

Messages from Modern Inventors to the Next Generation

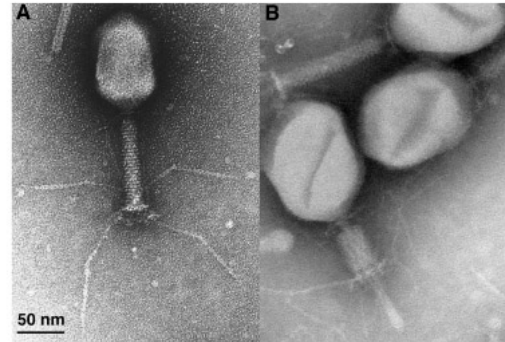
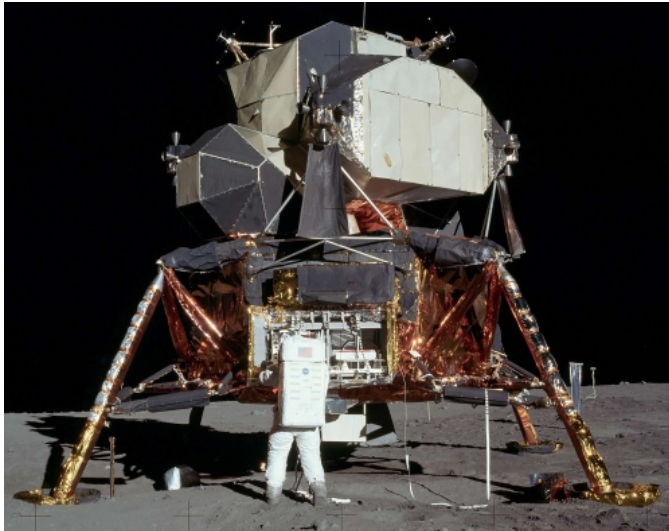
2. *Blue Rose of Dreams* - Mr. Yoshikazu Tanaka, Suntory Holdings Limited



Roses have been the most beloved plants by people all over the world since the days before Christ, and people have been producing new varieties of roses for more than 800 years. For hundreds of years, no one had ever been able to produce a blue rose in spite of the efforts of numerous plant breeders, so the expression, “a blue rose,” came to mean “impossible” in the English language. Using the latest biotechnology, however, Mr. Tanaka succeeded in creating roses containing a blue pigment for the first time in the world.

What inspired you to become an inventor/researcher?

I was fond of reading books since I was in elementary school. I learned about animals in the world and dinosaurs that had become extinct by reading a pictorial book over and over again until the cover was torn. What was striking for me in the field of science and technology was Apollo’s landing on the moon. I saw the Apollo command module at the U.S. pavilion during Osaka Expo ’70. (The Apollo 11 spacecraft consisted of “the command module and the service module” that traveled from the earth to the moon and “the lunar module” that landed on the moon.) I learned the word deoxyribonucleic acid (DNA) from a book titled *Men, Microscopes, and Living Things* and was deeply moved by the fact that DNA was the blueprint of life and that phages (virus) that infected colon bacillus were very similar in shape to the lunar module. At that time, I probably had an idea of studying biology in the future. When I was a university student, I conducted research on chemoautotrophic bacteria (unusual bacteria that obtained energy from inorganic substances such as nitrous acid and iron). I was surprised and awed by the fact that evolution consisting of a countless number of coincidences resulted in a huge diversity of life in spite of a uniform genetic material (DNA).



“Lunar Module” of Apollo Spacecraft and “Phage (virus)” that infects colon bacillus

Source: NASA (Lunar module) and Professor Arisaka’s Laboratory, the Tokyo Institute of Technology (phage)

What specific ideas and difficulties have you faced as an inventor?

Anyone can come up with the principle of creating a blue rose. In order to realize this principle, however, daily effort and a long succession of experiments are more important than a flash of inspiration. The color of a rose is supposed to turn blue when the genes responsible for synthesizing pigment are slightly changed. But roses are plants that have evolved over hundreds of millions of years, so this is not easily achieved by such shallow thinking. Research will progress little by little from faith in eventual success and repeating trial and error. Furthermore, since inventions are meaningless if you are not the first person to create the invention, winning the competition with unseen rivals pursuing the same goals comes down to persistent effort. In addition, as a professional inventor, it is important to put off working on something academically interesting but of little use in creating a blue rose. The ability to communicate with others is also necessary to some extent, since working with people with different areas of expertise is essential for achieving results.

What gives you joy as an inventor/researcher?

I am genuinely delighted when I isolate the genes of the enzyme that control flower color. . This would be the same sense of achievement one has in finishing a jigsaw puzzle or beating a game. There is a quiet pleasure even in a small discovery because you are the only person in the world that knows about the discovery. Flowers are not for eating so they do not satisfy your stomach, but they can brighten your mood and cheer up people. Furthermore, the color blue represents happiness and

hope, as symbolized by the bluebird of happiness. After we created a blue rose, a customer said to me, “Since it is now possible to do something that was considered to be impossible before, I won’t lose heart and keep on trying.” The comments made me feel honored and privileged to be a researcher. I believe the real purpose of inventions is to make people happy.



This is the Suntory laboratory where roses are bred.

To create bluer roses, roses introduced with various genes are grown successively. We have grown 20 thousand rose plants up to now.



This shows how a rose cell introduced with a gene grows into a small plant. From the time that we began developing blue roses, it took more than ten years for the first blue rose to bloom.

What message would you like to give to the next generation?

As scientific technology advances, it becomes possible to do things which were not possible in the past. There are many issues to be addressed in the future such as the environment, food, and natural

resources. These challenges will be solved when young people like you become interested in science and make innovative inventions. I think learning to manage the flood of information by scientifically examining and selecting information is important in leading a good life. In the language of flowers, a blue rose means “a dream comes true.” I hope that your dreams will come true as a result of having great ambition* and that you continue your efforts to succeed, undaunted by difficulties.

*Note: “High ambition” is phrased in Japanese as “aspiration in the azure sky”; that is, to aspire to attain greatness by having ambitions as high as the azure sky above the clouds.



This is a photo of the “Suntory blue rose APPLAUSE” which was first sold in November 2009. The English word “applause” which means “clapping of hands/cheers” was used for the name of the rose.