

Rui Pereira¹, Vera L. M. Silva², Artur M. S. Silva², Daniela Ribeiro^{1,3}, Eduarda Fernandes¹

LAQV
requimte
LABORATÓRIO ASSOCIADO
PARA A QUÍMICA VERDE

¹ LAQV-REQUIMTE, Laboratory of Applied Chemistry, Department of Chemical Sciences, Faculty of Pharmacy, University of Porto, 4050-313 Porto, Portugal.

² LAQV-REQUIMTE and Department of Chemistry, University of Aveiro, 3810-193 Aveiro, Portugal.

³ Faculty of Agrarian Sciences and Environment, University of the Azores, 9700-042 Angra do Heroísmo, Açores, Portugal.

Bis-Chalcones?
Why them?

Flavonoids and their precursors have long attracted interest from scientists due to their broad biological and physical applications, tied to their unique chemical properties [1]. However, among them, **bis-chalcones** (Fig. 1), flavonoid precursors with two chalcones moieties, were given less attention, despite some studies suggesting that they have improved bioactivities in comparison to their mono derivatives [2]. Moreover, previous results have shown the importance of **hydroxy groups** for the good bioactivities of the known *bis*-chalcones.

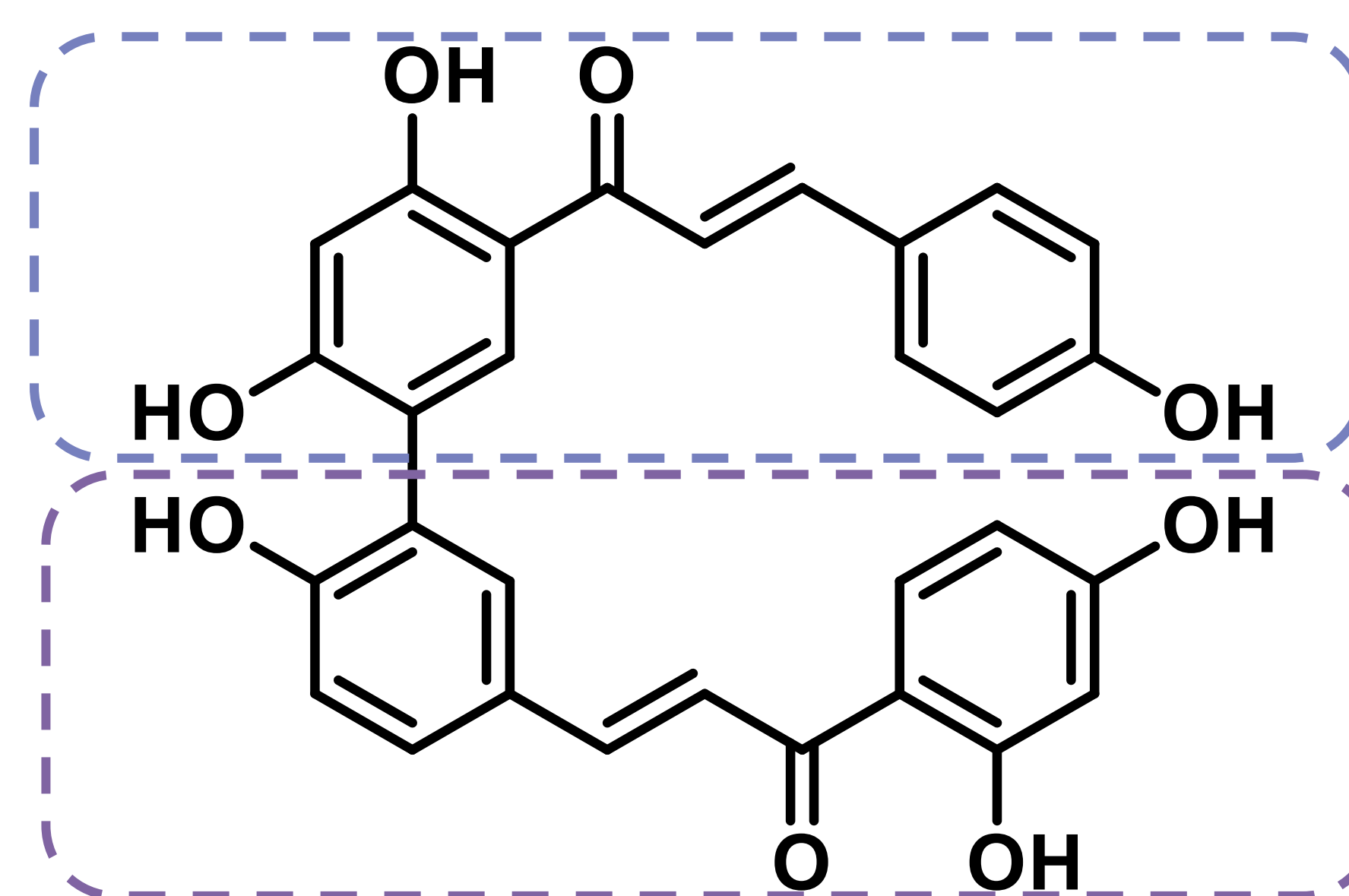
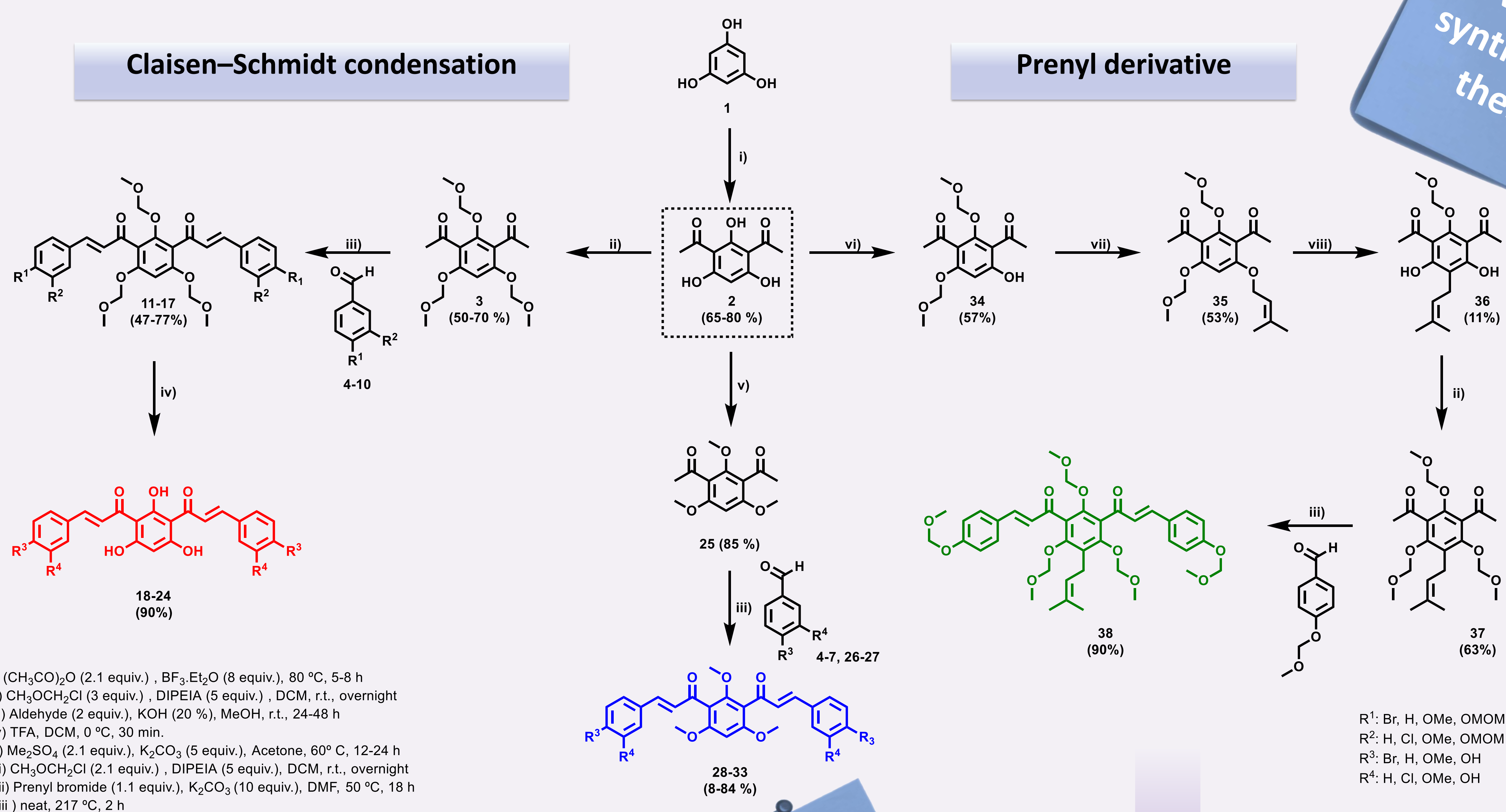


