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Principles of Cloning CRC Press

Biodiversity—the genetic variety of life—is an exuberant product of the evolutionary past, a vast human-supportive resource (aesthetic, intellectual, and material) of the present, and a rich legacy to cherish and preserve for the future. Two urgent challenges, and opportunities, for 21st-century science are to gain deeper insights into the evolutionary processes that foster biotic diversity, and to translate that understanding into workable solutions for the regional and global crises that biodiversity currently faces. A grasp of evolutionary principles and processes is important in other societal arenas as well, such as education, medicine, sociology, and other applied fields including agriculture, pharmacology, and biotechnology. The ramifications of evolutionary thought also extend into learned realms traditionally reserved for philosophy and religion. The central goal of the In the Light of Evolution (ILE) series is to promote the evolutionary sciences through state-of-the-art colloquia—in the series of Arthur M. Sackler colloquia sponsored by the National Academy of Sciences—and their published proceedings. Each installment explores evolutionary perspectives on a particular biological topic that is scientifically intriguing but also has special relevance to contemporary societal issues or challenges. This tenth and final edition of the In the Light of Evolution series focuses on recent developments in phylogeographic research and their relevance to past accomplishments and future research directions.

Clone Academic Press

Winner of 2014 AAAS/Subaru SB&F Prize for Best Young Adult Science Book Longlisted for the PEN/E.O. Wilson Literary Science Writing Award One of Nature's Summer Book Picks One of Publishers Weekly's Top Ten Spring 2013 Science Books For centuries, we've toyed with our creature companions, breeding dogs that herd and hunt, housecats that look like tigers, and teacup pigs that fit snugly in our handbags. But what happens when we take animal alteration a step further, engineering a cat that glows green under ultraviolet light or cloning the beloved family Labrador? Science has given us a whole new toolbox for tinkering with life. How are we using it? In Frankenstein's Cat, the journalist Emily Anthes takes us from petri dish to pet store as she explores how biotechnology is shaping the future of our furry and feathered friends. As she ventures from bucolic barnyards to a "frozen zoo" where scientists are storing DNA from the planet's most exotic creatures, she discovers how we can use cloning to protect endangered species, craft prosthetics to save injured animals, and employ genetic engineering to supply farms with disease-resistant livestock. Along the way, we meet some of the animals that are ushering in this astonishing age of enhancement, including sensor-wearing seals, cyborg beetles, a bionic bulldog, and the world's first cloned cat. Through her encounters with scientists, conservationists, ethicists, and entrepreneurs, Anthes reveals that while some of our interventions may be trivial (behold: the GloFish), others could improve the lives of many species—including our own. So what does biotechnology really mean for the world's wild things? And what do our brave new beasts tell us about ourselves? With keen insight and her trademark spunk, Anthes highlights both the peril and the promise of our scientific superpowers, taking us on an adventure into a world where our grandest science fiction fantasies are fast becoming reality.

Scientific and Medical Aspects of Human Reproductive Cloning The Rosen Publishing Group, Inc

To many, cloning is the stuff of science fiction. However, for decades it has been an important piece of scientific development. This guidebook starts by looking at the foundational scientific theories that led to the exact replication of molecules, cells, and even organisms. Drawing on primary sources, this book gives biographical information on key players in the field of cloning and traces how their work built upon that of their predecessors, culminating in the successful cloning of a sheep. It looks at how cloning technology has advanced and is used today. Students will hone their critical thinking skills by exploring the ethical debate behind the use of cloning technology.

Ethical Aspects of Animal Cloning for Food Supply W. W. Norton

Scientist Ian Wilmut describes the process by which he and other researchers at Scotland's Roslin Institute cloned the first mammal, a sheep named Dolly, and makes a case for the medical uses of cloning.

Bovine Reproduction Avery Publishing Group

A Clone of Your Own? by Arlene Judith Klotzko takes a close look at the inevitability of cloning, and the ethical, legal, and philosophical issues surrounding it.

