

## Do Scientists Care About Animal Welfare

The scientific research enterprise is built on a foundation of trust. Scientists trust that the results reported by others are valid. Society trusts that the results of research reflect an honest attempt by scientists to describe the world accurately and without bias. But this trust will endure only if the scientific community devotes itself to exemplifying and transmitting the values associated with ethical scientific conduct. *On Being a Scientist* was designed to supplement the informal lessons in ethics provided by research supervisors and mentors. The book describes the ethical foundations of scientific practices and some of the personal and professional issues that researchers encounter in their work. It applies to all forms of research—whether in academic, industrial, or governmental settings—and to all scientific disciplines. This third edition of *On Being a Scientist* reflects developments since the publication of the original edition in 1989 and a second edition in 1995. A continuing feature of this edition is the inclusion of a number of hypothetical scenarios offering guidance in thinking about and discussing these scenarios. *On Being a Scientist* is aimed primarily at graduate students and beginning researchers, but its lessons apply to all scientists at all stages of their scientific careers.

While there has been increasing interest in recent years in the welfare of farm animals, fish are frequently thought to be different. In many people's perception, fish, with their lack of facial expressions or recognisable communication, are not seen to count when it comes to welfare. Angling is a major sport, and fishing a big industry. Millions of fish are caught on barbed hooks, or left to die by suffocation on the decks of fishing boats. Here, biologist Victoria Braithwaite explores the question of fish pain and fish suffering, explaining what we now understand about fish behaviour, and examining the related ethical questions about how we should treat these animals. She asks why the question of pain in fish has not been raised earlier, indicating our prejudices and assumptions; and argues that the latest and growing scientific evidence would suggest that we should widen to fish the protection currently given to birds and mammals.

In a world where we usually measure animals by human standards, prize-winning author and MacArthur Fellow Carl Safina takes us inside their lives and minds, witnessing their profound capacity for perception, thought and emotion, showing why the word "it" is often inappropriate as we discover who they really are. Weaving decades of observations of actual families of free-living creatures with new discoveries about brain functioning, Carl Safina's narrative breaches many commonly held boundaries between humans and other animals. In *Beyond Words*, readers travel the wilds of Africa to visit some of the last great elephant gatherings, then follow wolves of Yellowstone National Park sort out the aftermath of their personal tragedy, then plunge into the astonishingly peaceful society of killer whales living in waters of the Pacific Northwest. We spend quality time, too, with dogs and falcons and ravens; and consider how the human mind originated. In his wise and passionate new book, Safina delivers a graceful examination of how animals truly think and feel, which calls to question what really does—and what should—make us human. Few arguments in biomedical experimentation have stirred such heated debate in recent years as those raised by animal research. In this comprehensive analysis of the social, political, and ethical conflicts surrounding the use of animals in scientific experiments, Barbara Orlans judges both ends of the spectrum in this debate -- unconditional approval or rejection of animal experimentation -- to be untenable. Instead of arguing for either view, she thoughtfully explores the ground between the extremes, and convincingly makes the case for public policy reforms that serve to improve the welfare of laboratory animals without jeopardizing scientific endeavor. This book presents controversial issues in a balanced manner based on careful historical analysis and original research. Different mechanisms of oversight for animal experiments are compared and those that have worked well are identified. This compelling work will be of interest to biomedical scientists, ethicists, animal welfare advocates and other readers concerned with this critical issue.

How many species are there across the globe? How much do all of the insects in the world collectively weigh? How far can animals travel? Steve Jenkins answers these questions and many more with numbers, images, innovation, and authoritative science in his latest work of illustrated nonfiction. Jenkins layers his signature cut-paper illustrations alongside computer graphics and a text that is teeming with fresh, unexpected, and accurate zoological information ready for readers to easily devour. The level of scientific research paired with Jenkins' creativity and accessible infographics is unmatched and sure to wow fans old and new. *Advances in Agricultural Animal Welfare* fully explores developments in the key areas of agricultural animal welfare assessment and improvement. Analyzing current topical issues, as well as reviewing the historical welfare issues, the volume is a comprehensive review of the field. Divided into five sections, the book opens in Part One by reviewing advances in animal welfare science, examining cognitive psychology, genetics and genomics. Part Two then looks at transdisciplinary research in animal welfare, with coverage of bioethics, welfare and sustainability from both environmental and food safety perspectives. Part Three explores the process of translating science into policy and practice, followed by discussion on the global achievability of welfare standards in Part Four. Finally, Part Five highlights some emerging issues in agricultural animal welfare. This book is an essential part of the wider ranging series *Advances in Farm Animal Welfare*, with coverage of cattle, sheep, pigs, poultry and aquaculture. With its expert editor and international team of contributors, *Advances in Agricultural Animal Welfare* is a key reference tool for welfare research scientists and students, practicing vets involved in welfare assessment, and indeed anyone with a professional interest in the welfare of agricultural animals. Provides in-depth reviews of emerging topics, research and applications in agricultural animal welfare Provides coverage of topics important to all agricultural animals and complements the wider series, *Agricultural Animal Welfare*, which will provide comprehensive coverage of animal welfare of the world's major farmed animals Edited by a world leading animal welfare academic, with contributions from a writing team of both leading academics and practitioners

