UNIVERSITÀ DEGLI STUDI DI PADOVA
Dipartimento di Biomedicina Comparata e Alimentazione
Department of Comparative Biomedicine and Food Science

Corso di Laurea / First Cycle Degree (B.Sc.)
in Animal Care

Animal research on social media:

the nowadays status and a guidelines proposal

Supervisor

Prof. Chiara Di Benedetto

Submitted by

Arianna Turello

Student n. 1224903

ACADEMIC YEAR 2021/2022

INDEX

ABSTRACT

This thesis examines scientific communication about animal experimentation in research, with a focus on social media and how the theme of animal experimentation is discussed on it.

Despite the existence of guidelines such as the Concordat on Openness in Animal Research and the commitment of Italian and European institutions involved in animal research, this topic remains somewhat polarized, particularly among the general public.

The thesis examines three social profiles of as many organizations, focusing on the way the research is communicated, and it digs deeper into the issue through qualitative interviews with privileged representatives. Based on this analysis, a document with a proposal of guidelines for communicating animal research in social channels is created and is supported by the production of some social media outputs as a model.

Keywords: animal-based research, scientific communication, social media, polarization

1. AN INTRODUCTION TO SCIENCE COMMUNICATION

Science communication has grown in popularity in an age when science governs many of our daily decisions. It covers a variety of concepts and practices, ranging from journalism to major exhibitions, from storytelling to events in which researchers participate. Benvicelli et al.[1] defines science communication as "the publication and dissemination of research results by private and academic research institutions. It is aimed at the scientific community and represents one of the ways of exchanging acquired knowledge between experts and professionals". This thesis explores also the phenomenon of science communication not only between members of the scientific field but also with the general public.

Born as a need to teach and share information also to the common people, the divulgation (from Latin *divulgare*, dis "different part" + *vulgo* "people" so "give to a big public") sees its birth with Galileo Galilei, therefore together with the birth of the scientific method. As many researchers and communicators report the *Sidereus Nuncius* written by Galilei in 1610 can be considered the text which marked a break into science communication. With its language the Sidereus Nuncius has started a new epoch in divulgation, introducing the style that "researchers still use nowadays among their community"[2] and opening a new approach to science[3].

Along with the evolution of science – and society – different styles of science communication developed to better adapt to the needs of the scientific community *in primis* and society itself. The previous *Deficit Model* (so-called because the divulgator fills a knowledge gap, the *deficit* indeed) has been proven no longer to work[4], apart from a few contexts. The modern way of communicating science tends to avoid making the public feel like a passive object of revelation and to gather their suggestions and ideas, include them in the scientific process as active participants, encourage commitment to the initiatives that are supported, consider their curiosity, and allow them to voice their opinions and ask questions. This is known as the *Open Science* approach, and it reflects society's complicated structure, in which communication occurs differently depending on the subject and possible stakeholders involved, who can include public institutions, children, other scientists, or ordinary people with differing views on science. This scheme also emphasizes how communication can now go in any direction, resulting in an open dialogue between science and society. Science communication works in both directions simply because the communication tool does. The scientist

---

[1] Benvicelli, S., & de Ceglia, F. P. (2013), *Comunicare la scienza*. Carocci.

[2] Battistini Andrea (1989), *Introduzione al Sidereus Nuncius*, Marsilio.

[3] Greco Pietro (2009), *L'idea pericolosa di Galileo*. *Storia della comunicazione della scienza nel Seicento,* UTET, Torino.

[4] Bucchi, M., & Trench, B. (2008), *Handbook of Public Communication of Science and Technology*. Taylor & Francis.

(or scientists) and all those who, as individuals or groups, have a direct or indirect interest in the subject investigated by the scientist are the multiple voices. The concept of Open Science is still relatively new and used as an umbrella term to describe a "process based on cooperative work and new ways of diffusing knowledge by using digital technologies and new collaborative tools"[5].
Thankfully, we now have said tools —like social media—that make a public-centered strategy relatively simple although they amplify also the risks that communication has to face. The digital world currently comprises various sorts of communication, including formal ones like for example institutional information published by the government. The great aspect about this is that since the pool of the public that can be reached is the entire public itself, it enables the exchange of information and raising of awareness towards specific themes without any prejudice. However, this might become a double-edged weapon since, while we may be able to open a line of communication between the source and the general public, we can never be completely certain that our message will be heard.

What we will deal with in this thesis are a specific area and a specific tool: digital and social media. Because of their recent birth and continuous mutation, scientific communication via these means differs not only from scientific articles intended for print but also from web articles. Their extremely multimedial nature can be both beneficial and detrimental depending on the theme investigated, especially if the topic in question is controversial. A contributing factor is the amount of false and incorrect information available on the internet in general, but particularly on several platforms that have a vested interest in giving all of their users a voice, regardless of their level of knowledge on the subject. This characteristic may cause skepticism toward the use of social media and may be the reason why science communication does not fully utilize them when addressing a discussed topic.
These themes and problems, as well as the topic of users' polarization, serve as the foundation for this thesis, which focuses on the perception of scientific research and animal testing through the social channels of institutions, non-profit organizations, and independent researchers who have embraced the cause of science communication and put their efforts into divulgating what animal-based research is all about.

[5] Foster Facilitate Open Science Training For European Research, *What is Open Science? Introduction*, (n.d.). Retrieved August 29, 2022, from https://www.fosteropenscience.eu/content/what-open-science-introduction

2. TALKING ABOUT ANIMAL RESEARCH

2.1 Where are we: state of the art on communicating research with animal experimentation

The topic of animal-based research (ABR) is just one of the many sectors in which science communication declines itself. Like any other subject in communication, public opinion has its saying in the matter, since the funding for these activities is most of the time public, and even if it is not, private institutions rely on the opinion of the public for their own financial support. Understanding public opinion and how to influence it is thus important to effective worldwide communication on this subject.

We also have to consider that this topic is rather recent in the world of science communication. According to MacArthur Clark et al.[6] the first initiative of openness about animal research was the Basel Declaration in 2010 with the purpose "to promote the dialogue concerning animal welfare in research by transparent and fact-based communications to the public" [7]. Although it was not until 2014, so less than a decade ago, that the European Animal Research Association (EARA) was born. The foundation of this not-for-profit organization could be considered the pivotal point in the history of openness about animal research. EARA provides a platform for all the staff involved in ABR to talk to the public and colleagues about its benefits and limitations, and it "encourages the biomedical sector, in every European country, to make a commitment to openness and transparency in its use of animals for research"[8].

---

[6]MacArthur Clark J., Clifford P., Jarrett W, Pekow C. (2019), *Communicating About Animal Research with the Public*, ILAR Journal, Volume 60, Issue 1, Pages 34–42.

[7] Basel Declaration Society (2011*), Purpose of the Basel Declaration Society*. http://www.basel-declaration.org/basel-declaration-society/purpose

[8]EARA, *Transparency Agreements* (n.d.). Retrieved August 14, 2022, from https://www.eara.eu/transparency-agreements

2.2 Who talks about animal experimentation: the stakeholders in the dialogue between science and society

In order to achieve a transparent and effective communication strategy (defined as "effective" as the condition in which the recipient of the message understands it and applies the information received), the open science approach must take into account all the stakeholders involved with a particular topic. Therefore, for the sake of this thesis, it is crucial to identify the participants in the conversation about animal testing in science.

The first speaker of this dialogue that needs to be considered are all the facilities that perform ABR and therefore favor its usage. These can be public or private institutions that, as stated before, require the approval of their funders, them being tax-paying citizens or private citizens that contribute to the cause of research. Regardless of who initiates the communication, it must not be unidirectional, that is, there cannot be a simple sender-receiver transmission. Given the demonstrated inadequacy of the one-way scientific communication approach[9], firms dealing with animal experimentation are changing and adapting to a more bidirectional manner, which begins with understanding and listening to the interlocutor. This is the reason behind the birth of non-profit associations, like the previously mentioned EARA, which contribute to the dialogue by providing data in favor of ABR.

