

Recursive types (see the Haskell demo)

$$F : * \rightarrow *$$

$$\mu : (* \rightarrow *) \rightarrow *$$

$$\mu F \cong F(\mu F)$$

We take $\mu F =$ the initial F -algebra

$$\begin{array}{ccc} F(\mu F) & \xrightarrow{i} & \mu F \\ \downarrow F! & & \downarrow ! \text{ (unique)} \\ FA & \xrightarrow{a} & A \end{array}$$

↙ "Fix" in Haskell

We proved that i is ISO

$$i; ! = F!; a$$

$$\Rightarrow i^{-1}; i; ! = i^{-1}; F!; a$$

$$\Rightarrow ! = i^{-1}; F!; a$$

↗ we can use that in Haskell!