

$$\begin{array}{c}
\frac{\Gamma \vdash A : \mathcal{U}_i \quad \Gamma, x:A \vdash B : \mathcal{U}_i}{\Gamma \vdash \Pi_{(x:A)} B : \mathcal{U}_i} \text{PII-FORM} \qquad \frac{\Gamma, x:A \vdash b : B}{\Gamma \vdash \lambda(x:A). b : \Pi_{(x:A)} B} \text{PII-INTRO} \\
\\
\frac{\Gamma \vdash f : \Pi_{(x:A)} B \quad \Gamma \vdash a : A}{\Gamma \vdash f(a) : B[a/x]} \text{PII-ELIM} \qquad \frac{\Gamma, x:A \vdash b : B \quad \Gamma \vdash a : A}{\Gamma \vdash (\lambda(x:A). b)(a) \equiv b[a/x] : B[a/x]} \text{PII-COMP} \\
\\
\frac{\Gamma \vdash f : \Pi_{(x:A)} B}{\Gamma \vdash f \equiv (\lambda x. f(x)) : \Pi_{(x:A)} B} \text{PII-UNIQ}
\end{array}$$