

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

Chapter 1 : Animal Testing - www.nxgvision.com

Usually, this middle view accepts experimentation on some, but not all, animals and aims to avoid unnecessary use of animals in scientific research by pursuing alternatives to animal testing. The following sections briefly outline a few of the arguments for and against animal experimentation.

Jeffrey and Lonette Stayton Awards for Writing Using animals in research and to test the safety of products has been a topic of heated debate for decades. According to data collected by F. Barbara Orlans for her book, *In the Name of Science: Issues in Responsible Animal Experimentation*, sixty percent of all animals used in testing are used in biomedical research and product-safety testing. People have different feelings for animals; many look upon animals as companions while others view animals as a means for advancing medical techniques or furthering experimental research. However individuals perceive animals, the fact remains that animals are being exploited by research facilities and cosmetics companies all across the country and all around the world. Although humans often benefit from successful animal research, the pain, the suffering, and the deaths of animals are not worth the possible human benefits. Therefore, animals should not be used in research or to test the safety of products. This inherent value is not respected when animals are reduced to being mere tools in a scientific experiment" qtd. Animals and people are alike in many ways; they both feel, think, behave, and experience pain. Thus, animals should be treated with the same respect as humans. Animals are subjected to tests that are often painful or cause permanent damage or death, and they are never given the option of not participating in the experiment. Risks are not morally transferable to those who do not choose to take them" qtd. Animals do not willingly sacrifice themselves for the advancement of human welfare and new technology. Their decisions are made for them because they cannot vocalize their own preferences and choices. Therefore, animal experimentation should be stopped because it violates the rights of animals. Next, the pain and suffering that experimental animals are subject to is not worth any possible benefits to humans. Animals feel pain in many of the same ways that humans do; in fact, their reactions to pain are virtually identical both humans and animals scream, for example. When animals are used for product toxicity testing or laboratory research, they are subjected to painful and frequently deadly experiments. Two of the most commonly used toxicity tests are the Draize test and the LD50 test, both of which are infamous for the intense pain and suffering they inflict upon experimental animals. In the Draize test the substance or product being tested is placed in the eyes of an animal generally a rabbit is used for this test ; then the animal is monitored for damage to the cornea and other tissues in and near the eye. This test is intensely painful for the animal, and blindness, scarring, and death are generally the end results. The Draize test has been criticized for being unreliable and a needless waste of animal life. The LD50 test is used to test the dosage of a substance that is necessary to cause death in fifty percent of the animal subjects within a certain amount of time. To perform this test, the researchers hook the animals up to tubes that pump huge amounts of the test product into their stomachs until they die. This test is extremely painful to the animals because death can take days or even weeks. According to Orlans, the animals suffer from "vomiting, diarrhea, paralysis, convulsion, and internal bleeding. Since death is the required endpoint, dying animals are not put out of their misery by euthanasia" The precision it purports to provide is an illusion because of uncontrollable biological variables" The use of the Draize test and the LD50 test to examine product toxicity has decreased over the past few years, but these tests have not been eliminated completely. Thus, because animals are subjected to agonizing pain, suffering and death when they are used in laboratory and cosmetics testing, animal research must be stopped to prevent more waste of animal life. Finally, the testing of products on animals is completely unnecessary because viable alternatives are available. Many cosmetic companies, for example, have sought better ways to test their products without the use of animal subjects. In *Against Animal Testing*, a pamphlet published by The Body Shop, a well-known cosmetics and bath-product company based in London, the development of products that "use natural ingredients, like bananas and Basil nut oil, as well as others with a long history of safe human

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

usage" is advocated instead of testing on animals 3. Furthermore, the Draize test has become practically obsolete because of the development of a synthetic cellular tissue that closely resembles human skin. Researchers can test the potential damage that a product can do to the skin by using this artificial "skin" instead of testing on animals. Another alternative to this test is a product called Eyetex. This synthetic material turns opaque when a product damages it, closely resembling the way that a real eye reacts to harmful substances. Computers have also been used to simulate and estimate the potential damage that a product or chemical can cause, and human tissues and cells have been used to examine the effects of harmful substances. In another method, in vitro testing, cellular tests are done inside a test tube. All of these tests have been proven to be useful and reliable alternatives to testing products on live animals. Therefore, because effective means of product toxicity testing are available without the use of live animal specimens, testing potentially deadly substances on animals is unnecessary. However, many people believe that animal testing is justified because the animals are sacrificed to make products safer for human use and consumption. Experimental animals are virtually tortured to death, and all of these tests are done in the interest of human welfare, without any thought to how the animals are treated. Others respond that animals themselves benefit from animal research. But the value we place on the quality of their lives is determined by their perceived value to humans" The value that humans place on their own lives should be extended to the lives of animals as well. Still other people think that animal testing is acceptable because animals are lower species than humans and therefore have no rights. These individuals feel that animals have no rights because they lack the capacity to understand or to knowingly exercise these rights. However, animal experimentation in medical research and cosmetics testing cannot be justified on the basis that animals are lower on the evolutionary chart than humans since animals resemble humans in so many ways. Many animals, especially the higher mammalian species, possess internal systems and organs that are identical to the structures and functions of human internal organs. Also, animals have feelings, thoughts, goals, needs, and desires that are similar to human functions and capacities, and these similarities should be respected, not exploited, because of the selfishness of humans. Tom Regan asserts that "animals are subjects of a life just as human beings are, and a subject of a life has inherent value. The harm that is committed against animals should not be minimized because they are not considered to be "human. Humans cannot justify making life better for themselves by randomly torturing and executing thousands of animals per year to perform laboratory experiments or to test products. Animals should be treated with respect and dignity, and this right to decent treatment is not upheld when animals are exploited for selfish human gain. After all, humans are animals too. Works Cited Against Animal Testing. The Body Shop, In the Name of Science: Issues in Responsible Animal Experimentation.

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

Chapter 2 : BBC - Future - Will we ever eliminate animal experimentation?

