ICGEB International Centre for Genetic Engineering and Biotechnology | Developing Knowledge

ICGEB International SEMINAR PROGRAMME 2018

Thursday, 11 January 2018 | 3:00 pm | ICGEB Seminar Room, W building | Padriciano, 99, Trieste, ITALY

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Torquetenovirus (TTV), first identified a little over two decade ago in the blood of a post-transfusion patient with abnormal liver enzymes levels using molecular techniques, is now known to be the prototype of a vast group of related yet distinct viruses that infect humans and various animal species, currently classified in the family Anelloviridae. TTV possesses several unique properties, including: a) a particularly small single-stranded circular DNA genome, which makes it the genetically simplest of all known replication-competent animal viruses hitherto detected in humans; b) an extremely high degree of heterogeneity which has brought to recognise at least 29 human species; c) a remarkable ability to produce persistent, possibly life-long infections with variably elevated levels of plasma viraemia in the apparent complete absence of overt clinical disease; d) a general ubiquity in the body, as shown by its detection in all the organs examined; e) a prevalence in a very large proportions of individuals regardless of age, socio-economical standing and health conditions.

From all these properties, it is evident that TTV has established a successful interaction with its host, even though many aspects of its life cycle and pathogenesis are still poorly understood. The interplay of TTV with the immune system of the infected host is no exception. However, circumstantial evidence has recently been reported that TTV might be immunomodulatory and that the immune system plays at least some role in controlling TTV replication. With regard to the latter aspect, findings have shown that TTV plasma loads tend to be higher in patients with immune system dysfunction than in healthy controls and that these loads undergo transient moderate changes following immunity perturbations due to, e.g., routine immunization, immunosuppressive medications, chemotherapy, and organ transplantation. A precise understanding of how extensively immunity can modulate TTV replication and of the mechanisms involved is of outmost importance, given the extremely high prevalence of active TTV infections in the human population and the intriguing proposal of using TTV viremia as a universal marker of global immune function.

"TTV story telling: from orphan virus of uncertain significance to immunological surrogate marker"

Host: M. Giacca

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