By conducting a quick web search on the subject, it is safe to say that the average public's perception of animal-based research is completely distorted, helped by the lack of knowledge about it. According to a 2014 Ipsos Public Affairs survey[10], only 8% of the sample believed that ABR was still the safest method of testing scientific procedures and that it could not yet be replaced by alternative technology. In 2014, 26% of the people interviewed were completely in favor of scientific research involving animals. An interesting note, according to the same research, "once informed (about the reality of animal-based research in Italy[11]), the interviewees decisively change their opinion regarding the level of acceptability of scientific experimentation on animals" passing from a more or less decisive consensus (meaning the marks from 6 on a scale with a maximum of 10) of 49%, to a percentage of

---

[9] Pitrelli P. (2003), *La crisi del "Public Understanding of Science" in Gran Bretagna*. https://jcom.sissa.it/sites/default/files/documents/jcom0201%282003%29F01_it.pdf

[10] IPSOS Public Affairs, *Le opinioni degli italiani sulla sperimentazione animale* (2014) https://fisiologiaitaliana.org/_docs/sperimentazione/140123_opinioni_degli_italiani_intervento_14_01_2014.pdf

[11] D8. Today the laws of the EEC that control scientific experimentation on animals are very strict. The cages must be very clean and of adequate size and those who perform surgery on animals must demonstrate that they can do so by limiting suffering as much as possible. Furthermore, today scientific experiments on animals have been greatly reduced and about 90% of the animals used for the experiments are mice.

57% after having received information, even limited, on scientific research on animals. This has only served to emphasize how crucial the sharing of information on the subject is in shaping public opinion. As a result, the methods of communication are key: on the one hand, extremely shrill or sensationalistic communication, and on the other, assertiveness and a lack of openness to discourse, radicalize viewpoints notwithstanding their justification and content.

2.3 The polarization between science and society

One of the problems that the topic of ABR faces is the fact that it is a controversial topic and thus is subjected to polarization. To worsen the situation, social media work according to the attention span of its users, leading to the repetitiveness of the content and thus to the creation of *echo chambers*. Cinelli et al.[12] defines echo chambers as "an environment in which the opinion, political leaning, or belief of an individual about a certain topic are reinforced due to repeated interactions with peers who share a similar view". They are a result of the human predisposition to selective exposure, which is a phenomenon happening whenever, to prevent or lessen *cognitive dissonance*, people prefer to focus on information in their surroundings that is compatible with and reinforces their present opinions. The theory of cognitive dissonance is considered the *casus belli* of the formation of echo chambers. Inside this area of *ideological comfort* given by the condition of *homophily* (the tendency for people to seek out or be attracted to those who are similar to themselves), users' "lack of exposure to alternative opinions also creates a false perception of unanimity, and thus a different perception of reality across groups"[3].

Given these premises, it is no wonder that users polarized against the use of animals in scientific research hardly desist from their position. An example is the conversations that take place daily in the comments section on the Facebook page [13]Understanding Animal Research, a British non-profit organization that "aims to achieve a broad understanding of the humane use of animals in medical, veterinary, scientific and environmental research in the UK"[14]. On their page, there is no shortage of polarized users who reappear several times in the comments section, an interaction that unfortunately

[12] Cinelli, M., De Francisci Morales, G., Galeazzi, A., Quattrociocchi, W., & Starnini, M. (2020), *Echo Chambers on Social Media: A comparative analysis*. Retrieved October 17, 2022, from https://www.researchgate.net/publication/340826673

[13] https://www.facebook.com/UnderstandingAnimalResearch

[14]Understanding Animal Research, *About us.* (n.d.). Retrieved August 18, 2022, from https://www.understandinganimalresearch.org.uk/about-us

is powered by the Facebook algorithm despite the educational efforts of the association and their policy for compliance [15]on social media.

2.4 The wrong concept of anti-vivisection

Although animal experimentation may be traced back to the ancient practice of *vivisectio*n (L. *vivus*, living + *sectio*, cutting), modern-day ABR is far from the original term used and its brutal implications. Therefore communicators must not use the terms animal-based research and vivisection interchangeably since the latter is really popular among the supporters of the cause against it and would draw shade at the concept of animal welfare.

While the *anti-vivisection* movement first aided in generating support for the cause of animal welfare, its purpose has now been fulfilled. People who identify as *anti-vivisectionists* do not have the right to do so anymore, because science no longer supports *vivisection* and the suffering it entails. Since The Cruelty to Animals Act of 1876, the history of laboratory animal welfare has advanced significantly, and it today both acknowledges and institutionalizes animal sentience. An illustration is the incorporation of the 3Rs principle in the European Directive 2010/63/EU, which encourages the member countries to carry out research following the principles theorized by Russel and Burch in 1959[16]. Replacement is the notion by which researchers aim to employ alternate technologies rather than in-vivo ones or to use species with less shown sentience. This method also avoids the use of animals where alternative methods exist, notwithstanding the costs (which are anyway lower for in-vitro tests, given the fact that they do not have the same requirements as living beings do). The Reduction principle is primarily concerned with the reduction of animals, which can be accomplished by communication between facilities and hence the avoidance of repeating the same experiment. An extension of this notion is the decrease of potential pain, distress, and stress that animals may experience, which correlates to the final principle of Refinement, the improvement of practices used in animal management, husbandry, and handling. Animal research replacement, reduction, and

[15]Understanding Animal Research (n.d), UAR social media house rules. Retrieved August 18, 2022, from https://www.understandinganimalresearch.org.uk/about-us/uar-social-media-house-rules?fbclid=IwAR3Pizk2-G5hUTHPI7UoFi9VJuuxSpVBm1W7PGBB0fbaiU6qJrecpBhvQ-w

[16] Russel, W. M. S., & Burch, R. L. (1959), *The Principles of humane experimental technique by W. M. Russel and R. L. Burch*. Methuen.

refinement are regarded as the best strategy for maximizing scientific progress while maintaining the application of the highest ethical considerations in the regulation of animal use.

	Definition	Comment
Replacement	The use of non-animal methods (absolute replacement) or less sentient species (relative replacement) whenever possible.	Often involves use of tools relevant to the target species (eg, humans) based on latest technologies; some concern about which species should be considered to be “less sentient.”
Reduction	The use of the lowest number of animals necessary to achieve reliable scientific results.	Requires appropriately designed animal experiments that are robust and reproducible.
Refinement	The use of methods that alleviate or minimize potential pain or distress or provide enhanced animal well-being for those animals that still have to be used.	May employ new in vivo technologies to benefit both welfare and science, including methods to minimize pain and distress as well as methods to deliver enhancements in animal care, housing handling, training, and use.

Figure 1Conventional Definitions of the 3Rs With Comments on How These Principles May Be Applied in Contemporary Science according to MacArthur Clark et al.

The misperception concerning animal-based research is likely the result of the *anti-vivisection* community's ignorance of these concepts. Better communication, starting with social media, is essential to change the public's perception of the issue and to permanently end the usage of the term "*vivisection*.".

3 COMMUNICATION OF ANIMAL TESTING BY RESEARCH FACILITIES AND SPECIALIZED WEBSITES ON SOCIAL MEDIA PLATFORMS

3.1 What is the Concordat of Openness on Animal Research and other existing guidelines

We can say that the history of communication about animals involved in scientific research began in October 2012, when more than 40 bioscience groups in the United Kingdom signed the Declaration on Openness in Animal Research. They agreed to draft a Concordat stating how they will be more transparent about how animals are used in scientific, medical, and veterinary research in the United Kingdom. This was only a foundation of what is now regarded as the model for many other transparency agreements throughout the world.