Animal Transgenesis and Cloning Wiley-Blackwell

Viewpoint selections examine some of the complex controversies surrounding animal cloning and the prospect of human cloning, in addition to offering tips on the art of essay writing.

Human Cloning NYU Press

In the twenty-first century, because of climate change and other human activities, many animal species have become extinct, and many others are at risk of extinction. Once they are gone, we cannot bring them back—or can we? With techniques such as cloning, scientists want to reverse extinction and return lost species to the wild. Some scientists want to create clones of recently extinct animals, while others want to make new hybrid animals.

Many people are opposed to de-extinction. Some critics say that the work diverts attention from efforts to save species that are endangered. Others say that de-extinction amounts to scientists "playing God." Explore the pros and cons of de-extinction and the cutting-edge science that makes it possible.

Cloning Oxford University Press

A Pulitzer Prize-winning investigative reporter traces the 2008 cloning of a pet pit bull and ensuing debates about scientific boundaries, commerce and ethics, in an anecdotal account that also examines the role of human emotions in promoting scientific achievements.

Dolly: 1st Cloned Sheep ABC-CLIO

Human reproductive cloning is an assisted reproductive technology that would be carried out with the goal of creating a newborn genetically identical to another human being. It is currently the subject of much debate around the world, involving a variety of ethical, religious, societal, scientific, and medical issues. Scientific and Medical Aspects of Human Reproductive Cloning considers the scientific and medical sides of this issue, plus ethical issues that pertain to human-subjects research. Based on experience with reproductive cloning in animals, the report concludes that human reproductive cloning would be dangerous for the woman, fetus, and newborn, and is likely to fail. The study panel did not address the issue of whether human reproductive cloning, even if it were found to be medically safe, would be "or would not be" acceptable to individuals or society.

Epigenetic Risks of Cloning Kidhaven

Bovine Reproduction is a comprehensive, current reference providing information on all aspects of reproduction in the bull and cow. Offering fundamental knowledge on evaluating and restoring fertility in the bovine patient, the book also places information in the context of herd health where appropriate for a truly global view of bovine theriogenology. Printed in full color throughout, the book includes 83 chapters and more than 550 images, making it the most exhaustive reference available on this topic. Each section covers anatomy and physiology, breeding management, and reproductive surgery, as well as obstetrics and pregnancy wastage in the cow. Bovine Reproduction is a welcome resource for bovine practitioners, theriogenologists, and animal scientists, as well as veterinary students and residents with an interest in the cow.

Clone Being National Academies Press

The second edition of Stem Cells: Scientific Facts and Fiction provides the non-stem cell expert with an understandable review of the history, current state of affairs, and facts and fiction of the promises of stem cells. Building on success of its award-winning preceding edition, the second edition features new chapters on embryonic and iPS cells and stem cells in veterinary science and medicine. It contains major revisions on cancer stem cells to include new culture models, additional interviews with leaders in progenitor cells, engineered eye tissue, and xeno organs from stem cells, as well as new information on "organs on chips" and adult progenitor cells. In the past decades our understanding of stem cell biology has increased tremendously. Many types of stem cells have been discovered in tissues that everyone presumed were unable to regenerate in adults, the heart and the brain in particular. There is vast interest in stem cells from biologists and clinicians who see the potential for regenerative medicine and future treatments for chronic diseases like Parkinson's, diabetes, and spinal cord lesions, based on the use of stem cells; and from entrepreneurs in biotechnology who expect new commercial applications ranging from drug discovery to transplantation therapies. Explains in straightforward, non-specialist language the basic biology of stem cells and their applications in modern medicine and future therapy Includes extensive coverage of adult and embryonic stem cells both historically and in contemporary practice Richly illustrated to assist in understanding how research is done and the current hurdles to clinical practice

Forgotten Clones University of Illinois Press

Assists policymakers in evaluating the appropriate scientific methods for detecting unintended changes in food and assessing the potential for adverse health effects from genetically modified products. In this book, the committee recommended that greater scrutiny should be given to foods containing new compounds or unusual amounts of naturally occurring substances, regardless of the method used to create them. The book offers a framework to guide federal agencies in selecting the route of safety assessment. It identifies and recommends several pre- and post-market approaches to guide the assessment of unintended compositional changes that could result from genetically modified foods and research avenues to fill the knowledge gaps.

