Leviviruses, which are single-stranded RNA bacteriophages, are known to be produced by only three genera of bacteria: *Escherichia*, *Pseudomonas*, and *Caulobacter*. Although studies of these viruses in *E. coli* have been of considerable importance to the elucidation of the molecular details of translation and of the use of overlapping sequences as viral genes, understanding of the steps leading to viral genome-ribosome association is limited to two observations: Leviviruses can attach to pili (which may or may not be the virion receptor sites), and viral RNA is transiently exposed during virus penetration of the cell.

The summer project was one component of a research program directed toward elucidation of the early steps in Levivirus infection in *C. crescentus*. During the project, clones of strain CB2 that survived phage infection were isolated and characterized with respect to their susceptibility to the RNA phage Cb5, as well as to two DNA phages Cd1 and Cb13. As is often observed with RNA phage infections, survivors of Cb5 infection in batch broth cultures retained full phage susceptibility. In contrast, two of 25 clones that survived Cd1 infection in batch broth culture proved resistant to plaque formation by both Cd1 (the selecting phage) and Cb5 (the RNA phage) and to be unable to adsorb either of those phages. They were interpreted as spontaneous phage-resistant mutants whose resistance could be attributed to loss of a phage attachment site common to the infection path of both phages.

Methods developed and refined during the experiments with the first mutants were subsequently employed for the characterization of 1,000 clones of CB2 isolated as survivors of perpetual Cb5 infection established and sustained in chemostat cultures. The initial screening detected more than 100 bacterial clones with altered phage susceptibilities. However, in contrast to the phage-resistant mutants obtained by batch-culture infection, these clones exhibited a diversity of phenotypes that included, in addition to resistance to both phages: resistance to the RNA phage only; to both Cb5 (the selecting phage) and Cd1, but with acquired susceptibility to Cb13, to which the parent strain is not susceptible; and hypersusceptibility to all three phages. The perpetual infection therefore yielded a collection of strains with various modifications whose further study should assist in elucidation of steps of RNA phage attachment to and penetration of the *C. crescentus* cell surface.