On 14th May 2014 the Concordat of Openness on Animal Research was launched, thanks to the efforts of Understanding Animal Research (UAR), the previously mentioned British membership organization formed in late 2008 to "explain why animals are used in medical and scientific research" and to "achieve a broad understanding of the humane use of animals in medical, veterinary, scientific and environmental research in the UK"[17]. A Steering Group directed the Concordat's drafting, and a Working Group represented the Declaration signatories' interests as the text was produced. Before that, Understanding Animal Research undertook two pieces of public research as part of the Concordat preparation "to understand what people in the UK think constitutes openness and transparency about animal research"[18]

The Concordat consists of a set of 4 commitments, to which 120 and more signatories abide. They are the following (*Concordat on Openness on Animal Research*, n.d.):

Commitment 1: We will be clear about when, how, and why we use animals in research

---

[17] Understanding Animal Research, (n.d.), *About us*. Retrieved July 16, 2022, from https://www.understandinganimalresearch.org.uk/about-us/

[18] Watson, C. (2022). *History of the Concordat on Openness*. Concordat on Openness on Animal Research in the UK. Retrieved July 16, 2022, from https://concordatopenness.org.uk/about-the-concordat-on-openness/history-of-the-concordat

Commitment 2: We will enhance our communications with the media and the public about our research using animals
Commitment 3: We will be proactive in providing opportunities for the public to find out about research using animals
Commitment 4: We will report on progress annually and share our experiences

This was the first time that scientific facilities that work with ABR officially recognized that knowledge was a powerful instrument for beginning to reduce the stigma surrounding this topic. Since the publication of the Concordat, the UK and other countries' facilities experienced the need to act in the public interest rather than maintaining the secrecy and perpetuating the ABR taboo. The effort of increased openness and improvement of media coverage – "because institutions are now providing better and clearer information, images, and videos to journalists" (MacArthur Clark et al.) – was successfully not followed by a rise in the "*anti-vivisection*" and animal rights activities, proof that transparent communication with the public and their proactive engagement repays the cause.
The UAR organization is a valent communicator of the message, with social media platforms that educate the public daily. This author found their social media policy to be effective because it encourages users to be respectful while not only publishing content that has been peer-reviewed and validated but also responding to a large number of comments - the majority of which are negative - appropriately and keenly.

3.2 In Italy

In Italy there is no regulation like the Concordat of Openness, although a similar concept of openness is included in the Legislative Decree 4 March 2014, n. 26 which implemented Directive no. 2010/63/EU and regulates the use of animals for scientific purposes. The document is easily accessible to the public on the website of the Ministry of Health and goes through the rules about animal research, experiment approval, the 3Rs, the Animal Welfare Body, and what is called the Non-Technical Synthesis. The latter is a document submitted by Users to the competent authorities that contains information on the project's objectives, the level of suffering and predicted benefits, as well as the number and species of animals to be used[19]. It's primarily a communication tool to apply the Reduction principle (the more scientific facilities are aware of each other's investigations, the fewer animals are used), but nothing is stopping the public from examining these records.

This explains the different communication strategies implemented by various scientific facilities and organizations because on the one hand they are free to choose how and how much content they disclose to the public, but on the other hand, they have no guidance in this regard, so it becomes a matter of trial and error.

To determine which strategies apply to effective social media communication, this thesis reports the results of three qualitative interviews conducted with a public institution, a private institution, and a non-profit organization dealing with the topic of animal-based research. The reason for selecting these institutions is an interest in determining whether differences in communication styles are based on the character of the institutions from which they come and whether this has a direct impact on communication efficacy. The material reported is the result of three different investigation processes, in order, a direct interview with the spokesperson for Research4life, an analysis of the Istituto Zooprofilattico Sperimentale delle Venezie website and social platforms, held by the Communications Office team in conjunction with my internship at the facility, while the last is a text drawn up on the basis of interview questions, developed after the independent observation of the Istituto di Ricerche Farmacologiche Mario Negri website and social channels.

[19]Ministero Della Salute (n.d.), *Sintesi non tecnica*. Retrieved September 14, 2022, from https://www.salute.gov.it/portale/temi/p2_6.jsp?lingua=italiano&id=4399&area=sanitaAnimale&menu=sperimentazione

3.2.1 Research 4 life

It seemed appropriate to start with the interview to the Italian equivalent of Understanding Animal Research: Research4life, a project born in 2015 "to create an open space in which to inform the public (citizens, institutions, media and the scientific world) on the various topics of biomedical research"[20]. Research4life operates via a website and a Twitter account, and research bodies, hospitals, non-profit organizations, universities, and trade associations participate in the mission. Their spokesman is Giuliano Grignaschi, with whom I had the pleasure to talk and draw the following interview.

QUESTION: ***Where did the desire to communicate about animal research come from?***

The desire to communicate always comes from the attempt to share what your life is with the people around you. Also, from the desire not to be "ashamed" of absolutely anything, because what we do is a job with a high moral value. Then it is necessary to take the next step and realize that the scientific community has finally understood, at least in Italy, with a serious delay compared to other countries such as the UK and the United States, that the population that deals with this type of topics still wants to know how the research happens. There is a right desire to know how money is spent, and how it is invested in the national health system. If the scientific community continued to be silent, the only answers could come from those who oppose this type of argument. Clearly, the dialogue was not at all balanced and this imbalance led to distortions of various kinds and it was, therefore, necessary to begin to speak more clearly and understandably also of these topics.

QUESTION: ***The only social media platform used by Research4Life is Twitter. I wanted to ask why this choice and how it contributed to the cause of communication.***

This choice was strongly reasoned, and strongly thought about and we decided not to use the most widespread channel, which is Facebook because it is a place where it is too easy to trigger fights, and insults, too impossible to control. So, it didn't seem like the right place to talk about topics so serious, so ethically relevant, and so high in content. We deliberately decided to leave it aside, to instead use a channel that is perhaps less followed, but which gives less chance of sparking controversy.

QUESTION: Does this choice have to do with a target audience problem?

Not so much a target problem, because we do not "disdain" any type of audience, but a problem of mechanism, of control over what happens on that platform. We try to talk to everyone, to be easier for everyone to understand and we are totally open to dialogue and discussion. But there must be

[20] Research4life (2022), *CHI SIAMO*. Retrieved September 15, 2022, from https://www.research4life.it/chi-siamo/

well-defined limits and there must not be the possibility of making everything expire in a fight, as unfortunately happens too frequently on Facebook.

QUESTION: ***Precisely to avoid these frictions, are there words that you often use because they are useful for creating a conscious attitude towards this issue? Or words you try to avoid?***

In our communication, we are very cautious not to use the term *vivisection* because we believe it is deeply incorrect; instead, we always and only use the term *animal experimentation*. We are very careful not to suggest that experimental animals do not experience pain since this is not true, and we want the communication to be sincere. It is the fundamental criterion for scientific communication. We don't want to hide anything because it must be genuine. For the rest, we attempt to utilize terminology that is understandable and useful, avoiding intricacies and terminologies that only a portion of those who listen understand.

QUESTION: ***Have there ever been any episodes of extremism for animal rights aimed at Research4life? Whether they were addressed directly to the website or on the Twitter profile? And if so, how were they handled?***

Look, I know it's something that always amazes everyone, but I have never received an insult. I've never received a threat, I've never received any of this.

It has only once happened to me in a local TV broadcast here in Northern Italy, to be at a confrontation where there were supporters of the two different parties and to find myself in front of some very fervent supporters of the animal rights side. It is one of these I remember that he said to me: "Aren't you afraid to come here in front of us?" And then I said, "Excuse me. No, honestly no. I don't understand. What should I be afraid of? There are far worse things that you can be afraid of. Of this really not. " And there we became friends.

