$$x \sim \mathcal{D} \longrightarrow \boxed{\text{Encoder (parameters } \boldsymbol{\phi})} \longrightarrow (\boldsymbol{\mu}, \boldsymbol{\sigma})$$

$$q_{\boldsymbol{\phi}}(\boldsymbol{z}|\boldsymbol{x}) = \mathcal{N}(\boldsymbol{z}|\boldsymbol{\mu}, \mathrm{diag}(\boldsymbol{\sigma}^2))$$