

$$\begin{array}{ccc}
 C_1 & \xrightarrow[\text{MonCat}]{f_1} & D_1 \\
 \downarrow \scriptstyle F & \text{MonCaMonCat} & \uparrow \scriptstyle G \\
 C_2 & \xrightarrow[\scriptstyle f_2]{\text{MonCat}} & D_2 \\
 \downarrow \scriptstyle H & \text{MonCaMonCat} & \uparrow \scriptstyle K \\
 C_3 & \xrightarrow[\scriptstyle f_3]{\text{MonCat}} & D_3
 \end{array}$$

$$\begin{array}{ccc}
 C_1 & \xrightarrow[\text{MonCat}]{f_1} & D_1 \\
 \downarrow \scriptstyle F \circ H & \text{MonCaMonCat} & \uparrow \scriptstyle K \circ G \\
 C_3 & \xrightarrow[\scriptstyle f_3]{\text{MonCat}} & D_3
 \end{array}$$