put, they would not be infected.

Vaccination was a technique that artificially created antibodies in the body. They would damage pathogens so that they could not cause diseases, then put them in the body to train white blood cells to design and produce antibodies.

But for AIDS, that training wasn’t easy. Even if they put in damaged HIV, they would be infected if they were exposed to it again. Because of this, HIV vaccines that had been developed in the past had failed.

“What do you think, Doctor Jason, as the greatest expert in AIDS and vaccinations?” Nicholas asked.

“Just looking at the data in the paper Doctor Ryu published in *Science*, I think it has potential,” Jason said.

Knock knock.

Jason’s secretary knocked on his door.

“Doctor Ryu is here.”

The three of them stood up right away. Young-Joon, who opened the door and came in, looked a little tired, but his eyes were bright.

For some reason, Nicholas felt proud. He hadn’t done anything to help Young-Joon’s growth, but he was pleased as the young man, whom he had known before he got famous, was growing at an astonishing speed. Now, he was big enough to have a meeting with the Director-General of the International Vaccine Institute, and the CEO and CTO of A-Gen. He was good enough to move international health agencies and carry out a global healthcare project. But this man’s growth wasn’t going to stop here as he had more things to do in the future.

“I will explain the HIV vaccine project. After I hand over the technology and preclinical data today, A-Gen and the International Vaccine Institute can continue the rest,” Young-Joon said as he handed out the presentation.

“What is this?” Yoon Dae-Sung asked as he held up the document. There were diagrams of seventeen types of antigens on it.

“The reason why past attempts to develop an HIV vaccine failed is simple,” Young-Joon said. “It’s because HIV evolves rapidly. Even if we administer a vaccine and create antibodies against the virus, HIV will quickly adapt to it. It will evolve to a variant that has resistance to that antibody.”

“That’s right.”

This had already been reported in his paper, and Yoon Dae-Sung, Nicholas, and Jason had all read that paper already.

“Then, it is actually simple. We just have to make an antibody against that variant with the vaccine.”

Viruses were faster than vaccines. Even if an antibody that was made from a vaccine chased after the virus, it would run away faster. No matter how great the vaccine was, it would never be able to catch the virus.

But if another vaccine was in the escape route of the virus? If an antibody against a variant that had resistance to the previous antibodies already existed in the body? The way for police cars that were slower than the perpetrator's sportscar to catch them was to corner them from all sides. Like this, they would create many different types of antibodies at once and not give the virus room to escape.

"In the paper, you used four different types of vaccines. I saw the animal experimentation data that ninety percent of HIV could be prevented," Jason said in astonishment. "Your idea to track the virus' evolution pattern and create vaccines against that to use all at once is revolutionary, and your ability to actually perform that is shocking as well. Should we do the clinical trial now?"

"In the paper, we put out animal experimentation data that show the vaccine, which catches the four variant patterns, prevents as much as ninety percent of the virus. We only did that much because we didn't have enough time. But I added more from there. We got more variant patterns," Young-Joon said.

For a moment, Jason felt his head spin.

'Wait. So those antibodies on the documents he just handed out are…'

"There are seventeen in total," Young-Joon said. "It is a vaccine that can catch all the possible early and mid-term variant patterns that can occur in HIV."

This insane act of being able to analyze and predict a virus' evolution pattern was already shocking progress. It was amazing that Young-Joon had found four targets already, but seventeen?

'He found seventeen? Is this true? Is this possible with current biology?'

"With one shot, people won't be infected by HIV even if you directly inject it into the blood," Young-Joon said. "We tested it on one hundred mice and not even one was infected. Now, A-Gen can do chimpanzee experiments, and the International Vaccine Institute can begin clinical trials."

1. The acronym for Ludwig Maximilian University of Munich, a prestigious university in Germany. ☜

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“Where are you considering for the clinical trial?” Jason asked.

“I would like it to begin first in the Republic of South Africa, Nigeria, India, Kenya, and Russia. These countries have the most infected population. As such, I think measures to prevent the spread are urgently needed.”

“Don’t places like Zimbabwe and Uganda have more infected people than Russia?”

“But Russia has a high mortality rate,” Young-Joon replied.

Jason nodded.

“Alright. Leave it to me.”

The meeting went on for about two hours, with a technical lecture about vaccine development followed by a debate about adjustments to the clinical trials. Young-Joon was going to form a technological alliance with A-Gen and the International Vaccine Institute and supply the key technology. Pharmacotoxicity experiments and drug efficacy demonstrations were mostly completed in mice and beagles. A-Gen and the Institute would carry out the chimpanzee experiment and clinical trial.

“I will send you the information and data about the experimentation method by email. I have to be on my way,” Young-Joon said as he got up after the meeting ended.

“It’s been a while since we saw each other. Why don’t we grab a bite to eat?” Yoon Dae-Sung and Nicholas said together like they wanted some more time with him.

“I would also like to have a meal with you, Doctor Ryu,” Jason also added.

“Oh, we can have lunch together next time. I have to get to another meeting right away…”

“Where are you going?”

“The Ministry of Health and Welfare. The Korea Centers for Disease Control and Prevention want to meet me regarding some project.”magic

Young-Joon bowed, then left.

Staring at the door, Jason said, “He is so busy.”

“He’s the proposer of a huge project like HIV eradication. Even if he had multiple bodies, it wouldn’t be enough,” Nicholas said. “Let’s say that it takes a few years to determine the success or failure of that project. Assuming that it succeeds, he’ll not only get the Nobel Prize, but the Nobel Prize’s grandfather as well.”

“No matter how conservative the Nobel Prize Committee is, they would find Doctor Ryu themselves and give it to him for that kind of achievement.”

“It seems like he’s going to be a candidate again this winter. I’m excited. It’s nothing compared to HIV eradication, but curing glaucoma and a successful Alzheimer’s clinical trial are both pretty amazing things as well.”

“If the Alzheimer’s cure becomes commercialized, he’ll get the Nobel Prize even if he doesn’t eradicate HIV. If he does both, a Young-Joon Prize will be created.”

As Nicholas and Jason were raving about Young-Joon, Yoon Dae-Sung had more mixed feelings.

“Oh Mr. Yoon. Isn’t Doctor Ryu a director at A-Gen?” Jason asked.

“Yes, that’s right.”

“Then when you retire, you can merge with A-Bio and put Doctor Ryu as the CEO. They are an affiliate anyways, and won’t A-Gen stand at the top of the global pharmaceutical industry if you combine with a company like that?”

Nicholas snuck a glance at Yoon Dae-Sung. What Jason said could happen in places like the U.S., where entrepreneurship was strong. But in Korean corporate culture, it was common to pass down management rights to their children.

‘Yoon Bo-Hyun.’

He was Yoon Dae-Sung's son, who was working at A-Gen and learning to manage the company. If it wasn't for him, Ji Kwang-Man would have stood by Young-Joon already, and not attacked him so hastily.

Would Yoon Dae-Sung hand over the company he had been working for since his father's generation to Young-Joon, a complete stranger? Or would he cause a conflict with Young-Joon for his one and only son?

Nicholas also had mixed feelings as he watched this confrontation. Yoon Bo-Hyun was the son of his old friend, and Nicholas had known him ever since he was a baby. To be honest, he felt a little sad when he thought of that boy, who only focused on studying and working with the responsibility of inheriting the family business and leading A-Gen, being pushed out by Young-Joon.

But right now, Young-Joon was the best intellectual of mankind. In addition, his ethics and character were great, and he would be able to safely lead the future of this revolutionary science. If Nicholas put aside personal emotions and only looked out for a better world, it would be right for Young-Joon to take that position.

'Yoon Bo-Hyun is a smart guy, but personally, I would like Doctor Ryu to take that position…'

Nicholas glanced at Yoon Dae-Sung like he felt bad for him. Ultimately, all the decisions would be made in Yoon Dae-Sung and Young-Joon's hands.

"I am considering it," Yoon Dae-Sung said. "But being outstanding as a scientist and the ability to lead a large corporation as management are two different things. Doctor Ryu is leading A-Bio well, but it is a small company if you just consider the size. Even if they have astonishing new technologies and a lot of money, they don't have a lot of employees compared to A-Gen."

"That is true." Jason nodded.

"If it is proven that Doctor Ryu is capable of leading A-Gen, I would consider handing over A-Gen to Doctor Ryu," Yoon Dae-Sung said.

Nicholas swallowed his worrisome groan. He was friends with Yoon Dae-Sung for a long time, but he couldn't tell when he was being sincere.

* * *

“No way.”

Ryu Ji-Won, who was walking into the main entrance of her school, stopped. It was because she noticed a huge banner on the main entrance.

[We support Alumni Doctor Ryu Young-Joon’s eradication of HIV.]

“Ugh…”

She was proud, but it was also a little burdensome. She also felt a little weird. As she walked to the lecture room, the topic of conversation of all the students around her was Young-Joon. She could hear two male students wearing jackets from the biology department chatting.

“Did you see Ryu Young-Joon’s Facebook?”

Ryu Ji-Won’s attention naturally headed towards them. Her brother was not on social media. What they were talking about was Young-Joon’s fan club.

“An A-Gen employee wrote this post, but apparently at the lab the person who posted was at before, Ryu Young-Joon cursed and called the lab director a piece of garbage and left. They said it’s a legendary incident.”

“He’s like an incarnation of research ethics.”

“I wish he would come to our school and teach our professor a lesson.”

“Yeah. If Ryu Young-Joon was a professor, I would consider going to grad school.”

“Even if he is a professor here, we can’t study under him because we don’t have enough credits, man. And you were almost put on academic probation last semester… If Ryu Young-Joon was a professor, Harvard graduates would apply to his lab. How would we get in?”

“Hey, we can start studying from now on. Ryu Young-Joon sunbae also studied in the same environment as us. We can’t be that good, but we could probably be good enough to study at his lab if he becomes a professor.”

“Yeah, I don’t think so.”

Ryu Ji-Won lowered her head and quietly walked past them. She quickly walked to the lecture room. In the Green Square, where the Student Hall and

the Central Library faced each other, there was a space where students could vote or survey people. Ryu Ji-Won stopped in her tracks again as she was walking past it.

[We stand against the development of the HIV vaccine.]

They had put up a small banner and a few students were surveying people.

'What is that? They're against the development of a HIV vaccine?'

Feeling bewildered, Ryu Ji-Won approached them.

"What is this?"

"Hello. It's a petition that expresses concern about A-Bio's development of the HIV vaccine. It would be great if you could participate," said the male student with curly hair as he handed Ryu Ji-Won the petition.

Surprisingly, there were already around a dozen people who had signed.

"Why are you against developing the vaccine?" Ryu Ji-Won asked.

"Well, we're not against it, but we're trying to say that it should be done with A-Bio's money, not on the taxpayer's dime."

"Isn't that the same thing? It's not like they are making something bad. What's the problem with making a vaccine with taxes…?" Ryu Ji-Won asked like she could not understand.

"It is bad. Vaccines are a medical practice that hasn't been proved completely safe. Vaccines aren't natural, and they have impurities. That's what is dangerous."

"What?"

"The human body has the ability to create antibodies against invading pathogens on its own. But vaccines recklessly inject pathogens into the body, right? Doesn't that alone make you feel uncomfortable? But there are other impurities in the things used to create vaccines. It's not natural materials, but preservatives like thimerosal. That's even more dangerous."

The male student showed Ryu Ji-Won a few documents and a poster.

“Take a look at this. It’s a paper that Andrew Wakefield, a conscientious doctor from England, published. Looking at children with autism, he found that all their symptoms appeared after receiving the MMR combination vaccine. Vaccines can cause autism.”

“...”

“The health authorities did not fully verify the dangers of vaccines, and they are doing compulsory vaccinations on children when they don’t know a lot about it. That is putting people in danger. There isn’t enough scientific evidence, and above all, it is an anti-democratic medical practice that violates the people’s choice and freedom as it is a mandatory vaccination.”

Ryu Ji-Won was barely listening to the student because she was thinking of who Wakefield was. She was familiar with the name as her brother, who was a science nerd and rambler, went on and on about the various issues in the scientific community whenever he bought her a meal. She was sure that it was a name she had heard of back then.

“Oh!” Suddenly, Ryu Ji-Won shouted. “I remember now. Didn’t that paper turn out to be wrong? So Wakefield had his medical license taken away…”

“That never happened!” shouted the student with a tense face.

“Weird. I think that’s what I heard.”

“Who said that?”

“... Someone I know who got his doctorate in biology.”

That was all Ryu Ji-Won said.

