



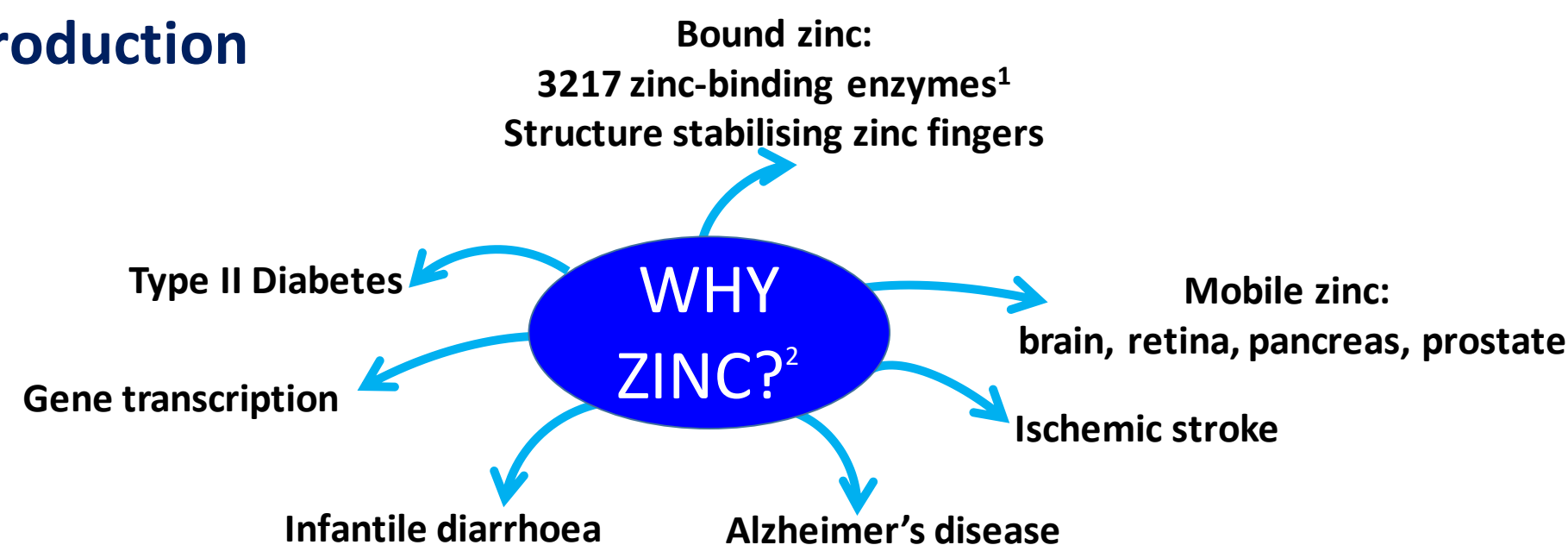
# Studies Towards Ratiometric Zinc Probes



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## 1. Introduction



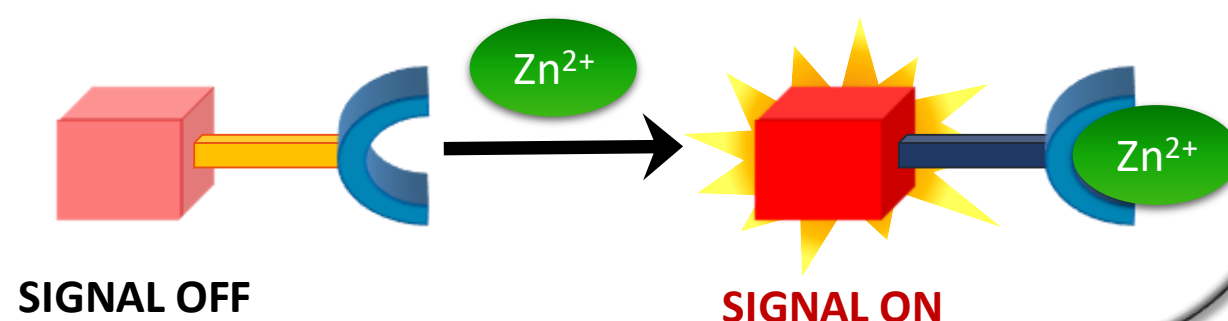
## THE CHALLENGE

Zinc detection is vital to biological studies, but difficult to observe experimentally