But I have to say that I have a really good relationship with most animal welfare organizations, most of those who deal with these things. And so honestly, I've never had any problems whatsoever.

QUESTION: ***What do you think this lack of problems is due to?***

I believe that this kind of interaction we have with people who don't think exactly like us is because we are extremely sincere. We are extremely open, we respond to everyone and, above all, if we go to our site, we show that we are interested in the whole universe of animal experimentation, including all replacement methods ranging from replacement to refinement. And therefore, we also publish many articles on replacement methods, we clearly demonstrate that we care that as soon as possible

animal testing will no longer be necessary, and therefore we show that we care, that we invest, we take steps forward to go in the direction of replacement.

QUESTION: ***Why, in your opinion, is there a need to talk about animal experimentation today and what obstacles have you encountered so far? For example, cultural resistance of people or resistance linked to the interests of the companies themselves…***

In general, there is a need to talk about how research develops, because, also with covid, we have seen very clearly the targets of the criticisms. All those who develop vaccines have been threatened in various ways because they want to poison people, establish the new world order, etc. So there is a serious problem in communicating how science develops and how it progresses. Ours is just one example. When researchers were threatened and received threatening letters, everyone was amazed. I've been saying for years, that with this kind of environment in which anyone who does something can be insulted, sooner or later it's everyone's turn. So it's just a cultural mechanism that we need to work on to explain how science works to people. Research is not an exact science, and everything is true until it is proven false, at which point we proceed with trials and errors. We must convey this in all areas, including animal testing, without denying that it occurs. Furthermore, there is a component related to business in which a newspaper struggles to print an article that speaks positively of animal testing since they know that many of their readers now hold the opposite opinion. In the case of a television broadcast, either the public is intensely engaged in the issue or the television program is struggling. We have only been able to participate in television broadcasts because we were invited as a counterpart. So, there is a kind of resistance, because clearly, those who make television have to sell advertising space. If there is an unattractive topic, they don't put advertising space on it and therefore they don't let you go. Those who write the newspapers still find it hard to accept certain points of view because they know that readers will not like them and therefore go in a different direction, so difficulties are encountered from this point of view. But they are the same that all those who do scientific communication meet.

QUESTION: ***Going back to the Twitter account, how are comments generally handled?***

I'd say ninety percent of the posts we put on Twitter have no comments but have some share. On one occasion, in which there was an exchange of comments with an MEP, it was something very calm. I directly provided all the necessary information.

QUESTION: Do you have a Transparency Agreement also for what concerns not only the Twitter channel but also your website?

No, unfortunately, we are unable to bring Transparency Agreements into Italy because there is still a climate of fear among many institutions about being able to engage in acts that could harm the world of research. Being transparent in Italy implies exposing oneself to the possibility of being harmed. Damage that, due to a shortage of finances in the system, cannot be reimbursed to the individual researcher.

QUESTION: If you have more funds available for the Research4Life project, will you go further than Twitter, or do you currently consider it a satisfactory medium for this mission?

It is clear that if we had more funds available, we will certainly also look at other channels that can be useful for doing this type of communication. Money should be needed to recruit people who can then manage them, people who can be paid decent money to be able to do this type of work. This is the big problem.

3.2.2 Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe)

Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe) is a public veterinary institute that conducts prevention, control, and research activities in the broad area of animal health and welfare, food safety, and environmental protection. IZSVe was founded in 1929 and it's part of a national network that includes nine other similar institutes, each of which covers a specific geographical area. The institute was designated as the National Reference Centre for Avian Influenza (AI) and Newcastle Disease (ND) by the Italian Ministry of Health in 1999 and as European Union Reference Laboratory (EURL) for AI and ND in 2019. The headquarters of the IZSVe are in Legnaro, Padova. The Institute employs almost 600 people, who include veterinarians, biologists, chemists, technicians, and administration staff.

The communication channels used by IZSVe are their website, Facebook page, and LinkedIn.

Their website, created in 2013, contains public communication divided into thematic pages. The part dedicated to the welfare of lab animals accounts for circa 20% of the website and its structure consists of a brief introduction on the theme, the activity of the laboratories, the name of the experiment contact person, the internal guidelines, and information on the OPBA (Organo Preposto al Benessere Animale, Animal Welfare Body). Their website does not contain any photos or videos on animal-based research, and it is forbidden for the staff to privately share content about it.

LinkedIn is the most used social network for its dissemination function of research projects. Since it refers to a sector audience it uses more technical language.

Their Facebook page serves mainly as an amplifier of the content shared on the website. Their tone is educational and, like the other platforms of the facility, publishes contents of a purely scientific nature, not administrative. Each post consists of a brief caption and a link to the website, resulting in several layers of information. Since its creation in 2017, the page has received two interactions on the theme of animal research.

The first interaction saw a user asking a question that was totally unbound from the theme of the publication (the recognition of mammary gland carcinomas in dogs through a blood sample) and an answer could have triggered unmanageable discussion. You may notice the presence of auto-moderation on the part of the fanbase.

