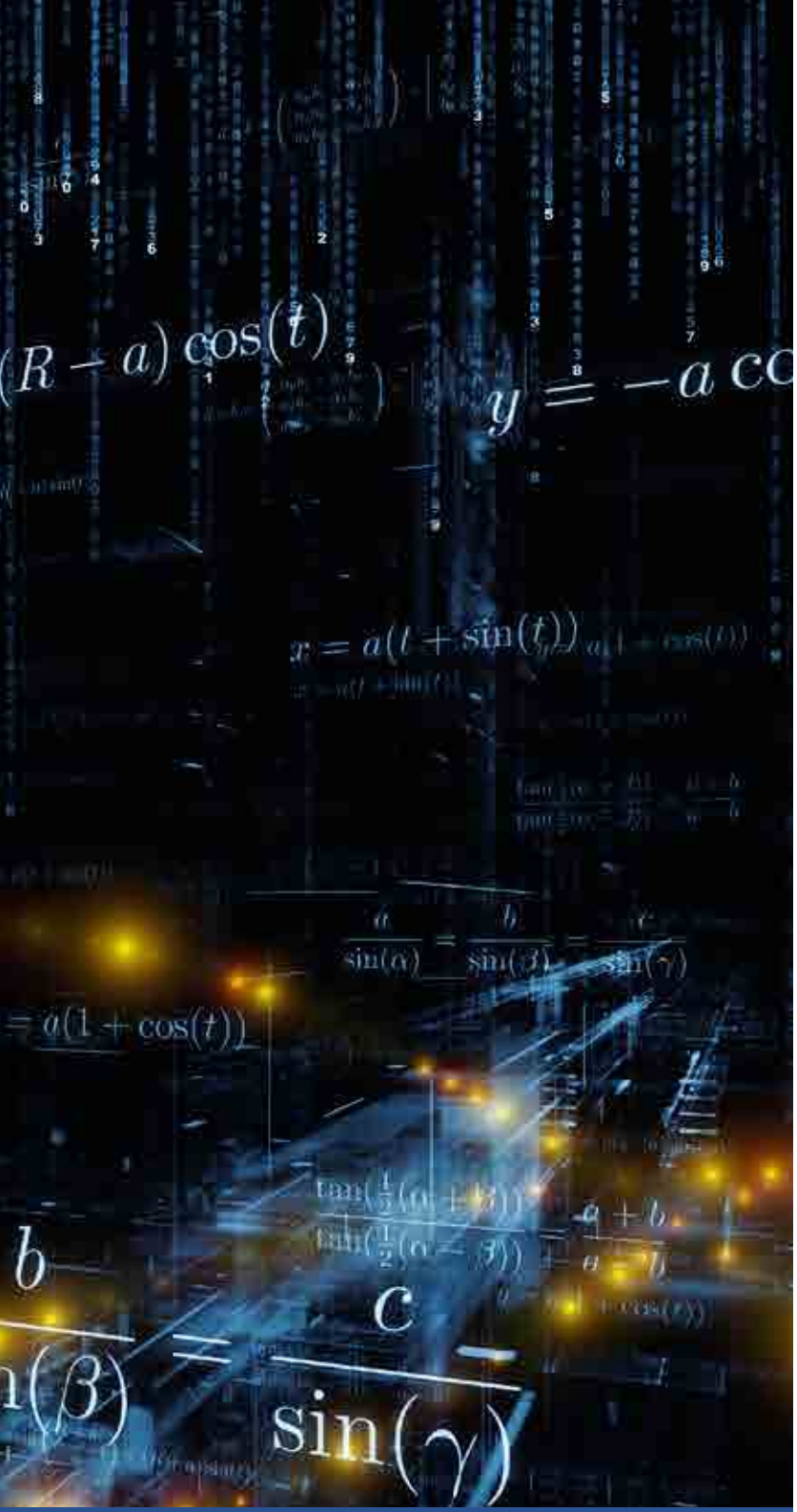

Mathematicians at the service of medicine

Computational and numerical simulations are tools that, day by day, are becoming more useful and interesting for studying diverse phenomena in the world. These tools are not strictly limited to math, but rather encompass diverse areas, including astrophysics, the economy, and climate change.

In this context, Dr. Cristóbal Rojas, investigator from the Department of Mathematics, Faculty of Exact Sciences at Universidad Andrés Bello, is working on the development of a mathematical model that will predict certain continuous physical phenomena by applying the theory of computation.

This UNAB researcher explains that, "For years, investigators have applied the theory of computation to analyze discrete mathematical models, which is to say, with a finite quantity of components. However, what we want to achieve is just the opposite. We aim to extend the theory of computation to analyzing physical phenomena of a continuous character, with infinite components. We also want these new systems to precisely predict the behavior of these phenomena."

Likewise, Dr. Rojas states, "A goal of our research is to determine how well we can predict the evolution of a physical system using the theory of computation. For this, we should understand how the limits imposed by the laws of physics will affect the capacity to compute a physical system in evolution."

This research, funded by a Fondecyt project, proposes studying specific and general cases and to apply the obtained knowledge to distinct areas, such as in medical models for disease prediction.

"Our objective is to transfer this knowledge to computational programs and models that could explain and predict the recurrence of pathologies. For example, today we are working with a model able to emulate lung efficiency over time, as well as with a model concerning the appearance of anomalies during placenta development," highlights the UNAB investigator.