MECHANISMS OF INTERACTION BETWEEN THE INFLUENZA VIRUS AND THE INFECTED CELL

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Summary

As far as we study the different functions of viral proteins and the mechanisms that viruses utilize to express the genome is becoming more and more important the contribution of the host cell. There are many examples of viruses that divert cellular proteins or RNAs as co-factors for their own transcription and/or replication and many RNA viruses take over the cellular gene expression machinery, leading to the preferential synthesis of viral products and the shut-off of cellular expression.

Influenza virus has a segmented genome of eight RNA chains of negative polarity and its polymerase is composed of three different subunits called PB1, PB2 and PA. For several years we have been involved in: I) the characterization of the individual function of PA polymerase subunit and II) the role of the viral NS1 protein on the specific translational enhancement of viral mRNAs. Along these studies we have looked for cellular factors that could be involved in viral function. These studies forced us to study both the cellular functions of these proteins and their relevance for the virus cycle. As an example of the work done some new undescribed transcription modulators of the RNA polymerase II emerged as necessary for viral expression as PA-interacting proteins. It suggests that viral and cellular polymerases could require common factors for genome expression.

Association of translation initiation factor eIF4GI with NS1 protein was found as involved in the mechanism of specific enhancement of translation of the viral messengers. Then besides to study the aforementioned aspects one biological question appears on top of that: The

influenza virus and the infected cell: for what proteins do they compete and what proteins do they share?

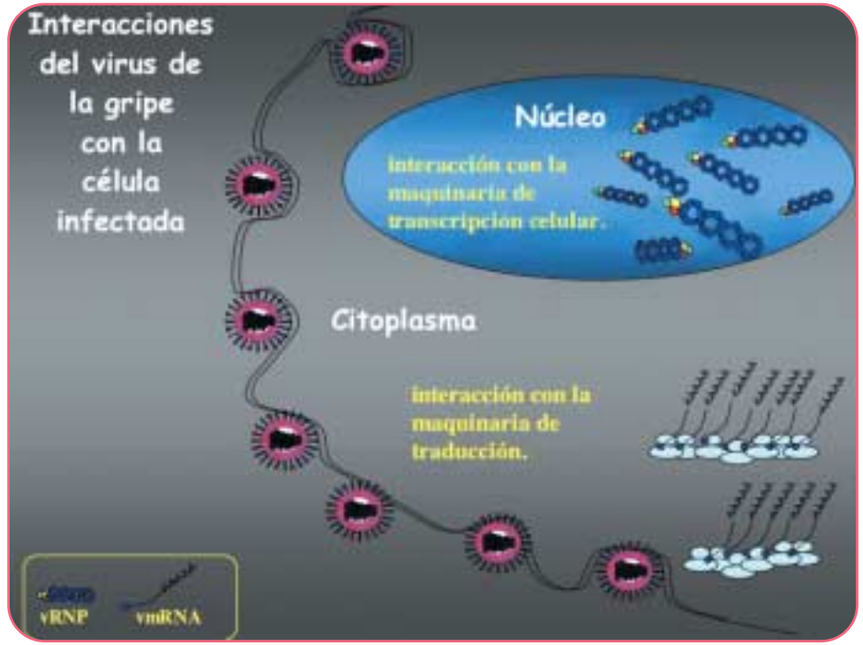

Figure 1. The figure represents the entry of influenza virus in the infected cell. Viral genome is shown in the nucleus of the infected cell, where viral transcription and replication takes place. In yellow it is shown the interactions of the virus with cell transcription and translation.

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PUBLICATIONS

Huarte, M., Falcon, A., Nakaya, Y., Ortin, J., García-Sastre, A. and Nieto, A. (2003). Threonine 157 of influenza virus PA polymerase subunit modulates RNA replication in infectious viruses. *J Virol.* **77**, 6007-6013.

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