“Anyway, vaccines are dangerous. President Clump of the United States is also against vaccines. The president of a country that is very advanced in science, like the United States, is against it. He has even appointed an anti-vaxxer as the Chairman of the Vaccine Safety Committee. Vaccines are dangerous things that haven't been proven yet. Just think about it: why would you get a shot when you’re not sick and create a disease? Does that make sense?”

“...”

“And it’s even more dangerous in the case of the HIV vaccine A-Bio is developing right now. Do you know why?” said the student. “What will the people who were vaccinated think? Won’t people who were behaving from fear of AIDS get excited after a dose of the vaccine and start living promiscuously, meeting prostitutes and random people at clubs?”

“Um…”

“Not only is the HIV vaccine simply dangerous, but it has a deadly danger in that it could cause societal immorality. And there will be more homosexual people as well,” said the student. “We cannot understand why they are making such a dangerous product that hasn’t been verified yet, but we are against it being done on the taxpayer’s dime. We have supported Doctor Ryu, and we are all for everything else about treating HIV and AIDS, but not vaccines.”

“Alright. I’ll be on my way now,” Ryu Ji-Won said.

“Okay. Could you join our petition? This will be an important piece of information that delivers the nation’s message to A-Bio.”

“No, I’m good,” Ryu Ji-Won answered briefly, then left.

* * *

Yoo Song-Mi was Young-Joon’s secretary who was hired to help him with managing his schedule and other various tasks. As murderous as his schedule was, she was also extremely busy every day. But the good thing was that she was getting used to the busy schedule. She was a little clueless at first, but she was pretty good at her job now.

RIght now, Yoo Song-Mi was delivering an offer from SBS producer Na Sung-Jin to Young-Joon about going on TV.

“... So, they want you to come on it.”

“It’s a lecture-style live broadcast?”

“Yes.”

“Nah. How can I go on TV? I’m not a celebrity or a professor; I’m just a scientist.”

“But sir, I think it’s a good idea for you to go on this time,” Yoo Song-Mi said.

“Why?”

Yoo Song-Mi wasn’t someone who usually expressed her opinions. Young-Joon raised his head among the documents at the unexpected opinion.

She said, “There are a lot of people who are worried about the development of the HIV vaccine. I think it would be good for you to get on TV and explain it in detail.”

“Worried? About what?”

“I’m managing your email inbox, right? A lot of emails like that come in.”

Young-Joon had his personal email listed on the A-Bio homepage. Out of the hundreds of emails he got in a day, Yoo Song-Mi delivered the important ones to him.

“There are a lot more emails that support and root for the vaccine development. So when I got a few emails that were against it, I left them out. But I’ve been getting more.”

“…”

Young-Joon knew that there was going to be resistance as he did this huge project. To be honest, the most difficult opponents he had were those who rejected bone marrow transplants because of religious reasons.

‘If they are against the development of the vaccine, are they anti-vaxxers?’

They were the easiest opponent among the resistance he predicted.

“Let’s see what kind of emails they are,” Young-Joon said.

Chapter 74: The Conqueror of AIDS (8)

“Even though there are people who are against the development of the HIV vaccine, there are way more emails from people who support it,” Yoo Song-Mi said. “So, it will take a while for you to find them yourself. I will gather the emails that are against it and send them to you.”

“Yes, thank you.”

Young-Joon went back to working on his documents.

In thirty minutes, Yoo Song-Mi organized the email inbox. As a bonus, she showed up with a cup of iced americano.

“It seems like you always have one at this time.”

“Thank you.”

Young-Joon slowly went through his inbox. There were vaccine skeptics among students at the most prestigious universities in the country like Jungyoon University. There were more than that among the general public. They were quite concerned about the technology Young-Joon was developing.

[Dear Doctor Ryu Young-Joon. I am a citizen who has supported you for a long time. Do you know RCWM? It’s a movement to raise our children without medicine.[1] Vaccines are dangerous. It was nice that you developed a lot of good drugs and treatments, but I don’t understand why you are trying to go down an unverified and dangerous path…]

[My name is Kim Pil-Young, and I am a second-year history major at Jungyoon University. Recently, there has been a movement against the development of the HIV vaccine in the Green Square at Jungyoon University. I would like to ask you, Ryu Young-Joon sunbae. Vaccines are…]

[Doctor Ryu, if something like an HIV vaccine comes out, people’s sex lives are going to become more immoral and dirty. Doesn’t AIDS happen from dirty sexual intercourse? In fact, the percentage of AIDS is high in homosexuals who engage in anal sex. I think that AIDS might actually increase.]

Click.

Young-Joon closed his inbox.

—They are funny people. There are only two organisms in the entire world that were created from nothing: one is the common ancestor of all organisms, and the other is me.

Rosaline said.

—Organisms never just appear. Are they saying that HIV is magically created in thin air and causes AIDS while non-infected people have sexual intercourse promiscuously? That does not happen. It's not that easy even if ordinary scientists tried their hardest to create it by reacting all kinds of liquid cultures and organic matter with a thermocycler.

Young-Joon was lost in serious thought with his chin resting on his hand.

—You're bothered by it. I don't think you need to. Just ignore it. That's a kind of thing that would have worked before the nineteenth century when Pasteur was experimenting with a swan-neck flask.

"It's not that simple," Young-Joon said.

Vaccine conspiracy theories weren't a new phenomena. It wasn't something that could be dismissed as just ignorance. This was because the more developed countries with higher education levels tended to have stronger beliefs in vaccine conspiracy theories. In particular, it was especially stronger in highly educated, high-income Caucasian people in America. Personal experiences about the side effects of vaccines, and a sense of security that there were no life-threatening infectious diseases everywhere like developing countries. They were the ones who created distrust and opposition to vaccines.

In addition, a solid logic was created when those who were educated in democracy began to appeal to the individual freedom of choice. That was why President Clump of the United States appointed an anti-vaxxer as the chairman of the Vaccine Safety Committee.

Young-Joon, who was then working on anticancer drugs, thought it was ridiculous when he heard the news. How shocked would scientists who studied immunology and vaccines have been? In one American immunology journal, they commented that the appointment was an international embarrassment.

But that person was still acting in that position. That was how strong the opposition to vaccines in developed countries like the U.S. was. There were no full-fledged movements in Korea yet, but there was a possibility that the HIV vaccine would be the starting point.

—If that's what you are worried about, just go on the show.

Rosaline said.

—If the vaccine opposition is a type of immune response, you can be the vaccine itself. Make some antibodies against that opinion in Korea.

“I’ll think about it today.”

Young-Joon rose from his seat.

“I’m going to head home. You should, too, Ms. Song-Mi. It’s already past working hours,” Young-Joon said to Yoo Song-Mi as he headed out of his office.

* * *

Young-Joon had come home in two weeks. He was so busy that he normally spent the night at the company, and he didn’t even go home on the weekends. It was because he thought it was a waste of time for him to go home. He brought some clothes to the closet in his office, slept on the couch, and showered in the company shower room.

“I’m going to forget my son’s face. Come home often,” said Young-Joon’s mother, who had moved here a couple of months ago.

“Don’t pressure him when he’s busy,” his father lightly criticized his mother. “Young-Joon, don’t care about us and do whatever you want to do, okay?”

“I’ll come home often now,” Young-Joon said. “Recently, I had to stay up at work because I was so busy from eradicating HIV, but I can relax a little in a few weeks.”

“Oh, that’s a relief.” His mother tapped him on his shoulder. “You have to take care of yourself. If you get sick, nothing else matters.”

Ryu Ji-Won also came home early because Young-Joon was having dinner at home. It had been a while since the whole family had a meal together.

“How strange of you to come home,” Ryu Ji-Won said like she was fascinated.

“I’m here to see if you’re studying hard.”

“Actually, I have a confession to make.”

“What is it?”

“I used your computer because mine broke when I was doing my assignment, but I broke that, too.”

“What? What kind of assignment were you doing that made you break two computers?”

“I was downloading some program…”

Ryu Ji-Won glanced at Young-Joon in a little bit of guilt, then giggled cutely.

“Sorry. I’ll make sure to fix it with my own money.”

“Isn’t that the allowance I gave you?”

“Uh… That is true… Anyway, I’m sorry. Oh right, I saw vaccine conspiracy theorists at school today.”

Ryu Ji-Won quickly switched the topic.

“Conspiracy theorists?”

“They were talking about how vaccines are dangerous, they can’t be trusted, and that AIDS will actually increase if you create something like that because they will live more promiscuously. They were petitioning.”

“How can people like that exist?” Young-Joon’s father said angrily with a frown.

“I guess they could think that way. To be honest, I felt that way in the past,” Young-Joon’s mother said. “It’s so worrisome and hard for mothers to see their baby get a shot. It’s so hard to make the decision to vaccinate them when they’re not even sick.”

“Oh honey, please don’t say that anywhere else. How can you say that when you’re Young-Joon’s mother?”

“I’m not saying I feel that way right now; I’m just saying that I understand. Mothers who raise their children without medicine don’t do it because they are bad people. What kind of mother would want to ruin their kid’s health on purpose? They think that they are doing the best they can with wrong information,” Young-Joon’s mother said. “And I think it’s possible for them to

believe that. How can regular people know what vaccines are? I studied a little after Young-Joon went into biology, but it was so hard that I couldn't understand any of it."

"*Sigh*."

"You don't know how vaccines work, either."

"... Actually, I'm thinking about going on TV because of that," Young-Joon said.

"TV?"

Ryu Ji-Won's head shot up.

"You're going to be on TV?"

"I've had a lot of offers for me to go on lecture programs or talk shows. I declined all of them though. But I'm thinking about it now. I thought I'd go and explain about vaccines and AIDS."

"Then you should do it!" Ryu Ji-Won said excitedly. "I'll do your makeup before you go on. Split the fee? You take seven, I take three? Yes?"

"I don't need makeup. I'm not a celebrity or anything, so why would I do that?"

"Hey, you don't know what you're talking about. If you go on something like that, it'll be forever pinned in your fan club."

Young-Joon got goosebumps on his arms when Ryu Ji-Won put it that way.

"But I haven't decided whether to go on or not."

"Why?"

'A scientist should only talk about the data and evidence in their paper.'

Young-Joon swallowed his words as it was obvious they were going to be frustrated with him. But for him, it wasn't an easy decision.

In his lifetime as a scientist, he had seen a lot of scientists get fame from things other than papers: scientists who worked on television, news columns, radio networks, and other mass media. The professor in the lab next door

when he was studying at Jungyoon University was someone like that. The graduate students of that lab were abandoned; they had barely gotten any supervision from the professor, as the professor was busy going on TV and writing books that they could barely make it to the lab once a week.

The faces of his colleagues next door who were complaining as their graduation became distant kept popping up in Young-Joon's head.

That lab barely published any papers. That professor didn't read papers either. The research did not progress, and the professor was appealing to the public and intoxicated by his fame. To Young-Joon, that too seemed fake.

Of course, he might go on television just this once and go back to being a scientist. But the hardest part about anything was the first time, right?

'I already changed so much because of Rosaline. But can I really give up my attitude as a scientist?'

Young-Joon was worried because he didn't have confidence in himself.

"Whether you go on the show or not, you should do whatever you want to do. Everyone supports you," Young-Joon's father said.

"Yes…" Young-Joon replied.

Ring!

A new email came into his inbox.

[Hello. I'm a woman in her forties living in Seoul. I am emailing you after seeing the petition against your vaccine development at Gangnam Station.]

He clicked on the email because he was curious what kind of worries she was going to talk about. But the rest of the email was unexpected.

[My second kid is at Jungyoon Hospital because he's sick, and there was a baby who was two years old. They had a bunch of machines hooked up, and they looked very sick. It turns out that the mother was in RCWM, so she didn't vaccinate them or give them any medicine because she wanted to raise them without medicine. People who are in RCWM are probably trying to raise the baby in a healthy way with their own beliefs. But eventually, the baby had brain problems after they suffered from a major injury, and they have to live

with a permanent disability. The mom cries every day, saying that it's her fault. I support you, Doctor Ryu. I hope you keep going with your research no matter what people say.]

Young-Joon let out a sigh.

'I'd rather fight Schumatix.'

He sent Secretary Yoo Song-Mi a text message.

[When you get to work tomorrow, please set a date for me to go on the show. And I have a request about the audience. I'll call you tomorrow.]

* * *

Kim Pil-Young, a second-year history major, was petitioning at Mapo-gu. The number of participants for the temporary organization, "Group Against the Development of the HIV Vaccine", or GAHIV, quickly grew and was now nationwide. They were even on the news a couple days ago. People at GAHIV printed that video on a huge poster and held it up wherever they went; it was a screenshot of the anchor on screen and the caption, "Group Against the Development of the HIV Vaccine."