*Science, Medicine, and Animals* explains the role that animals play in biomedical research and the ways in which scientists, governments, and citizens have tried to balance the experimental use of animals with a concern for all living creatures. An accompanying Teacher's Guide is available to help teachers of middle and high school students use *Science, Medicine, and Animals* in the classroom. As students examine the issues in *Science, Medicine, and Animals*, they will gain a greater understanding of the goals of biomedical research and the real-world practice of the scientific method in general. *Science, Medicine, and Animals* and the Teacher's Guide were written by the Institute for Laboratory Animal Research and published by the National Research Council of the National Academies. The report was reviewed by a committee made up of experts and scholars with diverse perspectives, including members of the U.S. Department of Agriculture, National Institutes of Health, the

Humane Society of the United States, and the American Society for the Prevention of Cruelty to Animals. The Teacher's Guide was reviewed by members of the National Academies' Teacher Associates Network. Science, Medicine, and Animals is recommended by the National Science Teacher's Association NSTA Recommends.

Publishers Weekly Most Anticipated Books of Fall 2019 A New York Times Editor's Pick People Best Books Fall 2019 Chicago Tribune 28 Books You Need to Read Now Booklist's Top Ten Sci-Tech Books of 2019 "It blew my mind to discover that teenage animals and teenage humans are so similar. Both are naive risk-takers. I loved this book!" —Temple Grandin, author of *Animals Make Us Human* and *Animals in Translation* A revelatory investigation of human and animal adolescence and young adulthood from the New York Times bestselling authors of *Zoobiquity*. With *Wildhood*, Harvard evolutionary biologist Barbara Natterson-Horowitz and award-winning science writer Kathryn Bowers have created an entirely new way of thinking about the crucial, vulnerable, and exhilarating phase of life between childhood and adulthood across the animal kingdom. In their critically acclaimed bestseller, *Zoobiquity*, the authors revealed the essential connection between human and animal health. In *Wildhood*, they turn the same eye-opening, species-spanning lens to adolescent young adult life. Traveling around the world and drawing from their latest research, they find that the same four universal challenges are faced by every adolescent human and animal on earth: how to be safe, how to navigate hierarchy; how to court potential mates; and how to feed oneself. Safety. Status. Sex. Self-reliance. How human and animal adolescents and young adults confront the challenges of wildhood shapes their adult destinies. Natterson-Horowitz and Bowers illuminate these core challenges through the lives of four animals in the wild: Ursula, a young king penguin; Shrink, a charismatic hyena; Salt, a matriarchal humpback whale; and Slavc, a roaming European wolf. Through their riveting stories—and those of countless others, from adventurous eagles and rambunctious high schooler to inexperienced orcas and naive young soldiers—readers get a vivid and game-changing portrait of adolescent young adults as a horizontal tribe, sharing behaviors and challenges, setbacks and triumphs. Upending our understanding of everything from risk-taking and anxiety to the origins of privilege and the nature of sexual coercion and consent, *Wildhood* is a profound and necessary guide to the perilous, thrilling, and universal journey to adulthood on planet earth.

