

Personhood for nonhuman primates: Revisiting the moral justification for animal experimentation

Muhammad S. Aldhshan BDS, MSc[†]

Abstract

Nearly every prescription medicine available today has been tested on animals. However, animal experimentation remains one of the most contentious aspects of biomedical research. While scientists strive to apply the replacement, reduction, and refinement principles, the use of animals in research has been increasing steadily due to a lack of universally accepted alternatives. Many animal rights groups argue that this shortage of alternatives is due to inadequate effort to create them. To many animal activists, the only morally permissible way forward is the total abolition of animal use in research. They see the legal personhood for nonhuman sentient animals, starting with nonhuman primates, as a means to an end. This commentary revisits the moral justification for animal experimentation from a contemporary philosophical viewpoint. It also discusses the concept of legal personhood for nonhuman animals and describes evolving alternatives that have the potential to replace animal experimentation.

Keywords: animal experimentation; nonhuman primates; moral patiency; legal personhood

Conflict of Interest Statement: None to declare.

Introduction: The example of Koko

“Koko” was the name given to the western lowland female gorilla that inaugurated scientific, philosophical, and moral debates on the concepts of individuality, animal sentience, and moral patiency. Koko was part of the “Great Ape language” project aimed at teaching nonhuman primates (NHPs) to communicate thoughts and feelings in sign language and lexigrams. It is often reported that Koko had a vocabulary of more than 1000 signs in addition to the ability to comprehend 2000 spoken English words.¹ Koko’s life was fascinating to many scientists. However, the conditions in which she was kept during her life were highly unnatural, which impacted her ability to bond with members of her own species. Koko, the most visible member of her endangered species, died alone in her sleep in 2018 at the age of 46 years old. Her death marked the end of an experiment that lasted a lifetime.

The relationship between humans and NHPs

Intelligence is often defined as a multidimensional construct encompassing a wide array of cognitive functions. Classically, intelligence has been measured by the capacity for logic, self-awareness, learning, emotional

knowledge, abstract thinking, language and flexibility in problem-solving.² While humans are known to prevail in all of these categories, NHPs also occupy varying levels of the intelligence spectrum. NHPs, such as gorillas and chimpanzees, have the mental capacity to organize social hierarchies, use facial cues to recognize kin and conspecifics (members of the same species), make tools and use them to acquire food, understand aspects of human language, and reciprocate emotions.³ NHPs share a close phylogenetic relationship to humans across genetic, physiologic, immunologic, and behavioural levels. These similarities make them an ideal animal model for most aspects of biomedical research. Consequently, using NHPs in drug testing plays a central role in the development of many drugs that humans have come to depend on to treat diseases.³ Preclinical trials on NHPs are often considered the final benchmark for establishing the effectiveness of experimental drugs or vaccines before transitioning to human clinical trials.³ According to the Canadian Council on Animal Care, more than 4800 NHPs have been used to test drugs and products for human use in 2019 in Canada alone.⁴

NHPs are as amenable to pain and psychological afflictions as humans. While humans have the advantage of verbalizing descriptive phrases to refer to different pain intensity or severity levels, NHPs cannot articulate these feelings as effectively. As such, they

*Correspondence to: aldhsham@myumanitoba.ca

[†]Max Rady College of Medicine, University of Manitoba

are considered moral patients. In this context, humans are the moral agents who hold moral responsibility towards captive NHPs. This moral responsibility entails that humans do not intentionally harm NHPs. It also means that, if absolutely needed, humans must only conduct morally responsible animal research where the foreseen benefits must tremendously outweigh the projected harms. One pertinent example of morally permissible research is the development of COVID-19 vaccines to save millions of lives. In contrast, subjecting NHPs to harm and/or less-than-humane living conditions to test cosmetic agents is not morally justifiable. Indeed, many countries have already passed legislation to ban animal testing in the cosmetic industry.⁵ A moral dilemma arises if one reflects on the use of NHPs (or other nonhuman animals) in research for scientific knowledge that may not yield any immediate benefit to humanity. This aspect of biomedical research is often viewed as morally grey. Furthermore, the grey area is inflated when researchers exaggerate the societal benefits of their work to acquire public funding,⁶ or when they underreport animal procedures employed in study design.⁷

The biomedical community remains divided when identifying the pillars of morally responsible animal research. A recent attempt was published in the *Cambridge Quarterly of Healthcare Ethics* by Drs. David DeGrazia and Jeff Sebo, who laid down three conditions for morally permissible research:

