

# Conditional Sampling

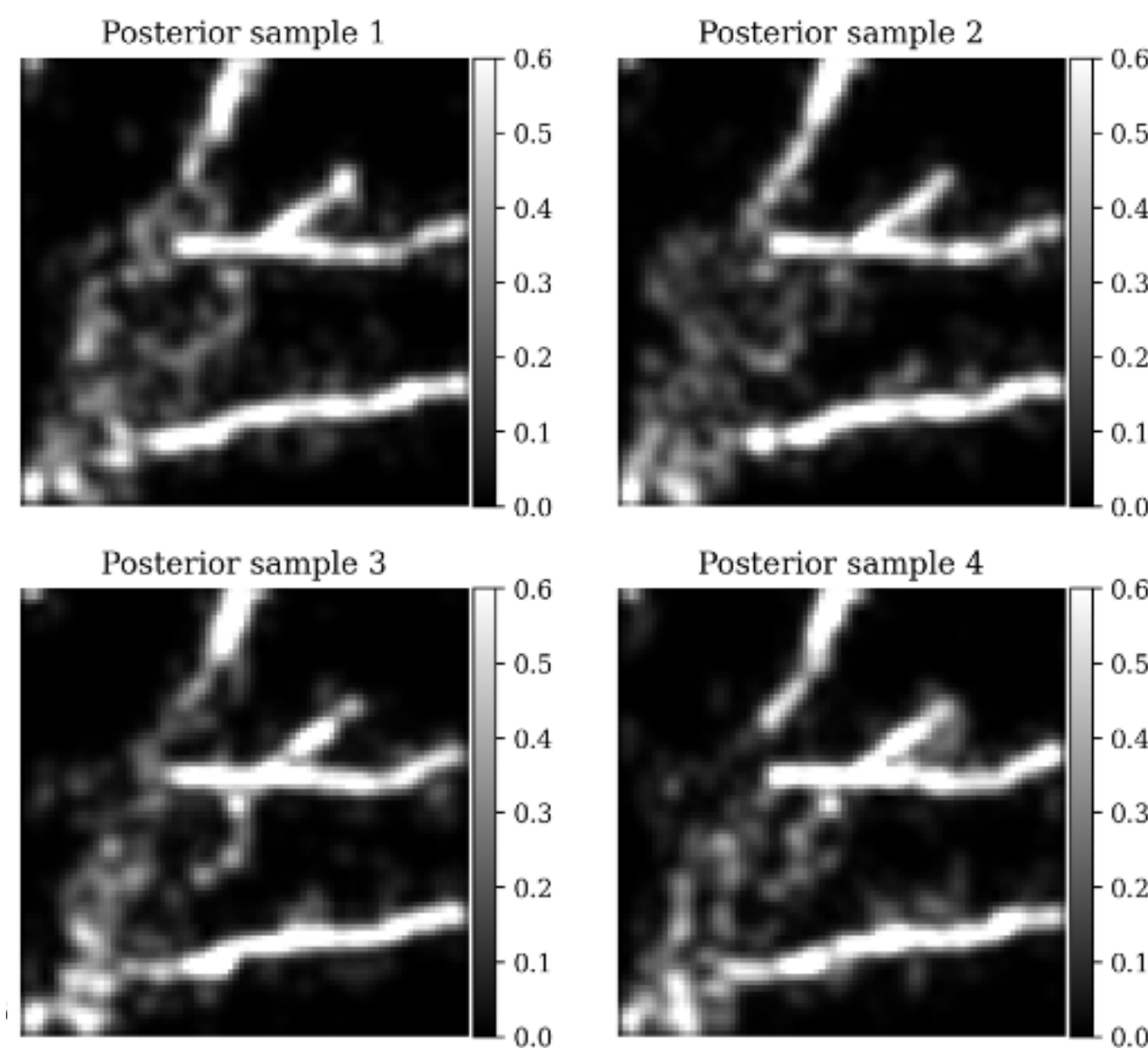
Goal: learn to sample from the conditional distribution:  $p(\mathbf{x} | \mathbf{y})$

This describes a general inverse problem:

