Endophytes for a Growing World

The book brings together papers covering the most recent scientific research from the top endophyte researchers in the world. It presents the state of the art in our knowledge and technical capacity and explores future directions of this work. It is highly relevant and timely because of the need to improve global food security and its sustainability, and also to provide novel bioactive molecules for medicine. There is also a need to protect forestry in a changing and growing world. Endophytes offer huge potential to reduce environmentally damaging agricultural inputs such as fertilisers and pesticides. They are also a largely overlooked group of organisms where much basic science remains to be undertaken. For example, new molecular tools of DNA profiling using high-throughput environmental sequencing are allowing the exploration of a previously largely unknown resource. There is a pressing need to convert scientific research on endophytes into practical application. This book describes how that will be achieved.

Trevor R. Hodkinson is Professor in Botany and Head of the Botany Molecular Laboratory, Trinity College Dublin, Ireland. His research is mainly focused in fields known as endophyte biology, molecular systematics and genetic resource characterisation. He has specialist knowledge of the grass family and of forest tree genetics/mycorrhizae.

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Brian R. Murphy is a Research Fellow in the Botany Department at Trinity College Dublin, Ireland. From an Irish perspective, he is largely responsible for the exciting research and associated publications relating to fungal endophyte application in agriculture. He is recognised as a leading expert in endophyte discovery from wild relatives of crops and their application to increasing stress resistance in cereal crops.

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Preface

The 18 chapters of this book are based on the theme of an international conference held at Trinity College Dublin (TCD), Ireland, in August 2017. During the 3-day conference, entitled 'Sustain: Endophytes for a Growing World', there were stimulating presentations, posters and discussions covering a broad range of endophyte biology and application; these influenced the shape and content of this volume. Papers were contributed by a number of conference delegates and others were subsequently invited to broaden the book's scope or address particular topics. Two anonymous book proposal reviewers provided valuable content guidance and many anonymous reviewers also helped improve the chapter contributions. We are particularly grateful to the production team at Cambridge University Press, who have been highly supportive and professional. Finally, we thank all 56 contributing authors to the book (from institutions in Australia, Chile, Denmark, France, Germany, Hungary, India, Indonesia, Ireland, Israel, New Zealand, Portugal and the United States), many of whom also peer reviewed other chapters. We urge all readers to encourage national, regional and global policy makers to embrace the potential of endophyte science to address the Global Sustainable Development Goals of the United Nations.