The number of GAHIV people gathered in Mapo-gu today was huge. There were around a hundred people as this was an important location in this movement.

"Hey you. Do you know where this is? How dare you do something like this here?" said a man in his fifties as he clicked his tongue. "This is right in front of the next-generation hospital that Doctor Ryu is running! How dare you petition something like this here?"

"Vaccines are really dangerous, sir. You must think about what kind of societal impact it will have when something like that is made." Kim Pil-Young began to desperately convince him.

"Hey. You're doing this here because it's in front of the hospital, right!?!" A little female student wearing glasses interrupted.

"Isn't this the first place that Doctor Ryu will supply the vaccine once it's made?"

“What…”

The moment the man frowned like he was baffled, GAHIV began shouting from behind him.

“That’s right!”

“We have to petition here because it’s the hospital!”

“We are against the development of the HIV vaccine!”

Kim Pil-Young got close to the man with a pen and the petition. He said, “Sir, there is a paper that vaccines cause autism. The more developed the country, the less its citizens get vaccines. Why do you think that is? In Japan, a HPV vaccine had side effects as well. Are vaccines really okay? Do you know how vaccines work?”

“Um…”

“Like how you gain resistance if you take too many antibiotics, vaccines also…”magic

“Hello!”

Suddenly, a young man and woman appeared in front of Kim Pil-Young.

“We’re from SBS.[2] GAHIV is doing the petition here, right?” the woman asked.

“Yes! We are,” Kim Pil-Young said with a bright smile. “Are you interviewing us?”

“No.” The woman shook her head with a smile. “Doctor Ryu Young-Joon is going on a lecture-style program, and he is going to talk about the HIV vaccine and the infection process of AIDS, and do a live debate.”

“Pardon?”

“He asked us to fill the audience with people who are against the development of the vaccine,” she said. “If it’s alright, could you come on our show?”

1. In Korean, it's called *An-A-Ki*, which stands for the Korean for raising children without medicine. It is a movement that believes in the natural healing power of the body and strives to not use modern medicine. ☜

2. SBS is a famous broadcaster in Korea. ☜

Chapter 75: The Conqueror of AIDS (9)

A hundred people signed up to participate in the live lecture and debate. They couldn't take more than that as the studio was a very unique place: it was Room 411, a lab in Lab One at A-Gen. This lab was made and used for science high schools[1] or university students to observe experiments.

A-Gen had made this in order to improve the company's image, pushing the slogan for the popularization of science and societal contribution. It was much larger than a regular lab, and it had a structure that was fit for a lecture, such as having a separate podium at the front of the room.

Young-Joon wanted to do the lecture program here.

—Filming in a lab?

Producer Na Sung-Jin found it ridiculous when he first heard the idea, but after thinking about it some more, he felt like it was actually going to be a very entertaining sight. The background would target the taste of the viewers who wanted to see the star scientist. It would be more interesting than meeting Young-Joon on a podium with a suit on, right?

—I'll get it ready. We will also gather the audience like you want.

* * *

Young-Joon borrowed the pAFM, the super-resolution visible photoactivated atomic force microscope, from Lab One. It was an optical microscope that could see one hundred thousandth of a piece of hair using light. It had outstanding performance among existing optical microscopes, and it was pretty expensive as well. A-Gen had this kind of thing because well, they were A-Gen, but Young-Joon had to wait a little in order to borrow this equipment.

There were a few more things that needed to be set up in Room 411 for his lecture. Ten days were needed in order to gather those things and the audience.

In the meantime, Young-Joon headed to India. Karamchand Pharmatics was now starting the production of the treatment, and Young-Joon was asked to conduct a technical inspection of the system.

In the meantime in Korea, another issue was unfolding noisily. Professor Sung Yo-Han, the optometry specialist of the next-generation hospital, opened a press conference. He was not alone; beside him was the most famous patient in the whole world right now, Ardip from India.

He was the first patient in the world to use the glaucoma treatment kit, the first commercialized stem cell therapy, the patient who got a tumor in his eye and was almost sacrificed by Schumatix's evil scheme, and the patient who informed the world of A-Bio's advanced new technology of automatic stem cell death. The whole world was angered at the horrible things Schuamtix did to him, and voices supporting Ardip came from everywhere.

The hashtag, "PRAYFORARDIP" dominated social media, and countless intellectuals, celebrities, and politicians criticized Schumatix and issued statements praying for Ardip's recovery.

How many people would experience such ups and downs as an ordinary patient? Among patients, he was as famous as Timothy Ray Brown. As the international medical industry was busy with the HIV eradication project, there were countless people who were curious about what happened to Ardip after the incident.

"We have cured Ardip's glaucoma at the next-generation hospital," Sung Yo-Han announced.

Click! Click!

Flashes poured onto them from all over. The reporters stared at Ardip with curious eyes. It was understandable that they were releasing this as this was an issue related to the confidence in the glaucoma treatment product. But was there a reason to open a press conference and bring the patient himself just for that?

Professor Sung Yo-Han said to the puzzled reporters, "Ardip told me he wanted to have a press conference. That is why I arranged this. The professional translator that was prepared by A-Bio will deliver the patient's message."

Sung Yo-Han handed Ardip, who looked nervous, the mic.

“Feel free to talk.”

“Y… Yes…”

Ardip gulped as his hands trembled. Dozens of reporters were staring at him. As he had lived as an insignificant and poor citizen, the interest was so overwhelming that it felt like he was being crushed.

But he had to say this for Young-Joon and for the women at the red-light district that looked after his life until now.

Ardip teared up even before he opened his mouth.

“I heard that Doctor RYu is developing an HIV vaccine. I also heard that there are a lot of people who are against it. I saw it. I saw it with my own two eyes because I can see now. They were petitioning in front of the next-generation hospital.”

The reporters look shocked. It was because they thought he would criticize Schuamtix, praise A-Bio, or talk about the glaucoma treatment, but Ardip began talking about the HIV vaccine out of the blue.

“Please don’t do that. Please. I beg you. You don’t know what kind of disease AIDS is. I grew up in Kamathipura in Mumbai, India,” Ardip said. “Kamathipura is like hell. It’s the worst red-light district in the world, and that place is infested with AIDS.”

Kamathipura was the biggest and oldest brothel in Asia. It was Hell where once someone came in, they could never get out. There were about twenty thousand prostitutes that lived there. A significant portion of them were minors, but there were too many that it was hard to estimate. There were even children under the age of ten.

Some women came to this place on their own after reaching the verge of starving to death from poverty, some were sold here by fraud, and some were kidnapped from Nepal and handed over by human trafficking. There were also women who were born here and were raised as prostitutes.

Usually, women would be kidnapped or sold when they were in middle school in Korean age, and locked in a 3 pyung[2] express our deepest regrets as alumni of this school, and…]

The conservative organizations were anxious at the different atmosphere and strange public opinion. The GAHIV homepage sneakily changed their goal from the rejection of the development of the HIV vaccine to rejection of the use of the HIV vaccine in Korea.

Time flew by, and it was the day of the live show. In Room 411 of Lab One at A-Gen, Young-Joon went up to the podium in front of one hundred people and a dozen cameras.

“Hello. I am Ryu Young-Joon from A-Bio,” said Young-Joon as a greeting. “A few days ago, I visited Karamchand Pharmatics in India. I was asked for technical advice on the production of Karampia, an AIDS drug. But in the meantime, something quite noisy happened in Korea,” Young-Joon said. “I completely understand how Ardip feels. And now, I have a sense of responsibility to develop the HIV vaccine as soon as possible and distribute it to Kamathipura and the world.”

Kim Pil-Young felt his palms sweat.

Young-Joon stared right at the audience.

“Before we go into the lecture, I want to ask you. Is there anyone here who is against my research?”

In the silence, Kim Pil-Young slowly raised his hand.

“Why are you against it?” Young-Joon asked.

His voice was not aggressive in the slightest; it really seemed like he was asking out of curiosity.

Kim Pil-Young replied, “Vaccines… are drugs that haven’t been proven safe.”

“Why do you think so?”

“There’s a paper that a British doctor wrote. It was published in Lancet, a famous medical journal. It talks about how the thimerosal contained in the MMR vaccine causes autism in children.”

“That paper was fabricated. The British General Medical Council criticized that fact in 1998. There was a record that five out of the twelve patients were already diagnosed with underdevelopment. And mistakes were found in hospital records for the remaining seven cases as well. That was why Lancet withdrew the paper,” Young-Joon said. “And that doctor was stripped of his medical license from the British Medical Association because of fabrication. Do you know that as well?”

“... Isn’t that because of the pressure from pharmaceutical companies?”

“The fact that patient information was fabricated in that paper is explained in detail in a paper published in the British Medical Journal in 2010.”

“I don’t believe that paper.”

“Then how can you trust the paper that Lancet withdrew, stomping on their own pride, and that the General Medical Council criticized as being false?”

Kim Pil-Young tried to say something, but didn’t. Then, he said, “The HPV vaccine is mandatory, but even if you don’t get the vaccine, only 0.007 percent of people get cervical cancer. I’m saying that you don’t need to get the vaccine. This is the statistic released by the American Cancer Society. There are only twelve thousand cervical cancer patients among one hundred seventy million American women. Why do we have to get the vaccine while taking the risks for side effects when this is the case?”

“Can you say that in front of twelve thousand patients?” Young-Joon grinned. “We can discuss further about the gains and losses of vaccines, but let’s find out about the more clear-cut things,” Young-Joon said. “I am also curious if A-Bio’s HIV vaccine is really dangerous, if it has side effects.”

He pulled out a small vial from the drawer.

“The thing in this vial is the HIV vaccine. It is the HIV vaccine we have developed: the one that we have completed the formulation of, and the one that will enter clinical trials soon. You can be immune to HIV if you inject five milliliters into your veins,” Young-Joon said. “A week ago, I administered this to my own body.”

The crowd gasped. Producer Na Sung-Jin was surprised at the shocking news.

“Now, let’s see the effects. Let’s see what kind of antibodies are in my blood, and whether it can destroy HIV,” Young-Joon said. “I think that there will be a limit to delivering its safety and efficacy with words. So today, I will show you myself.”

Young-Joon walked to the front of the microscope.

“This is called a super-resolution visible photoactivated atomic force microscope. This has such a high resolution that you can take pictures of viruses. A-Gen modified the equipment so that it could take videos.”magic

Young-Joon pulled out another vial.

“And the thing in here is an active form of HIV.”

Young-Joon drew up one milliliter of the virus.”

“Doctor Ryu!”

Horrified, Na Sung-Jin shouted as he got up from his seat. But he was too late. As everyone was in shock, Young-Joon injected the virus into his arm.

The lab was filled with silence. The audience was frozen.

Young-Joon stared at them with a calm face.

“I will not release my vaccine only in AIDS-risk areas in developing cultures and conduct clinical trials there when there is so much resistance because of its danger,” Young-Joon said. “But also, I will not take a defensive stand against this vaccine development. As Ardip said, people in high-risk areas need this technology as soon as possible. That is why I am administering and testing it myself.”

Young-Joon switched the syringe and drew blood from his arm. He mixed in a dye that stained white blood cells into his blood and put a droplet on the glass slide. Then, he turned on the microscope. A video of the virus rushing to the huge white blood cells was shown on the large screen.

“Let’s see together what happens to the virus.”

1. Science high schools are a special type of school where there is a large focus on science and technology. You must qualify to attend. ☜

2. A Korean unit of size. It is roughly equal to 107 square feet.[ref] room. The room would be small, and the ceilings would be so low that they wouldn't even be able to stand up fully. Sometimes, they would stay in that windowless room for years and never be able to come up. These women lived and prostituted in this place, which was not that much different from an animal pen.

Also, these women shared prostitution beds with each other because they didn't have their own. From dawn until they went to sleep, these women had to take customers, no matter if they were on their period, pregnant, or had a miscarriage.

The money they received for this was around a few hundred won, but most of it was taken from them as a room fee by gang members. To maintain order, they used violence, verbal abuse, and even electrical torture.

But there was something even scarier than that. The true ruler of terror that reigned over that region was not people, but a virus. The infection rate of HIV was sixty percent; half of the people who lived there were suffering from AIDS.

Everyone fell into despair when the women in the next room, which was divided by a cardboard partition, got sick. It was unimaginably painful that this disease, which infected the only people these women could rely on and consider as family, was an infectious disease. It was the horrid enemy that robbed them of their last strand of hope and their affection and care for each other. AIDS divided people from people; it was the devil that took away life and hope at the same time.

From a ten-year-old child to an elderly in their sixties, this disease did not discriminate. It killed the gang members who ruled over the women, the rich tourists from strong nations who visited Kamathipura, and the women living there.

