

$$\begin{array}{ccc}
 \tilde{H}_d(\mathbb{B}^{d+1}) & & \\
 \uparrow i^* & \searrow r^* & \\
 \tilde{H}_d(\mathbb{S}^d) & \xrightarrow{id^*} & \tilde{H}_d(\mathbb{S}^d)
 \end{array}$$