How would you explain the main findings of your paper in lay terms?
Ribosomes are the cellular factories for protein production and they consist of mature 40S and 60S subunits. Patients with defects in ribosomes show abnormal development, bone marrow failure, anemia or a higher risk of cancer. Our paper focuses on a well-known translation initiation factor, eIF4G1, which is involved in the initiation of protein synthesis by bridging the 40S ribosome to mRNA. We investigated a new function of eIF4G1 because the levels of 60S ribosome subunits were decreased in eIF4G1-deletion strains. To dissect how eIF4G1 participates in 60S ribosome biogenesis, we firstly proved that eIF4G1 physically interacts with immature 60S. Secondly, deletion of eIF4G1 led to incorrect association of the assembly factors surrounding the peptide exit tunnel (PET), an important functional center of the 60S ribosome. We speculate that eIF4G1 plays a dual role in ribosome biogenesis and protein synthesis, connecting the two vital pathways to balance protein levels.

Were there any specific challenges associated with this project? If so, how did you overcome them?
eIF4G1 has significant functions in the nucleus; however, eIF4G1 is mostly localized in the cytoplasm for translation initiation. At first, the challenge was to demonstrate the involvement of eIF4G1 in ribosome biogenesis in the nucleolus more clearly. To this end, we truncated domains related to translation and then identified domains of eIF4G1 that joined in 60S ribosome biogenesis. The C-terminus of eIF4G1 localized in the nucleus more obviously, and supported the association with the pre-60S subunit. The other challenge was recognizing a direct functional link between eIF4G1 and ribosome biogenesis. For this purpose, we chose other mutants of translation initiation factors, tif1Δ and tif3Δ, as controls, as they do not impair ribosome biogenesis. eIF4G1 just associated with pre-60S ribosomes transiently, so we also optimized experimental conditions and confirmed the binding signals of eIF4G1 repeatedly.

When doing the research, did you have a particular result or ‘eureka’ moment that has stuck with you?
Dealing with arguments and addressing questions are essential in academic inquiry. It takes a long time to satisfy me and convince others with logical facts and data. When we organized the results from different types of experiments, all the clues verified one conclusion; that was the ‘eureka’ moment for me.

Why did you choose Journal of Cell Science for your paper?
Journal of Cell Science (JCS) publishes topics in cell biology studying the structure, function, and behavior of cells. Our paper matches this because we uncover a functional role of the translation initiation factor eIF4G1 in maturation of the large ribosomal subunit (60S) in yeast. Our study might offer insights for people concerned about crosstalk between translation and ribosome biogenesis. Furthermore, I believe that JCS is reliable and fair, because JCS is a long-established journal with a thorough peer-review system. It is our first time submitting to JCS, and we received lots of valuable comments during the revision process.

Have you had any significant mentors who have helped you beyond supervision in the lab? How was their guidance special?
From undergraduate to a PhD student, I have stayed in the lab of Dr Lo. The environment is the same, but I can feel changes when it comes to facing different lab members. They’re all mentors who have taught me how to do research more calmly, unitedly, and happily. The person I am always grateful to is Dr Lo. Dr Lo treats students kindly and empathizes with us as much as possible, so I gain a lot of mental support from her. It is a relief to have support when seeking the unknown.
What motivated you to pursue a career in science, and what have been the most interesting moments on the path that led you to where you are now?

Scientific exploration might be something I can do all my life, because it arouses my curiosity and motivates me to build knowledge. My career expectation is to pass on or share what I have learned with others. For now, doing experiments makes me concentrate, and I like focusing on the moment. It also requires me to collect and integrate information logically for data analysis. It is an interesting way of training for independent thinking.

Who are your role models in science? Why?

People who can focus on their field for a long time are all amazing. I don’t have a specific role model, but I observe the specific characteristics required in science. If someone has traits such as patience, enthusiasm, and an open mind, I will learn from them.

What’s next for you?

I expect to graduate this year and apply for research opportunities abroad. Regardless of the outcome, I will try a different field of study in molecular biology. I hope to become a professional researcher or a professor in the future.

Tell us something interesting about yourself that wouldn’t be on your CV

I’m interested in tasty food, music, ball games, and skateboarding. I plan to work or travel where I can snowboard to relax.

Reference