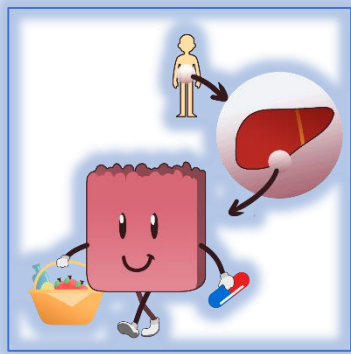
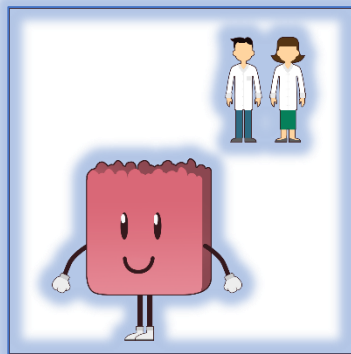


*The happy liver cell*

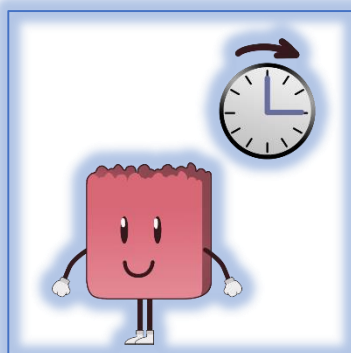
*By Teresa Rubio-Tomas*



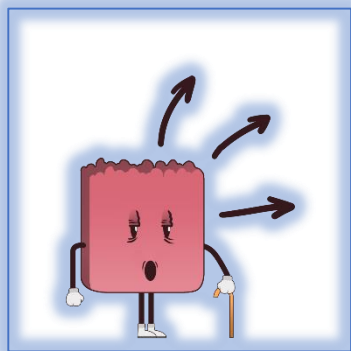
*“Hypatia was a cell living happily in the human liver. She was working hard cleaning the body's blood from harmful products while she was also helping the intestine to digest food and covert its components into energy.*



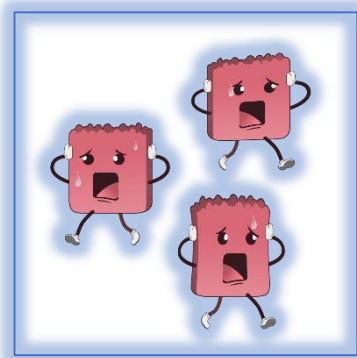
*Suddenly, one day, some scientists took out one molecule from her body.*



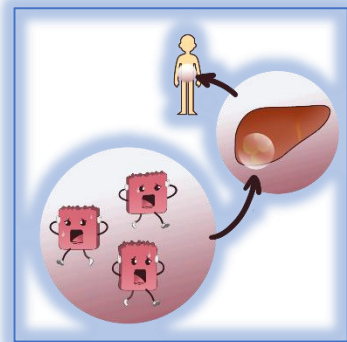
*At the beginning she felt just fine, so she continued living normally as if nothing had happened.*



*However, as she grew older, she realized that there was something wrong. After a certain age, she felt sick and weak to function properly.*



*All of a sudden, she started multiplying, something very unnatural for a cell in the liver! Her children also gave rise to new cells which did not function properly either.*



*The liver kept growing bigger and bigger until it could no longer fit into its original place. It was an overcrowded place with confused liver cells. There was chaos!*

*I am one of these scientists that remove molecules from cells to study their function. Many things can happen when you change something that is working well. It is very similar to the work of an apprentice car mechanic who takes out parts from a fully functional vehicle to study and understand what is the role of each part in the car.*

*If we study the role of each molecule within our cells, we will understand how they perform their daily tasks and achieve harmonic function. This is very important, for instance in cases of disease: if, at the onset of a disease a molecule is missing, then the scientist who has studied in depth how normal cells function, will know how to cure the patient as he will immediately understand that the absence of this molecule is causing the body's dysfunction.*

Our DNA contains blocks of information, called genes, which are needed to specify all our physical and biological traits. These genes are passed from parents to children. However, other factors, like e.g. the environment, could affect how much or little our genes are “expressed”. These factors are called epigenetic factors and they affect gene expression by changing the chemical marks that decorate our DNA without actually changing the DNA sequence. During development or disease, epigenetic mechanisms often affect gene expression.



Teresa Rubio-Tomas, who comes from Spain, did her PhD under the supervision of Iannis Talianidis, focusing on how some of these epigenetic mechanisms affect transcription of genes during liver cancer formation.

She found that some genes which are regulated by these epigenetic mechanisms are absolutely necessary for the normal function of the liver.

Teresa moved briefly back to Spain for a post doc where she studied mechanisms related to liver diseases and ageing. She is currently a postdoctoral fellow in the lab of Nektarios Tavernarakis at IMBB. She is using her previous experience to study mechanisms of growth and metabolism in the worm *C.elegans*. She removes

specific molecules from the worm’s body and then she investigates how these mutant worms respond to different chemicals both while they are young and when they get old (during ageing).