Brenner's Encyclopedia of Genetics Academic Press

Genetic-based animal biotechnology has produced new food and pharmaceutical products and promises many more advances to benefit humankind. These exciting prospects are accompanied by considerable unease, however, about matters such as safety and ethics. This book identifies science-based and policy-related concerns about animal biotechnology—key issues that must be resolved before the new breakthroughs can reach their potential. The book includes a short history of the field and provides understandable definitions of terms like cloning. Looking at technologies on the near horizon, the authors discuss what we know and what we fear about their effects—the inadvertent release of dangerous microorganisms, the safety of products derived from biotechnology, the impact of genetically engineered animals on their environment. In addition to these concerns, the book explores animal welfare concerns, and our societal and institutional capacity to manage and regulate the technology and its products. This accessible volume will be important to everyone interested in the implications of the use of animal biotechnology.

After Dolly Greenhaven Press, Incorporated

Animal Agriculture: Sustainability, Challenges and Innovations discusses the land-based production of high-quality protein by livestock and poultry and how it plays an important role in improving human nutrition, growth and health. With exponential growth of the global population and marked rises in meat consumption per capita, demands for animal-source protein are expected to increase 72% between 2013 and 2050. This raises concerns about the sustainability and environmental impacts of animal agriculture. An attractive solution to meeting increasing needs for animal products and mitigating undesirable effects of agricultural practices is to enhance the efficiency of animal growth, reproduction, and lactation. Currently, there is no resource that offers specific knowledge of both animal science and technology, including biotechnology for the sustainability of animal agriculture for the expanding global demand of food in the face of diminishing resources. This book fills that gap, giving readers all the necessary information on important issues facing modern animal agriculture, namely its sustainability, challenges and innovative solutions. Integrates new knowledge in animal breeding, biotechnology, nutrition, reproduction and management Addresses the urgent issue of sustainability in modern animal agriculture Provides practical solutions on how to solve the current and future problems that face animal agriculture worldwide

Reproductive Technologies in Animals Academic Press

The explosion of the field of genetics over the last decade, with the new technologies that have stimulated research, suggests that a new sort of reference work is needed to keep pace with such a fast-moving and interdisciplinary field. Brenner's Encyclopedia of Genetics, Second Edition, Seven Volume Set, builds on the foundation of the first edition by addressing many of the key subfields of genetics that were just in their infancy when the first edition was published. The currency and accessibility of this foundational content will be unrivalled, making this work useful for scientists and non-scientists alike. Featuring relatively short entries on genetics topics written by experts in that topic, Brenner's Encyclopedia of Genetics, Second Edition, Seven Volume Set provides an effective way to quickly learn about any aspect of genetics, from Abortive Transduction to Zygotes. Adding to its utility, the work provides short entries that briefly define key terms, and a guide to additional reading and relevant websites for further study. Many of the entries include figures to explain difficult concepts. Key terms in related areas such as biochemistry, cell, and molecular biology are also included, and there are entries that describe historical figures in genetics, providing insights into their careers and discoveries. This 7-volume set represents a 25% expansion from the first edition, with over 1600 articles encompassing this burgeoning field. Thoroughly up-to-date, with many new topics and subfields covered that were in their infancy or not in existence at the time of the first edition. Timely coverage of emergent areas such as epigenetics, personalized genomic medicine, pharmacogenetics, and genetic enhancement technologies Interdisciplinary and global in its outlook, as befits the field of genetics Brief articles, written by experts in the field, which not only discuss, define, and explain key elements of the field, but also provide definition of key terms, suggestions for further reading, and biographical sketches of the key people in the history of genetics.

