RNA processing and antiviral immunity

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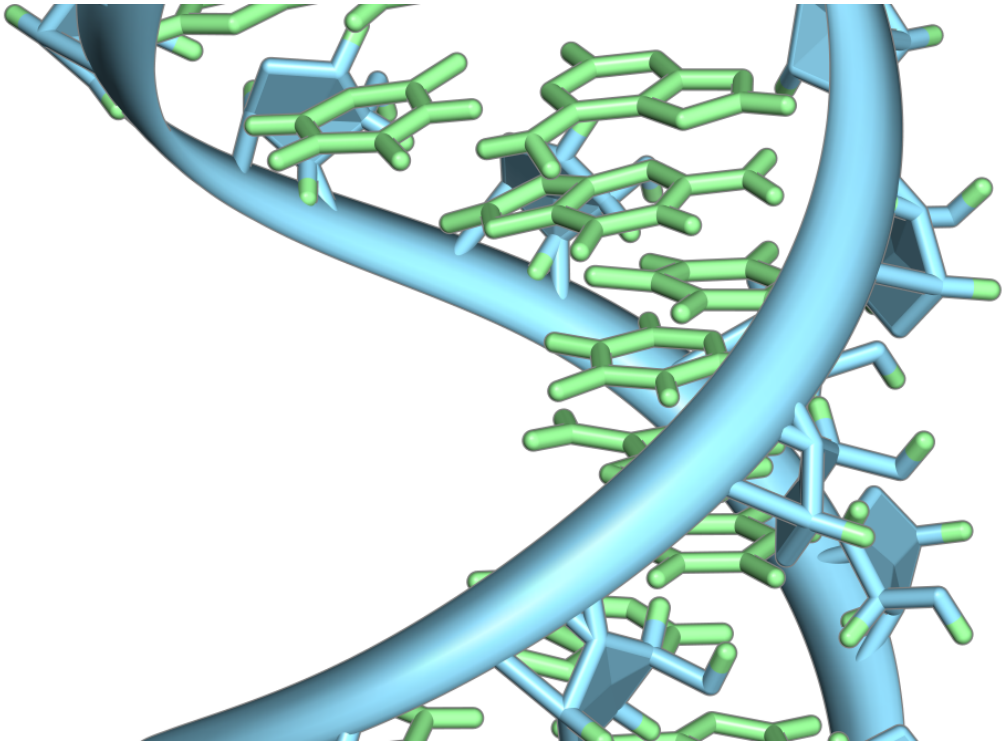

A hairpin loop from a pre-mRNA. Highlighted are the nucleobases (green) and the ribose-phosphate backbone (blue). Note that this is a single strand of RNA that folds back upon itself. Credit: Vossman/ Wikipedia

The RIG-I like receptors (RLRs) are intracellular enzyme sentries that detect viral infection and initiate a first line of antiviral defense. The cellular molecules that activate RLRs in vivo are not clear.

John Karijolich, Ph.D., and colleagues have made the surprising

discovery that host-derived RNAs—not viral molecules—activate RLRs. The investigators studied the cellular response to infection with Kaposi's sarcoma-associated herpesvirus (KSHV), an oncogenic virus and AIDS-associated pathogen that causes Kaposi's sarcoma and primary effusion lymphoma (PEL).

In patient-derived PEL cells, the researchers demonstrated that RLRs restrict KSHV lytic reactivation—the viral replication and cell-destroying part of the viral life cycle. They found that RLRs sense host-derived noncoding RNAs, and that an infection-dependent reduction in another host protein results in the accumulation of noncoding RNAs that activate RLRs.

The study, reported in *Nature Communications*, defines the in vivo substrates of RLRs during an oncogenic virus infection and reveals a relationship between cellular RNA processing and an innate antiviral immune response.

More information: Yang Zhao et al. RIG-I like receptor sensing of host RNAs facilitates the cell-intrinsic immune response to KSHV infection, *Nature Communications* (2018). DOI: 10.1038/s41467-018-07314-7

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