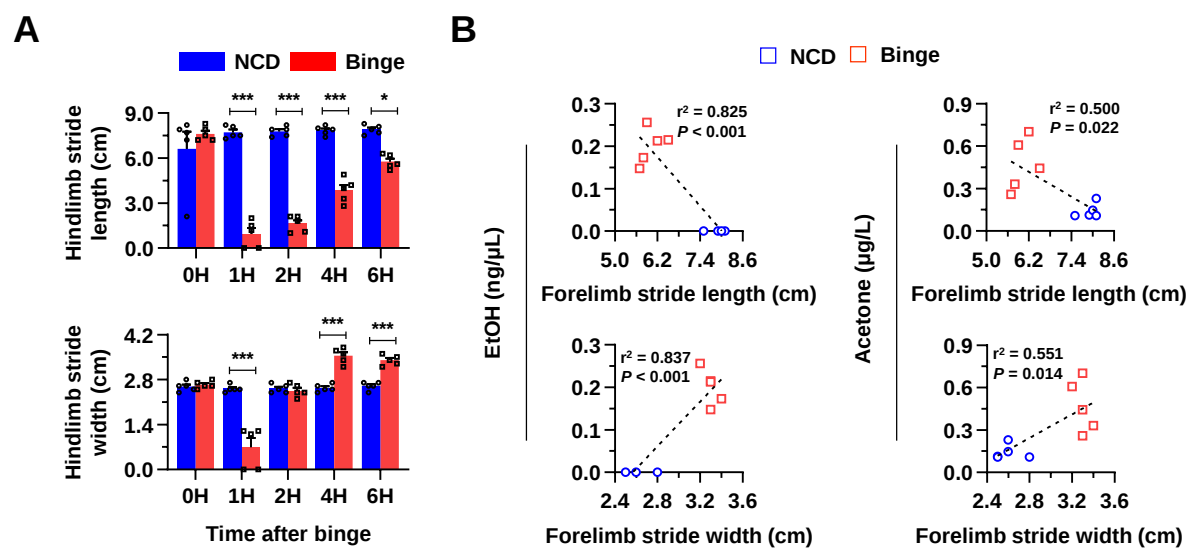
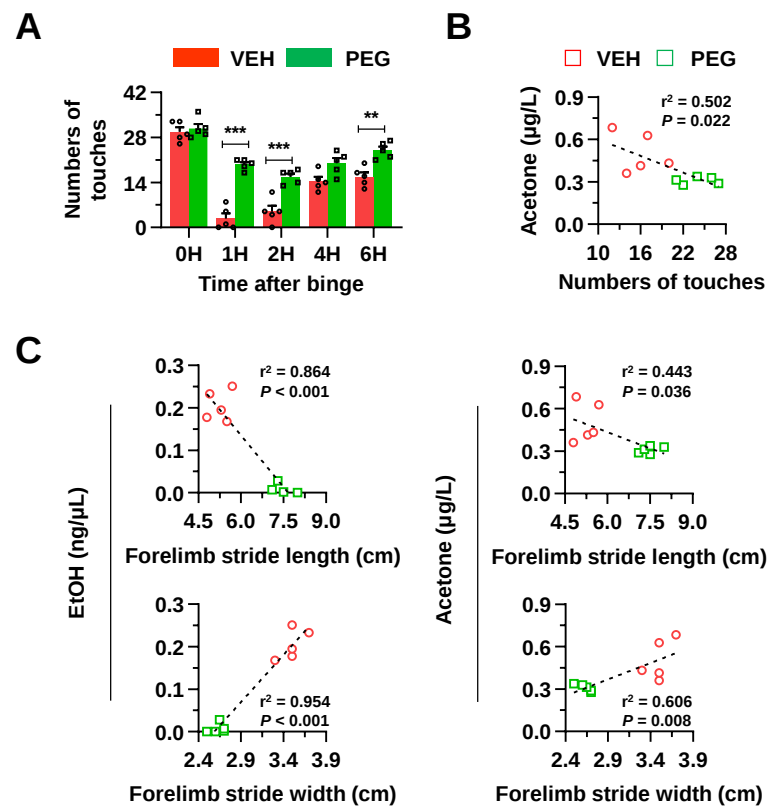
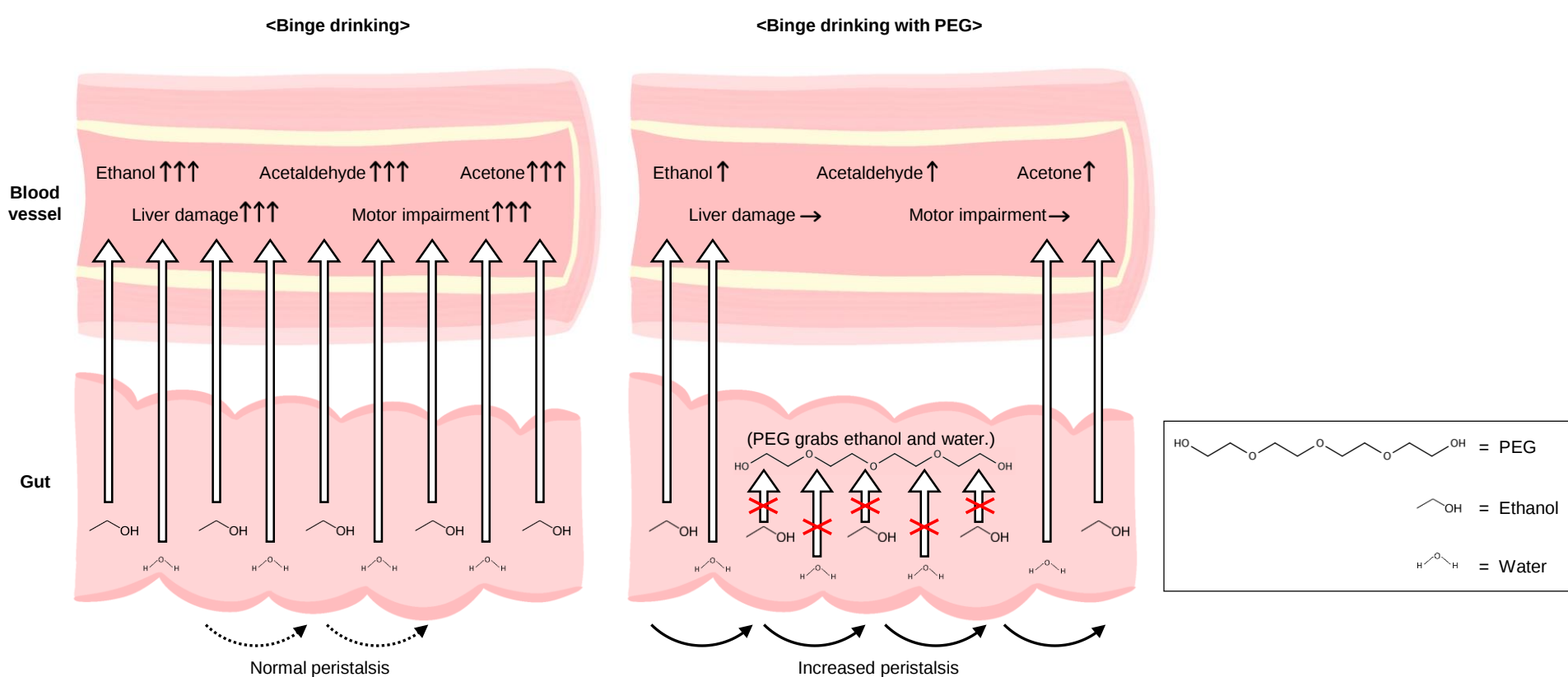




Supplementary Figure 1. Correlative analysis between alcohol metabolites and hangover behaviors in mice. **(A)** Hindlimb stride length and width with the different time points ($n = 5/\text{group}$). **(B)** Correlative analysis among blood ethanol and acetone levels and forelimb strides. Data are presented as mean $\pm$ SEM. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.



Supplementary Figure 2. Correlative analysis between alcohol metabolites and hangover behaviors in PEG-treated mice. **(A)** Numbers of touches of cylinder test according to the different time points after binge drinking ($n = 5/\text{group}$). **(B)** Correlative analysis between blood acetone levels and numbers of touches in cylinder test. **(C)** Correlative analysis among blood ethanol and acetone levels and forelimb strides 6 hours after binge drinking. Data are presented as mean $\pm$ SEM. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.



Graphical Figure 3. A graphical abstract demonstrating that PEG grabs ethanol and water to prevent liver damage and motor impairment. In case of typical binge drinking, ethanol is absorbed from gut to blood vessel and converted into acetaldehyde and acetone to cause liver damage and motor impairment. On the other hand, in case of binge drinking with PEG, ethanol is absorbed less to blood vessel owing to PEG having hydrophilic property and rapidly removed by increased peristalsis, resultantly to prevent liver damage and motor impairment.