ONE OF THE NEW YORK TIMES BOOK REVIEW'S 10 BEST BOOKS OF THE YEAR A major book about the future of the world, blending intellectual and natural history and field reporting into a powerful account of the mass extinction unfolding before our eyes Over the last half a billion years, there have been five mass extinctions, when the diversity of life on earth suddenly and dramatically contracted. Scientists around the world are currently monitoring the sixth extinction, predicted to be the most devastating extinction event since the asteroid impact that wiped out the dinosaurs. This time around, the cataclysm is us. In *The Sixth Extinction*, two-time winner of the National Magazine Award and New Yorker writer Elizabeth Kolbert draws on the work of scores of researchers in half a dozen disciplines, accompanying many of them into the field: geologists who study deep ocean cores, botanists who follow the tree line as it climbs up the Andes, marine biologists who dive off the Great Barrier Reef. She introduces us to a dozen species, some already gone, others facing extinction, including the Panamanian golden frog, staghorn coral, the great auk, and the Sumatran rhino. Through these stories, Kolbert provides a moving account of the disappearances occurring all around us and traces the evolution of extinction as concept, from its first articulation by Georges Cuvier in revolutionary Paris up through the present day. The sixth extinction is likely to be mankind's most lasting legacy; as Kolbert observes, it compels us to rethink the fundamental question of what it means to be human.

From the time of our earliest childhood encounters with animals, we casually ascribe familiar emotions to them. But scientists have long cautioned against such anthropomorphizing, arguing that it limits our ability to truly comprehend the lives of other creatures. Recently, however, things have begun to shift in the other direction, and anthropologist Barbara J. King is at the forefront of that movement, arguing strenuously that we can—and should—attend to animal emotions. With *How Animals Grieve*, she draws our attention to the specific case of grief, and relates story after story—from fieldsites, farms, homes, and more—of animals mourning lost companions, mates, or friends. King tells of elephants surrounding their matriarch as she weakens and dies, and, in the following days, attending to her corpse as if holding a vigil. A housecat loses her sister, from whom she's never before been parted, and spends weeks pacing the apartment, wailing plaintively. A baboon loses her daughter to a predator and sinks into grief. In each case, King uses her anthropological training to interpret and try to explain what we see—to help us understand this animal grief properly, as something neither the same as nor wholly different from the human experience of loss. The resulting book is both daring and down-to-earth, strikingly ambitious even as it's careful to acknowledge the limits of our understanding. Through the moving stories she chronicles and analyzes so beautifully, King brings us closer to the animals with whom we share a planet, and helps us see our own experiences, attachments, and emotions as part of a larger web of life, death, love, and loss.

From eye-witness accounts of elephants apparently mourning the death of family members to an experiment that showed that hungry rhesus monkeys would not take food if doing so gave another monkey an electric shock, there is much evidence of animals displaying what seem to be moral feelings. But despite such suggestive evidence, philosophers steadfastly deny that animals can act morally, and for reasons that virtually everyone has found convincing. In *Can Animals be Moral?*, philosopher Mark Rowlands examines the reasoning of philosophers and scientists on this question—ranging from Aristotle and Kant to Hume and Darwin—and reveals that their arguments fall far short of compelling. The basic argument against moral behavior in animals is that humans have capabilities that animals lack. We can reflect on our motivations, formulate abstract principles that allow us to judge right from wrong. For an actor to be moral, he or she must be able scrutinize their motivations and actions. No animal can do these things—no animal is moral. Rowland naturally agrees that humans possess a moral consciousness that no animal can rival, but he argues that it is not necessary for an individual to have the ability to reflect on his or her motives to be moral. Animals can't do all that we can do, but they can act on the basis of some moral reasons—basic moral reasons involving concern for others. And when they do this, they are doing just what we do when we act on the basis of these reasons: They are acting morally.

A balanced, accessible discussion of whether and on what grounds animal research can be ethically justified. An estimated 100 million nonhuman vertebrates worldwide—including primates, dogs, cats, rabbits, hamsters, birds, rats, and mice—are bred, captured, or otherwise acquired every year for research purposes. Much of this research is seriously detrimental to the welfare of these animals, causing pain, distress, injury, or death. This book explores the ethical controversies that have arisen over animal research, examining closely the complex scientific, philosophical, moral, and legal issues involved. Defenders of animal research face a twofold challenge: they must make a compelling case for the unique benefits offered by animal research; and they must provide a rationale for why these benefits justify treating animal subjects in ways that would be unacceptable for human subjects. This challenge is at the heart of the book. Some contributors argue that it can be met fairly easily; others argue that it can never be

met; still others argue that it can sometimes be met, although not necessarily easily. Their essays consider how moral theory can be brought to bear on the practical ethical questions raised by animal research, examine the new challenges raised by the emerging possibilities of biotechnology, and consider how to achieve a more productive dialogue on this polarizing subject. The book's careful blending of theoretical and practical considerations and its balanced arguments make it valuable for instructors as well as for scholars and practitioners.

