**Background**

Solar energy is the most abundant form of energy but extremely hard to use. Scientists have been trying different methods to convert solar energy to chemical energy, all of which need to solve two problems: media for electron transfer and enzymes to capture the excited electrons. Current methods for electron transfer include photosynthesis process and semiconductor nanoparticles. But they all bear certain disadvantages. As for the enzymes, most of them are oxygen intolerant, which makes it difficult to use them in air.

This year, our Biologistic project successfully solved these two problems with our in-silico fixed Cds nanoparticles on the surface of E.coli and silicon encapsulation system. We have successfully proved the applicability of our systems through hydrogen production and propose that our systems can be universally applied in model organisms such as R. sativa and yeast.

**Human Practice**

We investigated public opinion about energy issues by questionnaires. Questions closely related to our project have been designed and the results gave us previous guidance.

We promoted education by opening our lab to primary school students on June 2nd. Eight children visited our lab and conducted simple experiments under our supervision.

**Results**

We successfully constructed 7 parts this year and all tested their characteristics and proved their function.

**Expansion**

Now that our two systems (the artificial photosynthetic system and encapsulation system) proved to be successful, we want to expand our project even further. We are planning to apply our methods to other model organisms such as R. sativa and yeast. This will help us understand the stability of our silicon shell which suppresses the oxygen intolerance.

**Acknowledgments**

**References**

[Please provide the list of references as requested.]