



UNIVERSITÀ  
DI TRENTO

Dipartimento di  
Biologia Cellulare, Computazionale e Integrata - CIBIO

6 MAY

11:30 A.M.

ROOM A109 - POVO 1

YOGESH GUPTA

UNIVERSITY OF TEXAS AT SAN ANTONIO HEALTH SCIENCE CENTER



● ● ● **MECHANISMS AND TARGETING OF  
RNA METHYLTRANSFERASES IN  
CANCER AND VIRAL PATHOGENESIS**

**N6-methyladenosine (m6A)** is the most prevalent internal **modification of human mRNAs**. The core methyltransferase **complex METTL3/METTL14** deposits the majority of these marks and, in a context-dependent manner, dictates transcript fate. **Elevated METTL3** activity sustains the **leukemic state in acute myeloid leukemia (AML)**, making this enzyme an attractive therapeutic target. I will present **our work on METTL3/METTL14 that advances understanding of its evolution, substrate specificity, and catalytic mechanism**. I will also discuss mechanistic crosstalk between protein and RNA/DNA methyltransferases, highlighting a regulatory axis with therapeutic potential.

In the second part of the talk, I will turn to **2'-O-ribose methylation (2'-O-Me)**, an **RNA modification exploited by viruses** to promote replication and evade host innate immunity. I will present our structural and biochemical studies of the SARS-CoV-2 Nsp16/Nsp10 methyltransferase, aimed at defining its operating principles, substrate specificity, and mechanism-based inhibition to enable the development of novel antivirals.