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