Today many school students are shielded from one of the most important concepts in modern science: evolution. In engaging and conversational style, *Teaching About Evolution and the Nature of Science* provides a well-structured framework for understanding and teaching evolution. Written for teachers, parents, and community officials as well as scientists and educators, this book describes how evolution reveals both the great diversity and similarity among the Earth's organisms; it explores how scientists approach the question of evolution; and it illustrates the nature of science as a way of knowing about the natural world. In addition, the book provides answers to frequently asked questions to help readers understand many of the issues and misconceptions about evolution. The book includes sample activities for teaching about evolution and the nature of science. For example, the book includes activities that investigate fossil footprints and population growth that teachers of science can use to introduce principles of evolution. Background information, materials, and step-by-step presentations are provided for each activity. In addition, this volume: Presents the evidence for evolution, including how evolution can be observed today. Explains the nature of science through a variety of examples. Describes how science differs from other human endeavors and why evolution is one of the best avenues for helping students understand this distinction. Answers frequently asked questions about evolution. *Teaching About Evolution and the Nature of Science* builds on the 1996 National Science Education Standards released by the National Research Council—and offers detailed guidance on how to evaluate and choose instructional materials that support the standards. Comprehensive and practical, this book brings one of today's educational challenges into focus in a balanced and reasoned discussion. It will be of special interest to teachers of science, school administrators, and interested members of the community. A New York Times bestseller: "A passionate and convincing case for the sophistication of nonhuman minds." —Alison Gopnik, *The Atlantic* Hailed as a classic, *Are We Smart Enough to Know How Smart Animals Are?* explores the oddities and complexities of animal cognition—in crows, dolphins, parrots, sheep, wasps, bats, chimpanzees, and bonobos—to reveal how smart animals really are, and how we've underestimated their abilities for too long. Did you know that octopuses use coconut shells as tools, that elephants classify humans by gender and language, and that there is a young male chimpanzee at Kyoto University whose flash memory puts that of humans to shame? Fascinating, entertaining, and deeply informed, de Waal's landmark work will convince you to rethink everything you thought you knew about animal—and human—intelligence.

What do scientists use animals for? How common is it and is it always necessary? Are the animals in a great deal of pain? Are there any alternatives?

*Laboratory Animals: Regulations and Recommendations for the Care and Use of Animals in Research, Second Edition*, is the only publication to offer a global compilation of standards on the care, welfare and use of animals in research. The book provides updated information that will be of great interest to professionals across laboratory animal science and biomedical research. Users will find a broad picture of the regulations required in other areas of the world that will be essential to appropriately manage animal care and use programs. Offers a worldwide view and global compilation of regulations, guidelines and recommendations for laboratory animal research Provides insight into factors that play key roles in the regulatory framework for countries and geographic regions Compares and contrasts regulations in different regions Written in layman's terms to easily understand legislation and regulations

Health and welfare issues of brachycephalic (flat-faced) animals are one of the most pressing problems facing companion animals right now. Dogs, in particular, are suffering from a 'brachycephalic crisis' resulting from a perfect storm where predispositions to an array of health issues are amplified by a population boom for certain brachycephalic breeds such as the French Bulldog and Pug. But yet, for many owners, these dogs represent the perfect companion: endearing personas and cute looks in a socially desirable package. So where is the truth in all of this? This book will equip veterinary professionals, animal welfare scientists, breeders and owners with the fuller story about brachycephalic health and welfare. The first half of the book provides the context of how and why we are in this crisis, offering in-depth historical, social, ethical, communication, nursing, welfare, epidemiological, genetics and international perspectives. The second half shifts towards the clinical arena, with chapters that cover the background, diagnosis, treatment and prevention of the many unique healthcare needs of brachycephalic animals. Cutting-edge knowledge is shared on a range of disciplines including respiratory disease, ophthalmology, dermatology, dentistry, neurology, obesity, reproduction and anesthesia. With twenty chapters written by world-leading experts, lifetimes of experience and knowledge are condensed into the first book dedicated exclusively to brachycephaly in companion animals. This essential reference resource will inform, challenge and stimulate; it will open your mind to new opportunities for you to improve the welfare of brachycephalic animals by your personal and collective choices and actions. But prepare to be surprised: you may just find that your views on brachycephaly in companion animals will be changed forever.