“Even if human beings have higher moral status than nonhuman animals, animal research is morally permissible only if it satisfies: (1) an expectation of sufficient net benefit, (2) a worthwhile-life condition, and (3) a no-unnecessary-harm/qualified-basic-needs condition. We then claim that, whether or not these necessary conditions are jointly sufficient for justified animal research, they are relatively demanding, with the consequence that many animal experiments may fail to satisfy them.”⁸

DeGrazia and Sebo favour humans’ interests to those of nonhuman animals while maintaining the moral obligation to consider the well-being of all animals. Although many researchers welcome their proposal, others remain hesitant to adopt it.⁹ This is due to the resultant additional barriers the framework would create in order to pass institutional review and approve research proposals. Many researchers view the first condition in particular (an expectation of sufficient net benefit) to be excessively restrictive. Some recommended replacing it with “an expectation of knowledge production,”⁹ which is already a prerequisite for biomedical research proposals.

The philosophical perspective: Deontology and consequentialism

The debate herein has deep philosophical roots. In contemporary moral philosophy, deontology refers to a normative ethical theory that uses rules to discern the

morally acceptable course of action.¹⁰ Deontology bases the morality of a given action on whether the action in and of itself is right or wrong under specific moral constraints (rather than based on the consequences of the action).¹⁰ Immanuel Kant, an early proponent of deontology, argued that it would not be morally acceptable to lie even to a murderer at one’s door.¹¹ Applying deontology to the topic at hand, one could suggest that it is not morally acceptable to cause intentional harm to any non-consenting pain-sensitive being (including humans, NHPs, rats, mice) even in pursuit of “good” ends (i.e., scientific knowledge). In contrast to deontology is consequentialism, which judges the morality of a given action based on the consequences brought forth by the action while considering intentions irrelevant.¹² Utilitarianism is a form of consequentialism that advocates for actions that maximize the good and happiness of all parties involved.¹³ Applying utilitarianism, one could suggest that it is morally permissible to harm several animals to save many animals. It would also be permissible to generate scientific knowledge that could potentially save lives as long as researchers minimize the pain and maximize the happiness of the majority of people.

While both theories possess strengths and weaknesses, the biomedical community cannot fully adopt one theory and dismiss the other. Deontological ethics, while morally stringent, are intended for rational human beings who are capable of grasping moral imperatives. Hence, nonhuman animals are excluded from its scope. In doing so, one is not allowed to harm another human being under any circumstances. However, it is permissible, if needed, to harm nonhuman animals for one’s or humanity’s benefit. Conversely, utilitarianism cannot tackle many moral dilemmas that researchers encounter. For instance, measuring benefits can be subjective and open to political and societal interpretation. Additionally, if one assumes equal interests to all parties involved, utilitarianism benefits the majority at the expense of the minority in direct contradiction to individual’s rights. Both theories’ shortcomings lead many animal researchers to adopt an essentially flawed hybrid view, “Utilitarianism for animals, Kantianism for people.”¹⁴ This view assumes that humans are morally superior to every other animal species. As a result, humans’ interests are weighed more heavily than other sentient animals’ interests while maintaining an overall policy of harm reduction. This concept considers nonhuman animals as nonrational individuals that do not fall under deontological ethics protection. Therefore, nonhuman animals can be used in a utilitarian fashion.^{14,15} While the “Utilitarianism for animals, Kantianism for people” view is speciest, it accurately reflects the general public’s perspective of inferior animals’ moral and legal status.¹⁶ It also suits the biomedical research community to a large extent because it fosters relatively easy moral access to the use of NHPs in research.

A moral movement in the making

The purpose for the Nonhuman Rights Project, a key organization advocating for NHPs' rights, is to argue for equal fundamental rights of human and nonhuman animals.¹⁷ In a perfect world, this objective would be a universal moral drive. Despite ongoing differences in the rights of humans and nonhuman animals, animal rights theorists continue to fight for the total abolition of NHPs use in research. This goal can only be achieved by instilling legal personhood status on NHPs, which would change the matter at hand from a moral issue to a legal issue. It would also likely criminalize NHPs use in research due to an impenetrable lack of consent. Consider this: if the law has already granted the personhood status to non-living entities such as corporations, why is it reluctant to grant the same protective status to living, high-functioning beings like NHPs?

