



Searching for the key to bone formation

Bone formation begins during gestation and continues throughout life. A person's bone properties, such as regenerative abilities following an accident or bone breakage as a result of disease, depend on this process. Bone formation even affects height, determining if a person will be shorter or taller than their peers.

The protein CEBPb participates in bone formation by promoting the generation of cells that construct bones and the skeleton. However, science still does not know exactly how this protein exerts its role.

It is within this context that Dr. Martín Montecino, Director for the Center of Biomedical Research, Faculty of Biological Sciences at Universidad Andrés Bello, is leading a study that aims to determine the role that CEBPb performs in bone formation, defining the precise mechanisms through which this protein acts within cells.

"Our hypothesis is based on the fact that this protein intervenes from a very early stage of bone differentiation, promoting the formation of cells that will later constitute bones in mammals. Therefore, we propose that the function of this protein is very important in determining if cells will be competent in constructing osseous tissue, in addition to later helping to maintain the skeleton strong and healthy throughout an individual's lifetime," explains Dr. Montecino.

Moreover, Dr. Montecino states that, "this protein functions in the nucleus of the cell, where it interacts with the DNA to promote or inhibit the expression of distinct genes. This grants cells the environment needed for proper functioning within osseous tissue."

The research carried out by Dr. Martín Montecino is financed through Fondecyt and is supported by doctoral students in the fields of Molecular Biosciences and Biotechnology, both programs offered by the Universidad Andrés Bello. This project also trains undergraduate thesis students from the Biochemistry and Biotechnology Engineering programs of the University.

Dr. Montecino concludes that the results of this research will define new molecular markers for identifying the personal and differentiated abilities of individuals to form bone. This could result in the early identification of pathologies that affect osseous tissue and open new alternatives for the efficient control of these diseases.