In addition to the harm caused to animals, many people at all stages of their educational careers are uncomfortable with the use of animals in education. Studies show that exposing students—more than half of whom oppose animal testing—to animal dissection can traumatize them, foster insensitivity toward animals, and even dissuade some from.

Those who support this legal practice say that it is for a good cause, implying that it is better to use animals than human beings for testing. But on the other side of the coin, critics are also pushing their reasons why the practice should not be continued, with animal suffering and ethical issues as their biggest concerns. After all, it cannot be denied that the conditions of these test subjects are truly monotonous, unnatural and stressful, causing them to feel uncomfortable, suffer and even die. Basically, whether this practice is good or bad really depends on who you are asking. To come up with a well-informed opinion, let us take a look at the pros and cons of animal experimentation.

List of Pros of Animal Experimentation

1. It contributes to cures and treatments that save human lives. Proponents claim that most medical breakthroughs in the last century were direct results of animal experimentation. For example, insulin was discovered through a test where dogs had their pancreases removed. The Anderson Cancer Center also associated the hepatitis B vaccine with tests that were conducted on chimpanzees. Without these experimentations, these people say that thousands, if not millions, of hepatitis B and diabetic patients would have died each year. It provides an ethical alternative solution to testing. It is widely believed that it is unethical to use humans for invasive experiments, especially when it could result in death. Human lives should not be put at risks by letting them volunteer for testing medicines for potential toxicity or side effects, as well as for manipulating genes. To prevent unfavorable consequences, animal testing is done to precede human trials. It allows researchers to study test subjects for an entire life span. Considering that human beings can live up to 80 years or more, scientists who are conducting tests would be dead before they can gather results. On the other hand, laboratory animals, particularly rats, can only live for 2 to 3 years, which give researchers the opportunity to study the effects of treatments and genetic manipulation over an entire lifetime. In other cases, they can even continue to conduct experiments across several generations, which is why lab animals have been used for long-term research on cancer. It uses animals that are identical to humans in some way. As you can see, people and animals are biologically similar, having the same set of organs, central nervous system and bloodstream, which is why both are affected by virtually the same health conditions and diseases. Considering these facts, animals are being accepted as appropriate research subjects. It provides benefits to the animals themselves. If vaccines were not tested on animals, a lot of them could have died from diseases and health conditions, such as hepatitis, rabies, leukemia, anthrax, parvo, hip dysplasia, glaucoma, etc. Aside from this, animal experimentation helped keep some endangered species from becoming extinct. This is the reason of the American Veterinary Medical Association to endorse this practice.

List of Cons of Animal Experimentation

1. It uses cruel and inhumane treatment. Generally, testing protocols are often painful to the animal test subjects, where they are deprived of food and water, force-fed, physically restrained in long periods, inflicted with pain and wounds to test for healing process effects and remedies, and even purposely killed as part of the process. Some experiments also include the administration of lethal doses of certain chemicals to determine how much would kill animals. It uses animals that make poor test subjects. This directly contradicts what proponents believe about the closeness of animals and humans in an anatomical and biological sense, as both have many cellular, metabolic and anatomical differences. According to Thomas Hartung of the Johns Hopkins University, using rats to test for toxicity should not be accepted as reliable, as these animals are nowhere close to being 70 kilograms. This is further supported by the Archives of Toxicology study in , stating that the lack of direct comparison of human data versus that of a rat puts in question the usefulness of research data. It risks completing a misleading research. Some products and medicines that have the potential to harm animals are actually useful to humans, such as the aspirin. As you can see, the drug was almost shelved because it proved dangerous for animals,

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

which could have lead to the difficulty of lowering the risk of organ rejection during transplants. As only over 1 million animals are covered by the AWA as of , around 25 million more are left unprotected from abuse and mistreatment. And because animal experimentations are being regulated by the committee that is selected by the facility itself, animal subjects are even put at a bigger risk of being treated poorly for their entire existence. It is performed despite the existence of less expensive alternatives. There are alternatives to animal experimentation that are considered viable, such cell cultures in a petri dish and in vitro testing, which can even produce more relevant results than those from vivisection. The same thing goes to using artificial human skin, where virtual reconstructions of human molecular structures are done through computer models. And for testing adverse reactions, there is also the method called microdosing, where small doses are being administered on humans themselves. Indeed, animal experimentation offers some benefits, where medical treatments have been developed through it, but it also comes with significant problems, with those related to ethics being the biggest, which need to be carefully addressed. And with the pros and cons listed above, we can surely come up with a considerable opinion about this subject matter. Feb 7, -Flow Psychology Editor.

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

Chapter 3 : Animal use in pharmacology education and research: The changing scenario

An estimated 25 million or more animals, including rats, mice, and birds, are used yearly in the U.S. in all areas of research, testing, and education. In an attempt to overcome the limitations of animal models, researchers are genetically engineering animals, by removing or adding genes they believe relate to specific human diseases.

Most of these experts use mice, goats and other animals to test different discoveries they had and learn whether their experimentations can be used with humans. Though these are developed and designed for positive purposes, there are still certain arguments discussing about the pros and cons of animal experimentations. Most of these animal experimentations are done in pharmaceuticals, universities and other private institutions where medicinal tests of particular discoveries are done and observe the effects of such tests to the animals.

Pros of Animal Experimentation The purpose of animal experimentations is for positive uses and the following are the advantages of using such experimentations: There are many results already showing various medicinal breakthroughs with animal experimentation making it an advantageous procedure to try. Helps in assuring that substances and medicines created are safe for living organisms. Animals are chosen to be the living organisms where particular medicinal discoveries are tried. This is a way of ensuring whether the medicinal discoveries are safe to be used by any living organisms. Most medical products and treatments that are used nowadays will not be used if not for animal experimentation. There are many successful medical researches done that has prove the effectiveness of various medical products and treatments that are being used today and has helped many people in their diseases.

