

## CNC-UC team investigates new therapeutic targets for obesity from the microbiota



Scientific team led by Professor Teresa Gonçalves, from the Faculty of Medicine of the University of Coimbra, will investigate the interaction between the microorganisms that inhabit our intestine and adenosine receptors, which may be the key to treating various diseases, including obesity.

Lisbon, June 7, 2022 – The Mycobiota research project homeostasis under the regulation of adenosine receptors as pivotal players in obesity, from a team led by researcher Teresa Gonçalves\*, from the Faculty of Medicine of Coimbra, was the winner of the 3rd edition of the National Grant for Research Projects, awarded by the Biocodex Microbiota Foundation. The study, financed with a prize of 25 thousand euros, will be carried out over a year and a half and will be able to find new therapeutic targets not only for obesity, but also for the diseases associated with it.

According to the researcher, there is increasing evidence to support that the microorganisms that live in our gut (microbiota) contribute to our health. What is not known in greater depth is how this set of microorganisms is regulated. **“This project intends to**

**find out if one of the controllers could be the modulation system operated by adenosine, whose manipulation would control the intestinal microbiota to prevent or mitigate obesity”,** explains.

Teresa Gonçalves emphasizes that obesity and associated diseases are complex diseases with diverse causes and difficult to treat. In addition to genetic and personal factors, such as the quality of food or physical exercise, there are other factors that can contribute to these pathologies. One of these factors is the population of microorganisms in the gut – the gut microbiota – essential for defining how we process ingested food.

Most studies on gut microbiota have focused on gut bacteria. The populations of fungi (mycobiota \*\*) that are also part of the intestinal microbiota have been less studied, although there is already some data on their influence on chronic diseases, such as obesity, diabetes or inflammatory diseases. **“The interaction of the microbiota with our organism involves receptors on the surface of each individual's cells, which may be at the origin of some of these morbidities. This interaction can lead to the worsening or, on the contrary, the improvement of symptoms”,** says the principal investigator at the Center for Neuroscience and Cell Biology at the University of Coimbra and at the Faculty of Medicine at the University of Coimbra.

Among these receptors are the adenosine receptors which, among other functions, may, according to the scientific team, be able to control the intestinal mycobiota in the elderly. Adenosine receptors (A2A and A2B) are like sensors that exist in all human cells to identify signs of stress or exertion – adenosine. These receptors are of particular importance in controlling inflammation, preventing excessive tissue damage. These sensors can also contribute to obesity control.

**“What we will define is the role of these sensors in the inflammation process and whether, through them, we can balance the mycobiota and, consequently,**

**inflammation. And, in this way, promote a normalization of intestinal metabolism and, at the same time, prevent obesity”**, explains the researcher.

The theme chosen for the candidate projects for the 2021/2022 edition of the National Research Project Grant was "Microbiota and ABCD - Chronic Disease Based on Adiposity". The projects were evaluated by an independent jury made up of the four members of the Scientific Committee of Biocodex Microbiota Foundation in Portugal, who chose the work of the team led by researcher Teresa Gonçalves.

Last year, the PRIMING project was the winner, which aims to understand the impact of maternal obesity on the activation and stimulation of the child's immune system induced by the intestinal microbiota throughout the first year of life, authored by a team of researchers from i3S - Institute of Research and Innovation in Health of the University of Porto. In the first edition, the Grant was awarded to research aimed at identifying specific profiles of microbiota and metabolites that could predict better therapies for patients with Spondyloarthritis (SpA) and Rheumatoid Arthritis (RA), by two researchers from NOVA Medical School | Faculty of Medical Sciences of the Nova University of Lisbon.

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\*\*Microbiota and Mycobiota

The human microbiota corresponds to all the microorganisms that colonize our organism and with which we live daily: bacteria, viruses, fungi, yeasts and protozoa. Its composition differs according to the colonized surfaces, that is, there is the cutaneous, vaginal, urinary, respiratory, oral cavity and intestinal microbiota, formerly called intestinal flora. The mycobiota is the fungal component of the microbiota.

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