$$\begin{array}{c|c} \mathbf{C}_1 & \xrightarrow{f_1} & \mathbf{D}_1 \\ F & \mathbf{MonCaMonCat} & G \\ \mathbf{C}_2 & \xrightarrow{\mathbf{MonCat}} & \mathbf{D}_2 \\ H & \mathbf{MonCaMonCat} & F \ \mathring{\circ} \ H & \mathbf{MonCaMonCat} & \mathbf{D}_3 \\ \mathbf{C}_3 & \xrightarrow{\mathbf{MonCat}} & \mathbf{D}_3 \\ \mathbf{C}_3 & \xrightarrow{\mathbf{MonCat}} & \mathbf{D}_3 \end{array}$$