Cons of Animal Experimentations There are many positive things that can be listed for animal experimentation. However, there are particular things that make these animal experimentation processes unfavorable for some animal rights advocates. These things are as follows: As how animal rights advocates are saying, animals have their right to live their lives normally. Most animals used during these experimentations are either euthanized after certain researches while others are spending their entire life living in captivity. Validity of these experiments to animals. Drugs that are tested in animals are seen to have no approval from humans and have not benefited humans directly. Since animals are not the same as humans, there are several cases wherein the validity of using animals are not accountable for the benefit of humans.

Should Animal Experimentation Be Supported? Given that there are both pros and cons of the animal experimentation procedures, it is your decision whether you should be supporting this kind of experimentations or not. Yes, there are positive benefits that human can get since tests are not directly done to humans. But when it comes to the right of animals, there are particular things that you might consider thinking. Is it worth it that animals should be captured for their lifetime and euthanized for the benefit of humans? Would it be possible that this kind of experimentations be stopped or minimized to protect the lives of different animals used for various experiments?

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

Chapter 4 : BBC - Ethics - Animal ethics: Experimenting on animals

Animal experimentation. Nonhuman animals are used in laboratories for a number of purposes. Examples of animal experimentation include product testing, use of animals as research models and as educational tools.

Tweet on Twitter Did you know that there are more than 20 million animals that are used yearly for product, medical and scientific testing? Animals are often used in experimentation of medical treatments and procedures, including testing levels of toxicity in medications, are used in biomedical testing, and for commercial product testing. Animals have been the center of testing for thousands of years. Readers should know that the government has placed stringent laws for the treatment of animals in general, however, there are many who are against the low limits placed by the government. For years, the main reason given why animals are used in testing is that there are no other suitable candidates for this testing. While there are people who are willing to be the so called guinea pigs for science and medical research, there are not enough willing people for the demand of information, and animals are the next more relied upon source. A Debate Among the Masses The two main arguments regarding animal testing is that it is inhumane and abusive to animals, while others feel that because there are not enough willing people that companies need to learn and experiment somehow to better help the world, and thus turn to animals. Animal experimentation and testing is regulated by the Animal Welfare Act, which defines animal as any warm blooded animal. This excludes birds, fish, rats, cold blood animals and farm animals regardless of warm or cold blooded from experimentation and testing. This Act demands for reports as to the testing and treatment of all animals, however, allows for extensive testing that many may feel crosses the line. The biggest argument in favor of animal testing and experiments is that there have been so many life changing, lifesaving and substantial developments in the field of medical science thanks to the experimentation performed on animals. Studies have shown that over the last years of medical research where major breakthroughs and cures were found were through animal testing at least 85 percent. Without chimpanzees, a vaccine for Hepatitis B never would have been found. There are many other cures and vaccines that have been created and found thanks to animal testing. The lack of human volunteers and stringent laws about the abuse of a human regardless of consent make animals the next likely source. Animals have many systems that are so very similar to a humans that they are the perfect substitute for a person. Their organs work like a humans do, and many are just smaller in size, making it easier for doctors and scientists to learn and study with. Ethical considerations are taken into account for each situation. Animal testing is good for the sustainability of animals as well as people. Without these tests being done, there would never be a cure or vaccine for the illnesses that affect animals. While the body of a dog may work differently than a person, the same idea for treatment remains the same. Without animals to test the vaccine or treatment on, there would be no sure way to find out if it would work for millions of others over the years. There are extremely strict laws in place for the treatment of animals that are in research labs and testing facilities. While many people will focus on the labs that go against government regulations and ethical treatment, they overlook that many facilities treat animals with care and compassion, even while in the testing phase and that they are not unnecessarily harmed. Also, most people feel that animals do not have the ability to decipher right from wrong, so morality is not a determining factor in whether or not an animal can be tested on. The biggest con against animal testing is that it is cruel and inhumane to animals. In some cases, animals are forced to eat excessively, are forced medication, or are forced to do or consume other things. Many animals are bound, incapable of movement, or are otherwise incapacitated during many of these experiments, making it an often cruel experience for the animals. In many cases, there are now scientific ways of testing medications and other procedures or ideas without the use of animals or people. With the advancement in technology and medical science, animals can be spared and not treated inhumanely for what machines and technology can now do. In so many different ways, animals differ from people, and therefore are seen as bad test subjects. While there are many points where they are often similar, because of their differences, many would suggest that these

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

differences are the defining line between an experiment going right and wrong in a person, and this makes experimentation on animals wrong. Some drugs, procedures and treatments may work for animals, but this does not mean that they will work for people. Due to the fact that medical science has only come so far, it cannot be guaranteed that all treatments that are given to animals will work for people and this can cause mistreatment of the animals as well as the medical mistreatment to people. Shocking Facts Did you know that 90 percent of animals used in medical and commercial testing are not protected? The vast majority of testing is done on small rodents, such as rats and mice and rabbits, and they are not protected. The welfare of animals, regardless of their size or if they are warm or cold blooded, should be taken into account. They are, after all, living, breathing and can feel emotion and pain. There are endless arguments for and against animal testing. These are often the most debated however. It is in each of us how we feel towards this topic, and regardless of the information presented, we will often feel strongly. An open mind is always a good thing to have in situations like this, but most people know that an inner emotional feeling will dictate which side you stand on.

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

Chapter 5 : Should animals be used for scientific experimentation? | www.nxgvision.com

Over 25 million animals are used for experimentation in the U.S. every year. Monkeys, rabbits, cats, ferrets, pigs, sheep and chimpanzees are just some of the animals used for biomedical experiments, science education, and product and cosmetics testing.