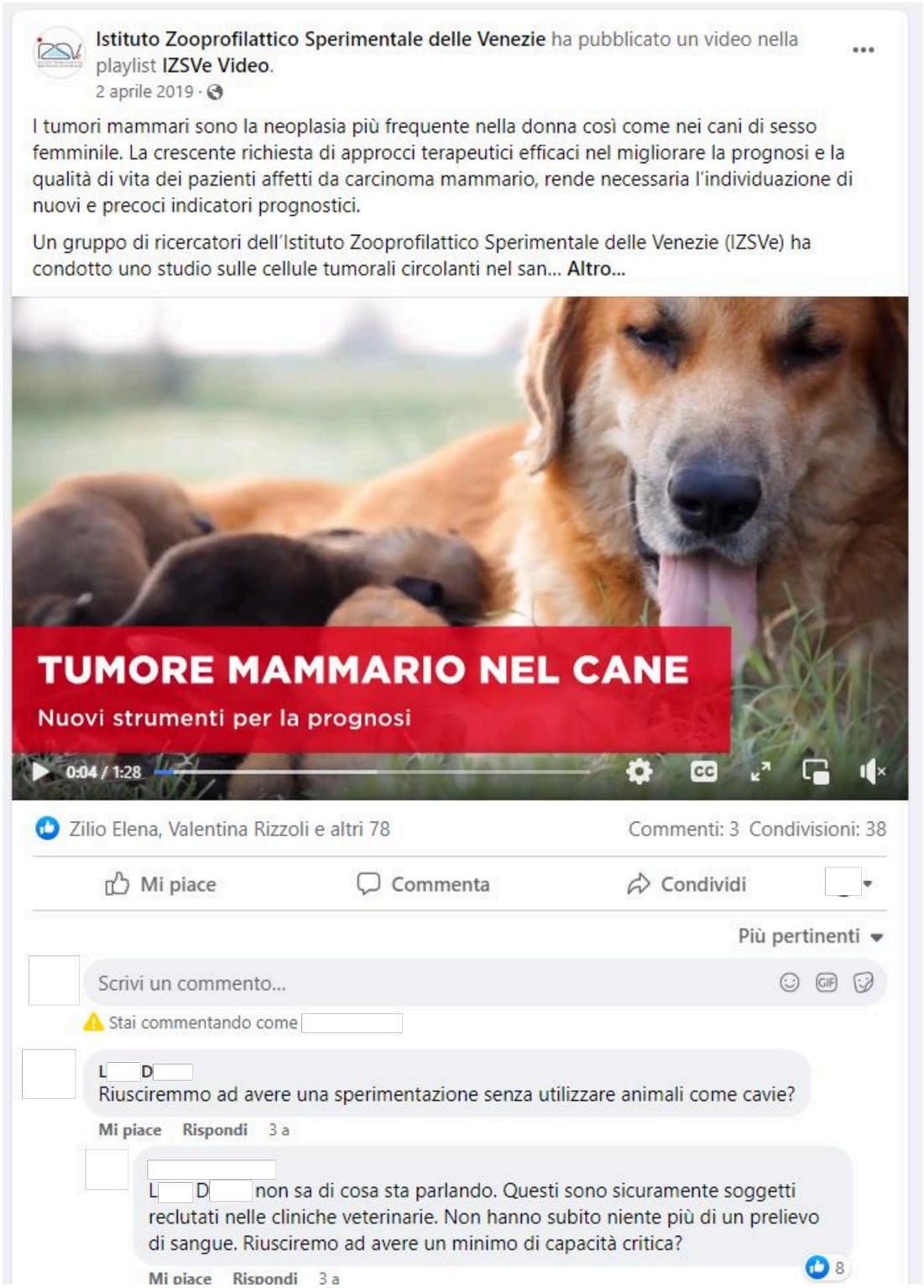


Figure 2 Screenshot from the IZSVe Facebook page, the first interaction

Translation

LD: Will we ever have some scientific testing free from the use of animals?

Answer from User: LD doesn't know what he is talking about. These are subjects recruited from veterinary clinics who have undergone nothing more than a blood draw. Will we be able to have a minimum of critical sense?

Figure 3, Second interaction

Translation

LD: Do you perform animal testing?

Answer by IZSVe: The IZSVe carries out basic and applied experiments with animals, aimed at knowing the origin and control of diseases involving the animals themselves. Studies are always subject to evaluation by the Institute's Ethics Committee and approval by the competent authorities. Much of this research is aimed at identifying conditions that can improve animal welfare in the various situations in which they are raised.

In the second interaction on the theme, the user asked a legitimate question, and an answer was given according to the social media policy, published on the website in 2020.
An interesting factor in these comments is that they come from the same user. This indicates the presence of polarized users to whom it is difficult to give a sensible answer for the reasons expressed above[21]. A feature of these users is also the fact that after a certain period of time they disappear.

An internal policy inspired by those of other institutes exists and acts as a list of guidelines for the employees (e.g. an employee cannot publish information about a study if it has not been previously shared by the official pages). In the past, some problems came upon with the apical members of the Institute, who happened to ignore said guidelines.
This policy describes a scheme to follow when a comment is received. The employee in charge of communication has the task to identify the nature of the questions, their topic, complexity, and level of criticality. Technical questions are followed by the expert's response, which may take some time due to the bibliographic research or because the expert is absent. For somewhat broader questions, the communication expert can propose an answer which is then approved by the expert. It is not possible to answer everything but only the questions considered useful and legitimate.
IZSVe has never felt the need to block users or delete their comments.

[21] Zollo, F. (2020), *Dinamiche di polarizzazione nel dibattito pubblico sui social media*. Retrieved October 5, 2022, from https://www.wearepics.it/portfolio-item/dinamiche-di-polarizzazione-nel-dibattito-pubblico-sui-social-media/

3.2.3 Istituto di Ricerche Farmacologiche Mario Negri

I finally had the pleasure to correspond with the Coordinator of Research in Milano Raffaella Giavazzi and Communication Manager Daniela Abbatantuono, who work for the Mario Negri Pharmacological Research Institute, a nonprofit research establishment dedicated to clinical and biomedical research based in Milan. The following text is drawn from a document drafted by the Doctors, which is derived from an interview on the communication strategy of the Institute and its activities beyond social media.

Since its foundation in 1963, the Mario Negri Institute has distinguished itself as being a mouthpiece for the importance of animal testing aimed at finding treatment solutions for the health of people and animals themselves. The charter of values and code of ethics, available on the Institute's website, from the very first pages, takes stock of the importance and proper management of this activity in respect of the animals that are used in biomedical research.

Consistent with this position, Mario Negri is always at the forefront of debates and actions aimed at promoting adequate legislation in our country. In 2015, the Institute was among the founding members of the Research4life association intending to join other organizations and institutions to speak more unanimously and incisively on this issue with a single voice. The association's logo can be found on the home page of the Institute's website. Among the most recent actions, Mario Negri contributed to drafting at the end of 2019 the mandatory opinion on the lack of alternative methods to animal testing of the Zooprophylactic Institute of Brescia. In this regard, he was the promoter of the document approved by the Superior Health Council and contributed to the drafting of the document approved by the National Bioethics Committee.

On the institute's website[22], the reference to experimentation occurs, in addition to the page of the animal care unit - the structure that deals with ensuring the welfare of animals - in the presentation of all the laboratories that use animal models, as well as in the press area, in the press releases of research studies that have used the animal model, and in the magazine area in various in-depth articles.

This is because animal experimentation, often still lacking in alternative methods, remains a *sine qua non* of biomedical research, and taking up the message of the President and Director of Mario Negri "Not using it means stopping the progress of medicine".

On the other hand, the disclosure of this issue on social channels where the Institute is widely present (in order of size of the number of followers: Facebook, Linkedin, Twitter, Instagram, Youtube) is more delicate. Here they share the results of research conducted also with experimental models, and

[22] Istituto Mario Negri (n.d.). Retrieved October 14, 2022, from https://www.marionegri.it

they do not feed the debate in the presence of users who make accusations against animal testing and are not interested in learning more about this issue. The following image depicts an example of this kind of interaction, which is not followed by an institutional response since it does not come from a position of curiosity but to fuel an argument.

Figure 4 Screenshot from the Facebook page of Istituto Mario Negri, post from 15 May 2015

Translation

Against obscurantism. Without animal testing, biomedical research in Italy dies. Article from Scienzainrete.it

Comment from user: "A drug that works on animals doesn't mean it works on us, we are not the same. Study Ayurvedic medicine and respect life!"

Nevertheless, there is no lack of disclosure moments open to the public, such as appointments with schools and universities, and open days for citizens.

The latest awareness campaign on the topic was in 2019, entitled "Let's save biomedical research in Italy". A real Manifesto to support animal testing, in the face of growing attacks by animal rights activists, accused of spreading false news and fueling a campaign of suspicion and hatred. It was promoted by scientists including representatives of the Mario Negri Institute.

In response to the attacks of animal rights activists, the Mario Negri Institute responded with actions aimed at explaining the importance of animal experimentation in the advancement of knowledge. In 2013, for example, following the episode that took place at the Milan State University where some animal rights activists broke in violently, Mario Negri, which took sides in favor of the university, suffered accusations to which it responded by organizing a day at its headquarters, to stress the

importance of animal testing. With the same goal, the Institute has been a supporter in various ways of the Pro-Test Association, promoted by young researchers in defense of animal experimentation.

Figure 5 Screenshot from the Facebook page of Istituto Mario Negri, post from 8 November 2013 referring to the aforementioned events of the same year.

Translation

Many exponents of the world of research, institutions, and information have already signed to testify their closeness to Prof. Garattini and the researchers of the "Mario Negri" Institute, against the national demonstration scheduled for Saturday 30 November, and called by animal welfare organization "Animal Amnesty". Sign up to support Prof. Garattini, the "Mario Negri" Institute, and scientific research!

Comment from user: “Butchers!”

