How would you explain the main findings of your paper in lay terms?

Cells have many compartments dedicated to specialised functions. Some compartments are sealed with a membrane, but others are formed by the coalescence of specific proteins. We found that the endoplasmic reticulum (ER) exit sites, which are the places in the cells where newly synthesised proteins exit their place of synthesis to be transported to the cell surface and secreted, are remodelled under cellular stress. Indeed, we have discovered that proteins such as Sec16 and COPII subunits that underlie the function of the ER exit sites phase separate or coalesce into non-Sec bodies when cells are starved of amino acids.

In this paper, we have discovered that three signalling pathways need to be activated to lead to Sec body formation. First, the absence of amino acid makes the cells more sensitive to salt. This creates stress that activates salt-inducible kinases (SIKs). This is sufficient when the salt stress is high. Second, the absence of amino acids activates both of PERK and IRE1, two kinases that are at the core of ER stress. Combined with moderate salt stress, this leads to the formation of Sec bodies. Activation of all three kinases leads to the stimulation of the unfolded protein response that we propose to be a key factor in Sec body formation.

When doing the research, did you have a particular result or ‘eureka’ moment that has stuck with you?

At the beginning of this project I had very hard time identifying the pathways that led to Sec body formation. The breakthrough came when we found Sec bodies formed in high-salt conditions. That was an exciting moment. So, I would say this was the ‘eureka’ moment during this project.

Why did you choose Journal of Cell Science for your paper?

I have been reading Journal of Cell Science and believed that our paper fits the scope and is suitable for this broad, yet targeted audience as it relates to a new exciting new field of phase separation, signalling pathways and stress.
experimental biology class in high school, the first time I saw a cell under a microscope, the first day of working in the lab, the first time having a Bachelor’s degree student… All those moments together led me here and I enjoyed every moment. This motivated me to start a PhD abroad.

What’s next for you?
So far I still would like to continue pursuing a career in academia. First of all I will try to find a postdoc position after my PhD.

Tell us something interesting about yourself that wouldn't be on your CV
Before I move to The Netherlands I hardly ever cycled. Now my bicycle is my daily transportation. I am still trying to enjoy cycling in the rain.

Reference