Monkeys, rabbits, cats, ferrets, pigs, sheep and chimpanzees are just some of the animals used for biomedical experiments, science education, and product and cosmetics testing. Some animals, however, are more preferred by laboratories. Many proponents of animal experimentation claim that the process is for a good cause. Better to use animals than humans for testing, right? After all, they are below humans in the natural chain of things. But, as English philosopher and social reformer Jeremy Bentham puts it, it is not a question of whether they can talk or reason, but whether or not they suffer. Considering that animals cry and show discomfort, it is safe to conclude that they feel something. Unfortunately, vivisection, or the practice of animal experimentation, is perfectly acceptable and legal. It is the worst form of animal abuse that is institutionalized and sanctioned by our society. Despite the fact that the conditions of animals in labs are monotonous, stressful, and very unnatural for them, invasive experimentation persists, and even when the endpoint is death. Whether animal experimentation is good or bad really depends on who you are asking. But, if it is condoned by society, then there must be some advantages to it, even if the benefits are at the expense of animal lives.

List of Pros of Animal Experimentation

1. Contributes to many cures and treatments that save many human lives

The majority of the medical breakthroughs that have happened in the last years were direct results from animal research and experimentation, according to the California Biomedical Research Association. Insulin, for example, was discovered through an experiment where dogs have their pancreases removed. The Anderson Cancer Center animal research also associated the vaccine for Hepatitis B with experimentation on chimpanzees. Without these experimentations, thousands, if not millions, of diabetic patients and those with hepatitis B would have been killed every year.

Provides adequate living, whole body system test subject

No other living thing in this planet has the closest anatomical structure as humans than animals. A human body is extremely complex that cell cultures in a petri dish cannot provide sufficient test results or proof that a cure or product is effective. Testing a drug for side effects, for example, requires a circulatory system that will carry the drug to different organs. Studying interrelated processes is also best done in subjects with endocrine system, immune system, and central nervous system, something humans and animals have. What about the use of computer models? They would require accurate information that is gathered from animal research. Humans and animals are also biologically similar, having the same set of organs, bloodstream and central nervous system, which is why they are affected with the same diseases and health conditions. Given these circumstances, animals used in experimentation do serve as appropriate research subjects.

Provides an ethical alternative for testing

Most people would say that it is unethical to use humans for invasive experimental procedures, especially when it can result in death. The lives of human volunteers must not be endangered when testing medicines for side effects or potential toxicity. Ethical consideration must also be made when genetic manipulation would be involved. Human trials must be preceded by animal testing, as stated by the World Medical Association Declaration of Helsinki. But, if animals could talk, they would probably demand the same ethical considerations.

Offer benefits to animals themselves

Animal experimentation is not only beneficial to humans but animals as well. If the vaccines were not tested on them, a lot of them could have died from rabies, infectious hepatitis virus, anthrax, feline leukemia, and canine parvovirus. Remedies for hip dysplasia and glaucoma were also discovered through animal testing. But the real highlight is that vivisection helped kept endangered species, such as the California condor, the tamarins of Brazil, and the black-footed ferret, from becoming extinct. This is why animal testing is endorsed by the American Veterinary Medical Association.

Allow researchers to study a test subject for a whole life span

Humans can live up to 80 years or more, which means some scientists would be dead before others results will be gathered. Laboratory mice, on

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

the other hand, only live for 2 to 3 years, giving researchers an opportunity to study effects of genetic manipulation or treatments over an entire lifetime. In some cases, they can continue to study across several generations. This is why mice and rats have been used for long-term cancer research. Animals are protected from abuse and mistreatment. Contrary to what most opponents believe, animal research is highly regulated, with laws enacted to protect animals. Since 1966, the federal Animal Welfare Act has been regulating animal experimentation. Research animals must be provided with shelter that follows minimum housing standards, such as the right-sized enclosure, recommended temperature, access to clean food and water, etc. Veterinarians must regularly inspect the animals and their living conditions. Each research facility must set up an Institutional Animal Care and Use Committee (IACUC) that will approve all proposals to use animals for experimentation. Fewer animals are used in research than as food for humans. Compared to the amount of chicken, cattle, sheep and pigs that humans eat, relatively few of them are used in experimentation. With consideration to the medical progress and advancement such tests provided, it is a small price to pay. To illustrate, for every chicken used in research, an equivalent of 10 are used as food.

List of Cons of Animal Experimentation

1. Cruel and inhumane treatment. Protocols in animal testing are often painful to the test subjects. They are forced fed, deprived of food and water, restrained physically for prolonged periods, inflicted with burns, wounds and pain to test for healing process effects and remedies, and even killed through neck-breaking or asphyxiation. This is according to the Humane Society International. The clips usually stay on for days, and to ensure the rabbits stay in place, they are incapacitated. Some experimentation also involves using lethal doses of certain chemicals to determine how much can kill animals. Animals make poor test subjects. This statement is a direct contradiction from what proponents believe about how closely related animals and humans are anatomically and biologically, because of the many metabolic, cellular, and anatomical differences between the two species. Using rats for toxicity, for example, must not be accepted as reliable since humans are nowhere close to being kilogram rats, according to Thomas Hartung, professor of evidence-based toxicology at Johns Hopkins University. This is further supported by the study in the Archives of Toxicology that states that the lack of direct comparison of human data versus that of a mouse makes the usefulness of research data dubious. Success in animal experimentation does not equate to human safety. When the sleeping pill thalidomide was tested on pregnant rats, mice, cats and guinea pigs, there were no incidences of birth defects, except when administered at extremely high doses. However, when it was used by pregnant women, it resulted in severe deformities affecting 10 babies. The arthritis drug Vioxx, which turned out great on animals was really bad news on humans because it caused more than 20 heart attacks and sudden cardiac deaths. Can lead to misleading research. Some medicines and products that are harmful to animals are actually valuable to humans. Aspirin, for example, was almost shelved because it proved dangerous for animals. Imagine what would have happened if aspirin was completely taken off the pharmaceutical list? There would have been no way to lower the risk of organ transplant being rejected. Most animals used in testing and research are not protected by the Animal Welfare Act (AWA). As of 2013, only over 1 million animals are covered by the AWA, leaving around 25 million more unprotected from mistreatment and abuse. These include birds, fish, mice and rats. And because vivisections within laboratory walls are regulated by the committee that the facility itself selected, animal subjects are even more at risk of being treated like prisoners in a hospital for their entire existence. The animals were so stressed out psychologically that they resorted to self-mutilation. The rest of the violations that NIRC committed were caught on a video footage, showing the heartbreaking conditions of the animals. But this facility is just one of the many that violates AWA. There are less expensive alternatives to animal experimentation. Despite what proponents insist, cell cultures in a petri dish, or in vitro in glass testing, are not exactly useless or insufficient. They can even produce results that are more relevant than animal experimentation. The same thing is true when using artificial human skin as a test subject, instead of animal skin. Virtual reconstructions of human molecular structures done through computer models also have the capacity to predict toxicity levels of substances, so no need to poison animals to collect data and draw conclusions. And, when testing for adverse reactions, administering small doses on humans, also known as