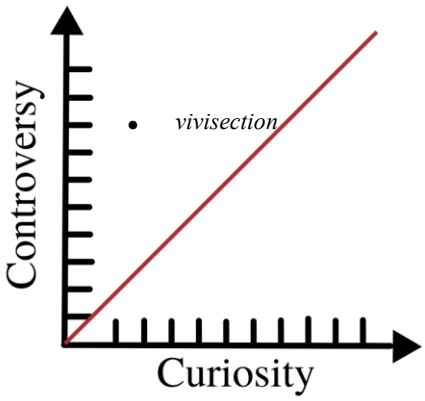
4 SUGGESTIONS FOR GUIDELINES

Starting from these reflections, I have developed 10 guidelines which I hope will be in support of those who - working in a research center that deals with experimentation or called as a communicator to talk about issues related to experimental research with animals - find themselves in communicating the theme of animal testing.

1. A qualified individual, capable of navigating both research and communication, is required to tackle this delicate issue. We strongly advocate some communication **training for researchers** and responsible parties to share a common frame regarding public opinion and "have (or acquire) the appropriate tools to prepare for interviews, public outings, and events in full understanding of the role they play"[23].
2. A **communication strategy** coming from researchers that directly work with animals allows a more coherent transmission of the message and the possibility for the staff to bring up valuable content. They are the most aware of the false perception of their work, thus letting them be the narrator of their profession helps in the demolition of the stereotypes surrounding it.
3. Guarantee the **transparency** of the statements, with the final aim of implementing a transparency Agreement following the example of the Concordat of Openness in the UK. Openness creates a base ground for trust, which helps gain consensus on the topic in the long run.
4. Along with the previous concepts we need also to ensure the **clarity** of the statements, meaning the use of adequate terminology, a compromise between technicality and comprehensibility. Avoid the use of the word "*vivisection*" because it does not represent the nature and mission of animal experimentation. Clarity is achieved also by the proper use of each social media and every technical choice that come with it (the social media strategy). An argument explained at its best prevents the manipulation of its message, thus limiting polarization phenomena in this regard.
5. Create a **common network** with other institutes and organizations that involve testing on animals. This does not mean a company should let go of its brand identity, but rather collaborate inside and outside social media channels, showing a united front to the public opinion and "a communication that brings out the consistency of information and approach"[23].

[23]Progetto Comis (2022), *Progetto Comis - Comunicazione Migliore per la Salute Pubblica nel periodo post COVID-19*. Retrieved October 15, 2022, from https://www.progettocomis.it

6. with other institutes and organizations that involve testing on animals.To adopt the **“Embrace curiosity” concept**. Meaning an assessment of the potential nature and consequence of the interactions on the platform reported on a scale that has curiosity and controversy as the two axes. During the sharing of any content, that being a post or a response to a comment, the communicator is asked to reflect on the level of controversy and curiosity that the interaction can cause by giving it a score from 1 to 10, which is then reported on the graph shown here. Every interaction from each party that places itself above the line, which is the condition in which curiosity and controversy are equivalent, is considered detrimental to the cause. An example is the use of the word “*vivisection*”, as previously stated. While any comment considered driven by curiosity is safe to answer, after previous research. It can be seen that the higher the level of curiosity that the content arouses, the higher the controversy that we can risk since we can rely on the support of a fanbase in this case. It is certainly an assessment that requires practice and testing to be considered objective, but it is a starting point for any polarized topic of science.



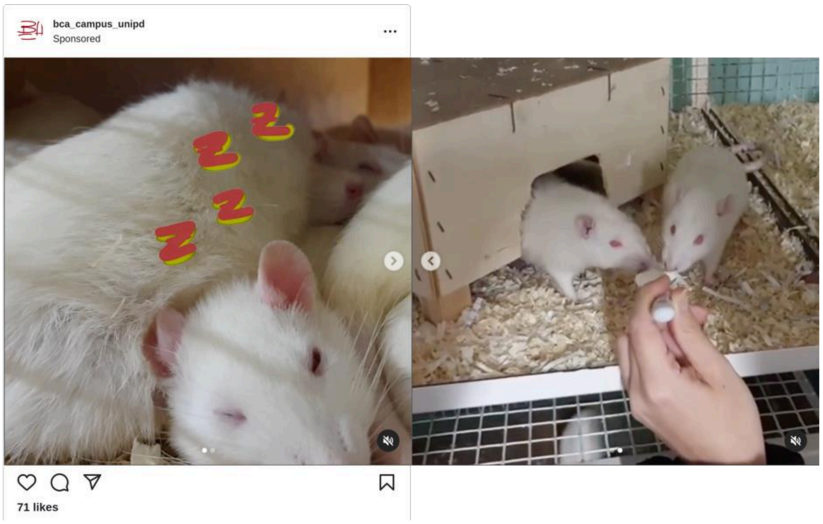
7. Regularly devote a post to the **ethics** underlying ABR, such as the usage of the 3Rs, the reasons for its criticality, and so on. Also, if this is a frequently debated topic in the account's comment section, it would be beneficial to use the "pin" function Instagram, Facebook, and other platforms provide. This allows a limited amount of content to be constantly shown at the top of the page and makes it much simpler to reroute users who have an interest in the subject.
8. Make intelligent use of **images and videos** to rely on the multimedia nature of these platforms but be mindful of the gap between what is viewed as "normal" by field workers and users outside the field. For the time being, that is, until the matter has achieved a low level of controversy, avoid depicting content that may upset the general public's sensibilities. For this reason, when showing the animals involved, always picture them in a neutral state while placed in their enclosure, being mindful of excluding the presence of equipment that to the external eye can reinforce the distorted and gruesome vision of a laboratory. This partly goes against the idea of transparency but complies with the previous assessment of the "embrace curiosity” concept.

9. Think **beyond the screen**! Initiatives that actively involve the public can be made known through the digital platform and become content itself.
10. Finally, **remember the goal**, which is drawing interest in the topic while making the public participate in the scientific process and not considering them as just the recipient of the message, but rather a valuable source of inspiration.

4.1 Example of content

The following are the explanatory sheets of three posts meant to be shared on Instagram and Facebook, the first one already existing and the second and third ones created specifically as an example.

4.1.1 Instagram post by bca_campus_unipd



bca_campus_unipd L'uso degli animali nella ricerca è sempre stato argomento di dibattito, spesso perché procedure e normative non sono a conoscenza dei più. Per esempio, conoscevate la regola delle 3 R?
Il principio delle 3R è stato ideato circa 50 anni fa per garantire un approccio più etico nell'utilizzo di animali nei laboratori. Al giorno d'oggi è un caposaldo nella ricerca: infatti la commissione bioetica, che analizza e vara lo studio di ricerca, verifica se e come questi principi vengono applicati.
Ma cosa vogliono dire queste R?
Replacement, o Rimpiazzo, significa utilizzare tutti quei metodi che permettono di evitare l'uso di animali nella ricerca.
Reduction è appunto la riduzione "ai minimi termini" degli animali nella ricerca, quindi solo quelli strettamente necessari affinché lo studio sia significativo devono essere coinvolti.
Refinement è il miglioramento delle procedure e delle strutture in cui gli animali saranno collocati, per garantire il minor stress e dolore e quindi il loro maggior benessere psicofisico.
Eri a conoscenza della regola delle tre 3R? Facci saper cosa ne pensi nei commenti!

Animal use in research has always been controversial, due to a scarce knowledge about the laws and procedures. For example, did you know the 3R's rule?

The principle of the 3Rs was introduced circa 50 years ago to guarantee a more ethical approach on the use of animals in labs. The bioethical committee analyzes and verifies that those concepts are applied, but what's the meaning behind these 3R's?
Replacement is to adopt all the methods that do not involve animal use in the study.
Reduction means that only the animals necessary to obtain a significant result must be involved, not more nor less.
Refinement is the improvement of procedures and the housing of the animals in order to minimize stress and pain and overall increase the welfare.

Were you aware of the 3R's rule? Leave your thought about it in the comments below!!