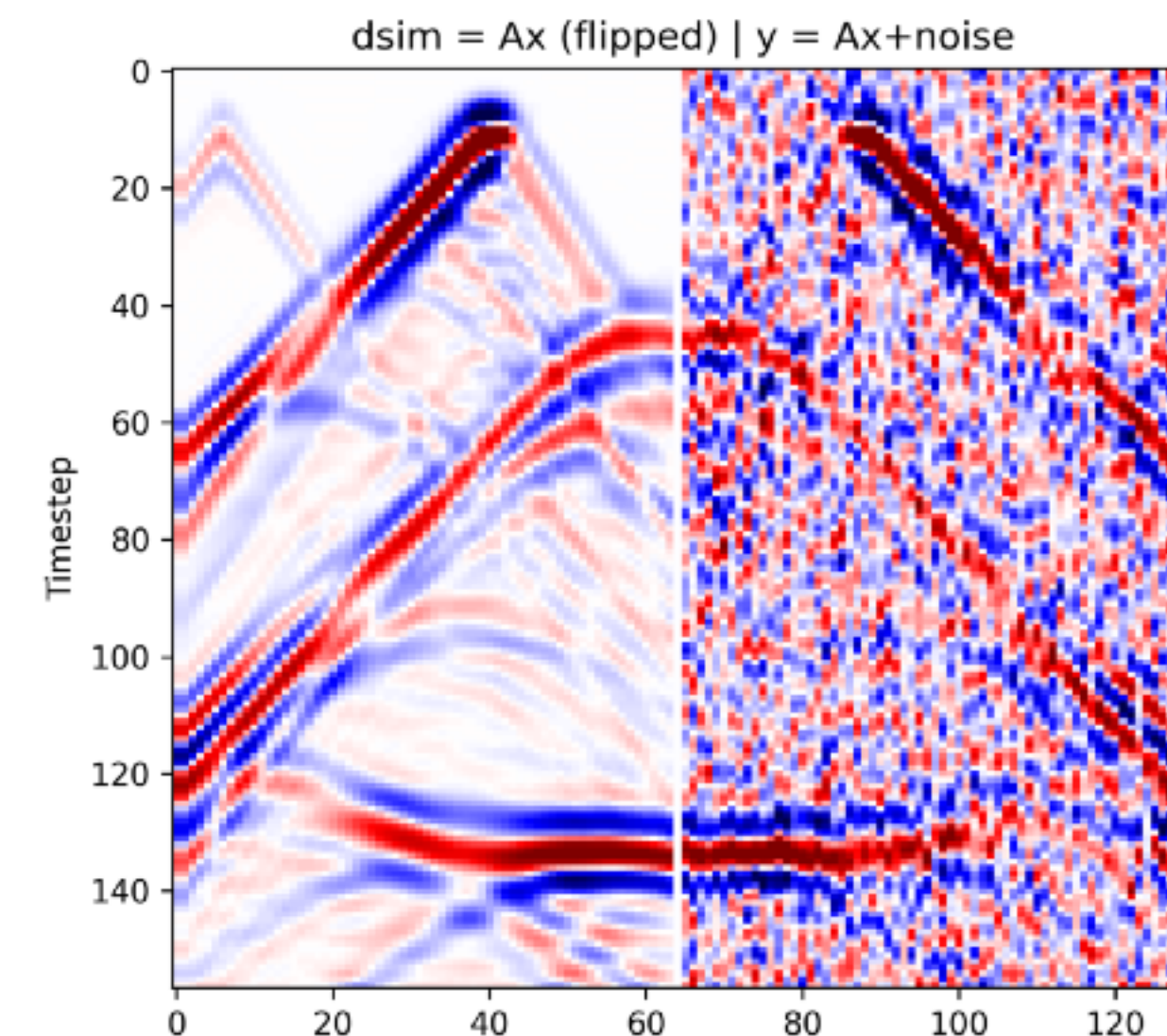
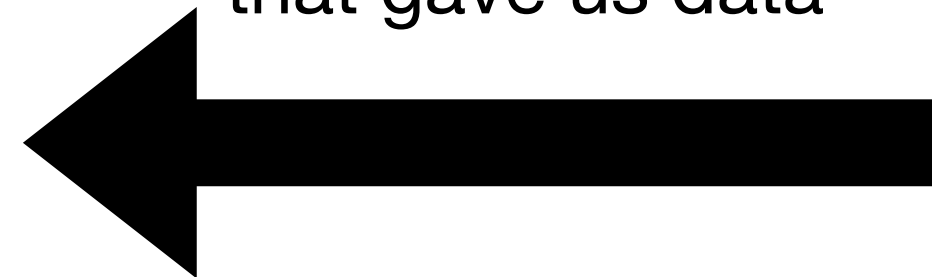
“given data  $\mathbf{y}$ , which image  $\mathbf{x}$  corresponds to it?”

We learn the whole distribution so we answer a more powerful question:

“given data  $\mathbf{y}$ , *which set of images*  $\mathbf{x} \sim p(\mathbf{x} | \mathbf{y})$  corresponds to it?”



Invert Forward process  
that gave us data



# How to make Conditional NF

We want a method of **Variational Inference** to approximate this distribution

$$q_{\theta}(\mathbf{x} | \mathbf{y}) \approx p(\mathbf{x} | \mathbf{y})$$

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