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

microdosing, also offers an alternative. Combined with blood analysis, results will be produced. But what is really important is that these alternatives are less expensive than animal experimentations. These only shows that animal tests are wasting plenty of government dollars allocated for research. Plenty of animal lives are wasted Considering all the tests that failed, not to mention other non-experimental factors that affect animals, there is a significant number of animal lives wasted for nothing. They suffer or get killed during the experiment, and suffer the same fate after the experiment. But what is really inhumane and unethical are the poor research procedures used by some facilities. Serious flaws were discovered in plenty of studies in the UK and the U. Selection bias was a major problem, but even with randomization and blinding technique used, proper selection of animals still failed. There is also a lack of hypothesis or objective related to the study. Medical breakthroughs need not involve animals Is animal experimentation really that necessary in discovering treatments and cures? Opponents argue that there is really no evidence of its vital role in major medical advances. If funds and resources are focused on animal-free alternatives, more humane, ethical and inexpensive solutions. One such alternative that should be given full support is the microfluidic chip, also known as organs on a chip. This involves the use of chips to achieve certain functions of a human body, such as mix, pump and sort. The chips are lined with human cells so they work similar to human organs. With this alternative, researchers can no longer use the excuse that they need a living, whole-body system to run experiments.

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

Chapter 6 : Save the Animals: Stop Animal Testing

Animals Used in Education Classroom Dissection The use of animals as dissection specimens in biology classrooms remains a prevalent practice in the United States, with 84% of pre-college biology educators reporting the use of dissection as a teaching tool, according to a nationwide survey of biology educators commissioned by NAVS in

Agreement on transparency in animal research launched in Portugal Forty reasons why we need animals in research These points have been drawn up to provide an accessible resource for anybody discussing the use of animals in research. We are happy to take your suggestions to add to our list. General points Animal research has played a vital part in nearly every medical breakthrough over the last decade. Nearly every Nobel Laureate in Physiology or Medicine since has relied on animal data for their research. Animals and humans are very similar; we have the same organ systems performing the same tasks in more or less the same way. Animals suffer from similar diseases to humans including cancers, TB, flu and asthma. All veterinary research has relied on the use of animal research. While non-animal methods play an important part of biomedical research, they cannot replace all use of animals. In vitro methods, such as cell cultures, and computer modelling play an important part complementing data from animal models. Many veterinary medicines are the same as those used for human patients: Modern anaesthetics, the tetanus vaccine, penicillin and insulin all relied on animal research in their development. Modern surgical techniques including hip replacement surgery, kidney transplants, heart transplants and blood transfusions were all perfected in animals. Medical Examples Thanks to animal research, primarily in mice, cancer survival rates have continued to rise. Herceptin “ a humanised mouse protein ” has helped to increase the survival rate of those with breast cancer; it could not have been attained without animal research in mice. While Fleming discovered penicillin without using animals, he shared the Nobel Prize with Florey and Chain who, by testing it on mice, discovered how penicillin could be used to fight infections inside the body. Animal research is responsible for the development of asthma inhalers. Around 30 million people in Europe are affected by the condition 1 and around 15, people die each year from asthma attacks in the continent 2. Animal research has helped develop modern vaccines including those against Polio, TB, Meningitis, human papillomavirus HPV , which has been linked to cervical cancer, and recently an Ebola vaccine is being developed from a modified chimpanzee-cold virus and an Ebola protein. Smallpox has been eradicated from Earth thanks to research in animals. Statistics Dogs, cats and primates altogether account for less than 0. Household cats kill approximately 5 million animals every week “ more than the total number of animals used in medical research every year. All animal researchers, projects and facilities doing, or related to, animal research must be authorised by national regulatory bodies. Ethics committees exist to ensure that the potential benefits of research outweigh any suffering to the animals. Animal welfare is underpinned by the 3Rs “ there is a legal requirement to replace animals with alternatives, refine experimental techniques and reduce the numbers of animals used in research. Animal research can only be carried out in Europe where there is no suitable non-animal alternative. Think of organ transplantation. Without animal testing nothing would have been possible. The large majority of non-human primates are used for the development and testing of new medications and vaccines. Responses Cosmetic testing is banned in Europe since Research on great apes orang-utans, bonobos, gorillas and chimpanzees is banned in the Netherlands , New Zealand , the United Kingdom , Sweden , Germany and Austria.

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

Chapter 7 : The use of animals in primary and secondary education - Animal Ethics

Pew Research Center poll have found that 50 percent of U.S. adults oppose the use of animals in scientific research, and other surveys suggest that the shrinking group that does accept animal experimentation does so only because it believes it to be necessary for medical progress.(5,6) The reality is that the majority of animal experiments do.

