Preface to the First Edition

In 1997, Dolly the cloned sheep began a biological revolution. She showed us the way to physiologically dedifferentiate already committed somatic cells, opening the gate to a whole new world of possibilities in the study of basic biological mechanisms that touch the origins of life at its core. It is clear that cloning vertebrates using somatic cells is here to stay. Unfortunately, at this time, we know little about how this process works, and it is difficult to imagine all the applications this technology will bring to fruition. This book tries to address some of these questions.

Part I of *Principles of Cloning* explores the basic known biological processes and lays out critical points to consider when interpreting cloning experiments that are now being conducted. The nucleus itself, chromatin structure, epigenetic changes, and the role of the egg are emphasized. Part II describes the methods utilized during cloning in an attempt to make them available to students and professionals who are interested in nuclear transfer techniques in vertebrates. Parts III–V contain analyses of species that already have been cloned and species that are still being studied, including nonhuman primates. We are delighted to say that the contributors in these sections published the first articles on most of these species. Experts in the area have also contributed to the applications of cloning covered in Part VI; we expect this part of the book to communicate the benefits of cloning to society in the medical and agricultural fields. Part VII addresses the ethical concerns evoked by this technology and is followed by an analysis of what the future may bring. We hope this book challenges readers, encouraging them to think beyond the cloning procedure itself to the creation of new individuals or pluripotent stem cells. Interesting questions regarding the mechanisms of dedifferentiation must now be addressed; the answers will perhaps allow scientists to recreate the same phenomenon in a more consistent and simpler way.

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