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Health

Covid, that's why **Omicron** is so contagious

August 16, 2022



Researchers from the Institute of Food Sciences (Isa) of the **Cnr** of Avellino and of the University of Salerno have developed an innovative bioinformatics procedure to simulate the interaction of the spike protein in the **Omicron** variant with the antibodies produced by our organism. The procedure will be able to explain the high transmissibility of this variant and predict the effects of possible new Covid variants on the immune defenses already developed. The study is published on *Molecules*.

Covid, Pfizer begins testing the vaccine against **Omicron** at the end of the month (also)

by Fabio Di Todaro

August 10, 2022

Cnr and University of Salerno

A research carried out in collaboration between the Institute of Food Sciences (Isa) of the National Research Council of Avellino and the Department of Chemistry and Biology "A. Zambelli" of the University of Salerno, born from food for thought that emerged following of meetings with the Joint Research Center of the European Commission, has deepened the study of the spike protein of the **Omicron** variant of SARS-CoV-2, with the aim of investigating two aspects: on the one hand, understanding how this interacts with the ACE2 receptor – that is the way of entry into our cells – on the other hand, check whether the antibodies developed by the human organism against the spike protein of the previous variants can somehow "recognize" it.

Complex molecular models

The study, published in *Molecules* required the realization of an automated bioinformatics procedure with which it was possible to simulate the variations of the amino acids of the spike protein present in the **Omicron** variant, thus obtaining models of the interaction of the new spike protein with antibodies based on over 150 molecular models of spike-antibody complexes already known for the previous variants of the virus, and analyze the characteristics of the interaction, highlighting how the new spike protein can be recognized or not by the antibodies developed against the old variants.

See also [interview with Pierluigi De Paolis \(president of the Order of Doctors of Foggia\)](#)

Covid, **Omicron** and reinfections: what are the risks and what we know

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Viral

by Aureliano Stingi

25 July 2022



Our antibodies recognize Omicron

"The work carried out has shown that many antibodies already present in our body can also recognize the spike protein of the Omicron variant, although with some differences in the molecular interactions that can form", he explains. Angelo Facchiano (Cnr-Isa), responsible for the study together with Anna Marabotti for the University of Salerno. "Furthermore, by also studying the mechanism of interaction with the ACE2 receptor, we have highlighted some differences with respect to the spike protein of the previous variants, offering a possible interpretation of the greater ease of transmission of the Omicron variant".

Predict the effectiveness of the immune defenses

This research may have important implications also in view of the appearance of new variants: the bioinformatics procedure developed, in fact, can be used to simulate the substitutions of amino acids present in new variants and quickly provide a forecast of the effects in terms of capacity, of the immune defenses offered by the antibodies already present in our body - developed as a result of vaccinations or previous infections - to counteract a possible new variant.

Covid, the spray vaccine also works against Omicron

by Daniele Banfi

25 July 2022



The interest of the European Commission

"With this procedure it took only a few weeks from the discovery of the Omicron variant and from the declaration of Variant Of Concern by the World Health Organization to obtain the results about the interactions of antibodies: it is therefore a tool that can be effectively put available to the scientific community in case of new variants of the virus. Interest in this sense for the procedure developed was also expressed by the Joint Research Center of the European Commission".

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