By Alla Katsnelson 10 June One of the most, if not the most, contentious issues in science is the use of animals in research. Scientists experiment on animals for a host of different reasons, including basic research to explore how organisms function, investigating potential treatments for human disease, and safety and quality control testing of drugs, devices and other products. Its proponents point to the long list of medical advances made possible with the help of animal research. Opponents believe it is cruel and meaningless, as observations in animals often do not translate directly to humans. Over the course of five decades their guidelines have become widely accepted worldwide, and while the reliability of published reports on the numbers used varies, they do at least provide a snapshot of historical trends. Around 29 million animals per year are currently used in experiments in the US and European Union countries. This is less than half the total in the mid-1970s – a significant drop, but one that has plateaued in the last decade. Fresh out of veterinary school in 1975, Carbone landed a job as an animal vet at Cornell University, in New York State. At that time the numbers of animals being used in experiments and testing was on the decline: But then came the development of tools that could selectively modify individual genes in mice. This proved to be such a powerful and popular technique that the decreasing trend in animal use ground to a halt. Now, a raft of novel experimental techniques may help to push numbers down again. Improvements in imaging methods that offer a peek inside the bodies of animals allow scientists to get more and better data from each experiment than before. For example, researchers previously had to cull multiple mice at different stages of tumour development, but now they can non-invasively watch the disease unfold in a single living animal using a fluorescent dye. Similarly, as brain-imaging techniques become more advanced, some questions that are now addressed with experiments in monkeys might be better answered by peering into the human brain. Meanwhile in vitro advances are also pointing towards reliable alternative methods. One such advance is the ability to re-program human skin cells into a primordial, stem cell-like state. Lab-on-a-chip technologies – and perhaps one day, lab-grown organs – could also provide increasingly sophisticated ways to identify disease mechanisms or test prospective medicines. Finding alternatives Trends also show that some sectors are doing more than others to reduce animal use. When many people think about animal testing, they imagine rows of rodent cages in a pharmaceutical company lab. But according to data from European Union countries, the pharmaceutical sector uses almost half the number of animals that academic labs do, and animal use in drug development dropped significantly between 1995 and 2010 – the most recent statistics available. First, drugs are increasingly designed to target specific molecular mechanisms, and these are best identified in culture dishes rather than live animals. Second, conducting experiments in 1,well cell culture dishes is vastly less expensive than in animals, so companies are motivated to use alternatives whenever they are available. Jan Ottesen, vice president of lab animal science at Danish company Novo Nordisk, which makes insulin and other drugs for diabetes and haemophilia, says his company actively seeks out tests that can replace animal use without compromising patient safety. Novo Nordisk decided 15 years ago to replace animal tests with cell cultures to verify the quality of each batch of drugs before it goes to market. The company had to provide the authorities with data proving that other tests worked just as well. It took until 2005 for the company to complete the switch. However, for some types of experiments there are no equivalent non-animal options, says Ottesen. For example, in searching for new drugs that decrease joint pain due to arthritis, you need a model that mimics the human condition. The important thing, he stressed, is to set up the experiment so as to avoid unnecessary pain. Having said that, all the replacements that can be implemented should be implemented. Meanwhile, tens of thousands of these substances have undergone no toxicity testing at all. Addressing this gap with animal

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

studies alone would be expensive and impractical. Hartung believes that with enough investment and coordination, animal tests on products in this category can be replaced completely. He is leading the Human Toxome Project, an initiative that aims to map the ways substances disrupt hormones and endanger health, as well as to develop advanced, non-animal lab tests for toxicity testing. Meanwhile, almost four in ten animals are used in basic, as opposed to applied, biological research “and this proportion is growing. Sarah Wolfensohn, a veterinary surgeon who heads Seventeen Eighty Nine, a consultancy advising researchers on animal welfare, based in Swindon, UK, says this is in part because a lot of this type of work is carried out in academia where the financial and performance pressures that motivate interest in non-animal-based techniques are weaker than in the commercial sector. Other factors play a role too, she says. Meanwhile, the use of animals in many areas of life-science research is on the decline, experts note, even if genetic work in mice is still keeping numbers up. If you would like to comment on this story or anything else you have seen on Future, head over to our Facebook page or message us on Twitter.

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

Chapter 8 : 10 Pros and Cons of Animal Experimentation | Flow Psychology

natives, disseminating research and testing information, restricting animal use, counting the numbers and kinds of animals used, establishing a uniform policy for animal use within Federal agencies, and amending the Animal Welfare Act.

Established cell lines Stem cells. Cell culture is a promising alternative to animal use. Cultured cells have been developed to create monoclonal antibodies and cell lines have been extensively used in cancer research as well. It can predict drug interactions much before a drug is marketed. Various liver-based in vitro model systems include liver tissue slices, isolated microsomes, perfused liver and immortalized cell lines. These techniques can be efficiently used to screen highly toxic compounds at an early stage. Many in vitro techniques have evolved, but the concept is new and awaits validation and standardization. Synthetic replacement using a protein membrane to simulate a skin barrier is approved as a partial replacement. The Organization for Economic Cooperation and Development OECD has approved several tissue culture methods which measure the rate of chemical absorption by the skin. Chitosan films, a substitute for animal and human epidermal sheets are used for in vitro permeation of polar and non-polar drugs. Such films are capable of simulating the flux of drugs like 5-fluorouracil 5-FU and indomethacin INDO across rat, rabbit and human cadaver epidermal sheets. Another example is the use of fungi for studies of the metabolism of drugs. It has been seen that selected group of fungi have the ability to metabolize a wide variety of drugs. *Cunninghamella elegans*, used for testing anti-coagulants, diuretics, anticonvulsants and hemorheologic agents, also holds promise as a suitable alternative. This has saved approximately one million rabbits annually. Similarly, neuroblastoma cell, glioma cells are replacing teratogenic tests. In vitro micronucleus tests are widely used for genotoxicity and photogenotoxicity assays. Bovine corneal opacity and permeability tests have also gained wide acceptance. Most of these in vitro techniques have been validated. In Silico Computer based The in silico methods include models of diabetes, asthma and drug absorption. Potential new drugs identified using these techniques require verification in animal and human tests before licensing. Quantitative structure-activity relationship QSAR models are also used. These are mechanistic models that aim to predict sensitization from mechanistic knowledge and empirical models that are aimed at predicting from a statistical perspective. These are easier to use as compared to wet laboratory processes. A few examples include computer models to model human metabolism, to study plaque buildup and cardiovascular risk and to evaluate toxicity of drugs. For example, the protease inhibitors for patients with HIV were designed by computer and tested in human tissue cultures and computer models, bypassing animal tests due to the urgent need for a treatment. A new cardiovascular drug was developed and approved in based on data from a virtual heart as animal data were inconclusive. These alternatives can be substituted by demonstrations using computer-simulated learning programs. Exercises in the form of graphs, tables obtained from various animal experiments can be used to teach students. They will analyze and interpret these applying different methods, formulae and statistics. After the discussions the learner can draw conclusions and correlate them clinically. Analyzing the results of any experiment or drug trial and drawing conclusions is a good learning experience for students for developing clinical judgment skills. The various alternatives used are mannequins, videos, observational and field studies, materials from slaughter house and fisheries, supervised clinical experience etc. Hence, the results obtained with these simulated models may not be very accurate. It is pertinent to remember however, that the aim of the software is to teach the students about salient facts that have practical utility in their future role as decision makers in patient care. Computer-based alternatives are being used in many countries. In India, two models are currently available: These are available as free modules and as advanced paid versions. Computer-based alternatives were used to some extent by all countries. We evaluated these software programs and found that the alternatives are implementable and decrease the cost and time spent on animal experiments. The students appreciated the alternatives and found these more useful to understand the mechanism of action of drugs.