The worst case was to give birth to a baby while being infected with HIV. The baby would have HIV from the moment it was born. It was sinful that it was born into that hellhole, but the mother was also giving it HIV.

"AIDS is not what you think it is," Ardip said while tears ran down his face. "That infection is a curse. It is the devil that takes away the last strand of hope from people who have nothing. I heard everything the people who are against the vaccine said. The things about the side effects or homosexuality increasing."

Ardip bit his lower lip.

“How… Why does that matter? Even if that is true, is that a reason to stop the vaccine development? I have been blinded by glaucoma, and I have a limp in my left leg from a stroke. But still, I’m more afraid of AIDS. When you go to sleep, you don’t worry about whether you were infected by HIV or not. You are not in terror at the news that someone is coughing in the morning. That is why people in developed countries can worry about the side effects and resist vaccines,” Ardip said. “Please let him exile that disease from Kamathipura. I beg you. Please do not stop Doctor Ryu. The people who live there are like family to me. Please rescue those people.”

Ardip came out of chair and begged them, bowing on the floor. Sung Yo-Han quickly got him off the floor and settled the situation down.

“We will not be receiving any questions for the condition of our patient.”

* * *

Ardip’s appeal about the place called Kamathipura and the situation of AIDS there had quite an impact. The issue about AIDS cure and HIV vaccines was heated. Kim Pil-Young was also shocked as he heard firsthand from a local survivor that the infection rate of HIV was sixty percent.

The first place where the atmosphere changed was Jungyoon University. The booth where they were petitioning was in pieces. A poster with a long message written by students was put up in the Central Library.

[Recently, we have seen a group on campus leading the movement against the development of the HIV vaccine and campaigning for signatures. The biotechnology major students, batch of 2019,[ref]This is the Korean equivalent of “Class of…” in university, but the year is when they enter, not graduate. ☜

Chapter 76: The Conqueror of AIDS (10)

“Ack!” shouted Nicholas, who was watching TV, as he quickly got up. “What is he doing…?” Everyone froze as it was so shocking.

Nicholas thought that it wouldn't be easy to break the strong belief of anti-vaxxers with some vague logic and persuasion, so he expected Young-Joon to take strong action, given his personality. But he didn’t think it would be this dramatic. To administer the vaccine and HIV to himself?

“Wait, he’s putting HIV inside his own body? Is Doctor Ryu crazy?”

“Can he do that?” Joo Hwa-Young, the lab director of Lab Five, asked Nicholas as they were watching TV together.

“Whether he can or not, people usually aren’t able to do that, no matter how confident they are in their product,” Nicholas said.

“Isn’t human testing against research methods?”

“Um…”

Nicholas thought for a moment.

“It is normally against research ethics for the frontline experimenter to experiment with a sample from their bodies,” Joo Hwa-Young said.

“But Director Joo, Doctor Ryu is not only the frontline experimenter, but the project leader,” Nicholas replied.

It was normally against research ethics for a frontline experimenter to experiment with their own sample; it was banned by law, and the project leader would get punished. This wasn’t originally in the ethics guidelines, but it was created after a professor at a university forcibly collected eggs from his female students and conducted stem cell experiments.

“The reason the human research guidelines prohibit the self-experimentation of researchers is to protect them. If they allow that, superiors like a CEO or professors can force their subordinate scientists to donate samples or do experiments,” Nicholas said.

“That’s true.”

“But it isn’t a problem if you use the project leader’s sample.”

“That is also true.”

Joo Hwa-Young nodded.

There were two key points in determining research ethics in human subject research experiments: the first was whether the subject fully understood the experiment, and the second was whether the experiment occurred under completely voluntary consent. The frontline experimenter could fulfill the first

condition better than anyone, but the law fundamentally prevented it as there was a risk of problems arising in voluntary consent.

Then what about project leaders? Because they were the manager of the entire project, they knew more about the purpose, principle, and the side effects of the experiment better than the frontline experimenter. There was no worry about them being coerced into the experiment or the donation of a sample as there was no one to give them orders about the experiment because they were the manager. As such, the project leader was exempt from the research guidelines of human subject research; there were no stipulated provisions at all.

Because of this, professors who burned with the passion to experiment often used their own bodies to experiment. Young-Joon also wasn't the first person to administer a vaccine to their own arm. A few professors who studied vaccines had done this before the first phase of clinical trials.

These people weren't even far from home; someone like Lee Sang-Hee, a veterinary professor at Chungnam National University in Korea, had injected a vaccine for bird flu into their arm. It was to test its effectiveness before the clinical trial. Someone like Kim Min, a famous parasitology professor, had once put parasites in their eye and cultivated them.

"But still, injecting HIV is too dangerous…" Joo Hwa-Young said in a worried tone.

"He's probably showing some gut because he saw that a target antibody was created after the vaccine injection," Nicholas replied. "He really is bold. Sacrificing his own body for the advancement of science."

In A-Gen's lab, a video that Young-Joon was filming live through the microscope was on the screen. The camera that was filming him also turned their cameras toward the video. Huge cells and tiny, dot-like viruses showed up on the screen.

—Let's take a look together at what happens to these viruses.

As they listened to Young-Joon, Joo Hwa-Young asked, "Is Doctor Ryu going to show the immune response to the virus live right now?"

"It seems like it."

“But it won’t be easy,” Joo Hwa-Young said. “I don’t know if you know this, but I studied molecular imaging in the past. It’s not easy to use a microscope that can observe viruses, and filming something like that isn’t just about how skilled someone is at using a microscope.”

“Let’s see what kind of miraculous science he will show us this time.”

* * *

The microscope was the most effective tool for humans to enter the microworld. The true value of biology began rising to the surface after Leeuwenhoek began studying microbes and Robert Hooke began studying cells. But the scientific community had yet to properly film a virus and the immune response to catch the virus.

Why were they unable to do so when they had a microscope with enough magnification? It was because after magnifying a part of the microworld like that, it was difficult to figure out which ones were the white blood cells, tissue cells, and the virus. It was similar to how it would be impossible to determine a grain of rice if it was enlarged to one thousand times its size.

Because of reasons like this, molecular imaging, the technology of observing the microworld through microscopes, had been established as its own field of study in science as it was extremely difficult work.

Things like observing viruses or filming the differentiation process of certain cells were often published in top journals like *Science* or *Nature*. There were quite a lot of scientists that studied molecular imaging as their performance would be very noticeable with just one good picture. Even so, there was no scientist who had succeeded in filming the immune response to a virus.

But not anymore.

“I put in four different kinds of dye in this blood sample. They will stain different types of white cells so that we can observe them at the same time.”

Only colorless and translucent cell masses were on the screen where the dye had not yet worked. There were black dots that looked like viruses, but their movements weren’t captured accurately. It was because they were too small and they kept moving out of focus.

“The dyes will stain neutrophils, B-cells, T-cells, and macrophages. Now, I also don’t know which of these giant white blood cells are which. But you can tell if you stain them.”

This dye was a fluorescently tagged antibody that recognized the biomaterials on the surface of the white blood cells. Young-Joon would be able to dye them according to what kind of type they were. For example, the dye would paint neutrophils green from their high expression of CXCL12. Additionally, he added a red fluorescent protein on the capsid of HIV.

Young-Joon made a darkroom by putting a lid on the chamber, then irradiated with a light that fluoresced the fluorescent proteins. Numerous red dots appeared on the monitor, and large cells that were emitting green light were following the red dots.magic

“The cells that are shining green are neutrophils, a type of white blood cell. They are one of the first T-cells to notice and react to a bacterial or viral infection,” Young-Joon said. “Can you see the small green dots that are left in the neutrophil’s tracks? These are signs that the neutrophil leaves. It’s a cell fragment with something called CXCL12.”

Young-Joon went on and explained further.

“Now, a white blood cell called a T-cell will follow this path.”

A little after, they could see cells that were stained yellow come into view.

“T-cells play a key role in regulating the overall immune system. And HIV recognizes a substance called CD on the surface of these cells and infects them,” Young-Joon said.

Red dots swarmed near the yellow cells, but even after time, they could not infiltrate the T-cells.

“But this time, they can’t infect the T-cell. Why do you think that is?” Young-Joon asked as he turned to the audience, but no one could answer.

“Do you see these gray dots on the surface of the red virus?” Young-Joon asked as he zoomed in on the screen a little more. “These are antibodies. Antibodies are biomaterials that bind to viruses. The virus cannot infiltrate the T-cells because the antibodies are attached to the virus, changing their structure.”

Young-Joon explained more.

“When the virus cannot infect the T-cells, the host of this virus, and gets stalled, the macrophages that follow the signal of the neutrophils will track them down.”

Young-Joon pointed to the purple cells that appeared on the screen.

“Macrophages are cells that engulf and destroy things that are weird and suspicious in our bodies.”

Now, the macrophages were swallowing up the red dots.

“Because macrophages have powerful digestive enzymes inside, they fragment everything that comes into the cell by endocytosis and destroy it,” Young-Joon explained. “This mechanism removes the virus from the body of a vaccinated person. It’s the first time I’m seeing it as well.”

Now, most of the red dots had disappeared. After they were all eliminated, the white blood cells began to scatter.

Young-Joon turned off the monitor. The broadcasting screen also returned to the camera that was filming the podium in the lab. Young-Joon turned to face the audience.

“The immune response is almost over now. Does anyone have any questions?”

The audience was silent. No one among the opponents could say a word. Even if logical explanations about the mechanism of vaccines and the process of antibody production were given to anti-vaxxers, their beliefs didn’t change easily.

But science was able to give irrefutable evidence. People who believed that the Earth was flat like a religion would have no choice but to accept the truth that the Earth was round if someone took them to outer space in a rocket and made a circle around it.

Young-Joon injected himself with the vaccine and HIV, and he filmed the immune response with an antibody-staining technology and an ultra-precise microscope and presented it as a video. Who in the audience would have thought they would see such a thing?

Producer Na Sung-Jin gulped as he looked at the audience's expressions. They made the atmosphere for a live debate and whatever, but what debate? He had given Young-Joon gloves and put him in the ring to do a little sparring, but Young-Joon just pulled out a gun on the first round and shot the opponent.

'How is this a debate? The other side was obliterated in ten minutes…'

Kim Pil-Young, the person who was the most fiercely opposed, was also silent.

"As you just saw, you can stop a virus from infecting your body if you have antibodies. Antibodies are produced by the white blood cells called B-cells. But for them to make it, they need a recipe, and the vaccine is the drug that delivers that recipe.

"..."

The audience was still silent.

"I know why you are against vaccines," Young-Joon said. "It's because you're afraid. You would have heard a lot of stories that there are side effects, or that someone was sick after getting vaccinated."

"..."

"Then, do vaccines really have side effects?" Young-Joon asked. "To be honest, no scientist will be able to be one hundred percent confident. Side effects could show up depending on the person who got the vaccine."

Young-Joon approached the audience.

"There is nothing in the world that doesn't have side effects. Your life could be in danger if you drink ten liters of water at once. Cats are usually safe animals, but they cause allergies in some people," Young-Joon said. "If vaccines are made by humans, they will definitely have effects in some unlucky people. Side effects that couldn't be found when conducting a clinical trial with hundreds of people could be found when it is conducted with millions of people. But we use vaccines because those side effects are weak and don't happen often; the gain of using vaccines is much higher than the risks of side effects."

Kim Pil-Young's eyes met Young-Joon's. He lowered his head, but he didn't know why.

Young-Joon said, "The Lancet paper that states the MMR vaccine causes autism that the man sitting in front here mentioned earlier. After it was announced, many people refused to get the MMR vaccine. What do you think happened?"

"..."

"Measles, which was on the verge of eradication, was revived. MMR is a measles vaccine. There was a measles epidemic that developed countries like the U.S. hadn't experienced before."

Kim Pil-Young's ears reddened a little.

"Infectious diseases find small weaknesses in our immunity and enter. They spread quickly, paralyzing our society. And the only way to fill those weaknesses is vaccines," Young-Joon said. "Currently, our vaccine was developed with a formula that can produce antibodies to all seventeen variants. It has shown significant results in chimpanzees and is in preparation for clinical trials. From now on, we will start clinical trials with the International Vaccine Institute in areas like Kamathipura and other places with high infection rates."

Chapter 77: A-Bio Cancer Laboratory (1)

Young-Joon came back to his office after the show ended. He took out some orange juice and had a glass.

—Can I get rid of the remaining virus now that it's over?

Rosaline sent him a message.

"How long will it take to get rid of it with a regular immune response?"

—It will be less than 74 hours for the virus to be completely eliminated.

"Not bad."

—But your body will be pretty heavy and tired during it. I'll just get rid of it now.

"Okay."

