

Speech by
Prof. David Ruchien Liu

I am deeply honored to receive the 2022 King Faisal Award, which I humbly accept on behalf of a very dedicated team of more than 200 current and former students, postdocs, collaborators, and staff. Working with such talented and devoted people has been the honor of my professional life. This award, celebrating the development of precision gene editing technologies, is the result of their tireless efforts.

Misspellings in our DNA cause genetic diseases in hundreds of millions of people around the globe. Many of these diseases severely limit lifespan or quality of life and almost all of these diseases are currently untreatable. Although in many cases we know exactly which DNA misspelling is causing the disease, we have until recently lacked the technologies required to efficiently and precisely correct such misspellings in living systems. As a result, many individuals have been left without effective treatment options.

Thanks to the work of our research team, as well as thousands of other scientists in the gene editing field, we have begun to transform this bleak picture into one of hope. Our laboratory recently developed base editing and prime editing, precise gene editing technologies that enable us to precisely correct disease-causing DNA misspellings in living cells and mammals.

Our hope is that these technologies may one day be translated into human therapeutics that treat the root cause of thousands of genetic diseases, alleviating suffering for millions of patients and their families. Base editing and prime editing have also provided thousands of research laboratories around the world with powerful tools to illuminate the relationship between our genes and our lives, resulting in new scientific discoveries that further inform biology, disease, and medicine.

That this award committee chose gene editing as a focus of the 2022 King Faisal Prize is a powerful reminder that the era of human gene editing has already begun, and that humanity has taken the first steps to free ourselves and our children from being at the mercy of misspellings in our DNA.