

$$\begin{array}{ccccc}
 A & & h_A(A) & \xrightarrow{\quad \Phi_A \quad} & F(A) \\
 \downarrow f & & \downarrow h_A(f) & & \downarrow F(f) \\
 & & \text{id}_A & \xrightarrow{\quad \quad} & u \\
 & & \downarrow & & \downarrow \\
 & & f \circ \text{id}_A = f & \xrightarrow{\quad \quad} & (Ff)(u) = \Phi_X(f) \\
 & & \downarrow h_A(X) & \xrightarrow{\quad \Phi_X \quad} & \downarrow F(X) \\
 X & & & & 
 \end{array}$$