[Controlling immune response.]

[Inducing target location of macrophages.]

[Destroying reverse transcriptase and virus.]

Rosaline controlled the immune response and destroyed the virus by using a little bit of fitness.

—There won’t be any people that will get in the way of making the vaccine now, right?

“There’s no way it will be solved that easily.”

Young-Joon stretched out his legs as he leaned back on his couch.

“The opposition against the vaccine will still be there.”

—Even though you explained everything about how the vaccine worked and why it is needed?

“Even if they were convinced logically, people who were against it once will always be against it because they don’t want to admit that they were wrong.”

—Really?

Rosaline asked again with a hint of surprise in her voice.

—Why do they do that? They don’t admit it even after understanding that they were wrong?

“People are like that. They call it cognitive dissonance.”

—It is the most puzzling thing I have heard and seen since I was born. In this case, doesn’t understanding mean the same thing as admitting? The fact that they do not admit it when they have understood is like hot iced tea.

Rosaline said.

“People are like that.”

—Unbelievable. Then was the show and the lecture all for nothing?

“No.”

Young-Joon grinned.

“A lot of the anti-vaxxers will leave, and the people who didn’t know about the vaccine will not go that way now, so there are definite benefits.”

—I see.

“The people who were strongly against it will continue to be stubborn, but that organization will lose power soon. Like a virus that was discovered by an antibody.”

—I understand.

“Anyway, I’m done with the urgent things now. The International Vaccine Institute will do the clinical trial for the vaccine, Karamchand will produce the treatment, and now that the bone marrow is out of my hands now, I should rest for a while,” Young-Joon said. “More than that, it’s suspicious that Roche is keeping quiet.”

—Roche?

“It’s a company that originally made a lot of money from AIDS drugs. It won’t hurt them a lot if it disappears, but they’re probably annoyed that the replica drug companies in India participated in the HIV eradication companies, and it’s weird of them to have just left me alone,” Young-Joon said. “I’m sure they’re up to something…”

Thud thud!

Someone banged on his door. It was Park Joo-Hyuk. He looked a little angry.

“Are you insane? Why would you inject a virus into your own arm?”

“To a scientist, research is like their child. What are you going to do if you don’t believe in it?” Young-Joon replied calmly.

“Oh, my blood pressure…”

Park Joo Hyuk looked up to the ceiling while grabbing the back of his neck. Young-Joon laughed.

“You’re laughing?”

Park Joo-Hyuk frowned.

“You’re actually out of your mind, aren’t you?! Argh! What should I do with a lunatic like you?”

Park Joo-Hyuk put Young-Joon in a headlock, which was partly serious and partly a joke.

“Ah okay. Sorry, I’m sorry. I’ll be careful from now on,” Young-Joon said as he escaped from the headlock.

“You will, right?”

“Okay. I’ll probably be nagged a lot by my family, so please stop here.”

Park Joo-Hyuk glared at Young-Joon like he was annoyed.

“Yeah, I guess you hear an earful from your parents. Enough about that. There was an entertaining incident in the industry recently. Do you know about it?”

“An interesting incident?”

“Conson & Colson absorbed Schumatix.”

“Really?”

Young-Joon was surprised.

“It was revealed this morning. Schumatix almost went into a coma after being punched by you, right? It was basically impossible to recover from, right?”

“Well, their business was in the medical field, so it was pretty fatal that they induced a tumor in a patient on purpose.”

“Right. But Conson & Colson already had a lot of stakes in Schuamtix. It seems like they just took this opportunity to take over the company.”

“Wow…”

“That’s not it. There’s another multinational pharmaceutical company that is based in Switzerland other than Schumatix.”

“Roche?”

Young-Joon’s eyes widened.

Most of the executives at Schumatix were from Roche. As the two companies cooperated, competed, and developed together in that tiny Switzerland, they had a very close relationship. They also had stakes in each other’s company, but they were already close, starting from their network of people.

“No…”

“Conson & Colson guaranteed the status of the Schuamtix’s executives. And it seems like Conson & Colson must have successfully negotiated a large stake through them with Roche.”

“Then did Conson & Colson and Roche become related companies?”

“Yeah. It’s hard to estimate it accurately because the stock prices are fluctuating, but experts predict that the combined market value of the three companies will exceed one hundred trillion won,” Park Joo-Hyuk said. “It’s five times A-Gen. Three times Pfizer.”

“So there’s a new pharmaceutical dinosaur.”

“Anyway, it seems like Conson & Colson are negotiating with Pfizer, too. If they sign some contract together, it will really be the largest company in the world. It will be an unprecedented company that is monstrously big.”

“I see.”

“Why are you so calm? Isn’t it obvious that they’re trying to keep you in check? Those people are probably thinking that you will ultimately become A-Gen’s CEO. They think that it will be hard to fight you if A-Bio’s research ability and A-Gen’s infrastructure come together,” Young-Joon said. “And they really started feeling the danger as they saw Schuamtix getting destroyed. Seeing even the White House be on your side, they know that it will really be dangerous if they just leave you alone. That’s why the multinational pharma companies are bunching up together. To keep A-Bio in check.”

“I know,” Young-Joon said.

“Then why are you so calm?”

“It’s better if those companies come together and make a better drug.”

“Fuckkk… Seriously, you…”

Young-Joon burst into laughter as he saw Park Joo-Hyuk frown.

“I’m kidding.”

Young-Joon got up.magic

“Love for humanity is important, but so is our company.”

“Shouldn’t we do something?”

“We are already doing a lot of things. Everyone is working hard, and we’re getting good results, right? This is enough.”

“I looked up some things about Conson & Colson’s CEO, and he’s really dangerous.”

“He’s famous. He’s like the Steve Jobs of the pharmaceutical industry, right?”

“You already know. Apparently, he’s pretty good. I mean, look at them now. They absorbed Schuamtix, and they also rode that wave to get Roche, too. What if they bring in Pfizer?”

“What do you mean?”

Young-Joon shrugged.

“It’s just another company that we have to compete with.”

* * *

For a while, everyone who Young-Joon met nagged him to not be reckless, and that it was too much to inject a virus into himself no matter how confident he was in the vaccine.

‘Well, I was also confident in the vaccine, but honestly, I mostly believed in Rosaline when I injected the virus into myself…’

But since Young-Joon couldn’t explain Rosaline, he just said he would be careful and moved on.

In the meantime, a video of Young-Joon’s self-clinical trial of the HIV vaccine was uploaded on A-Bio’s homepage and fan club.

“I get the fan club, but why on the homepage…?”

To Young-Joon, who was puzzled, Yoo Song-Mi explained, “Public opinion is really good right now. The management team distributed a press release with the live broadcast video of you.”

“A press release?”

“Yes. You have a really good image right now. They were saying that they need to improve the company’s image with this energy.”

Before Young-Joon started the live broadcast, the international community was focused on the press conference that Ardip appealed to with tears. Ardip, who cried and begged on his stomach while revealing the situation in developing countries to the people against the development of the vaccine, showed up everywhere in the media.

When the whole world was dripped with tears, Young-Joon suddenly appeared and injected the virus into his own body on live television to see the effects of the vaccine. To people, it looked like he was reacting to Ardip’s tears.

‘This person isn’t just a genius scientist; he’s a pioneer of medicine who sacrifices his own body.’

The image he imprinted on the whole world was different than before. Young-Joon’s ingenuity had already drawn attention as he put the stem cell treatments into clinical trials, but his personality hadn’t been highlighted as much. Things like how he went against his lab director because of Cellicure and how he fought with the hospital director because the clinical trial patient changed weren’t stories that were revealed to the public. Destroying Schuamtix’s scheme with a counterattack made him out to be smart and competent, not a matter of personality.

But it was different this time. The way people understood the flow of events was as follows:

1. Young-Joon, who visited India for the production of Karampia, an AIDS treatment, felt the unsanitary conditions and the prevalence of infectious diseases in developing countries.

2. Young-Joon was very heartbroken as he watched Ardip crying and begging for people to not oppose the development of the HIV vaccine on TV.

3. Young-Joon was determined to eradicate HIV as fast as he could. To accelerate the vaccine development, he had to spread the word about its safety and efficacy, and he conducted an experiment on his own body to do this.

4. Hurry up and give him the Nobel Prize.

“That’s the atmosphere right now?” Young-Joon asked, baffled.

“To people right now, you’re like a great saint who sacrificed his own body to medicine,” Yoo Song-Mi said.

“That image is too much… It’s a little burdening, to be honest.”

“But it’s true. The public is raving about you right now because stories of you fighting over research ethics are coming up all of a sudden. Search it up.”

“…”

What Yoo Song-Mi said was true. Public opinion, which was continuously popping up on Twitter, was no joke.

—He’s a genius, but look at his personality. He’s perfect.

—He’s like someone that would be in something like a Marvel Comic. Everything about him is so outstanding that it almost seems unreal.

—I scraped together other people’s reactions to the live broadcast LOL the amount of national pride I have right now is lethal

—I live in Minnesota, and the anti-vaccine movement also went down in America. Before this, people who were against vaccine development were marching and stuff like that, but they all just disappeared.

—They might not admit it, but they will have to be conscious of the current social climate.

—Wasn't the number one mad scientist Werner Forssman, who invented conduit technology by cutting a vein in his arm with a knife and putting in a rubber tube? Now, he has to hand over the crown.

—But I was so scared. I'm worried that Doctor Ryu will get sick. Please be careful. You have to work for a long time.

—A resident who used to work at Sunyoo Hospital here. Spilling tea about why Doctor Ryu moved the Alzheimer's clinical trial from Sunyoo Hospital to another place. This story is true because I heard it from the nurses who work on clinical trials. I'm deleting this in five minutes. Featured by Politician S.

"They're talking about all sorts of things… There were only a few people who knew the reason why we moved the Alzheimer's clinical trial.

"Speaking of clinical trials…" Yoo Song-Mi said. "The Clinical Trial Management Center called when you stepped out briefly."

"About what?"

"They said they are done setting up the stroke clinical trial and starting Phase One, and the second is that Amuc, the type 2 diabetes cure was successful in the first phase.

Young-Joon shot up from his seat.

"Phase One of the Amuc trial was a success?"

"Yes. Try calling them."

As Young-Joon picked up the phone, Yoo Song-Mi said, "And I have two more things to tell you. Hold on."

"What is it?"

As Yoo Song-Mi checked her phone and her notes, she said, "You had a meeting with KCDC[1] about the diagnostic kit development, right? They asked us to submit a program plan because they put forward a national project competition. And Director Kim Young-Hoon at A-Gen wanted me to schedule a meeting because he wants to see you."

Kim Young-Hoon was the person SG Groups added to A-Gen.

“Oh, and one more. The Office of Science and Technology from the White House called. They were asking when you’re coming to America. And they also want to schedule a meeting there… Seriously, the amount of work you have is murderous.”

“I think it’s about building the cancer lab.”

Young-Joon was lost in thought for a moment.

“First of all, please set a business trip to America. Right now, I’m going to check the clinical trial report on the diabetes cure. Please set up a meeting for this either today or tomorrow, and schedule a meeting with Celligener and the Probiotics team during next week.”

“Wait, go slower,” Yoo Song-Mi said as she quickly jotted it down. “But sir, what is the meeting agenda that I should tell to Celligener?”

“We’re going to talk about developing a cure for pancreatic cancer.”

* * *

“I heard that they are past stem cells and are touching the anticancer drug markets,” Mason said to the board of directors at Conson & Colson.

“The Office of Science and Technology in America is supporting that. And they said they are building a lab right beside the National Cancer Institute,” Richard explained further.

All the faces of the directors were dark. They had enlarged themselves by buying Schumatix and holding hands with Roche; the negotiation with Pfizer was going well too, but even so, Young-Joon’s advancement into America was still trouble for them.

“I will go meet Director James,” said David, the CEO of Colson & Conson.

1. Korea Centers for Disease Control and Prevention ☜

Chapter 78: A-Bio Cancer Laboratory (2)

As soon as the board meeting came to an end, David set up a meeting with James, the director of the Office of Science and Technology.

A-Bio's entry into America: how would Young-Joon, the revolutionary, change the medical market of America? As a scientist in the same field, it made him very excited. But at the same time, it made him very anxious as a manager of a competitor.

'Ryu Young-Joon…'

David couldn't attack him with a sloppy move. Young-Joon was a genius in scientific technology and research development, but he was also highly skilled in politics and management. He saw through and prepared for Schuamatix's sabotage and completely destroyed him by hitting back at just the right time. A huge company like that took fatal damage from just one strike and collapsed. Even if the White House supported them, it wasn't an easy thing to do. It was because the timing of Young-Joon's counterattack was so perfect. It gave David goosebumps thinking of how Young-Joon had the CIA ready and just calmly waited for his prey to step on the web.

