Viruses produce double-stranded RNA (dsRNA) during infection, and long dsRNA is also encoded and expressed in animal cells. dsRNA-binding proteins (dsRBPs) are not sequence specific, and we are interested in how cells discriminate cellular from viral dsRNA. Ongoing studies are focused on the mechanisms by which two dsRBPs, ADAR and Dicer, mediate "self" versus "non-self" discrimination. Our studies indicate that in C. elegans, the ADAR RNA editing enzyme marks cellular long dsRNA as "self". Studies of D. melanogaster Dicer-2 indicate its helicase domain is specialized for cleavage of viral, or "non-self", dsRNA.