Preface

From its first description by Murray et al. in 1926 (referred to as *Bacterium monocytogenes*), *Listeria monocytogenes* has frequently been associated with infection of humans and animals [1, 2]. The dual lifestyle of *L. monocytogenes*, from environmental saprophyte to pathogen, has sparked interest in scientists across a range of fields and has advanced our understanding of the biology of the bacterium [3]. The evolution of this understanding has been characterized by many notable milestones. Studies on the ecology of *L. monocytogenes* illustrated its ubiquitous nature, with a large range of environments harboring the organism, including soil, plant material, water, and wastewater, to carriage by animals and humans, often asymptomatically [4, 5]. Although current knowledge suggests that cases of human listeriosis are almost exclusively through foodborne infection, this critical transmission vector became clear only during the 1980s, largely the result of a series of high-profile disease outbreaks, perhaps most notable of which was the Canadian outbreak of 1981, linked to contaminated coleslaw [6]. With many foodborne outbreaks recorded globally every year since then, some of which have been amongst the most severe of any attributed to a bacterial pathogen [7, 8], *L. monocytogenes* has been a driving force in the development of current disease surveillance and control strategies. This includes global surveillance networks such as PulseNet, which allows international comparison of different strains of *L. monocytogenes*. Along with these advances in the epidemiology of the organisms, other strides were being made in the understanding of the pathogenesis of the organism, including its intracellular nature and how this contributed to crossing three key barriers—the intestinal barrier, the blood–brain barrier, and also the fetoplacental barrier, perhaps most characteristic of this pathogen [9, 10, 11]. The knowledge of this intricate mode of infection has led to the recent reformation of the interaction between *L. monocytogenes* and humans, which has seen the agent of one of the most severe bacterial diseases of humans being used in the fight against cancer, one of the leading causes of human mortality [12, 13].

This long journey in the understanding of *L. monocytogenes* has been achieved through a vast array of research covering a wide range of scientific areas, including, in recent years, molecular methodologies. These achievements have often been made through innovative strategies devised to address many different questions regarding the biology of the organism, from pathogenicity and virulence to characterization and tracking sources, and are characterized by the development of many scientific methodologies.

Methods in Molecular Biology is a series of books that presents a step-by-step protocol approach to experimentation. Each protocol opens with an introductory overview, a list of the materials and reagents needed to complete the experiment, and is then followed by a detailed procedure supported with a notes section offering tips and tricks of the trade as well as troubleshooting advice. The protocols are comprehensive and reliable.

As *Listeria monocytogenes* continues to be a major threat to public health, this book in the series is a timely addition. It brings together protocols and methodologies that are used in research to gain a better understanding of *Listeria* at a molecular level. The topics covered include sampling in order to isolate *Listeria*, methods for their identification and

characterization, methods for gene manipulation, and finally methods for the control of the organism. The book will contribute towards the harmonization of the methods used and will therefore benefit all those interested in Listeria research.

Fermoy, Ireland — *Kieran Jordan*
Werribee, VIC, Australia — *Edward M. Fox*
Vienna, Austria — *Martin Wagner*

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http://www.springer.com/978-1-4939-0702-1

Listeria monocytogenes
Methods and Protocols
Jordan, K.; Fox, E.M.; Wagner, M. (Eds.)
2014, X, 286 p. 42 illus., 17 illus. in color., Hardcover
ISBN: 978-1-4939-0702-1
A product of Humana Press