

$$\begin{array}{ccc}
 \mathbf{C}_1 & \xrightarrow[\text{MonCat}]{f_1} & \mathbf{D}_1 \\
 \downarrow F & \text{MonCaMonCat} & \uparrow G \\
 \mathbf{C}_2 & \xrightarrow[f_2]{\text{MonCat}} & \mathbf{D}_2
 \end{array}$$