The legal personhood movement lacks political presence, funding, and media coverage to realize its objective in the near future. However, it is slowly attracting attention to its cause, especially in younger, more progressive individuals. The repercussions of the legal personhood movement, however morally correct, could be devastating for biomedical researchers and pharmaceuticals companies who are reliant on NHP testing.^{18,19} There is resistance to the legal personhood movement in the researcher community. For example, the Society for Neuroscience actively recruits members to "continue the collaboration to rebut legal arguments for the 'personhood' of animals."²⁰

The legal personhood movement should not be taken lightly. It was just under 200 years ago that owning a human slave was an accepted social norm.²¹ Barely 100 years ago, women did not have the right to vote.²² 50 years ago, homosexuality was a crime punishable by imprisonment.²³ These historical facts are viewed with bewilderment and embarrassment at how contemporaries of the times neglected fundamental human rights. Will today's society be perceived in the same way given its treatment of sentient animals?

In search of alternatives

No experimental model to date can fully substitute the structural complexity or functional integration of organ systems as those found in laboratory animals. However, this may be slowly changing. Recent advances in biological microelectromechanical systems have made it possible to build multi-channel three-dimensional microfluidic culture devices that emulate the microarchitecture and mechanics of living human organs.²⁴ This revolutionary system is known as "Human Organs-on-Chips". While still in its infancy, it aims to replace animal testing altogether.²⁵ Human Organs-on-Chips are an example of humanity's ingenuity and our collective effort to replace animal testing with reliable and reproducible alternatives. Perhaps the most commonly used in vitro alternative is the animal cell culture that has effectively reduced, but not replaced, the use of living animals in research.^{26,27} Cell cultures are slowly evolving

into three-dimensional and four-dimensional systems by using guiding scaffolds or three-dimensional printers to stack cultured cells into designed structures. This help researchers better understand cellular behaviour under physiological and pathological conditions.²⁸ Another alternative is computational modelling, where advanced algorithms are used to simulate human physiology. Such *in silico* (computational) models have already been used to predict the clinical risk of experimental drugs with greater accuracy than animal models.²⁹

Conclusion

Experimentation on NHPs remains controversial. This commentary offers an evidence-based exploration into the moral status of NHPs in biomedical research in the context of the corresponding legal personhood argument. While some may disagree with the perspectives presented herein, the moral justification for animal experimentation should be revisited at a systematic and institutional level. Legality is not necessarily equivalent to morality.

Acknowledgements

The author wishes to thank Dr. Katinka Stecina for her constructive feedback on an earlier draft of this article.

References

- [1] Gold KC, Watson LM. In memorium: Koko, a remarkable gorilla. *American journal of primatology*. 2018;80(12):e22930.
- [2] Sternberg RJ. Intelligence. *Dialogues in clinical neuroscience*. 2012;14(1):19–27.
- [3] Phillips KA, Bales KL, Capitanio JP, Conley A, Czoty PW, 't Hart BA, et al. Why primate models matter. *American journal of primatology*. 2014;76(9):801–827.
- [4] Canadian Council on Animal Care. CCAC Animal Data Report 2019; 2020. Available from: <https://ccac.ca/Documents/AUD/2019-Animal-Data-Report.pdf>.
- [5] Sreedhar D, Manjula N, Pise A, Pise S, Ligade V. Ban of cosmetic testing on animals: A brief overview. *International Journal of Current Research and Review*. 2020;12(14):113–116.
- [6] Sumner P, Vivian-Griffiths S, Boivin J, Williams A, Venetis CA, Davies A, et al. The association between exaggeration in health related science news and academic press releases: retrospective observational study. *BMJ*. 2014;349. Available from: <https://www.bmj.com/content/349/bmj.g7015>.