And he also did a huge performance live on television to put a stop to the anti-vaccine movement. Perhaps Ardip's press conference was also in his hands. If so, Young-Joon was quite skilled at being a manager. His talent would certainly shine in the American market as well.

'But the American market won't be that easy, Doctor Ryu.'

David smiled as he watched a video of Young-Joon's show again.

'Attacking straightforward without any tactics and only taking what you need to take…'

A-Bio was never going to be able to monopolize this country, as the issue of competition between companies was not just about new technology.

"Sir."

Alice, David's secretary, came to see him.

She said, "I scheduled a meeting with the director of the Office of Science and Technology. It is two days from now, and it is two o'clock."

"Thank you. Alice…"

"Yes?"

“Do you know how band-aids were first invented?”

“... I’m not sure.”

“About a hundred years ago, there was an employee in charge of purchasing cotton in our purchasing department. Name was John Dickson,” David said. “At the time, John was enjoying his sweet honeymoon, but his wife was a little clumsy, so she used to trip a lot and get cuts all over from a kitchen knife. John always put gauze and tape on his wife’s injuries and treated her.”

Alice tilted her head in confusion. It looked like she was curious why David was telling her this story.

David said, “His biggest concern was what he would do if she got hurt while he was at work. After some thought, Dickson put some gauze in the middle of some medical tape beforehand to make it easy for her to use it when she needed it. That’s the first ever band-aid.”

David slowly rose from his seat. He was sixty and quite old, but the suit he was wearing looked good on his lean and toned body. It was because he had taken care of his health well; David was someone who lived so regularly that his schedule was measured with a ruler and the hand of a clock.

David looked out the window.

“It was a simple invention that combined technology that already existed without using anything new, but it became the best medical item in the twentieth century. The president of Conson & Colson at that time found it and commercialized it in astonishment. It was one of the key products that developed our company into a major company. John Dickson went on to become the vice president.”

“Oh…”

David smiled.

“I just want to talk about that. If you get a boyfriend, Alice, I hope he is someone as sweet as John Dickson.”magic

“Haha, thank you.”

Alice smiled while she tidied up her hair.

David went outside. He wanted to organize his thoughts while taking a walk.

Conson & Colson was a company that was clearly one of the top companies among the numerous pharmaceutical companies. They had the highest profits in the industry, but it wasn't because they wielded incredible new technology like A-Bio.

Big money came from little things, did they not? It was just like how Coca-Cola, a beverage brand, was the number one brand in the world. Conson & Colson's main products were small items like band-aids, painkillers, lotion, or contact lenses. In this sense, Conson & Colson's business didn't actually overlap with A-Bio; there wasn't really much for them to directly conflict over. Actually, they could win-win if Conson & Colson provided things like medical adhesive when A-Bio did procedures like bone marrow transplantation. There were actually directors who were optimistic about the situation.

But not David.

"Now, Ryu Young-Joon is coming to America to make an anticancer drug. What should Conson & Colson do now."

His heart beat at the entertaining development. David, who didn't ever have a competitor while leading the number one company in the industry, even felt like he was younger now.

"This man was the first one to open the field of stem cell treatment. He would have had mountains of work to do just with stem cells, but he made a type 2 diabetes cure within a year and got it into clinical trials. He also made a HIV vaccine," David muttered to himself as he walked on the trail. "And he is coming here to target the anticancer market and swallow up the National Cancer Institute. He already buttered up Director James."

Everyone thought that Young-Joon was the father of stem cell technology, but David thought differently. To Young-Joon, stem cells were only one of his many items. That was why he did things unrelated to stem cells like a HIV vaccine, a diabetes cure, probiotics, and a pancreatic cancer cure.

'Ryu Young-Joon will push through to this field sometime.'

He will be Conson & Colson's biggest enemy. Then, what would be the best point to stop his growth?

‘Anticancer drugs.’

The field that had the most variables in the world. The disease that was more complex and difficult to handle than any other disease. Even a genius like Young-Joon was not going to be able to be confident in everything when overcoming this barrier.

David had no intention of sabotaging him to make him slip; he was going to let them sprint ahead, and all he had to do was climb on top of his shoulders and hold his leash.

Then how? The way that medicine dealt with diseases was divided into three stages:

1. Prevention.

2. Diagnosis.

3. Treatment.

If the disease was cancer, the first stage was usually impossible. Unless the cancer was a rare type that occurred because of a virus like cervical cancer, cancer could not be prevented. The reason that cancer occurred was because people were unlucky. The mutation of a gene, which caused cancer, was completely coincidental. Cancer could happen even if one lived a very healthy life.

And honestly, no one could beat Young-Joon at the third stage. Wasn’t he someone who said he was going to fix pancreatic cancer right away?

But the second stage, the diagnosis market? In the stream of medicine, diagnosis was upstream of treatment. If David controlled the stream there? If he dominated the diagnosis market and then reached out to Young-Joon, he would have no choice but to hold David’s hand.

‘I will tame him while making a cooperative relationship.’

David called his secretary.

“Alice, please contact Illemina and ask for a meeting as soon as possible.”

—Illemina?

It was the best company in the world for DNA analysis. Illemina had invented a technology that analyzed DNA in the blood, and if there were cancer cells in the body, a miniscule amount of their DNA would flow through the blood vessels. If he could find it and analyze it, they would be able to diagnose the presence of cancer without an endoscopy. Although, no one had tried it or commercialized it yet.

David could see a few big pictures in his head. He would place Illemina's DNA analysis equipment in each hospital and analyze the patient's DNA using that. He would monopolize the diagnosis of cancer in all patients. Then, he could have the upper hand over Young-Joon. Young-Joon's technology would be used when being treated at the hospital, but the one sending the patient to the hospital would be Conson & Colson. In that world, Young-Joon's anticancer drugs would only be able to play a limited role; even if he made an anticancer drug that could cure end-stage pancreatic cancer, all patients would already be diagnosed when it was at its early stage.

* * *

Young-Joon finished a few meetings hecticly. Now, he was talking to the Life Creation Team.

"How is the liver organoid going?"

"It's a dead end…" Park Dong-Hyun said in a dejected voice.

Cheon Ji-Myung added, "We can differentiate a stem cell into a liver cell. But the hand technique required in the process of cultivating it from the matrix to the tissue is too hard. We use fifty microliters of the culture liquid, and we have to stick it exactly in the duct cells that are in the middle. That part's a little difficult."

"It is probably possible to do if we experiment like you, but… We can't do it like that," Park Dong-Hyun said as he thought back to Young-Joon's experiment.

Young-Joon, who thought for a moment, said, "Let's put that on pause for a moment and let's do something else."

"What?" Park Dong-Hyun asked.

“The KCDC held a project contest while spearheading a new business. Do you know about it?”

“The dengue virus?” Jung Hae-Rim asked.

“Oh, you know about it?”

Young-Joon was surprised. It was because frontline scientists were too busy doing their assigned experiments that they had less interest in other projects or national ones.

“Haha.”

Jung Hae-Rim’s chest puffed up.

“You should know this if you are a scientist. Try harder, everyone,” Jung Hae-Rim said with a proud face.

“What kind of project is it exactly?” Cheon Ji-Myung asked Young-Joon.

“It is to develop a vaccine, a treatment, or a technology to diagnose the infection for the dengue virus. We are going to work on developing a diagnostic technology,” Young-Joon replied.

“Diagnostic?”

“Yes. Actually, I had a meeting with the KCDC. They asked me if I could eradicate dengue fever like AIDS.”

“So?”

“I told them that we can’t start anything new because we have too many projects going on.”

“But are you still going to do it?” Jung Hae-Rim asked like she was nervous.

“The reason the KCDC is interested in dengue fever is because Korea is being threatened by the dengue virus,” Young-Joon said.

The dengue virus was originally a virus that mosquitoes transmitted in hot regions like Vietnam. But as the average temperature rose due to climate change, its occurrence began rising to the North.

“The dengue virus has already arrived in Jeju Island. There was a confirmed case last year.”

“That’s true.” Park Dong-Hyun nodded.

“But why are we developing a diagnostic technology? Not a treatment or a vaccine?” Bae Sun-Mi asked.

“We can’t afford to develop treatments or vaccines and put them through clinical trials.”

“Is that so?”

“Yes. You all have to get back to liver organoids after this, right?”

“Oh…”

The team all covered their faces with their hands. Watching them, Young-Joon smiled.

“Dengue fever doesn’t actually need a special treatment. It usually gets better after a week. The problem is dengue hemorrhagic fever or dengue shock syndrome, and they require intensive treatment. So the solution to control this disease is accurate diagnosis,” Young-Joon said. “We have to develop a very cheap, fast, and accurate diagnostic kit. We will be able to secure a tremendous advantage in controlling this infectious disease.”

“Alright.”

Young-Joon opened a PowerPoint file on his laptop.

“This is the base technology for this diagnostic kit. It’s only a sketch of the main idea, so it needs to be developed more,” said Young-Joon.

“What’s the logic behind it?”

“Do you remember Cas9?”

Cas9: it was a pair of gene scissors that could find a precise location in the huge, three billion letters of human DNA and cut it.

“The fact that it can cut at one exact location means that it can help identify the presence of DNA that has the information of that location,” Young-Joon

said. “With this, we can cut the DNA of the dengue virus that is floating around in the blood. If it’s cut, the patient is infected with dengue fever, and they are not infected if there is no reaction.”

“Wow…” the Life Creation Team exclaimed. It was surprising that gene scissors could be used this way.

“How long did you do “Think Big” for?” Park Dong-Hyun asked.[1]

“I didn’t do anything like that. And there’s one more thing to do with this diagnostic technology. I’m thinking of diagnosing cancer with this on top of dengue fever.”

“Cancer?”

The Life Creation Team’s eyes widened.

Young-Joon explained, “If we have cancer, the cancer cell’s DNA flows through our blood vessels, although it’s a really small amount. We can catch that with Cas9 with the same logic as dengue fever.”

“...”

“I will freeze-dry the Cas9 protein and make a kit with fluorescent material. If you drop someone’s blood on it, the kit will change color as it cuts the DNA of the dengue virus of cancer cells.”

“So, the thing you are trying to make is…”

“This diagnostic kit is like a pregnancy test,” Young-Joon said. “It will be sold in places like convenience stores or grocery stores. Regular people will be able to buy it, and they will be able to diagnose what kind of disease they have if they put one drop of their blood on it with the included blood-collection needle.”

“...”

“They won’t have to go to the hospital, and they don’t have to borrow expensive equipment from DNA analysis companies like Illemina. We are going to make them doctors in everyday life.”

“Oh my god…”

“The biggest problem with pancreatic cancer is that it is not only difficult to treat, but also difficult to diagnose,” Young-Joon said.

1. ”Think Big” offers a variety of educational content for all age groups, but mostly children. Their content includes workbooks and worksheets for children. ☜

Chapter 79: A-Bio Cancer Laboratory (3)

A-Bio had never made a diagnostic kit before. For this product in particular, it was probably going to require a difficult level of work because the technology was pretty sophisticated.

“To be honest, it might take a long time to develop it. The idea to catch DNA with Cas9 is extremely creative and innovative, but we have a long way to go because there are a lot of problems to solve to make it into a kit,” Cheon Ji-Myung said.

Young-Joon nodded.

“That’s right. And the key point of this project is to use PMDS to make a lab-on-a-chip that is stable for a long period of time, so we will probably have to collaborate with A-Gen’s Mobile Diagnostic Device Research Department at Lab One,” Young-Joon said.

Lab-on-a-chip: it was given this name because it was a technology that could carry out experiments normally done in labs on a tiny chip that was the size of one’s palm. It was an object that integrated semiconductor technology, ultra-fine nano circuit manufacturing technology, and cutting-edge biochemical engineering technology based on biomaterials. Pregnancy tests were also considered lab-on-a-chip as it confirmed the presence of human chorionic gonadotropin through an antibody reaction. If they were going to make A-Bio’s all-in-one diagnostic kit into a product that could be bought at convenience stores, they would have to overcome the lab-on-the-chip.

The problem was that confirming the presence of DNA using Cas9 was a very basic main idea. It was similar to saying, “Let’s put an elevator in high buildings and go up and down easily.” Like how a lot of cutting-edge technologies of electrical engineering and physics was put into making that elevator, there were obviously lots of difficult obstacles in the process of applying Cas9 to lab-on-a-chip.

“How do they analyze DNA in blood at Illimena?” Young-Joon asked.

