Polymorphic Lists

- Define in ST

  $\vdash$ stnil (X:V) = True

  $\vdash$ stcons X =
  Fn x $\in$ X. Fn l $\in$ List X. $\langle$x, l$\rangle$

- From $\vdash$ $|list|$ = List it follows that

  $\vdash \forall\alpha.$ stnil $\alpha \in |list|\ \alpha$

  $\vdash \forall\alpha.$
  stcons $\alpha \in \alpha \rightarrow (|list|\ \alpha \rightarrow |list|\ \alpha)$

- Hence can define:

  nil : α *list*

  cons : $\alpha \rightarrow (\alpha\ list \rightarrow \alpha\ list)$

- Satisfying

  $\vdash$ |nil| = stnil

  $\vdash$ |cons| = stcons

- Then get usual list theorems via ST2HOL