- [7] Percie du Sert N, Hurst V, Ahluwalia A, Alam S, Avey MT, Baker M, et al. The ARRIVE guidelines 2.0: updated guidelines for reporting animal research. *The Journal of Physiology*. 2020;598(18):3793–3801. Available from: <https://physoc.onlinelibrary.wiley.com/doi/abs/10.1113/JP280389>.
- [8] DeGrazia D, Sebo J. Necessary Conditions for Morally Responsible Animal Research. *Cambridge Quarterly of Healthcare Ethics*. 2015;24(4):420–430.
- [9] Eggel M, Neuhaus CP, Grimm H. Reevaluating Benefits in the Moral Justification of Animal Research: A Comment on “Necessary Conditions for Morally Responsible Animal Research”. *Cambridge Quarterly of Healthcare Ethics*. 2020;29(1):131–143.
- [10] Alexander L, Moore M. Deontological Ethics. In: Zalta EN, editor. *The Stanford Encyclopedia of Philosophy*. Summer 2021 ed. Metaphysics Research Lab, Stanford University; 2021. [Cited 2021 Aug 26].
- [11] Varden H. Kant and Lying to the Murderer at the Door ... One More Time: Kant’s Legal Philosophy and Lies to Murderers and Nazis. *Journal of Social Philosophy*. 2010;41(4):403–421. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1467-9833.2010.01507.x>.
- [12] Sinnott-Armstrong W. Consequentialism. In: Zalta EN, editor. *The Stanford Encyclopedia of Philosophy*. Fall 2021 ed. Metaphysics Research Lab, Stanford University; 2021. [Cited 2021 Aug 26].
- [13] Dryer DP. Utilitarianism, For and Against. *Canadian Journal of Philosophy*. 1975;4(3):549–559.
- [14] Nozick R. *Anarchy, state, and utopia*. New York: Basic Books; 1974.
- [15] Caviola L, Kahane G, Everett JAC, teperman e, Savulescu J, Faber NS. Utilitarianism for animals, Kantianism for people? Harming animals and humans for the greater good. *PsyArXiv*; 2020. Available from: psyarxiv.com/j3rgm.
- [16] Holdron C. The Case for Legal Personhood for Nonhuman Animals and the Elimination of their Status as Property in Canada; 2013. [Cited 2021 Aug 26]. Available from: <http://hdl.handle.net/1807/42864>.
- [17] Nonhuman Rights Project. *Who We Are*; 2021. [Cited 2021 Aug 26]. Available from: <https://www.nonhumanrights.org/who-we-are/>.
- [18] Buckley LA, Chapman K, Burns-Naas LA, Todd MD, Martin PL, Lansita JA. Considerations Regarding Nonhuman Primate Use in Safety Assessment of Biopharmaceuticals. *International Journal of Toxicology*. 2011;30(5):583–590. PMID: 22013138. Available from: <https://doi.org/10.1177/1091581811415875>.
- [19] Prior H, Sewell F, Stewart J. Overview of 3Rs opportunities in drug discovery and development using non-human primates. *Drug Discovery Today: Disease Models*. 2017;23:11–16. Use of non-human primate disease models. Available from: <https://www.sciencedirect.com/science/article/pii/S1740675717300087>.
- [20] Society for Neuroscience. The Committee on Animals in Research; 2021. [Cited 2021 Aug 26]. Available from: <https://www.sfn.org/about/volunteer-leadership/committees/committee-on-animals-in-research>.
- [21] Government of Canada. The abolition of the slave trade and slavery in the British Empire; 2017. [Cited 2021 Aug 26]. Available from: <https://www.canada.ca/en/canadian-heritage/campaigns/black-history-month/key-events/abolition-slavery.html>.
- [22] Government of Canada. 100th Anniversary of Women’s First Right to Vote in Canada; 2018. [Cited 2021 Aug 26]. Available from: <https://swc-cfc.gc.ca/commemoration/cent/index-en.html>.
- [23] The Canadian Encyclopedia. Homosexuality; 2021. [Cited 2021 Aug 26]. Available from: <https://www.thecanadianencyclopedia.ca/en/article/homosexuality>.
- [24] Wu Q, Liu J, Wang X, Feng L, Wu J, Zhu X, et al. Organ-on-a-chip: recent breakthroughs and future prospects. *BioMedical Engineering OnLine*. 2020 Feb;19(1):9. Available from: <https://doi.org/10.1186/s12938-020-0752-0>.
- [25] Larkin M. Could organs-on-chips replace drug testing on animals?; 2015. [Cited 2021 Aug 26]. Available from: <https://www.elsevier.com/connect/could-organs-on-chips-replace-drug-testing-on-animals>.
- [26] Yang Z, Xiong HR. In vitro, Tissue-Based Models as a Replacement for Animal Models in Testing of Drugs at the Preclinical Stages. In: Ceccherini-Nelli L, Matteoli B, editors. *Biomedical Tissue Culture*. Rijeka: IntechOpen; 2012. Available from: <https://doi.org/10.5772/52300>.
- [27] Luperchio T. Can Cell Lines Replace Animal Research?; 2021. Available from: <https://speakingofresearch.com/2015/11/25/can-cell-lines-replace-animal-research/>.

- [28] Miao S, Cui H, Esworthy T, Mahadik B, Lee Sj, Zhou X, et al. 4D Self-Morphing Culture Substrate for Modulating Cell Differentiation. *Advanced Science*. 2020;7(6):1902403. [Cited 2021 Aug 26]. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1002/advs.201902403>.
- [29] Passini E, Britton OJ, Lu HR, Rohrbacher J, Hermans AN, Gallacher DJ, et al. Human In Silico Drug Trials Demonstrate Higher Accuracy than Animal Models in Predicting Clinical Pro-Arrhythmic Cardiotoxicity. *Frontiers in Physiology*. 2017;8:668. Available from: <https://www.frontiersin.org/article/10.3389/fphys.2017.00668>.