“They separate all the blood cells like red and white from the blood. They spin it in a centrifuge and only take the upper layer because that’s where DNA is,” Cheon Ji-Myung replied. “But there’s only a trace amount of cancer cells or dengue virus DNA in that. So they can’t use that as is, but they have to uniquely amplify their DNA.”

“If you’re amplifying them, you’re doing PCR (polymerase chain reaction), right?”

“Yes.”

To settle the cells in blood, a centrifuge was required, and to amplify DNA, a thermo-cycler that could carry out PCR was required. Both pieces of equipment were worth a few million won. If they made a diagnostic kit with Cas9, it needed to be done in a kit that was the size of one’s palm; it actually had to be a lab on a chip.

“And we also need to create a signaling system that allows us to visually confirm that Cas9 has responded,” Cheon Ji-Myung said.

“We have a lot of obstacles to overcome. But we will find a way eventually,” Young-Joon said.

* * *

David, the CEO of Conson & Colson, was in a meeting with the scientists from Illemina. The person who came to the negotiation table as the representative of Illemina was Jonathan, the CTO. In this industry, he was a person who was called “One of Them”. It was because he was one of the people who first invented the cutting-edge technology called next-generation sequencing.

The reason why this technology was amazing was because it drastically reduced the money and time required for DNA analysis. For example, before this technology was invented, the Human Genome Project was a gigantic project that took three trillion won and hundreds of scientists worked on for more than a decade. But with next-generation sequencing, it could be done in around ten days with tens of millions of won. Now, the technology was more advanced that it cost around a million won.

“Did you see the paper about Cas9 that Doctor Ryu published?” asked Jonathan abruptly while they were talking about business.

“Of course I read it,” David replied.

“Mr. CEO. We are focusing on the fact that Cas9 can find a specific sequence of DNA. We think that they will be able to easily track down mutants that occur in the body with that technology. If they apply that in diagnosis, I believe they can become the most threatening enemy to our business.”

“Do you think it will be that easy?”

“It will be difficult, but I don’t know what will happen with Doctor Ryu’s ingenuity. Everything you suggest is great, but I’m worried that Doctor Ryu will bring about a new trend with Cas9 in the diagnostics market.”

“I thought you didn’t look well, but that’s what you were worried about.”

“As you know, it is best to not start a big new business when there is a huge variable.”

“Hahaha,” David laughed. “Jonathan, don’t worry too much. No matter how amazing the Cas9 technology is, it will be impossible to use that to measure DNA in blood. Even if Doctor Ryu uses that in diagnosis, he won’t use it on blood. It will be far from the business we are trying to do.”

“Hm…”

“Even if the patient has end-stage cancer, there are only trace amounts of the cancer cell’s DNA in your blood. In the end, they can only confirm the presence by amplifying it. And doesn’t amplification mean that they must use a thermo-cycler? If they get there, the most precise technique is Illemina’s next-generation sequencing. Cas9 will not be used there.”

“I also think so as well, but…”

Jonathan pressed on his temples with his fingers and thought hard.

“Haha. It will all be fine, don’t worry. You are too afraid of Ryu Young-Joon’s ingenuity,” David said. “But that ingenuity will feed us. If we hold the diagnostics market in our hands, the treatment market will naturally have no choice but to depend on us.”

"…"

"I will tell Director James this as well, but I am thinking of a strategy to supply Illemina's equipment to every hospital in America. When patients who visit the hospital pay about a hundred dollars to get their blood drawn and give it to the doctor, the doctor will start Illemina's equipment to see if DNA of cancer cells are present in the patient's blood. It will be a precise and fast diagnosis," he said. "We will set a new trend in blood testing. It's not just simple PCR like before, but we will be doing next-generation sequencing at the hospital about the target locations that show cancer mutations."

"Alright."

"Don't worry about Doctor Ryu. There are more than a couple obstacles to overcome to use Cas9 for diagnosis. Now, shall we sign? I need a weapon if I'm going to convince James."

David pushed the contract in front of Jonathan. Chewing on his lower lip, Jonathan stamped on the contract.

* * *

"There is a way to separate blood cells from the plasma," Young-Joon replied.

"How?"

"Like how we can filter out impurities and just get water with a water filter, we can put in a filter. Blood cells will get caught because they are much bigger, and we will be able to collect plasma only."

"Hm… But I can't imagine doing that on a flat chip. Are you going to enclose the filter and syringe separately in the kit?"

"We'll make a micro-circuit in the PDMS chip where the blood moves through. We can make a net from agarose on that pathway's wall. Then, the blood cells will be trapped there, and plasma and DNA will flow through."

"Woah," Park Dong-Hyun exclaimed. "I didn't know there was a solution like that. Wow, you are really good. Then what about DNA amplification?"

"Hm." Young-Joon was lost in thought for a bit instead of answering.

He was stuck. He didn't have an answer anymore.

‘Rosaline. You can use as much fitness as you want, so give me some advice.’

—I didn’t think you needed me anymore because you did everything well alone from capturing DNA with Cas9.

Rosaline said playfully.

‘Of course not. Please help me. It’s hard.’

[Synchronization Mode: See Isothermal DNA Amplification Reaction. Fitness consumption: 1.5]

‘Isothermal DNA Amplification Reaction?’

—You can use recombinant polymerase amplification. After isolating the DNA using a material that attaches to single-stranded DNA…

Young-Joon scoffed after seeing the fantasy and detailed mechanism Rosaline showed him.

‘Right. She finds answers that didn’t exist before.’

“There is a way,” Young-Joon said. “But I think I will have to do the first experiment to see if it works. It’s also difficult to explain it as well.”

“Alright.”

“We also have to look for a signal amplification device that can show us that Cas9 did cut the DNA…”

[You do not have enough fitness.]

Rosaline sent him a message.

—There is a way, but let’s recover your fitness first. There’s a limit to making neurons in your head right now.

“Let’s think about that next time. First, let’s test if it is possible up to here,” Young-Joon said.

“What should we prepare?” Bae Sun-Mi asked.

“We have to make an experimental prototype for the lab-on-a-chip with PDMS. Let’s all go to the Mobile Diagnostic Device Research Department at Lab One next week,” Young-Joon said.

“Hup! Diagnostic Device!”

Suddenly, Jung Hae-Rim’s head shot up.

“Why?”

“Oh… Um… I know, sir.”

She glanced at Young-Joon like she was trying to see if he was okay.

“Are you talking about Park So-Yeon?” Young-Joon said first since it seemed like it was difficult for her to say it.

“Yes… You might see her there, and… If we do collaborative research together, she might come to A-Bio or come into meetings…”

Park So-Yeon was a skilled Scientist who worked at A-Gen’s Mobile Diagnostic Device Research Department. She was also Young-Joon’s ex-girlfriend.

“I don’t care, so we can just move forward with it. It doesn’t matter to me if we are working together. You know me, right? I won’t incorporate any personal feelings, so let’s just work by meritocracy, alright?”

* * *

“What should we do now?” asked a man as he kept touching his curly hair. They were on the way out after a meal.magic

Park So-Yeon desperately wanted to ask to go home, but she kept it in. Her friend had tried hard to set her up. She said that he was a good person. To be honest, he wasn’t bad, but it was just that his bluffing was funny and he wasn't charming.

“Why don’t we go to a cafe?” Park So-Yeon asked.

“Maybe not coffee. I have a nice sky lounge that I know. Do you want to go there in my car?”

As if he was waiting for it, he pulled out a smart key from his pocket. A shiny Audi rang.

“It’s only been two weeks since I bought it. Ms. So-Yeon, you’re the first woman I’m taking in my car.”

The man put on a confident expression. This man, who said he worked at SG Group, constantly bragged about his money and job, even while eating. He would have loved it if Park So-Yeon asked how much the watch he was constantly touching was.

“I like walking after I eat. I’ll take the car next time.”

Park So-Yeon started walking with the man slowly.

“You seem to have a very calm personality, Ms. So-Yeon,” the man said.

“I do?”

“Kind of like an ice queen? You’re that type, right? You don’t talk much, don’t have much of a reaction.”

“...”

“You shouldn’t be like that. Men like girls who have a big reaction to things.”

What kind of crap was this?

‘Do you think I came here to make you feel good and react to what you say?’

Park So-Yeon wanted to spit it all out, but she didn’t.

“What kind of things do you like?” the man asked.

“I like perfume.”

“Oh! Which one? I know a bit about perfume. I mostly use Jo Malone or Chanel. Which do you usually use?”

“I just use one that I like. I don’t care about the brand.”

“What kind of scent?”

“One that smells like rain.”

“Oh, you like the smell of rain. It’s nice. The scent of rain is different depending on the kind of perfume. Did you know that? Ones like Alaska Raindrop from Jo Malone are made with melted Alaskan snow water, so it has a colder and fresher scent. The scent of rain is different in different regions. Depending on the origin…”

“Water molecules don’t have a scent. Rainwater doesn't have a scent as well,” Park So-Yeon said.

The man who was confident was sort of flustered.

“Oh, really?”

“The smell of rain is actually the smell of a substance called geosmin emitted by bacteria living in the ground traveling through rainwater and flowing into the humid atmosphere. The smell of rain is actually just the smell of bacteria.”

“...”

After finishing her explanation, Park So-Yeon chuckled. It was because she thought of Young-Joon. He was the one who told her about the smell of rain. On the first date before actually dating him, Young-Joon had explained to Park So-Yeon with a straight face that he had read a paper like that. Now that she thought of it, it was pretty funny. Depending on the situation, wasn’t it something that could be a little rude or insensitive? Breaking the romance of the first date by explaining to a woman who liked the smell of rain that it wasn't actually rain but bacteria.

‘I thought that was cool back then.’

Young-Joon’s charm was his innocent curiosity and passion for science. He wasn’t interested in cars, watches, or showing off his money, and he liked reading papers more than meeting girls. It seemed like everyone was focused on his ingenuity right now, as he was very famous, but his real charm was his humanness behind all that.

‘I was crazy, wasn’t I?’

She shouldn’t have left Young-Joon when he fought with the lab director. She should have stood by him when he was having a hard time. This was the

biggest mistake in her entire life. It wasn't because Young-Joon was successful now, but it was because it wasn't common to see someone so innocent and upright in character. She felt this so much every time she was set up with another person. If she didn't make a mistake back then, maybe she would be happily experimenting beside him.

"Phew…" Park So-Yeon suddenly let out a deep sigh. Surprised, the man was now walking on eggshells.

"Um, well… I don't know if the smell of rain is bacteria or something because I'm in the arts, but Jo Malone's perfume smells good. I just wanted to tell you that. Would you like one?"

"You don't have to," Park So-Yeon replied. "And I'm really sorry, but I don't think I should be on blind dates."

"Pardon?"

"I don't think I'm over my ex-boyfriend yet. I'm really sorry. I came out here not ready to meet someone else."

Chapter 80: A-Bio Cancer Laboratory (4)

On Monday morning, Young-Joon and the scientists from the Life Creation Team showed up at the Mobile Diagnostic Device Research Department's lab at Lab One.

It had been a long time since Young-Joon had come to Lab One. He had come to A-Gen a few times in the past, but he had only visited the lab director's office or the administrative office to get A-Bio's first building. It was the first time he was coming into the lab ward where other scientists were after his punishment.

"It feels like people are glaring," Park Dong-Hyun said as he walked.

The scientists at Lab One weren't hostile to Young-Joon, but they were staring at him like it bothered them quite a bit.

"Just ignore them," Young-Joon said.

They walked through the hall and went up to the second floor. When they got off the elevator, there were thirteen of the Anticancer Drug Research

Department's labs. The only way to get to the Mobile Diagnostic Device Department's labs was to go past them.

Click.

As they were on their way, a scientist popped out of Room 211.

"Oh…"

It was Senior Scientist Kim Hyun-Seok. He was Young-Joon's sunbae that used the desk next to him when he worked as a Scientist at the Anticancer Drug Research Department. He froze when he saw Young-Joon.

"It's been a while, Senior Kim. How have you been doing?" Young-Joon greeted him.

"God, Doctor Ry… I mean, Sir. How have you been doing?"

"Well."

"... What brings you to Lab One?"

Kim Hyun-Seok glanced at Young-Joon like he was trying to figure it out.

"I just have some business to take care of."

"I heard that you are developing a pancreatic cancer cure. Is it related to that?" Kim Hyun-Seok asked cautiously.

The idea and experiment strategy Young-Joon was going to use to cure pancreatic cancer hadn't been revealed yet because of security reasons. But the word that he was developing a cure had traveled fast, and everyone in the industry knew.

Kim Hyun-Seok was always wary of this situation where Young-Joon was going to put out a cure and target the anticancer drug field. Because if so, he would be competing with the Anticancer Drug Research Department. This department at A-Gen was home to the world's greatest intellectuals, but to be honest, Kim Hyun-Seok wasn't confident he could beat Young-Joon.