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

Similarly, the response of faculty in India to training on alternatives was very encouraging. Poland, Czech Republic and Romania reported a relatively high level of use of computer-based alternatives. Invertebrate animals Invertebrates can be used to replace the more commonly used laboratory animals. The most used invertebrate species are *Drosophila melanogaster*, a fruit fly and *Caenorhabditis elegans*, a nematode worm. *Drosophila melanogaster* is a classic model used for detecting mutagenicity, teratogenicity and reproductive toxicity. The body of *C. elegans*. These organisms have short life cycle and can be studied in large numbers, a distinct advantage over the vertebrates. In spite of some obvious drawbacks like the lack of an adaptive immune system which is a deterrent for their use in certain types of research such as vaccine development, these organisms do have a potential as alternatives to use of conventional animals. Similarly, fruit flies can be useful to identify novel virulence factors or pharmacologically active compounds. Rapid developing vertebrates A recent vertebrate model, the Zebra fish has proven to a very good model for toxicity testing. These have been used and validated in large scale high throughput screens for various psychotropic drugs. Their use has increased in the past two decades and a population-based atlas of the zebra fish brain has recently been developed. Chemical administration can be done directly to fish water or by microinjection of small amounts of chemicals. The morphological and molecular basis of tissue and organ development are, in general, either identical or similar to other vertebrates including man. Drug metabolism can also be studied in hydra, a eumetazoan diploblastic organism belonging to the phylum Cnidaria. Microdosing studies enable potential new drugs to be tested safely in humans using ultrasensitivity of accelerator mass spectrometry. The time taken is months and this method is relatively cost effective. It provides excellent information about human metabolism. However, it is also worthwhile to consider the viewpoints that animal experiments provide an insight into the intricacies of drug action. The pharmacology of the drug unravelled during the preclinical phase of drug development is a prerequisite to understand the potential efficacy and safety of a new drug. On the other hand, experts also opine that while animal experiments may be a necessity for graduates of pharmacy or biosciences, their role is debatable for medical graduates as the objectives can be met with alternative evaluation methods. Conclusion It seems likely that these alternative methods and models will eventually replace intact animal models in pharmacology education, either partially or completely. The stakeholders need to provide timely information and also upgrade undergraduate and postgraduate curriculum in pharmacology, taking these facts into consideration. They must not only initiate and encourage the projects for the development of alternatives in education but also ensure their implementation, by providing the requisite infrastructure in all institutions. In doing so, a broad consensus must be developed for removing or reducing the animal experiments from curriculum. As technology advances, these alternatives, especially in vitro and in silico techniques would receive wide acceptance by researchers and regulatory bodies, as well. Whether the in vivo effect observed in animals can be compromised, and if the extrapolation should be entirely dependent on in vitro or in silico data, can be a matter of debate. While a combination of newer in vivo and in vitro techniques do provide viable and cost-effective alternatives to certain pharmacodynamic and pharmacokinetic evaluations of drugs, animal testing is yet required for repeat dose toxicity, carcinogenicity of drugs and certain behavioral studies. Hence, it appears that animals are not entirely dispensable, especially in research, which reiterates the need to practice the principles of 4Rs in animal experimentation and intensify our efforts in developing and validating suitable alternatives to their use. Student evaluation of teaching and assessment methods in pharmacology. Virtual experimental pharmacology an alternative or not? A global assessment by pharmacology faculties and MBBS students? Rec Res Sci Tech. Computer simulation models are implementable as replacements for animal experiments. Replacing animal use in physiology and pharmacology teaching in selected universities in eastern Europe-charting a way forward. University Grants Commission; Medical council of India, New Delhi, amendment notification of 8 July to the Minimal standard requirements for medical colleges with admissions annually, regulations. Early modern experimentation on live animals. Nuffield council of bioethics. Annual report animal usage by fiscal year, United States department of agriculture, animal and plant inspection service. Statistics of scientific procedures on living

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

animals. Home office, Great Britain. Alternatives to animal testing: IUCN the red list of threatened species. Alternatives to animals in education, research and risk assessment: An overview with special reference to Indian context. Dewhurst D, Hemmi A. A survey of animal use and alternatives in higher education in Europe. University of Edinburgh, UK. All noble prizes in physiology or medicine. Humane Society Press; The use of animals in higher education: Problems, alternatives and recommendations. Regulations on graduate medical education, amended upto Medical Council of India. Practical manual of Pharmacology; pp. Postgraduate medical education regulations, amended upto Substitute of animals in drug research:

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

Chapter 9 : Forty reasons why we need animals in research | EARA

Using animals in research and to test the safety of products has been a topic of heated debate for decades. According to data collected by F. Barbara Orlans for her book, In the Name of Science: Issues in Responsible Animal Experimentation, sixty percent of all animals used in testing are used in biomedical research and product-safety testing (62).

