Molecular Mimicry between Fc Receptor and S Peplomer Protein of Mouse Hepatitis Virus, Bovine Corona Virus, and Transmissible Gastroenteritis Virus [Abstract]

Emilia L. Oleszak
Jacek Kuzmak
Brenda Hogue
Rebecca D. Parr
Stephen F Austin State University, parrrl@sfasu.edu

Ellen W. Collisson

See next page for additional authors

Follow this and additional works at: https://scholarworks.sfasu.edu/biology

Part of the Biochemistry Commons, and the Biology Commons

Tell us how this article helped you.

Repository Citation
Oleszak, Emilia L.; Kuzmak, Jacek; Hogue, Brenda; Parr, Rebecca D.; Collisson, Ellen W.; Rodkey, L. Scott; and Leibowitz, Julian L., "Molecular Mimicry between Fc Receptor and S Peplomer Protein of Mouse Hepatitis Virus, Bovine Corona Virus, and Transmissible Gastroenteritis Virus [Abstract]" (1995). Faculty Publications. 50.

https://scholarworks.sfasu.edu/biology/50

This Article is brought to you for free and open access by the Biology at SFA ScholarWorks. It has been accepted for inclusion in Faculty Publications by an authorized administrator of SFA ScholarWorks. For more information, please contact cdsscholarworks@sfasu.edu.
Molecular Mimicry between Fc Receptor and S Peplomer Protein of Mouse Hepatitis Virus, Bovine Corona Virus, and Transmissible Gastroenteritis Virus [Abstract]

We have previously demonstrated molecular mimicry between the S peplomer protein of mouse hepatitis virus (MHV) and Fc gamma R (FcγR). A monoclonal antibody (MAb) to mouse FcγR (2.4G2 anti-FcγR MAb), purified rabbit immunoglobulin, but not their F(ab′)₂ fragments, as well as mouse and rat IgG, immunoprecipitated (1) recombinant S peplomer protein expressed by a vaccinia virus recombinant in human, rabbit, and mouse cells, and (2) natural S peplomer protein from cells infected with several strains of MHV and MHV escape mutants. We report here results of studies documenting molecular mimicry between FcγR and S peplomer protein of viruses representing three distinct antigenic subgroups of the Coronaviridae. We have shown a molecular mimicry between the S peplomer protein of bovine corona virus (BCV) and FcγR. The 2.4G2 anti-FcγR MAb, rabbit IgG, but not its F(ab′)₂ fragments, as well as homologous bovine serum, free of anti-BCV antibodies, immunoprecipitated S peplomer protein of BCV (Mebus strain). In contrast, we did not find molecular mimicry between S peplomer protein of human corona virus (HCV-OC43) and FcγR. Although the OC43 virus belongs to the same antigenic group as MHV and BCV, MAb specific for human FcγR I or FcγR II and purified human IgG₁, IgG₂, and IgG₃, myeloma proteins did not immunoprecipitate the S peplomer protein from HCV-OC43-infected RD cells. In addition, we did demonstrate molecular mimicry between the S peplomer protein of porcine transmissible gastroenteritis virus (TGEV) and FcγR. TGEV belongs to the second antigenic subgroup of coronaviridae. Homologous swine IgG, but not its F(ab′)₂ fragments, immunoprecipitated from TGEV-infected cells a 195-kDa polypeptide corresponding to the TGEV S peplomer protein. We have also examined whether there is a molecular mimicry between S peplomer protein of infectious bronchitis virus (IBV) and FcγR. Nonimmune chicken IgG did not immunoprecipitate the S peplomer protein from IBV-infected chicken embryo fibroblasts or Vero cells, suggesting that there is no molecular mimicry between the IBV-S and FcγR. In conclusion, we have demonstrated molecular mimicry between FcγR and S peplomer protein of three members of Coronaviridae, namely MHV, BCV, and TGEV. In contrast, the S peplomer protein of two other members of Coronaviridae, namely HCV-OC43 and IBV, did not exhibit any molecular mimicry with FcγR.