"It is related to that," Young-Joon replied.

A bit of relief came onto Kim Hyun-Seok's tense face.

“You’re going to co-develop the pancreatic cancer cure with us?” Kim Hyun-Seok asked.

Even if Young-Joon was a genius, cancer was going to be difficult. He probably couldn’t have developed a cure like that by himself. He probably tried a few different things and then came to the Anticancer Drug Research Department because it wasn’t working out, as this department at Lab One was one of the labs with the most accumulated results and know-hows in the world when it came to anticancer drug development.

“No.” Young-Joon calmly shook his head. “We are almost done developing it already. The reason we came to Lab One is to meet the Mobile Diagnostic Device Department.”

“The Diagnostic Department?”

Kim Hyun-Seok tilted his head in confusion at the unexpected answer.

“Yes. Well, I’ll be on my way since I have to go do experiments. We should grab a coffee next time,” said Young-Joon briefly, then walked past Kim Hyun-Seok.

As he and the Life Creation Team walked through the hallway, the Diagnostics Department’s labs showed up. Young-Joon went into the lab.

“Hello. We’re from A-Bio.” Young-Joon greeted the scientists at the entrance.

“Welcome. I heard that you were coming from the director,” Principal Scientist Song Yu-Ra greeted Young-Joon.

“I won’t bother you too much. Please help us with the PDMS biochip, and please put a talented hands-on scientist on us.”

When Young-Joon stepped inside, Song Yu-Ra gave them a scientist to work with. They were a doctor-level Scientist who had the best technique in the Diagnostic Department and majored in developing the lab-on-a-chip using PDMS. It was Park So-Yeon.

She gasped in surprise when she saw Young-Joon, but he was unfazed by her at all.

“T-This way,” Park So-Yeon said.

She took Young-Joon and the Life Creation Team and moved to one side of the lab. When she took out the various types of PDMS chips from the tank, he chose the one that was three millimeters wide.

“I would like to make a path for the plasma to flow through on the PDMS chip. Can we do that?” Young-Joon asked.

Park So-Yeon put the chip in the mold and stamped it to make the lines. Young-Joon cut the unnecessary parts on the edges with a knife. He punched a groove in the middle. Then, he boiled agarose, pipetted a few ten microliter drops into the gap of the line that Park So-Yeon made, and let it harden.

On the other side, he hung up a suctioning equipment. If he pulled blood into it and made it go through the path inside the PDMS, they would be able to filter out the blood cells with agarose’s fine mesh and separate the plasma.

“Can we make a microchamber at these locations?” asked Young-Joon as he pointed to a few places.

Park So-Yeon made a chamber with a fine-movement puncher at the desired locations on the line where the plasma moved through.

“Thanks.”

The separated plasma all moved to separate microchambers. Young-Joon added the freeze-dried Cas9 and other samples into the chambers.

“Please dry the samples.”

As Young-Joon held out the chip, Park So-Yeon blew all the solvent from the sample from the dryer.

The two people did not discuss anything other than work. All Park So-Yeon did was silently follow Young-Joon’s orders. He was also focused on the experiment.

At the end of a two-hour job, Young-Joon dropped his blood onto the PMDS chip. After watching the reaction for a moment, he said, “Can you please hand me the nuclease-free water?”

It was the most sterile distilled water used in the lab. Park So-Yeon handed him the water, which was stored in a small vial, and Young-Joon used that to melt and collect the DNA.

“Please analyze this with NGS.[1]”

Park So-Yeon calmly took it when Young-Joon handed her the DNA.

“Yes.”

The experiment proceeded at a rapid pace.

* * *

Young-Joon and the Life Creation Team worked hard on the experiment all day with the help of Park So-Yeon. In just one morning, they had almost finished the key technology of the diagnostic kit. People would have fainted if they heard about how fast they were progressing, but this wasn’t a big deal to the Life Creation Team anymore.

When they finished the experiment and left the building, it was already past seven in the evening.

“Should we grab some dinner? It’s on me,” Young-Joon said.

“That sounds good. Should we go to the place where we had our first dinner as a department?” Bae Sun-Mi asked.

Coincidentally, they weren’t too far from the restaurant. It was the first barbeque restaurant they went to after presenting their results at the year-end seminar.

[You a Fool If You Ain’t Been Here]

“Reminds me of the good old days,” Young-Joon said as he grilled some beef. “It was really exhilarating when we dropped the bomb about the iPSCs at the year-end seminar, right?”

“Yes. And we didn’t know that this would happen back then. Who would have imagined Doctor Ryu would have become a director, made an affiliate company, and we would be working under him?” said Cheon Ji-Myung with a chuckle.

“You can talk informally now. We’re off work now, and it’s an informal setting. Park Joo-Hyuk even swears at me when it’s just the two of us. It’s more awkward for me to see him be formal when other people are around.”

“Haha.. Yes… sir?” Cheon Ji-Myung raised the end of his sentence awkwardly.

“To be honest, I don’t like dividing ranks and creating authority in the company… I think that scientists who have been educated enough should know how to respect each other, but Park Joo-Hyuk nagged me that organizations don’t work that way.”

“That’s right. Organizations don’t work like that. In a formal setting, you must be treated as the CEO,” Cheon Ji-Myung said.

Young-Joon didn’t really agree, but he didn’t say anything because he felt like he would be pressuring him even more.

“But we really succeeded in just six months,” Park Dong-Hyun said. “Do you all remember when Doctor Ryu said he was going to swallow up A-Gen and be their biggest shareholder and whatever?”

“I don't know if I should say this, but honestly, I thought you were crazy at the time. But now, it’s really on the verge of coming true. You’re set to being the biggest shareholder of A-Gen if you trade it with them. It was like a dream back then,” Jung Hae-Rim said.

“Didn’t Dong-Hyun say that he believed in Doctor Ryu? Saying that it looked possible,” Cheon Ji-Myung said.

“Ah, well, I was half in doubt, but I had to ally myself with him at least in words, right? You don’t know how life will turn out.”

“Alright, now I know how you really feel,” said Young-Joon with a smile.

Park Dong-Hyun playfully hit him on the shoulder.

“No, I’m kidding. I love you, sir.”

“Please give your love to your wife and babies at home. I’m good.”

To Young-Joon, the Life Creation Team members were like his hometown friends. They hadn’t known each other for long, but the fact that they knew the

Young-Joon during his Scientist days gave him a sense of relief that was unexplainable with words. And since they didn't fall behind among the talented individuals that came to A-Bio from all over the world, they were honestly the best team for him. They were people who he could trust more with projects that were more creative and difficult and people he could rely on personally.

As their glasses emptied one by one, the night deepened.

"But Doctor Ryu…" Jung Hae-Rim said with a twisted tongue.

"Yes?"

"Uh… Can I say this? Um… About Ms. So-Yeon."

"Yes."

"I think she still has feelings for you."

Park Dong-Hyun, who was sitting beside her, strongly nodded.

"The way she looked at you when you were doing the experiment was like something out of a drama."

"Was it?"

"Yes. Even Mr. Soon-Yeol, who is the slowest out of all of us, probably noticed."

Park Dong-Hyun pointed at Koh Soon-Yeol. He calmly nodded his head.

"I can tell now that I'm dating Ms. Yoon-Ju, but her face definitely looked like she had feelings for you…"

Young-Joon shrugged.

"But what can you do? To be honest, I am not interested in Park So-Yeon at all. I have no affection left, and I don't like her or even hate her. I just don't have any kind of opinion about her now," Young-Joon said.

"Woah… Cold guy." Cheon Ji-Myung chuckled.

“But I want Doctor Ryu to enjoy life and date people, even if it’s not Ms. Park So-Yeon,” Bae Sun-Mi said. “You’re still young. Working is great, but there are things that you can only enjoy right now.”

“That’s right. If I was your age, not married, and I had your fame and money? Then it would be insane. Hehe,” Park Dong-Hyun said.

Young-Joon chuckled.

“Thank you. But I don’t know if it’s because I’m addicted to work or something, but I like researching a lot more right now. And I don’t want to meet anyone anyways.”

* * *

The best advantage of a diagnostic kit was that it didn’t require a type of clinical trial where they had to inject drugs into someone’s body since all they had to do was harvest some blood and watch the reaction in a few minutes.

In just a few days, the members of the Life Creation Team got used to developing the diagnostic kit quickly. Now, they were at a point where they didn’t need Young-Joon’s help. Their progress of development was also pretty far ahead, so the basic type of the product was expected to be created soon.

But before that, big news that would surprise the entire world came out.

[A-Bio enters clinical trials for pancreatic cancer cure.]

[Phase One to be simultaneously done in Korea and the U.S.]

[The only experimental therapy that can cure pancreatic cancer that recurred after surgery.]

Even though the treatment difficulty of pancreatic cancer was extremely high, it was something that a lot of bio-venture companies actually undertook. There were two reasons for this.

One was that due to the nature of ventures, they started with at least one ingenious strategy. In other words, there was a vague expectation that this method could cure pancreatic cancer.

Another was that it was fairly easy to gather clinical trial volunteers; put another way, it meant that pancreatic cancer did not have a cure. There were

volunteers who wanted to try an experimental therapy if they were going to die anyway. In particular, it was a significant incentive if it was a technology that was made by a company like A-Bio that had already shown a lot of innovations.

In Korea, the A-Bio Next-Generation Hospital conducted the clinical trial. In the U.S., Professor Feng Zhang of MIT's medical department, who hadn't yet joined A-Bio, agreed to supervise the clinical trial.

And about three weeks after A-Bio began to develop the kit, Young-Joon was in MIT professor Feng Zhang's office.

"It's been a while, Doctor Ryu."

"Hello."

"You look a little tired."

"I still have jet lag. How is the clinical trial going?"

"It is revolutionary," Feng Zhang said as if he was waiting for him to ask. His voice was full of excitement that he could barely hold back. "I should have gone to A-Bio earlier and worked on this!"

Feng Zhang was almost jumping up and down.

"Haha, don't worry. We still have a lot of cancers to conquer. You are joining A-Bio in the second half of the year, right?"

"I want to go right now if I can."

"Are the patients showing improvement?"

"The five-year survival rate of pancreatic cancer is only eight percent, right? There are a lot of cases where the cancer returns in end-stage patients even if we resect the pancreas with surgery. And for older patients, we can't do surgery at all a lot of the time," Feng Zhang said. "But because this cure doesn't require surgery and it's an oral drug, it's easy to introduce it to the body. We're testing it against fourteen patients, and almost ten are on the verge of being cured."

"Really?"

“Yes. The other four patients are showing great improvement as well. The drug itself is quite strong. How did you make it? The drug is only finding the cancer cells in the pancreas, which is known to be hard to target, and killing them. Other than that, the drug works so fast that ninety percent of the tumor disappears in some patients just after five days.

“It’s a relief that it is working well.”

“Yes. In the case of end-stage pancreatic cancer patients, it’s difficult to treat because the cancer cells spread to other parts of the body, but… Well, there’s nothing we can do about that with current technology. It’s a miracle that we can treat it this efficiently.”

“Of course… It can spread when it becomes end-stage…” Young-Joon rested his chin on his hand and thought about what Feng Zhang said.

“There’s nothing we can do about it. But Conson & Colson and Illemina are saying that they will provide a quick diagnostic service for pancreatic cancer so that it doesn’t get to end-stage.”

“Is that so?”

“Yes. I heard that CEO David of Conson & Colson cajoled Illemina to create a MOU and had it out with the director of the Office of Science and Technology. Each hospital will be supplied with Illemina’s equipment and technology, and the U.S. federal government will support it.”

“Hm.”

“It’s nothing but a rumor spreading behind the industry’s back, but I heard it from someone involved.”

Feng Zhang laughed in a friendly way.

“Someone involved?” Young-Joon asked.magic

“That is… Haha. Actually, I heard it from David himself. He said not to talk about it, but it should be fine, haha. He’s my senior from my undergrad, and we’re quite close,” Feng Zhang said. “Now, the number of people who will die from pancreatic cancer will drastically decrease if Conson & Colson diagnoses and A-Bio cures.”

“Conson & Colson thought well.”

“Yes, And David wants to meet you. If you’re okay with it, should I set it up?”

“That sounds great,” Young-Joon said without hesitation.

A-Bio was filled with scientists from all over the world. Of course Young-Joon heard about the rumor that was spreading behind the industry’s back.

“I will meet him if you set up the date,” Young-Joon said.

But actually, David was already on the list of people he was going to meet during this visit to America.

1. NGS is an acronym for next-generation sequencing. ☜