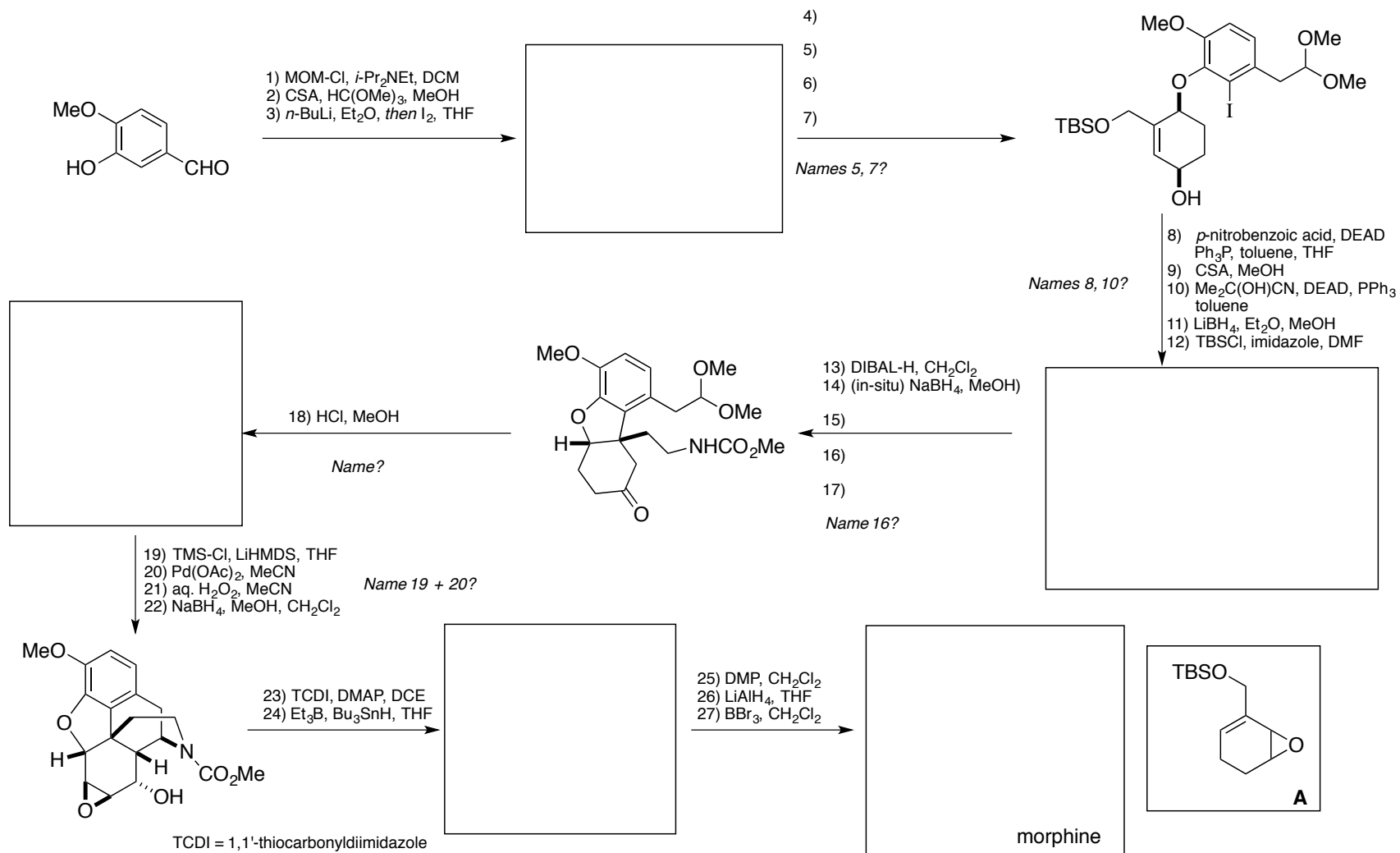


E53: Total Synthesis (±)-Morphine



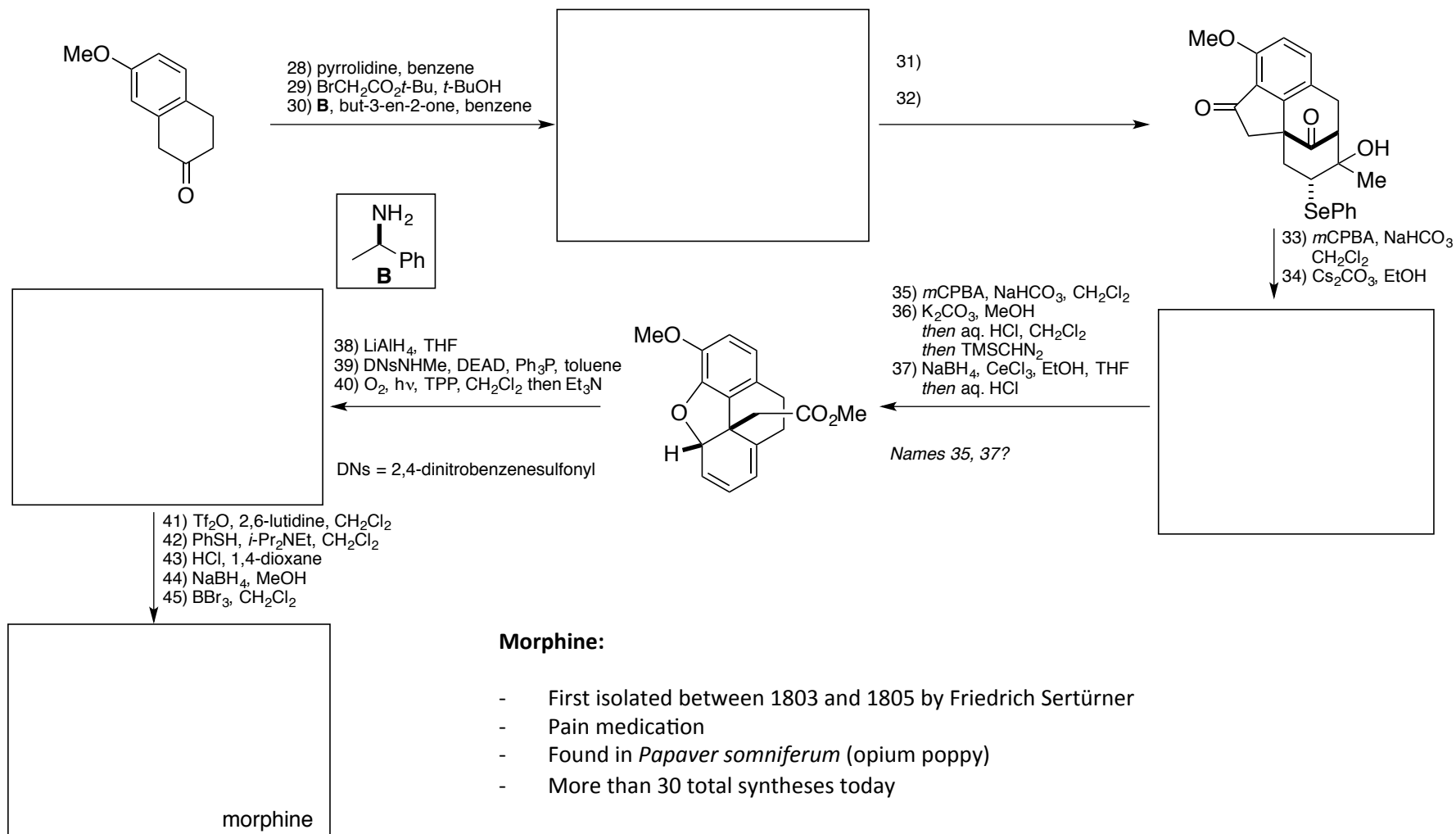
K. Uchida, S. Yokoshima, T. Kan, T. Fukuyama, *Org. Lett.* **2006**, *8*, 5311–5313.

H. Umihara, S. Yokoshima, M. Inoue, T. Fukuyama, *Chem. Eur. J.* **2017**, *23*, 6993–6995.



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E53: Total Synthesis (–)-Morphine



Morphine:

- First isolated between 1803 and 1805 by Friedrich Sertürner
- Pain medication
- Found in *Papaver somniferum* (opium poppy)
- More than 30 total syntheses today

K. Uchida, S. Yokoshima, T. Kan, T. Fukuyama, *Org. Lett.* **2006**, *8*, 5311–5313.

H. Umihara, S. Yokoshima, M. Inoue, T. Fukuyama, *Chem. Eur. J.* **2017**, *23*, 6993–6995.

<https://en.wikipedia.org/wiki/Morphine> (31.10.2017).



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