#bcacampus #bcacampusunipd #animalcareunipd #3R #labanimals

LUGLIO 5, 2021

This is a post I worked on for the institutional account of the Department of Comparative Biomedicine and Food Science (BCA) of the University of Padova[24] since I have been involved as a member of the editorial team [25].

The objective of the post was precisely to make known the ethics behind animal research, divulgating the principle of the 3 Rs. The choice behind it was to inform the people outside the field of the existence of these principles, despite them being a well-established concept among us as Animal Care students. The target of the page, in fact, also includes people outside the department that might be foreign to these principles.

The incipit of the caption has the goal to entice users to read the entire text by quoting a matter of fact: the controversy surrounding animal-based research. The phrases are concise, and

[24] From https://www.instagram.com/p/CQ8HvQfoXrU/?utm_source=ig_web_copy_link

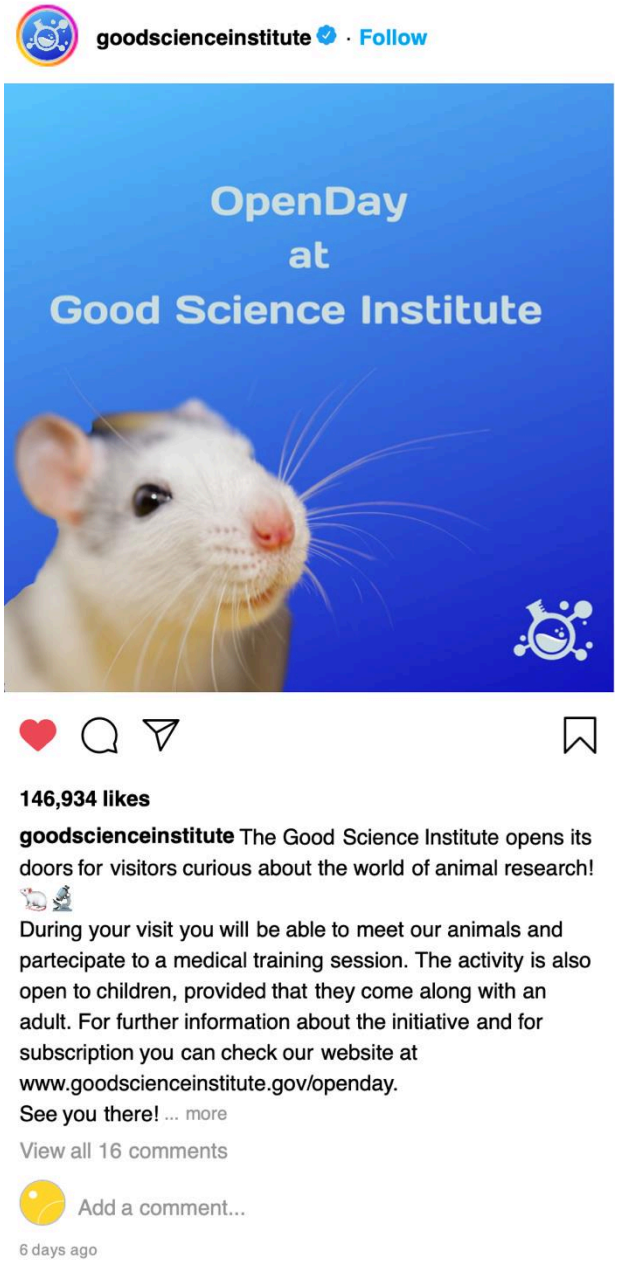
[25]"WeCHAT & WeSOCIAL: Online learning community" was funded by the University of Padova (Italy) under the 2019 call "Innovative teaching projects".

the entire caption aims to be as brief as possible on the subject while remaining clear in its concepts. By doing so, you take advantage of the user's attention threshold while offering explanations on the subject. The language used is appropriate to the chosen social media and has a correct balance of technical terms (ethical committee, welfare, etc.) and colloquiality. Emojis are used to stress said colloquiality but also to give structure to the text as a sort of bullet point.

The first video of the carousel pictures a couple of somnolent rats and, on top of that, a GIF is added to stress the fact that they are sleeping, thus not in pain. The colors of the GIF reprise those chosen for the graphic design of the account, a “unipd red” and an acid green. The second video shows a clip where the rats are spoon-fed some yogurt, so they look more active but still do not show alarming behavior. Both videos reflect the message of the caption, namely that the animals in the picture are cared for.

4.1.2 Mockup post for Instagram

This is a test of a post that follows the guidelines above by applying them to the fictional research company GoodScience Institute, which I imagine is a private business.



The post promotes an open day at the laboratory, with the aim of sensibilize people to the topic of animal-based research while letting them have a first-hand experience. This enhances the principle of transparency that an Institute would want to have and stimulates the curiosity of potential visitors.

The subject of the image is a rat in a neutral state, captured in a position in which, even if its features were to be anthropomorphized, it does not show signs of pain or aggression. The objective is to make the subject itself curious about meeting the visitors. The background of the photo recalls what I imagined the colors that a research institution may use. Blue is used because it is a non-aggressive color that encourages serenity, orderliness, and tranquility; according to the psychology behind colors, because of its relaxing and mentally stimulating effects, blue promotes trust and dependability (so much so that it has long been the color of the Instagram interface and it is still the color of the Facebook app), those being feelings we want our followers to address to the Institute.

The caption is a simple and brief invitation to the event, and it gives an overview of what will be the activities, as well as specifying the target of the possible visitors, them being also families. This shows the interest of the institute in the education of the younger generation about research with animals.

The font used in the image is a basic and clear text that reflects the institutionality of the post, recalled also by the presence of the logo, but it is harmonized with the colloquiality of the caption, which uses emojis. This, as well as the content of the caption itself, stresses the opening of the Institute to a wider public and identifies a target that includes the non-scientific population.

4.1.3 Mockup post for Facebook

GoodScience Institute
3h ago

Today we shed light on an issue that is often raised on the channels of the GoodScience Institute and other institutions that, like ours, are involved in research, namely: if technologies such as in-vitro studies exist, why is it still necessary to test on animals?

Quite simply, because the alternative models, unlike the animal ones, do not yet allow the total replacement of a living being in its entirety and complexity. For this reason in vitro, in silico, organoid, and so on tests, are referred to as complementary models instead, limited in their effectiveness but useful for the Reduction and Replacement of animals in research.

At GoodScience we practice animal testing, which takes place according to the ethical criteria prescribed by Directive no. 2010/63 / EU (more about it in the post pinned at the top of the page), but we are also committed to the development of complementary models, which we hope, one day, will become alternatives to research on animals and fulfill the concept of Replacement.

To discover all the studies of the GoodScience Institute in this regard, visit the dedicated page on our website opening the link below!

GOODSCIENCE INSTITUTE
Complementary Models
www.GoodScienceInstitute.gov/complementary-models
Open Link

8 Comments

Like Comment Share

As before, this post applies the guidelines above to a possible Facebook post for the fictional GoodScience Institute.

The post addresses a topic debated within the community which is the dispute regarding animal models as opposed to their substitutes. By acknowledging the presence of the theme on its channels the institute demonstrates it is aware of the problem it represents, and its mission is to dispel false myths about it. The introduction uses the gimmick of the question to lure the attention of the audience. Then it readily answers with a concise statement about the reason for the current impossibility of replacing lab animals with alternative models. By doing so, it also specifies the difference between the terms alternative and complementary models. The caption continues with the assertion of the use of animal models by the institute, which is a statement that demonstrates the objective of transparency, but then affirms that GoodScience is also interested in the pursuit of the Replacement principle, coming clear about their studies on complementary models and inviting the audience to continue the educational process, started with this post, by visiting the dedicated page on their website.