Writing for a high-quality scientific aquaculture publication is challenging, and many students and early career aquaculture scientists find the task daunting. Expanding on his popular workshop on *Improving Scientific Writing* at the 2017 World Aquaculture conference, Rodrigue Yossa provides new researchers with all the tools they need to write abstracts and a variety of articles (original, research reports, magazines, working papers, conference proceedings and more). He also takes the reader step-by-step through the process of reviewing submitted manuscripts and replying to reviewers, as well as understanding research ethics. Each section is accompanied by examples, and attention is focused on providing advice on grammar, how to focus your paper and possible loopholes when writing. *A Pocket Guide to Scientific Writing in Aquaculture Research* offers a lifeline to aquaculture students and early career researchers getting a grasp on the basics of science communication through writing.

"Stories that both dazzle and edify... This book is not just about life, but about discovery itself. It is about error and hubris, but also about wonder and the reach of science." —Siddhartha Mukherjee, *New York Times Book Review* We all assume we know what life is, but the more scientists learn about the living world—from protocells to brains, from zygotes to pandemic viruses—the harder they find it is to locate life's edge. Carl Zimmer investigates one of the biggest questions of all: What is life? The answer seems obvious until you try to seriously answer it. Is the apple sitting on your kitchen counter alive, or is only the apple tree it came from deserving of the word? If we can't answer that question here on earth, how will we know when and if we discover alien life on other worlds? The question hangs over some of society's most charged conflicts—whether a fertilized egg is a living person, for example, and

when we ought to declare a person legally dead. *Life's Edge* is an utterly fascinating investigation that no one but one of the most celebrated science writers of our generation could craft. Zimmer journeys through the strange experiments that have attempted to re-create life. Literally hundreds of definitions of what that should look like now exist, but none has yet emerged as an obvious winner. Lists of what living things have in common do not add up to a theory of life. It's never clear why some items on the list are essential and others not. Coronaviruses have altered the course of history, and yet many scientists maintain they are not alive. Chemists are creating droplets that can swarm, sense their environment, and multiply. Have they made life in the lab? Whether he is handling pythons in Alabama or searching for hibernating bats in the Adirondacks, Zimmer revels in astounding examples of life at its most bizarre. He tries his own hand at evolving life in a test tube with unnerving results. Charting the obsession with Dr. Frankenstein's monster and how Coleridge came to believe the whole universe was alive, Zimmer leads us all the way into the labs and minds of researchers working on engineering life from the ground up.

*Career Paths in Human-Animal Interaction for Social and Behavioral Scientists* is an essential text for students and professionals wanting to pursue a career in human-animal interaction (HAI). It is exclusively designed to navigate this field and provide information on the best education, training, and background one might need to incorporate HAI into a successful career. Kogan and Erdman bring together a diverse range of insights from HAI social scientists who have secured or created their HAI job. The book highlights six categories of work settings: academia, private practice, corporations/for profit companies, non-profit organizations, government, and other positions, to show the growing number of opportunities to blend social science interests with the desire to incorporate HAI into their careers. The book clearly outlines the career paths available to social science students and professionals, from careers connected to human services of psychology, therapy, social work, and journalism, to research or other scholarship.

A respected resource for decades, the *Guide for the Care and Use of Laboratory Animals* has been updated by a committee of experts, taking into consideration input from the scientific and laboratory animal communities and the public at large. The Guide incorporates new scientific information on common laboratory animals, including aquatic species, and includes extensive references. It is organized around major components of animal use: Key concepts of animal care and use. The Guide sets the framework for the humane care and use of laboratory animals. Animal care and use program. The Guide discusses the concept of a broad Program of Animal Care and Use, including roles and responsibilities of the Institutional Official, Attending Veterinarian and the Institutional Animal Care and Use Committee. Animal environment, husbandry, and management. A chapter on this topic is now divided into sections on terrestrial and aquatic animals and provides recommendations for housing and environment, husbandry, behavioral and population management, and more. Veterinary care. The Guide discusses veterinary care and the responsibilities of the Attending Veterinarian. It includes recommendations on animal procurement and transportation, preventive medicine (including animal biosecurity), and clinical care and management. The Guide addresses distress and pain recognition and relief, and issues surrounding euthanasia. Physical plant. The Guide identifies design issues, providing construction guidelines for functional areas; considerations such as drainage, vibration and noise control, and environmental monitoring; and specialized facilities for animal housing and research needs. The *Guide for the Care and Use of Laboratory Animals* provides a framework for the judgments required in the management of animal facilities. This updated and expanded resource of proven value will be important to scientists and researchers, veterinarians, animal care personnel, facilities managers, institutional administrators, policy makers involved in research issues, and animal welfare advocates.