Fig. 1 Structure of *Rhuschalcone*, a natural *bis*-chalcone.

How did we synthesized them?

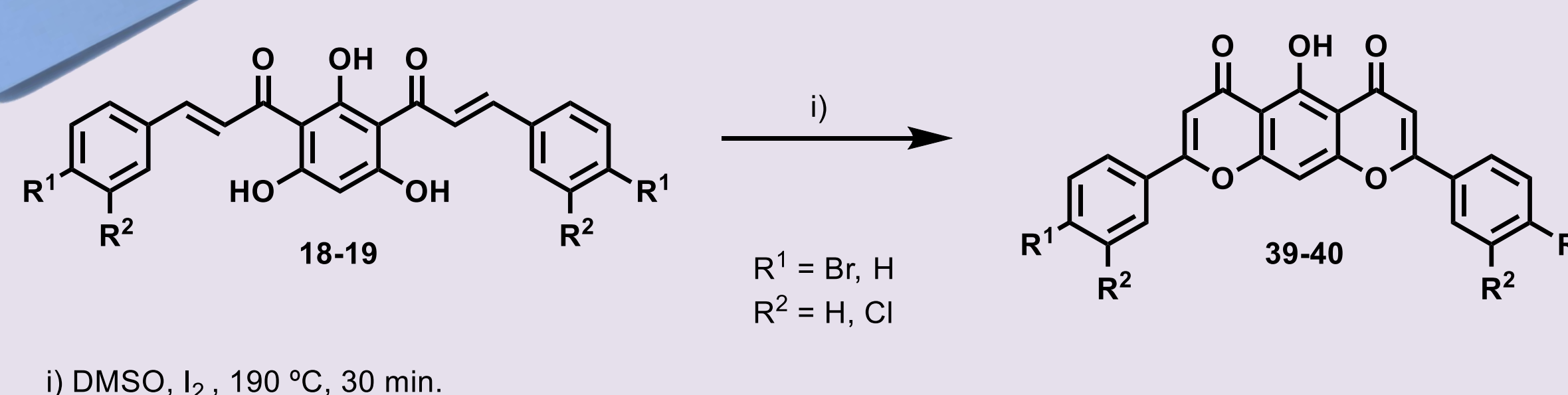


Conclusions

- ✓ **Bis-chalcones** were synthesized successfully by **Claisen-Schmidt condensation** in good yields, expect for the derivatives synthesized with aromatic aldehydes containing free hydroxy groups.
- ✓ Prenylation reaction was successful but the **Claisen rearrangement** step requires further optimization.
- ✓ Cyclization of **bis-chalcones** was successful yet difficult to purify. The presence of a free hydroxy group during the reaction may have caused unwanted degradation.
- ? The next step will be the evaluation of the **anti-inflammatory activity** of all *bis*-chalcones obtained.

How they reacted?

Cyclodehydrogenation



References:

- [1] A. Sousa, M. Lucas, D. Ribeiro, C. Correia, V. L. M. Silva, A. M. S. Silva, E. Fernandes, J. Nat. Prod., 83 (2020), 3131-3140.
[2] Z. Zhuang, W. Zhang, C. Sheng, W. Zhang, C. Xing, Z. Miao, Chem. Rev., 117 (2017), 7762-7810

Acknowledgments:

The work was supported through the projects UIDB/50006/2020 and UIDP/50006/2020, funded by FCT/MCTES through national funds. Rui Pereira thanks FCT/MCTES (Fundação para a Ciência e Tecnologia and Ministério da Ciência, Tecnologia e Ensino Superior) and ESF (European Social Fund) through NORTE 2020 (Programa Operacional Região Norte) for his PhD grant UI/BD/151269/2021.