The shape of the text is more formal than the one on Instagram, it uses more technical language but without giving up its educational intent. At the end of their reading, the user has a clear idea of why animal models are still used and what is the difference between complementary and alternative models. The mention of Directive no. 2010/63/EU is strategic for two reasons: it clarifies the fact that animal-based research is regulated by an authority, and it reroutes the audience toward another media content of the institute by making use of the “pin” function. The element of trust is raised by the institute's specified hope of fulfilling the Reduction principle in the near future. For this to happen, after all, research needs funds, which it obtains by stimulating the attention of possible investors also thanks to its social media sharing.

The photo design is consistent with that of Instagram, by maintaining the color of the background and the font style. The text of the image asks a question, which tempts the audience to read the caption. The graphics are essential and refer to the topic of the post.

5. CONCLUSIONS

The goal of this thesis was to discover, or at least validate, how the public perceives animal-based research in a specific setting: social media. We are used to thinking of them as unrelated to scientific concepts, used to consider them a mere means of transmission of futile information. Because of my involvement in an editorial project involving social media[26], as well as the preparation of this thesis, I realized they may be far more than that. I wanted to go extensively into the causes behind the scientific community's apprehension about these kinds of instruments and suggest solutions for a wider consideration of the topic. Another factor that motivated me to conduct this study was my strong belief in the moral importance of lab animal care, and I understand that for change to occur, attention must be drawn to the issue. Discussing the theme of animal research benefits the animals, their care, and the development of core concepts of animal care in this regard, such as the 3 Rs. In conclusion, my interest in this topic stems from a desire to study how the ABR argument may be reconciled with social media while also giving dignity to everyone working in the sector, including the animals themselves.

From research both bibliographical and direct to the institutions, I identified the main problem regarding not only this topic. The phenomenon of polarization among users of social media affects science communication in general. The root of the problem is the initial silence of the scientific world, their fear of openness that causes skepticism and controversy. The narration of the reality of animal experimentation is the responsibility of those who practice it. It is a duty to open one's notions outside the scientific world because, in doing so, there is no room for external voices. Communication is a cause of high moral value as much as the research itself.

[26]Balzan, S., Di Benedetto, C., Cavicchioli, L., Merlanti, R., Gelain, M. E., Zanetti, R., Cortelazzo, A., Marinelli, L., & Cardazzo, B. (2022). *Disseminating Science and Education through Social Media: The Experience of a Students' Editorial Team at the University of Padova*. Journal of Microbiology &Amp; Biology Education, 23(1).

REFERENCES

Bibliography

Balzan, S., Di Benedetto, C., Cavicchioli, L., Merlanti, R., Gelain, M. E., Zanetti, R., Cortelazzo, A., Marinelli, L., & Cardazzo, B. (2022). Disseminating Science and Education through Social Media: The Experience of a Students' Editorial Team at the University of Padova. Journal of Microbiology &Amp; Biology Education, 23(1).

Battistini Andrea (1989), Introduzione al Sidereus Nuncius, Marsilio.

Benvicelli, S. & De Ceglia, F. P. (2013), *Comunicare la scienza*, Carocci.

Bucchi, M., & Trench, B. (2008). *Handbook of Public Communication of Science and Technology*. Taylor & Francis.

Cinelli, M., De Francisci Morales, G., Galeazzi, A., Quattrociocchi, W., & Starnini, M. (2020), *Echo Chambers on Social Media: A comparative analysis*. Retrieved October 17, 2022, from https://www.researchgate.net/publication/340826673

Greco, P. (2009). *L'idea pericolosa di Galileo: Storia della comunicazione della scienza del Seicento*. UTET.

IPSOS Public Affairs, *Le opinioni degli italiani sulla sperimentazione animale* (2014) https://fisiologiaitaliana.org/_docs/sperimentazione/140123_opinioni_degli_italiani_intervento_14_01_2014.pdf

MacArthur Clark J., Clifford P., Jarrett W, Pekow C. (2019), *Communicating About Animal Research with the Public*, ILAR Journal, Volume 60, Issue 1, Pages 34–42.

Pitrelli P. (2003), *La crisi del "Public Understanding of Science" in Gran Bretagna.* https://jcom.sissa.it/sites/default/files/documents/jcom0201%282003%29F01_it.pdf

Russel, W. M. S., & Burch, R. L. (1959), *The Principles of humane experimental technique by W. M. Russel and R. L. Burch*. Methuen.

Watson, C. (2022). *History of the Concordat on Openness*. Concordat on Openness on Animal Research in the UK. Retrieved July 16, 2022, from https://concordatopenness.org.uk/about-the-concordat-on-openness/history-of-the-concordat

Zollo, F. (2020), *Dinamiche di polarizzazione nel dibattito pubblico sui social media*. Retrieved October 5, 2022, from https://www.wearepics.it/portfolio-item/dinamiche-di-polarizzazione-nel-dibattito-pubblico-sui-social-media/

Sitography

Basel Declaration Society (2011*), Purpose of the Basel Declaration Society*. http://www.basel-declaration.org/basel-declaration-society/purpose

CHI SIAMO. (2022, January 21). Research4life. Retrieved September 15, 2022, from https://www.research4life.it/chi-siamo/

EARA, *Transparency Agreements* (n.d.). Retrieved August 14, 2022, from https://www.eara.eu/transparency-agreements

Foster Facilitate Open Science Training For European Research, *What is Open Science? Introduction*, (n.d.). Retrieved August 29, 2022, from https://www.fosteropenscience.eu/content/what-open-science-introduction

https://www.instagram.com/p/CQ8HvQfoXrU/?utm_source=ig_web_copy_link

https://www.facebook.com/UnderstandingAnimalResearch

Istituto Mario Negri. (n.d.), Retrieved October 14, 2022, from https://www.marionegri.it

Ministero Della Salute (n.d.), *Sintesi non tecnica.* Retrieved September 14, 2022, from https://www.salute.gov.it/portale/temi/p2_6.jsp?lingua=italiano&id=4399&area=sanitaAnimale&menu=sperimentazione

Progetto Comis (2022), *Progetto Comis - Comunicazione Migliore per la Salute Pubblica nel periodo post COVID-19*. Retrieved October 15, 2022, from https://www.progettocomis.it

Research4life (2022), *CHI SIAMO*. Retrieved September 15, 2022, from https://www.research4life.it/chi-siamo/

Understanding Animal Research, *About us.* (n.d.). Retrieved August 18, 2022, from https://www.understandinganimalresearch.org.uk/about-us

Understanding Animal Research (n.d), *UAR social media house rules*. Retrieved August 18, 2022, from https://www.understandinganimalresearch.org.uk/about-us/uar-social-media-house-rules?fbclid=IwAR3Pizk2-G5hUTHPI7UoFi9VJuuxSpVBm1W7PGBB0fbaiU6qJrecpBhvQ-w

Acknowledgments

Words cannot express my gratitude to my professor and supervisor Chiara Di Benedetto for her invaluable patience and feedback. I also could not have undertaken this journey without the whole teaching staff of the Animal Care course, who generously provided knowledge and expertise. Additionally, this endeavor would not have been possible without the support from Giuliano Grignaschi, who – besides impacting and inspiring me with his work – kindly provided me with the content and materials I needed. I take this opportunity to also thank the spokespersons of the institutions mentioned in this thesis, Barbara Tiozzo e Mirko Ruzza for the Istituto Zooprofilattico Sperimentale delle Venezie, and Raffaella Giavazzi and Daniela Abbatantuono for the Istituto di Ricerche Farmacologiche Mario Negri.

I am also grateful to my classmates, friends, and partner for their editing help, late-night feedback sessions, and moral support.

Lastly, I would be remiss in not mentioning my family, especially my mother. Their belief in me has kept my spirits and motivation high during this process. I would also like to thank my cats for all the entertainment and emotional support.