Some investigators have argued that emotions, especially animal emotions, are illusory concepts outside the realm of scientific inquiry. However, with advances in neurobiology and neuroscience, researchers are demonstrating that this position is wrong as they move closer to a lasting understanding of the biology and psychology of emotion. In *Affective Neuroscience*, Jaak Panksepp provides the most up-to-date information about the brain-operating systems that organize the fundamental emotional tendencies of all mammals. Presenting complex material in a readable manner, the book offers a comprehensive summary of the fundamental neural sources of human and animal feelings, as well as a conceptual framework for studying emotional systems of the brain. Panksepp approaches emotions from the perspective of basic emotion theory but does not fail to address the complex issues raised by constructionist approaches. These issues include relations to human consciousness and the psychiatric implications of this knowledge. The book includes chapters on sleep and arousal, pleasure and fear systems, the sources of rage and anger, and the neural control of sexuality, as well as the more subtle emotions related to maternal care, social loss, and playfulness. Representing a synthetic integration of vast amounts of neurobehavioral knowledge, including relevant neuroanatomy, neurophysiology, and neurochemistry, this book will be one of the most important contributions to understanding the biology of emotions since Darwin's *The Expression of the Emotions in Man and Animals*.

A pioneering canine behaviorist draws on cutting-edge research to show that a single, simple trait—the capacity to love—is what makes dogs such perfect companions for humans, and explains how we can better reciprocate their affection.

“Lively and fascinating . . . The reader comes away cheered, better informed, and with a new and deeper appreciation for our amazing canine companions and their enormous capacity for love.” —Cat Warren, New York Times best-selling author of *What the Dog Knows Does your dog love you?* Every dog lover knows the feeling. The nuzzle of a dog's nose, the warmth of them lying at our feet, even their whining when they want to get up on the bed. It really seems like our dogs love us, too. But for years, scientists have resisted that conclusion, warning against anthropomorphizing our pets. Enter Clive Wynne, a pioneering canine behaviorist whose research is helping to usher in a new era: one in which love, not intelligence or submissiveness, is at the heart of the human-canine relationship. Drawing on cutting-edge studies from his lab and others around the world, Wynne shows that affection is the very essence of dogs, from their faces and tails to their brains, hormones, even DNA. This scientific revolution is revealing more about dogs' unique origins, behavior, needs, and hidden depths than we ever imagined possible. A humane, illuminating book, *Dog Is Love* is essential reading for anyone who has ever loved a dog—and experienced the wonder of being loved back.

The *Encyclopedia of Animal Behavior* has engaged with great success the efforts of many of the best behavioral biologists of the 21st century. Section editors drawn from the most accomplished behavioral scientists of their generation

have enrolled an international cast of highly respected thinkers and writers all of whom have taken great care and joy in illuminating every imaginable corner of animal behavior. This comprehensive work covers not only the usual topics such as communication, learning, sexual selection, navigation, and the history of the field, but also emerging topics in cognition, animal welfare, conservation, and applications of animal behavior. The large section on animal cognition brings together many of the world's experts on the subject to provide a comprehensive overview of this rapidly developing area. Chapters relating to animal welfare give a full view of behavioral interactions of humans with companion animals, farm animals, and animals in the wild. The key role of animal behavior in conservation biology receives broad attention, including chapters on topics such as the effects of noise pollution, captive breeding, and how the behavioral effects of parasites interacts with conservation issues. Animal behavior in environmental biology is highlighted in chapters on the effects of endocrine disruptors on behavior and a large number of chapters on key species, such as wolves, chimpanzees, hyenas and sharks. Clear, accessible writing complements a wealth of information for undergraduate college students about the essential concepts of animal behavior and the application of those concepts across the field. In-depth coverage of concepts, methods, and exemplar organisms serves the needs of graduate students and professionals in the field. From the use of behavior in assessing the welfare of pigs to the social behavior of insects, from animal empathy to bat brains, this authoritative reference, with its in-depth introductory articles, rich array of illustrations, interactive cross-referenced links, and numerous suggested readings, can guide the student or the professional to an expanded appreciation of the far-flung world of animal behavior. An invaluable tool for teaching and a source of enrichment and detail for any topic covered in an animal behavior course, the Encyclopedia of Animal Behavior is the definitive reference work in its field and will be for years to come. Comprehensive work which covers the usual topics along with emerging areas of animal behavior This encyclopedia contains clear, accessible writing and is well illustrated, including an online video, complimenting a wealth of information As an online reference, this work will be subject to period updating. This ensures that the work always remains current Contains in-depth introductions to the material that make each well-illustrated section come alive with the best the new content the discipline has to offer Glossary includes a compendium of behavioral terms that form a succinct mosaic of virtually every concept and phenomenon related to animal behavior Section editors, drawn from around the world, represent the best and the brightest among today's behavioral biologists and have recruited a broad range of internationally recognized experts Editors-in-Chief are experienced scientists and writers who between them have authored or edited eight books and teach courses in animal behavior at their respective universities

