What is Universal Village? Since the inception of this international conference, we've had numerous supporters, and this year marks the third time we will convene.

However, there is still insufficient agreement on the concept of Universal Village is. Unfortunately, that is our fault because we have not clearly articulated the concept. So today, having been given this wonderful opportunity, I would like to do my best to get your full understanding, approval, and support of the concept.

When we look back on modern history, businesses have used technology without considering the harm it causes humanity and the environment. Many have accepted this as a consequence of "scientific progress." However, in recent years, people have begun to notice the reduction in air, water and soil quality. In fact, since 1945, Japan has seen an increase in diseases due to cadmium, mercury, and air pollution. Now we are at a point where our environment and health have been undermined so that the consequences of pollution cannot be ignored.

However, when it comes to a method to solve all these problems, even ecologists do not have an answer. And that is why we launched the Universal Village International Conference in 2013 which aims to bring researchers from various fields together to discuss these issues. At the same time, we started researching the laws that govern the entire global ecosystem and discovered that the ecosystem is largely dependent on microorganisms. Therefore, to protect the ecosystem, we urgently need to solve problems in the following three fields:

1. Protect diversity of microorganisms in the soil by developing materials to replace pesticides and chemical fertilizers.
2. Protect diversity of microorganisms in the ocean by developing new materials to replace oil and micro-plastic (petroleum products).
3. Protect diversity of the microorganisms underground and in seabeds where radioactive waste materials have been dumped by nuclear power plants by developing new energy sources to replace nuclear power plants.

Unfortunately, humans have used the ocean as the world's sewer, have destroyed rainforests, have carried out underwater nuclear tests in coral reefs, and have used the Alps as illegal dumping grounds for radioactive waste. That is why we researchers who are determined to regain a sustainable global ecosystem named this conference Universal Village.

During the last two years, another eminent threat to humanity and environment has emerged in form of nuclear energy. People all over the world are fearful of global nuclear contamination caused by a massive explosion of nuclear material. In fact, the consensus of the most trusted authorities is that we are in a critical state where, at any moment, a nuclear war could occur.

Currently, there are 15,700 nuclear weapons worldwide and 500 nuclear power plants. To demonstrate the power of one nuclear power plant, it has been estimated that if all the spent nuclear fuel in the Fukushima Daiichi plant was collected together it would have 100,000 times the amount of cesium released by the bomb dropped on Hiroshima.

Not only that. The damage caused by the Fukushima Daiichi nuclear power plant accident in Japan that took place on March 2011, has now spread to wider areas including Tokyo. Although scientists had anticipated this, the majority of Japanese were told that the impact of the Fukushima accident would be minimal and not to worry. Currently, however, through young people's blogs, we are finding that a large number of people are complaining of serious physical disorders that they believe are due to radiation sickness, and people have begun to realize for the first time that they were not told the truth.

Therefore, nuclear power, far from being a safe and clean energy source as they advertise, unleashes nuclear reactions that are "found only in astronomical bodies and on a level with nuclear weapons in the danger they bring to humans and the Earth."

Moreover, there are plans to increase nuclear power generation in China and Africa, and the United States. Even Japan and many other countries do not intend to stop nuclear power generation. Furthermore, governments and companies in these countries are not taking firm steps to prevent accidents such as those in Chernobyl and Fukushima Daiichi from occurring again.

So what is the role of scientists in the face of global catastrophe of this magnitude? Their responsibility cannot just stop at relaying facts to the people. They should go beyond this and develop technology that will neutralize what is threatening people, in order to bring them peace of mind.

One good reference in this regard is the book *TEN BILLION*, by Stephen Emmott, which asks what the world will be like if the population reaches ten billion, and uses a parable to illustrate the role of scientists in a crisis situation. Emmott calls the present world situation a "crisis unlike anything we have ever seen," and uses the following story to rouse up scientists about the role they must play. Assume that an asteroid is in a collision path with the Earth and we know the exact date it will happen. Emmott states that "All governments around the world will work together to find a solution…There will be a worldwide effort to take action. All scientists, engineers, all universities and companies will be required to cooperate." It is precisely now that we scientists must realize that such a joint effort is necessary. And in fact, this is why we asked all of you to gather here today.

Because of this emergency situation, in addition to the 3 research areas we discussed earlier, another goal of Universal Village has been added which is to protect the safety of the people by developing technology that will detoxify all radionuclides that currently exist in nuclear weapons, nuclear power plants, and spent nuclear fuel, as well as develop medicine to maintain the health of victims of radiation illness.

Naturally doubts will arise as to whether science in the 21st century could solve such a challenging problem. I myself was doubtful until I met Dr. Teruo Higa, professor emeritus of the University of the Ryukyu at the 1st Universal Village International Conference in 2013. Dr. Higa's work involves the use of a combination of microorganisms called Effective Microorganisms (EM) centered mainly on lactic acid bacteria, yeast, and phototrophic bacteria to solve many ecological problems such as air, soil and water pollution in over 150 countries.

