Congenital infection of human cytomegalovirus (HCMV) is one of the leading causes of non-genetic birth defects, and development of a prophylactic vaccine against HCMV infection is of high priority for public health. Merck has a Phase I clinical trial of a replication-defective live HCMV virus vaccine with restored expression of the pentameric complex gH/gL/pUL128-131. In this presentation, we will describe the in-depth characterization of the soluble pentameric complex. We will discuss how the characterization of the pentameric complex increases our understanding of the immune dominant component of the vaccine and how it enables us to evaluate the quantity and quality of humoral responses elicited by the vaccine.