

Commencement Address (December 2022)

I would like to congratulate the 3 graduates who have received their doctoral degrees today. The degrees you have earned today through your perseverance in your research are the fruits of your efforts and are truly worthy of praise. I hope you take pride in your achievements and remember the joy of this important day.

I would also like to express my heartfelt congratulations to your family, friends, and the dedicated professors who have continually given guidance to you. I am sure that all those who supported you in various ways as you studied at NAIST are cheering for you today.

Now, how do you feel as you look back on your study experience here at NAIST? The training in graduate school is quite different from that in college; you have worked on your own research project for an extended period of time to compose a doctoral thesis. Steve Jobs, one of the founders of Apple, once said,

“To design something really well, you have to get it. You have to really grok what it's all about. It takes a passionate commitment to really thoroughly understand something, chew it up, not just quickly swallow it. Most people don't take the time to do that.”

You have learned how to thoroughly apply yourself to your research, thinking in depth of different approaches that you tried to explore this research. I believe your doctoral degree is a proof that you are able to do what Steve Jobs described as “most people don't take the time to do.” These skills will be invaluable in various situations to solve problems and issues you may face in coming years.

In addition, you must have experienced firsthand how research may not proceed as planned. When testing a hypothesis that you feel should be without fault, it may be completely negated. I am sure there are many times that you had to come up with a new hypothesis and repeat the cycle over and over. Some people say that the lab is filled with disappointment and frustration.

However, the fascination and wonder of scientific research lie in the fact that humanity continues to expand its horizon of wisdom through a cycle of disappointment and hope. The hope we thought we had finally found turns to disappointment, and what we thought was the truth turns out to be false. As philosopher Karl Popper pointed out, scientists develop their theories through relentless testing.

It is hard to believe now, but for a long time in the West, people assumed that men had one fewer rib than women. This is because the Old Testament of the Bible says that Eve was created by taking one rib from Adam. In the 16th century, Andreas Vesalius, the founder of modern human anatomy, finally corrected this error. You are probably also familiar with the fact that until the advent of Copernicus, Kepler, and Galileo, people believed in a celestial motion theory that placed the earth at the center of the universe. It was not until the mid-20th century that DNA was recognized as genetic material. In fact, with only four nucleotides (G, A, T, and C), DNA was

considered too simple as a medium for complex genetic information, and it was actually argued that proteins were genetic material.

Thus, when viewed over a long timeframe, our knowledge is truly dynamic. What was once considered scientific fact is later denied by verification and replaced by a new "fact" or a new "theory". There were even cases where research that won a Nobel Prize was later refuted. The history of science is also a very interesting history of failure, and through repeated failures, mankind has been acquiring new knowledge.

Finding a hope in disappointment. Using failure as an opportunity for new discoveries. That is how scientific research goes. As a scientist, I would love to see the Japanese national soccer team takes their penalty kick failure and resulting loss as an opportunity for new growth. I believe you have come to understand the importance of failure through learning the methodology of science and persevering on your research theme to achieve your doctoral degree. You now also have "grit", the ability and tenacity to get things done. Moreover, you have gone through the unprecedented situation of the global COVID-19 pandemic. Feeling uneasy with the quick spread of an unknown infectious disease, each of you has been searching for hope and making efforts until this memorable day; such an experience surely increases your confidence throughout your life.

Last week, I visited University of California, Davis. This is the university where I worked as a microbiology professor prior to my appointment at NAIST. I had the pleasure of reuniting with former colleagues with whom I had only been able to communicate online for about three years since the coronavirus disaster began at the end of 2019. During the visit, we reflected on what we had accomplished together and discussed possibilities for future collaborations in education and research. I also had opportunities to meet new colleagues who are willing to help in our pursuits.

The post-corona era where we live with the coronavirus has begun. The days of unknown viruses trapping us online are coming to an end. Here, I have one suggestion for you all. Go on a trip! To enjoy new landscapes, to meet new people, and to have new experiences. I believe that a journey that you embark on after the experience of the long, hard work to earn your PhD will offer an opportunity to discover new possibilities, new hopes, and a new you.

This concludes my commencement address, but in closing, I would like to congratulate all of you once again on your proud achievements.

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