First published in 1964, Ruth Harrison's book *Animal Machines* had a profound and lasting impact on world agriculture, public opinion and the quality of life of millions of farmed animals. Concerned with welfare standards at a time when animal production was increasing in scale and mechanization, Ruth Harrison set about investigating the situation in a fair and even-handed way. Reporting her findings in this book, Harrison alerted the public to the undeniable suffering of calves living in veal crates and birds in battery cages. Written at the beginning of the intensive farming movement, which promised progress but in reality worsened conditions for domesticated animals, *Animal Machines* provides a fascinating insight into the system we are living with today and must continue with as the global population increases. Harrison's work brought about legal reforms, a greater understanding of farm conditions for animals and increased public awareness. *Animal Machines* is reprinted here in its entirety, accompanied by new chapters by world-renowned experts in animal welfare discussing the legacy and impact of *Animal Machines* 50 years on.

Looks at animal welfare in society and the sciences, including laboratory animals, pets, and the effect of climate change. A powerful new theory of human nature suggests that our secret to success as a species is our unique friendliness "Brilliant, eye-opening, and absolutely inspiring—and a riveting read. Hare and Woods have written the perfect book for our time."—Cass R. Sunstein, author of *How Change Happens* and co-author of *Nudge* For most of the approximately 300,000 years that *Homo sapiens* have existed, we have shared the planet with at least four other types of humans. All of these were smart, strong, and inventive. But around 50,000 years ago, *Homo sapiens* made a cognitive leap that gave us an edge over other species. What happened? Since Charles Darwin wrote about "evolutionary fitness," the idea of fitness has been confused with physical strength, tactical brilliance, and aggression. In fact, what made us evolutionarily fit was a remarkable kind of friendliness, a virtuosic ability to coordinate and communicate with others that allowed us to achieve all the cultural and technical marvels in human history. Advancing what they call the "self-domestication theory," Brian Hare, professor in the department of evolutionary anthropology and the Center for Cognitive Neuroscience at Duke University and his wife, Vanessa Woods, a research scientist and award-winning journalist, shed light on the mysterious leap in human cognition that allowed *Homo sapiens* to thrive. But this gift for friendliness came at a cost. Just as a mother bear is most dangerous around her cubs, we are at our most dangerous when someone we love is threatened by an "outsider." The threatening outsider is demoted to sub-human, fair game for our worst instincts. Hare's groundbreaking research, developed in close coordination with Richard Wrangham and Michael Tomasello, giants in the field of cognitive evolution, reveals that the same traits that make us the most tolerant species on the planet also make us the cruelest. *Survival of the Friendliest* offers us a new way to look at our cultural as well as cognitive evolution and sends a clear message: In order to survive and even to flourish, we need to expand our definition of who belongs. From the scientist duo behind *True or Poo?*, their original New York Times bestselling sensation--a scientifically precise, fully illustrated, utterly hilarious guide to animal flatulence. Dogs do it. Millipedes do it. Dinosaurs did it. You do it. I do it. Octopuses don't (and nor do octopi). Spiders might do it: more research is needed. Birds don't do it, but they could if they wanted to. Herrings do it to communicate with each other. In 2017 zoologist Dani Rabaiotti's teenage brother asked her a most teenaged question: Do snakes fart? Stumped, Rabaiotti turned to Twitter. The internet did not disappoint. Her innocent question spawned the hashtag #doesitfart and it spread like a noxious gas. Dozens of noted experts began

