UNIVERSITÀ POLITECNICA DELLE MARCHE

RESEARCH AREA:

VIRUS

TITLE: Fighting SARS-CoV-2 by blocking the main protease: a molecular and biophysical perspective

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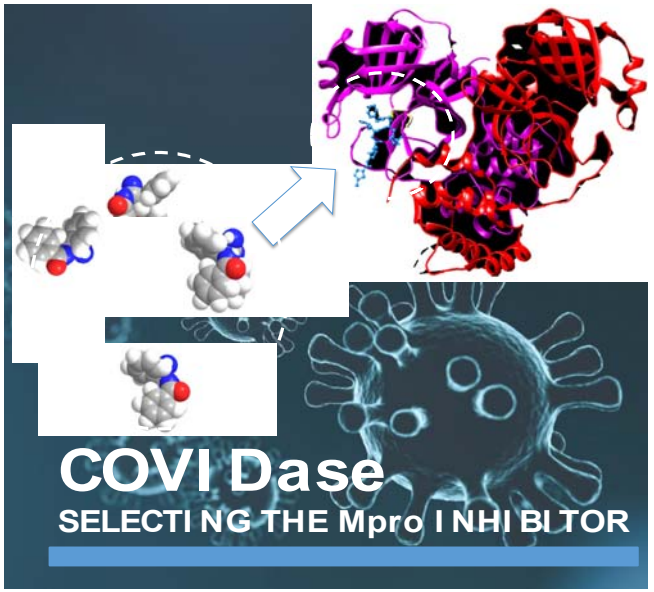
Research activity description: SARS-CoV-2 is an enveloped, positive-strand RNA virus with a large single-strand RNA genome. Among various open reading frames identified, the replicase gene encodes two overlapping polyproteins, which are extensively processed by the virus main protease (Mpro). Since is active in the dimeric form, Mpro is an attractive therapeutic target for CoVs. Indeed, the combinatorial evaluation of inhibitors targeting the dimerization of Mpro, possibly selected among repositioned drugs, represents a quick and robust strategy. In order to evaluate the efficiency of a series of repurposed drugs on the Mpro monomer-dimer equilibrium and to elucidate the molecular mechanism of inhibitor action, we started a collaborative research with the Universities of Perugia and Palermo. At present, several milligrams of recombinant Mpro have been produced at the MaSBiC facility, a series of repositioned drugs have been tested in-silico as potential inhibitors of the dimeric association and have been synthetized, and X-ray and neutron beam-time at European Large Scale Facilities



has been granted to study the structural and dynamical properties of the virus main protease in the different conditions.

Link: https://devpost.com/software/covidase

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