Cloning Cavendish Square Publishing, LLC

The natural world is marked by an ever-increasing loss of varied habitats, a growing number of species extinctions, and a full range of new kinds of dilemmas posed by global warming. At the same time, humans are also working to actively shape this natural world through contemporary bioscience and biotechnology. In *Cloning Wild Life*, Carrie Friese posits that cloned endangered animals in zoos sit at the apex of these two trends, as humans seek a scientific solution to environmental crisis. Often fraught with controversy, cloning technologies, Friese argues, significantly affect our conceptualizations of and engagements with wildlife and nature. By studying animals at different locations, Friese explores the human practices

surrounding the cloning of endangered animals. She visits zoos—the San Diego Zoological Park, the Audubon Center in New Orleans, and the Zoological Society of London—to see cloning and related practices in action, as well as attending academic and medical conferences and interviewing scientists, conservationists, and zookeepers involved in cloning. Ultimately, she concludes that the act of recalibrating nature through science is what most disturbs us about cloning animals in captivity, revealing that debates over cloning become, in the end, a site of political struggle between different human groups. Moreover, Friese explores the implications of the social role that animals at the zoo play in the first place—how they are viewed, consumed, and used by humans for our own needs. A unique study uniting sociology and the study of science and technology, *Cloning Wild Life* demonstrates just how much bioscience reproduces and changes our ideas about the meaning of life itself.

Cloning Pets University of Pittsburgh Press

Presents a variety of viewpoints on the issue of cloning.

A Clone of Your Own? Government Printing Office

“Definitely shows how a seemingly frivolous film genre can guide us in shaping tomorrow’s world.” —Seth Shostak, senior astronomer, SETI Institute Artificial intelligence, gene manipulation, cloning, and interplanetary travel are all ideas that seemed like fairy tales but a few years ago. And now their possibilities are very much here. But are we ready to handle these advances? This book, by a physicist and expert on responsible technology development, reveals how science fiction movies can help us think about and prepare for the social consequences of technologies we don’t yet have, but that are coming faster than we imagine. Films from the Future looks at twelve movies that take us on a journey through the worlds of biological and genetic manipulation, human enhancement, cyber technologies, and nanotechnology. Readers will gain a broader understanding of the complex relationship between science and society. The movies mix old and new, and the familiar and unfamiliar, to provide a unique, entertaining, and ultimately transformative take on the power of emerging technologies, and the responsibilities they come with.

Safety of Genetically Engineered Foods National Academies Press

This book provides a detailed introduction to the cloning of both plants and animals and discusses the important social, ethical, political, technical, and other issues related to the practice. • Offers an informed perspective on cloning and its potential applications in everyday life and elsewhere • Includes profiles of key individuals and organizations related to the field of cloning, a Perspectives chapter, a chronology of important events in the history of cloning, and a glossary of key terms that strengthen the reader's understanding of the topic • Supplies the necessary historical background and context for readers to understand why cloning of both plants and animals is of great importance—and why cloning technology is even more critical when it involves human beings

Cloning Wild Life National Academies Press

Someday soon, if it hasn't happened in secret already, the first cloned human will be born and mankind will embark on a scientific and moral journey whose destination cannot be foretold. In *A Clone of Your Own?*, Arlene Judith Klotzko describes the new world of possibilities that can be glimpsed over the horizon. In a lucid and engaging narrative, she explains that the technology to create clones of living beings already exists, inaugurated in 1996 by Dolly the sheep, the first mammal cloned from a single adult cell. Our fascination with cloning is about much more than science and its extraordinary medical implications. In riveting prose, full of allusions to art, music, and the cinema, Klotzko shows why the prospect of human cloning triggers our dearest hopes and especially our darkest fears, forcing us to ponder anew what it means to be human, and what it would be like to have 'a clone of your own'.