weighing in on which animals do and don't fart, and if they do, how much, how often, what it's made of, what it smells like, and why. Clearly, the public demands more information on animal farts. *Does it Fart?* fills that void: a fully authoritative, fully illustrated guide to animal flatulence, covering the habits of 80 animals in more detail than you ever knew you needed. What do hyena farts smell especially bad? What is a fossa, and does it fart? Why do clams vomit but not fart? And what is a fart, really? Pairing hilarious illustrations with surprisingly detailed scientific explanations, *Does it Fart?* will allow you to shift the blame onto all kinds of unlikely animals for years to come.

Ethical questions about the use of animals and humans in research remain among the most vexing within both the scientific community and society at large. These often rancorous arguments have gone on, however, with little awareness of their historical antecedents.

Experimentation on animals and particularly humans is often assumed to be a uniquely modern phenomenon, but the ideas and attitudes that encourage the biological and medical sciences to experiment on living creatures date from the earliest expression of Western thought. Here, Anita Guerrini looks at the history of these practices from vivisection in ancient Alexandria to present-day battles over animal rights and medical research employing human subjects. Guerrini discusses key historical episodes, including the discovery of blood circulation, the development of smallpox and polio vaccines, and recent AIDS research. She also explores the rise of the antivivisection movement in Victorian England, the modern animal rights movement, and current debates over gene therapy.--From publisher description.

Scientific experiments using animals have contributed significantly to the improvement of human health. Animal experiments were crucial to the conquest of polio, for example, and they will undoubtedly be one of the keystones in AIDS research. However, some persons believe that the cost to the animals is often high. Authored by a committee of experts from various fields, this book discusses the benefits that have resulted from animal research, the scope of animal research today, the concerns of advocates of animal welfare, and the prospects for finding alternatives to animal use. The authors conclude with specific recommendations for more consistent government action.

*Laboratory Animal Medicine* is a compilation of papers that deals with the diseases and biology of major species of animals used in medical research. The book discusses animal medicine, experimental methods and techniques, design and management of animal facilities, and legislation on laboratory animals. Several papers discuss the biology and diseases of mice, hamsters, guinea pigs, and rabbits. Another paper addresses the dog and cat as laboratory animals, including sourcing of these animals, housing, feeding, and their nutritional needs, as well as breeding and colony management. The book also describes ungulates as laboratory animals, including topics on sourcing, husbandry, preventive medical treatments, and housing facilities. One paper addresses primates as test animals, covering the biology and diseases of old world primates, Cebidae, and ferrets. Some papers pertain to the treatment, diseases, and needed facilities for birds, amphibians, and fish. Other papers then deal with techniques of experimentation, anesthesia, euthanasia, and some factors (spontaneous diseases) that complicate animal research. The text can prove helpful for scientists, clinical assistants, and researchers whose work involves laboratory animals.

With unique personal insight, experience, and hard science, *Animals in Translation* is the definitive, groundbreaking work on animal behavior and psychology. Temple Grandin's professional training as an animal scientist and her history as a person with autism have given her a perspective like that of no other expert in the field of animal science. Grandin and coauthor Catherine Johnson present their powerful theory that autistic people can often think the way animals think—putting autistic people in the perfect position to translate “animal talk.” Exploring animal pain, fear, aggression, love, friendship, communication, learning, and even animal genius, Grandin is a faithful guide into their world. *Animals in Translation* reveals that animals are much smarter than anyone ever imagined, and Grandin, standing at the intersection of autism and animals, offers unparalleled observations and extraordinary ideas about both.

NATIONAL POLICIES, CANADIAN PROGRAMS, REDUCING PAIN, ROLES OF COMMITTEE MEMBERS, TRAINING OF LABORATORY STAFF.

The necessity for animal use in biomedical research is a hotly debated topic in classrooms throughout the country. Frequently teachers and students do not have access to a balanced, factual material to foster an informed discussion on the topic. This colorful, 50-page booklet is designed to educate teenagers about the role of animal research in combating disease, past and present; the perspective of animal use within the whole spectrum of biomedical research; the regulations and oversight that govern animal research; and the continuing efforts to use animals more efficiently and humanely.

Examines cloning, its possible benefits, the risks involved, and cutting-edge science in the field.

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