

## Preface

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# ICS-29: The 29<sup>th</sup> International Carbohydrate Symposium

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The carbohydrate community met at the Universidade de Lisboa and at its Faculdade de Ciências, in Portugal, for the 29<sup>th</sup> International Carbohydrate Symposium, held from the 15<sup>th</sup> to the 19<sup>th</sup> of July 2019, an event under the auspices of the International Carbohydrate Organisation. In issue 7 of the volume 91 and in this issue, glycoscience topics discussed in this meeting are presented, providing an overview of the recent developments in various laboratories expertized in carbohydrates.

As members of the IUPAC Division of Organic and Biomolecular Chemistry (Division III), we are very grateful to the editor of Pure and Applied Chemistry, Prof. Hugh Burrows, for giving us the opportunity to demonstrate the unique role of carbohydrates in biological processes and the importance of Glycosciences to the understanding of human health and disease. The generation of original synthetic approaches toward new and biologically relevant molecular entities is, indeed, an important task for the carbohydrate and bioorganic experts. The issue 7 covers a diversity of methodologies and structures, starting with the structurally diverse fucosylated chondroitin sulfates from marine origin by Nikolay Nifantiev, who also describes, in another contribution, the study of conformational changes in monosaccharides by per-*O*-sulfation. The stereoselective synthesis of sugar mimetics by Slawomir Jarosz, the preparation of S-simplexides by Paul Murphy and that of nucleosides with anticancer potential by Nuno Xavier, together with the syntheses with hydroxymethylfurfural and glycosyloxymethylfurfural approached by Yves Queneau, illustrate the important crosslink of both bioorganic and the carbohydrate chemistry areas.

Glycosylation is, indeed, one of the most important reactions in carbohydrates chemistry and biology. In this issue Nicola Pohl describes the automated solution-phase synthesis of  $\alpha$ -1,2-linked-rhamnopyranosides, while Ana Gomez reports on bioconjugatable and water-soluble carbohydrate-based organoboron compounds. C-glycosides are also highlighted with the contribution of Lázló Somsák on the synthesis of C-glycosyl glycomimetics, and that of Amélia Pilar Rauter, describing the first C-glycosylflavones that inhibit protein-protein interactions tackling beta-amyloid and prion interactions, which may lead to new therapeutic approaches against Alzheimer's disease progression. She also showed, in another contribution, that deoxyglycosylation of polyphenols may be a successful strategy to improve aglycone neuroprotective activity and physicochemical properties, as illustrated for resveratrol.

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**Article note:** A collection of invited papers based on presentations at the 29<sup>th</sup> International Carbohydrate Symposium (ICS-29), held in the University of Lisbon, Portugal, 14–19 July 2018.

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Galactosyl and sialyl clusters against *T. cruzi* parasite are presented by Ivone Carvalho, an interesting contribution showing the potential of exploring carbohydrate clusters for health. The issue also comprises a paper on transglycosylation reactions in honey by Manuel Coimbra and another one on the liquefaction of almond husk for the production of bio-oil, by Galhano dos Santos. Ultimately, the three papers presented in this issue illustrate the diversity of glycosciences, describing a new one-pot oligosaccharide synthetic methodology by Jarayaman and coworkers, the preparation of nanoparticles for solid state NMR coating investigation by Cristina Nativi and a new approach to carbohydrate analysis by Voglmeir.

The papers included in both issues clearly demonstrate the dimension and diversity of carbohydrate research, covering synthesis, analysis, medicinal chemistry, biotechnology, amongst other areas. Indeed, they illustrate the importance of these multifunctional and stereochemically rich molecules for the innovation in the pharmaceutical, food and chemical industries.

We hope these new findings will also inspire young researchers to pursue their career contributing with their own solutions for the societal challenges in health, nutrition and environmental issues!