DONATE The use of animals in primary and secondary education The vast majority of animals used in the field of education are used for dissections. There is not data available for every country, but in the United States, it has been estimated that nearly six million vertebrates are used for this purpose each year, of which half are frogs. The use of frogs for dissection has been common for decades in biology classes in secondary education. However, many other types of nonhuman animals are dissected, including pig fetuses from the meat industry and even fox and mink corpses from the fur industry. Also, many different species of invertebrates are used, such as grasshoppers and earthworms. Sometimes animal parts such as organs are used for experiments instead of whole bodies. Parts commonly used include hearts, eyes, lungs and brains especially from pigs, cows, chickens and sheeps. They are often dissected in order to see their internal structure. Another practice consists of incubating eggs until chicks hatch from them in order to observe the process. The babies are normally killed once the experiment ends, shortly after coming into existence. Sometimes students are invited to take these animals home, but this is unusual. Even if they are taken home by a student, they may be abandoned or discarded soon afterwards, meaning they will face certain death and they will suffer a great deal. These animals live in confined spaces they cannot get out of. Social animals often have no contact with other animals. They may experience stress and fear from being constantly surrounded by a large number of children making a lot of noise. In many cases they are not properly cared for. As a result, their lives are usually short. This is especially true for women, a greater percentage of whom reject practices that use animals. Furthermore, teachers can have a tremendous influence on the attitudes of students. In fact, even if teachers do not comment on their own practices, they still spread this idea, because the students see animals treated as mere things used by humans at will. Teachers who support dissection often defend the practice by arguing that learning without real animals is not the same. These claims are backed by the companies that sell animals for dissection and as laboratory tools in other areas. Many countries that have large education budgets and are known for the quality of their student training like Scandinavian countries do not use animals in their education. However, the heart of the matter lies in whether it is acceptable to use animals for this purpose. It is never considered acceptable to use humans in order to study human anatomy and physiology even though it is generally acknowledged that this would be the best way to do it. If we do not maintain a speciesist position , we cannot hold the view that it is unacceptable to use humans yet acceptable to use nonhuman animals in this way. Where do the animals used in education come from? It is very common for the animals used in classrooms to be captured in the wild, though they can also be bought from breeders. There are companies that are dedicated specifically to the mass breeding and raising of animals for this purpose, to capturing them, to acquiring them from smaller dealers, to purchasing or collecting unwanted animals, and to distributing them. Animals who are captured suffer terribly before they are killed. Frogs, for example, are often stacked by the dozen in sacks where they can remain for more than a week without food, only being hydrated with water that is thrown in from time to time. Many animals who do not die in this way or during capture may be killed by means of chemicals or alcohol, which can cause up to 20 minutes of suffering before death. This includes not only frogs but many other animals as well. Sometimes educational institutions themselves breed animals in vivariums or animal houses. Sometimes so many are bred and raised that most are ultimately not used in the experiments. Cats and dogs may be obtained from kennels. In certain places including areas in the United Sates , public institutions or organizations that receive public assistance have a legal obligation to provide animals to laboratories and other institutions that want to use animals as lab tools. Pig fetuses are ripped from

DOWNLOAD PDF SHOULD ANIMAL EXPERIMENTATION BE USED IN EDUCATION?

the wombs of pregnant sows after their slaughter. However, even if as in these cases the animals are not killed solely for the purpose of educational or laboratory uses, but by other forms of animal exploitation such as animal agriculture, the fact is that by using their bodies, one is supporting the exploitation of these animals. The same is true when it comes to obtaining animal parts such as cow eyes, sheep brains or pig hearts. They can be purchased at a butcher shop, supermarkets or directly from slaughterhouses. Buying animal parts gives money to an animal exploitation industry, and drives the continued exploitation of animals. The progression of conscientious objection

Conscientious objection consists of not wanting to carry out a certain practice for ethical reasons. This is increasingly common in places where work experience with animals is required. This need not be the case at all, but such a belief may predispose these teachers against conscientious objection. Even if there is a right to object and formal sanctions are not imposed on the student, teachers can still punish students by ridiculing them in class. Students who do not want to participate in animal harming experiments can also face more serious problems. There have been cases where students have been taken to court to obligate them to perform experiments. Fortunately, there is a growing acceptance of conscientious objection as a perfectly valid ethical option. Pressures against conscientious objection, including informal ones, are increasingly seen as unacceptable. In the United States today there are 16 states in which the right to conscientious objection is recognized. There is also more and more awareness and consideration on the part of teachers towards students who object to performing animal experiments, as well as a greater willingness to abandon these experiments. One current method for learning animal anatomy and physiology without performing dissections uses high quality graphics with photographs and microphotographs which show the anatomy of animals in maximum detail. Another is the use of vinyl model bullfrogs, with great detail in the various appendages and organs and even the structure of the organs. One reason software and inanimate models have begun to replace live animals is that they provide great savings for educational centers since they do not require having to buy animals for each student for course after course. They are also more convenient because it means that teachers avoid spending time having to prepare the animals for dissection thus saving time and having to dispose of the bodies once they are used. It also keeps them from having to work with formalin to preserve the bodies and other unpleasant and potentially toxic tasks related to dissecting real bodies and body parts. Even so, this does not fully explain why the move towards other teaching methods has occurred. Also instrumental in this has been the increasing consideration of humans for animals, and the struggles of many students who have objected to these experiments with animals. Further readings Adkins, J. Problems, alternatives, and recommendations. Nonanimal methods, Washington, D. Physicians Committee for Responsible Medicine. What does it teach? Humane Society of the United States, accessed on 19 July]. Alternative methods for a progressive, humane education, 2nd ed. Where have all the bullfrogs gone? Life lessons, alternatives and humane education, Ann Arbor: Guidance for education establishments in England and Wales , Southwater: National Academy of Sciences [accessed on 2 September]. Alternatives to Lab Animals, 32, pp. A guide to conscientious objection.