



## What is the importance of small RNAs in the transmission of *L.monocytogenes* ?



My name is **Patrícia dos Santos**, I am 25 years old and I am from Portugal. I did my studies in the University of Aveiro (Portugal), where I studied Biotechnology. During my master in Molecular Biotechnology, I decided to go abroad, under the Erasmus program, in order to do my master thesis. I chose the University of Southern Denmark where I stayed for a few months. This experience allowed me to work within the field of microbiology, in particular with antibiotic resistance in bacteria. Now, I am back in the same university, but this time as a PhD student working with something different: small RNAs in *Listeria monocytogenes*.



I have a background in Biotechnology and because of that I learnt how important microorganisms are and how often they are present in our daily live, even though we do not realize it: production of bread, yoghurt, beer, wine, and so on. If in one hand we have “good” microorganisms, on the other hand we have the “bad” ones, like *Listeria monocytogenes*, a food-borne pathogen that can cause diseases and in some cases (immunocompromised people) can lead to death.

## Objectives

With my project I will try to help to discover [how this bacterium can adapt to different environments through the study of small RNAs](#).

As we know, we have DNA in the cells, which is transcribed to RNA. This RNA can be RNA that has a known function, like messenger RNA, but it can also be non-coding RNA, such as small RNAs. Small RNAs have shown to have an important role in the adaptation of many bacteria in different stress conditions. RNAs have a specific sequence formed by four bases (A, U, C and G) placed in different orders, with different repetitions, etc. In the cell, the small RNAs will be looking for other RNAs to target them. How? Each base binds specifically, it means, A binds to U, and C to G. Thus, when the small RNA finds other RNA with a sequence that matches, they will bind strongly. After that, the RNA bound to the small RNA will no longer be free to help the cell to adapt under stress conditions; the cell will become weaker and incapable of infection.

## Expected results

In order to find out to which RNAs (called targets) the small RNA binds, I will have to construct a mutant strain (bacteria) lacking the small RNA and compare it to the “normal” bacteria (wild type), to [check if both bacteria express the same genes](#). If not, it means that the genes that are not being expressed may be the targets of the small RNA.

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