

*July 16-21, 2017 at UC San Diego, CA, USA*

### **Coenzymes, viruses and the RNA world**

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The results of a detailed bioinformatic search for ribonucleotidyl coenzyme biosynthetic sequences in DNA- and RNA viral genomes are presented. No RNA viral genome sequence appears to encode for sequences involved in coenzyme biosynthesis. In both single- and double-stranded DNA viruses a diverse array of coenzyme biosynthetic genes has been identified, but none of the viral genomes examined here encodes for a complete pathway. Although our conclusions may be constrained by the unexplored diversity of viral genomes and the biases in the construction of viral genome databases, our results do not support the possibility that RNA viruses are direct holdovers from an ancient RNA/protein world. Extrapolation of our results to evolutionary epochs prior to the emergence of DNA genomes suggest that during those early stages living entities may have depended on discontinuous genetic systems consisting of multiple small-size RNA sequences.