

Publication**Competition-colonization trade-off promotes coexistence of low-virulence viral strains****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 3925785**Author(s)** Ojosnegros, Samuel; Delgado-Eckert, Edgar; Beerenwinkel, Niko**Author(s) at UniBasel** [Delgado-Eckert, Edgar](#) ;**Year** 2012**Title** Competition-colonization trade-off promotes coexistence of low-virulence viral strains**Journal** Interface : journal of the Royal Society**Volume** 9**Number** 74**Pages / Article-Number** 2244-2254

RNA viruses exist as genetically diverse populations displaying a range of virulence degrees. The evolution of virulence in viral populations is, however, poorly understood. On the basis of the experimental observation of an RNA virus clone in cell culture diversifying into two subpopulations of different virulence, we study the dynamics of mutating virus populations with varying virulence. We introduce a competition-colonization trade-off into standard mathematical models of intra-host viral infection. Colonizers are fast-spreading virulent strains, whereas the competitors are less-virulent variants but more successful within co-infected cells. We observe a two-step dynamics of the population. Early in the infection, the population is dominated by colonizers, which later are outcompeted by competitors. Our simulations suggest the existence of steady state in which all virulence classes coexist but are dominated by the most competitive ones. This equilibrium implies collective virulence attenuation in the population, in contrast to previous models predicting evolution of the population towards increased virulence.

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