



Current research on secondary lignified cell walls, a thematic issue dedicated to Bernard Monties

Foreword

The present issue of *Comptes rendus Biologies* is dedicated to Bernard Monties on the occasion of his retirement. The chapters illustrating various aspects of current research on secondary walls were written by leading scientists who, at a time or another, worked with him. By themselves, the contents give testimony to the large range of his interests and to his talent for inducing researchers from different fields to work together on a given project.

I met Bernard Monties at a time when his interests were shifting from soluble polyphenols to lignins. Lignins are complex, heterogeneous molecules present in the secondary walls of xylem and sclerenchyma. They give their unique properties to wood and fibres. However, lignins are difficult to study, since their structure is irremediably altered during extraction. As a biochemist, Bernard Monties was primarily involved in the challenge of unravelling lignin structure and its relationships with other wall constituents. At that time (the early 1970s), he had already recognized the necessity of approaching the study of lignified cell walls from various viewpoints to achieve genuine understanding. He called together chemists, plant physiologists, anatomists, cytologists, microbiologists as well as specialists of wood quality into a research group within the framework of two successive national projects on woody materials ('matériau bois' and 'filière bois'), each partner bringing to the task his specific methods and abilities. The organization of this research group already revealed the fun-

damental rules guiding Bernard Monties towards his scientific goals, one might even say that it revealed the philosophic reflection sustaining his work and leading to his achievements. He was aware that even the best techniques had intrinsic limitations compelling scientists to use multidisciplinary approaches. His thorough knowledge of current scientific literature allowed him to put in touch colleagues working in distant fields.

If Bernard Monties was conscious of the benefits gained by multidisciplinary approaches, he was also conscious of the necessity to keep a balance between fundamental and applied researches. This unremitting concern led him to develop cell-wall research in the INRA ('Institut national de la recherche agronomique') laboratories in directions likely to open on industrial applications and, more recently, to promote programmes uniting scientists from domains as different as ecophysiology, biomechanics, molecular biology, etc.

The large panel of contributions collected in this issue bears witness to Bernard Monties' constant care. Fundamental aspects are illustrated by the most recent studies on lignins and lignification from chemical and biochemical [1–4], immuno- and cytochemical [3,5–7], genetic [8–10] viewpoints coupled to a study of microbial wood degradation [11]. Two chapters are devoted to physicochemical and mechanical properties of woody material [12,13], while special attention is given to tension wood [10]. On the other hand, evidence of the large range of industrial applications can be found in papers on pulping [14–16], fibre technology [16], forage digestibility [9], biomass conversion

[17] and on obtention of new materials from lignified cell walls and co-products [18,19]. It is sure that this challenging confrontation of viewpoints will create profitable emulation and promote new researches on lignified tissues that are often considered as a paradigm of plant cell differentiation, while offering us the main renewable resource from the biosphere.

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