



# The answer lies in the genes

In the era of genomic studies, one of the most notable discoveries has been of DNA sequences derived from viruses in animals, plants, and fungi. These endogenous viral elements (EVEs) have profoundly influenced the evolution of humans and other species. In fact, close to 8% of the human genome is composed by virus-derived genes.

It is in this context that Dr. Gloria Arriagada, investigator for the Faculty of Biological Sciences at the Viña del Mar campus of the Universidad Andrés Bello, is carrying out several studies with the aim of defining the relationship between EVEs and diverse clinical pathogens present today.

One study has identified the cellular components that participate in the virus-host interaction. "Our research focusses on understanding how the human immunodeficiency virus-1 (HIV-1) and the murine leukemia virus (MLV) transport through the cell cytoplasm to reach the nucleus. Since the cytoplasm is very thick, these viruses must bind with microtubule-associated motor proteins," comments Dr. Arriagada.

"We have found that the dynein complex, which transports substances from the cell periphery to the perinuclear zone, is important for the infection of both viruses. We are trying to establish how certain proteins of this complex are associated with the viruses entering the cell," explains Dr. Arriagada.

In a related study, Dr. Arriagada is investigating certain EVEs in the chinchilla, an animal endemic to Chile's deserts. According to Dr. Arriagada, this animal contains Filovirus-derived DNA sequences, a strain that belongs to the same family as the Ebola virus. "This suggests that viruses of the Ebola family were at one time present in South America. This evidence is very important for the epidemiological surveillance of possible disease vectors."

Dr. Arriagada also forms part of the Millennium Nucleus on the Biology of Neuropsychiatric Disorders (NC130011), a project with the mission of developing different viral tools that would regulate the expression of genes associated with psychiatric pathologies such as depression, obsessive compulsive disorder, and schizophrenia. "We are working on generating viruses that target specific types of neurons to be able to subsequently study the synaptic functions of these specific neurons at a cellular level!"

en los genes