Following are a couple of real-life examples of the power of EM.

In agriculture, EM is used as an organic fertilizer resulting in crops that not only taste excellent and are highly nutritious but increases the crop yields by 1.5-2 times.

This picture illustrates before and after EM was used as a fertilizer in South Africa. Previously, it was thought that tomatoes could not be drown on their soil. However, after EM was used as a fertilizer, the tomato harvest was abundant.

EM has also been used to quickly undo the catastrophic effects of a Tsunami. For example, in Sendai, a tsunami hit on March 2011 and covered the field with salt. Usually, this means that crops cannot be grown for a long time. However, after EM was sprayed on the fields, in only 4 months (i.e. July), crops began to grow. And after only 6 months (i.e. September), there was a full harvest.

EM has also been shown to purify water and sewage after a flood. After the flood in Don Muong district of Bangkok Thailand, Prime Minister supported the use of EM balls to purify their water.

Even in Japan, EM was used to purify the Nihonbashi River. The rivers used to be dirty and foul smelling because of sludge deposits. However, after few years of using EM, the river was cleaned and mullet and sea bass abound and lots of mussels were found.

All these photos illustrate the power of EM. However, the question still remains, can EM protect us from harmful radioactive materials? The toxicity of radioactive material which has a long half-life, such as cesium 137 and strontium, is primarily due to internal, rather than external radiation exposure. Other than through breathing in the material, internal exposure can occur through the ingestion of contaminated food. However, EM is able to almost completely prevent this internal exposure. How so? It has been shown that crops grown with EM do not absorb radioactive substances. For example, even when cucumbers are grown in soil where the concentration of cesium-137 is 6000 becquerel (Bq) per kg, there were no radioactive material detected in the cucumber. Moreover, in terms of taste, size and crop yields these agricultural crops were superior to those before being contaminated with radioactivity.

Another major challenge of a nuclear power plant is how to treating radioactive sludge and debris. The efforts of the company Iwate Compost have demonstrated that EM can completely treat this kind of sludge and debris. This company has been involved for over

fifteen years in using EM to compost and ferment sludge and raw garbage. When sludge that has a level of 200 Bq is fermented, after 30 days there are no detectible radioactive substances, and with levels of 500 to 700 Bq no radioactive substances are detected after 45 days.

Most of these activities have been done by the EM Research Organization Inc. which Dr. Higa supervises, or by NPO groups and EM support volunteers from all over Japan. However, people in Japan are gradually learning about the power of EM to decontaminate radiation. At a composting facility in Tochigi Prefecture, radioactive contaminated material with 1,000 Bq up to10,000 Bq were fermented in plastic bags after being sprayed with EM. After 2 months, radiation levels were cut in half.

In addition, even on asphalt, where it is hard to reduce radiation levels by washing with water, there are a number of cases in which spraying with EM has dramatically reduced radiation levels. Therefore, people are beginning to pay attention to this decontamination technology in urban areas as well.

However, Japanese researchers have been critical of Dr. Higa's findings and have refused to listen and visit the farmers who have direct experience spraying EM in fields that were highly contaminated with radioactive material and later found that no radioactive materials were detected in their crops. This will result in a dire situation. Even though it could have been prevented, contaminated crops will be put on the market, resulting in a great number of people suffering from internal radiation exposure. Moreover, there is a significant difference between the contaminated areas designated by the government, and areas that are actually contaminated. If you consider the fact that the contaminated area includes the Kanto region, including Tokyo, at least 50% of the Japanese population have been affected by internal radiation exposure.

Therefore, a scientific explanation for the effects of EM has to be developed. Dr. Higa hypothesized that the microorganisms in EM are able to change salt into nutrients for crops and also change radioactive substances to harmless substances through a process of transmutation. We are currently developing a new theory that scientifically proves "transmutation by microorganisms" and will discuss this further in my book that will be published soon. If transmutation of radioactive substances by microorganisms is possible, then radioactive substances should be able to be transformed into non-radioactive substances.

In conclusion, What we now need to do is fully ascertain the bi-product of "scientific progress" that we have unquestioningly accepted up till now, and thereby avoid ever repeating the mistakes that have put our humanity and environment in jeopardy. With this in mind I would like to ask all the scientists gathered here today to consider adding one of the following goals to their research agenda.

1. Create other eco-friendly new materials as an alternative to plastic or other petroleum products.
2. Create other forms of green energy as alternatives to oil and fossil fuels.

3. Continue to study technology for the detoxification of radioactive nuclear material.

All the global ecological problems facing the world—problems related to nuclear energy and pollution of the soil, air, and water—can be solved through effective application of microorganisms according to the "Dr. Higa's Theory". It is my hope that we will contribute to this development. I firmly believe it is only through this unified effort by scientists that we will be able to overcome the crisis facing humanity and the Earth.