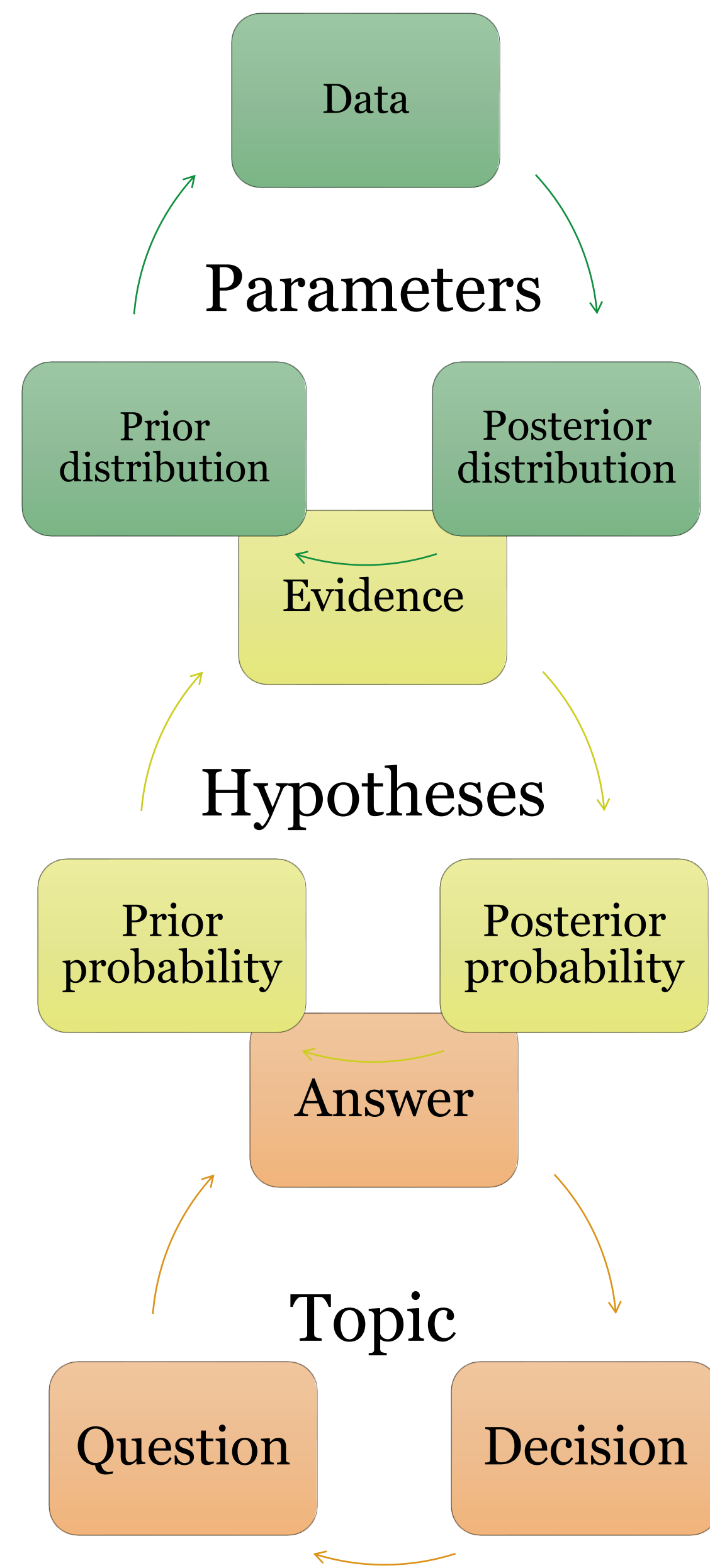




PRIOR PROBABILITIES

WHY

do we need them

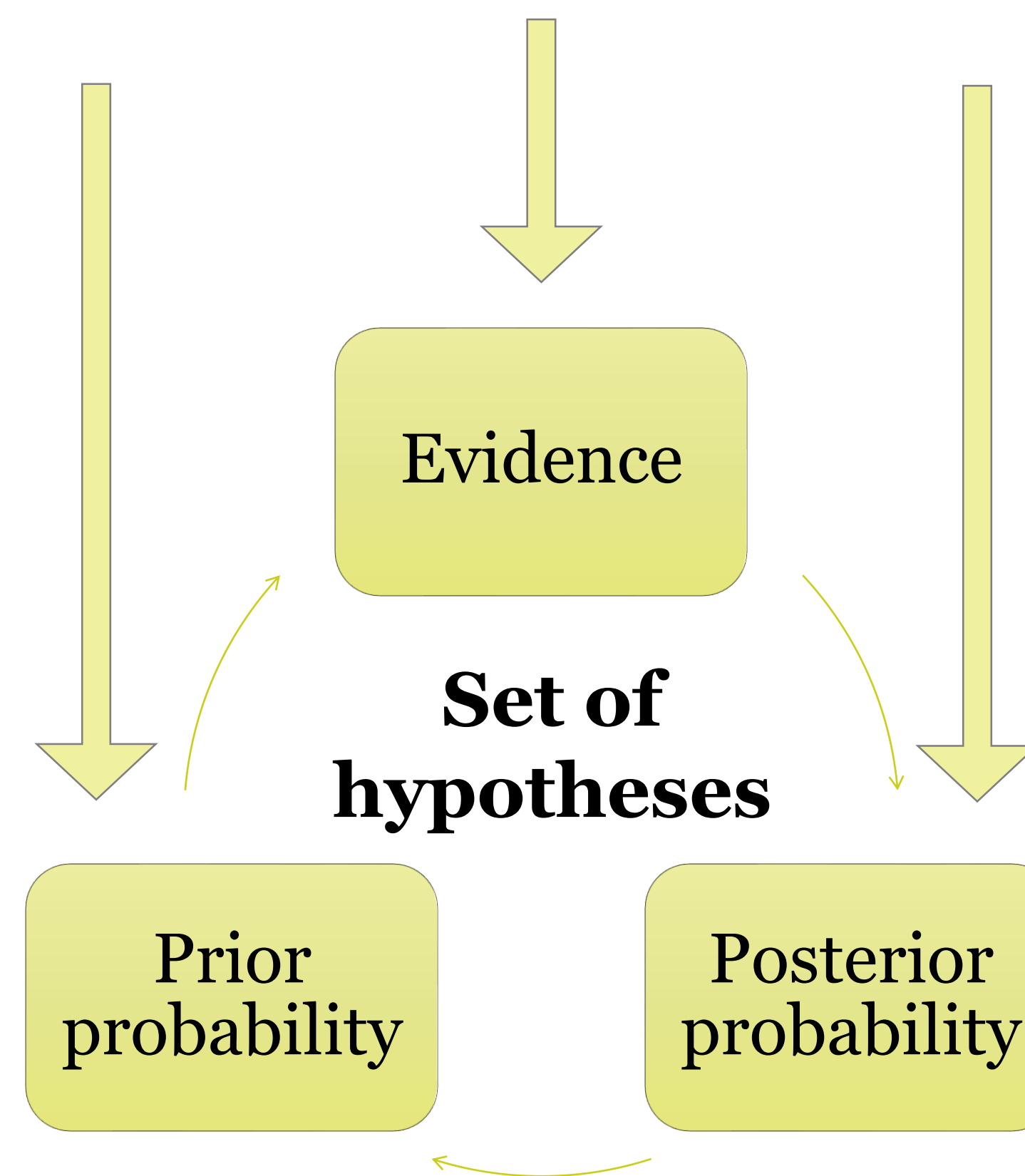


Updating knowledge
To answer a research question, we need prior probabilities.
Without prior probabilities we remain 'stuck' at the level of evidence

WHAT

do they mean

$$P(H) \times P(D|H) \approx P(H|D)$$



Prior probabilities are defined in the context of a **set of hypotheses**

Any hypothesis in a set has to be:

- **Possible**
 - It should have logical probability > 1
- **Plausible**
 - It should have subjective probability > 1
- **Valued**
 - It should have value to someone

HOW

do we specify them

1. Set of hypotheses

$$H_1: \mu_1 > \mu_2 > \mu_3$$

$$H_2: \mu_3 > \mu_1$$

2. Possibility of hypotheses

How many other possibilities are there?

H1							
H2							

3. Plausibility of hypotheses

How likely is H1/H2 true (vs not true)?

H1							
H2							

4. Bet on hypotheses

How do you bet €1 on these hypotheses? (2) are betting odds and (3) are your beliefs

H1							
H2							

5. Prior probability

The final bet incorporates possibility; plausibility; and value.