A family of variable immunoglobulin and lectin domain containing molecules in the snail Biomphalaria glabrata

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Technical limitations have hindered comprehensive studies of highly variable immune response molecules that are thought to have evolved due to pathogen-mediated selection such as fibrinogen-related proteins (FREPs) from Biomphalaria glabrata. FREPs combine upstream immunoglobulin superfamily (IgSF) domains with a C-terminal fibrinogen-related domain (FreD) and participate in reactions against trematode parasites. From RNAseq data we assembled a de novo reference transcriptome of B. glabrata to investigate the diversity of FREP transcripts. This study increased over two fold the number of bonafide FREP subfamilies and revealed important sequence diversity within FREP12 subfamily. We also report the discovery of related molecules that feature one or two IgSF domains associated with different C-terminal lectin domains, named C-type lectin-related proteins (CREPs) and Galectin-related protein (GREP). Together, the highly similar FREPs, CREPs and GREP were designated VIgL (Variable Immunoglobulin and Lectin domain containing molecules).
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