Zn<sup>2+</sup> has no colour, It is very dilute in individual proteins and diamagnetic, so is 'spectroscopically' silent

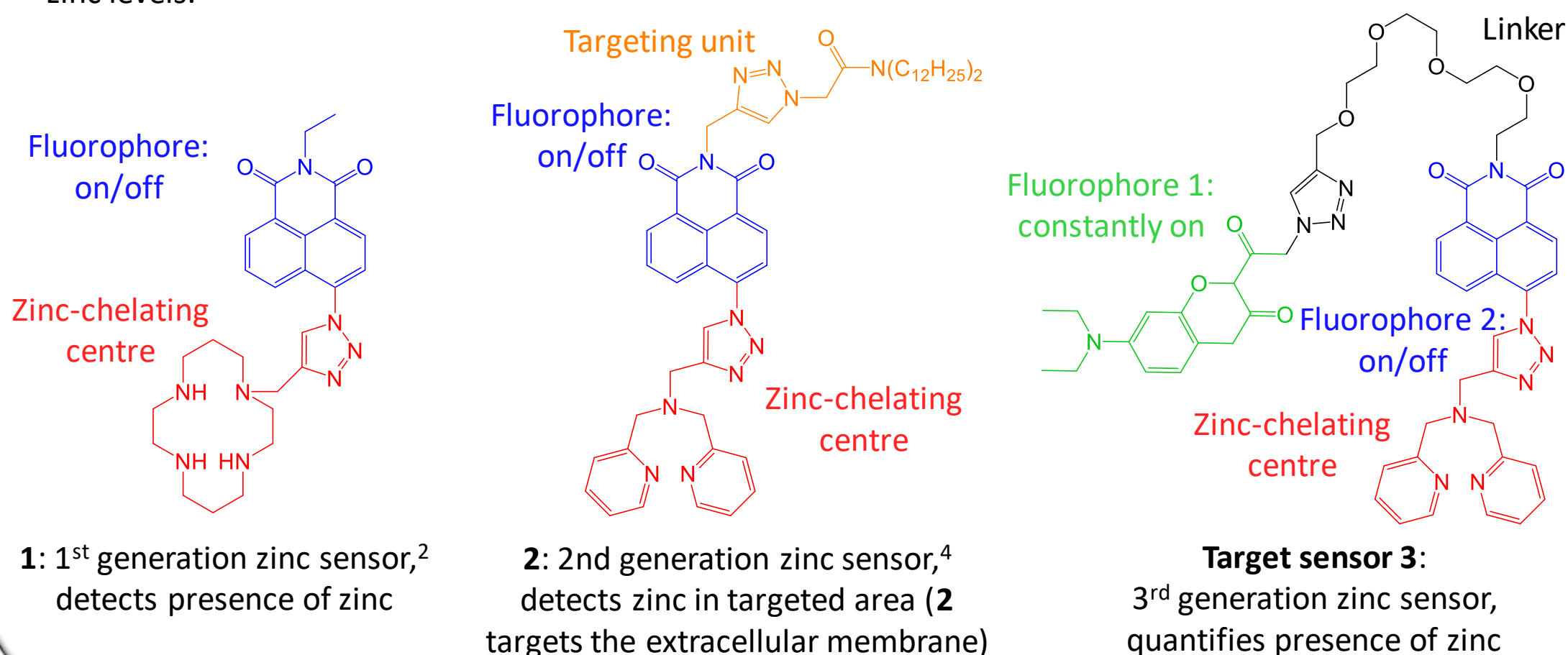
## THE SOLUTION

Use fluorescent zinc sensors

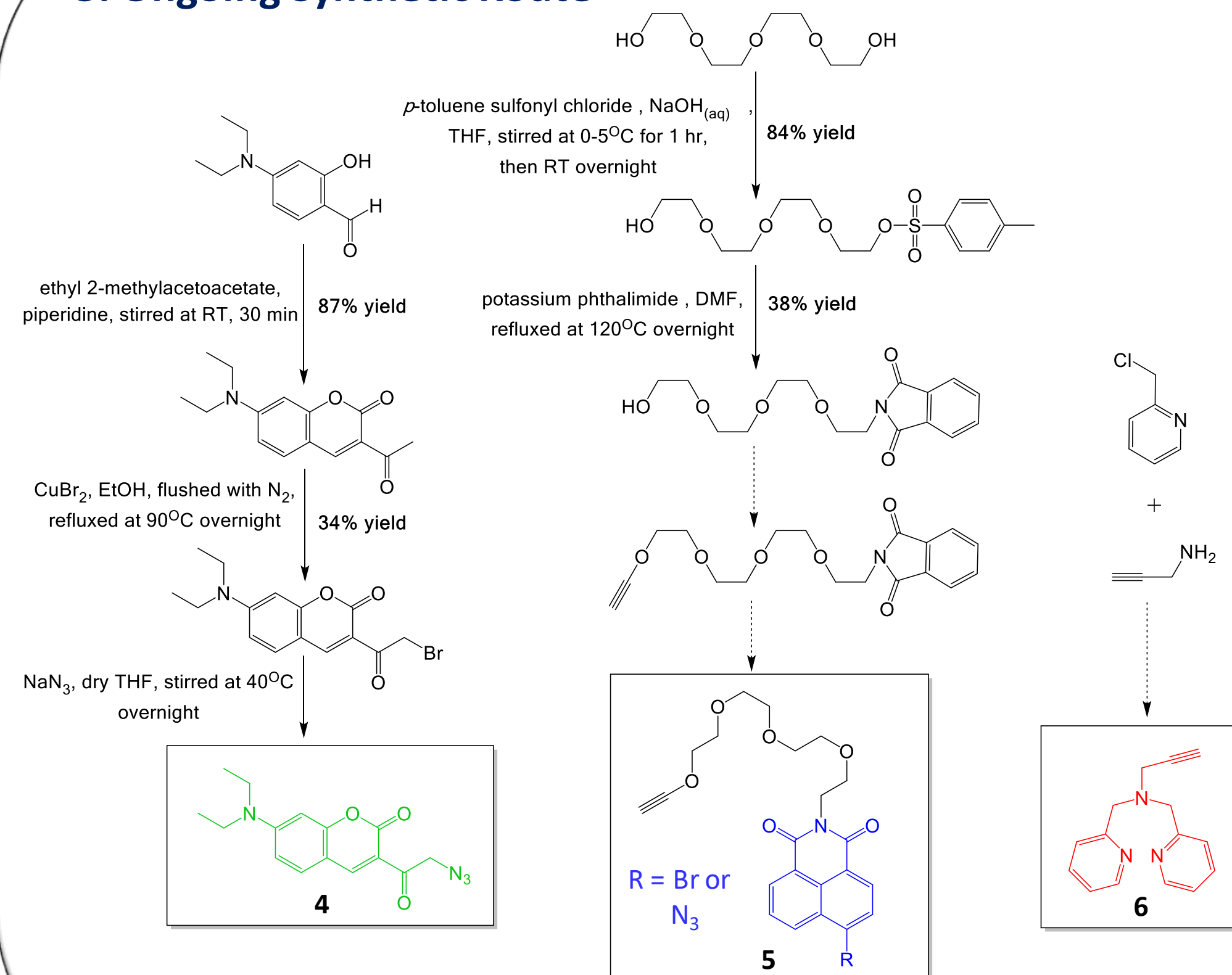


## 2. Aim

Generally, the zinc sensors synthesised to date have not been able to quantify zinc levels. Thus, the main aim of this project is to synthesise target sensor **3** – a ratiometric zinc sensor<sup>3</sup> able to quantify biological zinc levels.



## 3. Ongoing Synthetic Route



The modular units **4-6** will be reacted using a 2 step "click"<sup>4,5</sup> process leading to the formation of target sensor **3**.

## 4. Conclusions and Future Work

- Several compounds were synthesised but some with poor yields
- Reaction procedures and purification processes will be optimised to increase yields
- Simultaneously, the remaining synthetic route will be completed
- Linker folding is possible in a biological environment
- Molecular modelling will be carried out to see if fluorophore-fluorophore interactions may disrupt the ratiometric qualities of **3**.

## 5. Acknowledgements

I would like to thank Dr Phil Duncanson for his help in the lab and encouragement through this project.