



**INSTITUTO DE INGENIERÍA
BIOLÓGICA Y MÉDICA**
PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE

IIBM Seminar

“(Re)folding, function and (co)evolution of metamorphic proteins”



César A. Ramírez-Sarmiento

Associate Professor- Institute for Biological and Medical Engineering
Adjunct Researcher - Millennium Institute for Integrative Biology (iBio)

Wednesday 10th August 2022 - 13:00 Hrs - Lunch included

Hybrid Seminar – Sala C-306 Const. Civil

Zoom link: Contact secretariaiibm@uc.cl



INSTITUTO DE INGENIERÍA
BIOLÓGICA Y MÉDICA
PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE

"Re)folding, function and (co)evolution of metamorphic proteins"

In most cases, a protein must fold into a unique, thermodynamically stable three-dimensional structure to carry out their biological functions. However, several proteins have been described to switch between two dissimilar structures due to specific stimuli while simultaneously switching their functions, being termed metamorphic proteins.

Although they are regarded as intriguing oddities, these metamorphic proteins are highly conserved in many organisms due to their role in regulating essential processes, such as gene transcription and circadian periodicity. Thus, these proteins challenge our grasp of the time scales of the evolution of protein structure and of the long-standing "one sequence, one fold, one function" paradigm.

In this seminar, we will describe our computational and experimental efforts in deciphering the refolding mechanism of the metamorphic protein RfaH, a bacterial transcription factor responsible for the expression of long virulence operons, and in understanding how two different folds are encoded within its amino acid sequence. We will also show how biophysical approaches can be used to explain how RfaH acts on RNA polymerases to support processive RNA synthesis