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BASIC GENETIC ENGINEERING TECHNIQUES INVOLVED IN HUMAN CLONING: A NARRATIVE REVIEW

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Abstract: *Research this aim for study view ethics and morals towards practice cloning man based on study literature scientific method research used is studies literature with approach qualitative through analysis content to three journal that discusses human cloning from perspective ethics biotechnology , social ethics and morals, as well as ethics religious. Data analyzed with grouping ideas and arguments main to in themes relevant ethics. Study results show that human cloning is seen potential threaten dignity and uniqueness identity human, causing risk biological like abnormalities genetics and disorde rs development, as well as trigger problem social in the form of inequality, objectification humans and change structure social. Besides that, from corner view ethics religious, cloning man considered contra dictory with spiritual values regarding essence creation and holiness life human beings. The conclusion of study This confirm that although engineering genetics own potential significant scientific and therapeu tic benefits, the application of human cloning must be restricted in a way strict through principle clear ethics and oversight multidiscipline ry so that development technology still in line with fundamental moral, social and humanitarian values.*

Abstrak: Penelitian ini bertujuan untuk mengkaji pandangan etika dan moral terhadap praktik kloning manusia berdasarkan kajian literatur ilmiah. Metode penelitian yang digunakan adalah studi literatur dengan pendekatan kualitatif melalui analisis isi terhadap tiga jurnal yang membahas human cloning dari perspektif etika bioteknologi, etika dan moral sosial, serta etika keagamaan. Data dianalisis dengan mengelom pokkan gagasan dan argumentasi utama ke dalam tema-tema etis yang relevan. Hasil kajian menunjukkan bahwa human cloning dipandang berpotensi mengancam martabat dan keunikan identitas manusia, menimbulkan risiko biologis seperti kelainan genetik dan gangguan perkembangan, serta memicu persoalan sosial berupa ketimpangan, objektifikasi manusia, dan perubahan struktur sosial. Selain itu, dari sudut pandang etika keagamaan, kloning manusia dianggap bertentang an dengan nilai spiritual mengenai hakikat penciptaan dan kesucian hidup manusia. Kesimpulannya bahwa meskipun rekayasa genetika memiliki potensi ilmiah dan terapeutik yang signifikan, penerapan human cloning harus dibatasi secara ketat melalui prinsip etik dan pengawasan multidisiplin agar perkembangan teknologi tetap sejalan dengan nilai moral, sosial, dan kemanusiaan yang fundamental.

INTRODUCTION

Progress biotechnology in two decade final has expand possibility in manipulation material genetics, including development technique cloning as effort replicate organism life. Development the bring hope big, especially in field medical and therapeutic regenerative, however at a time bring up debate deep ethics about moral boundaries that should be guarded by modern science (Irsyadi, 2022). In study Sibarani (2024), cloning man called as one of the issue biotechnology is causing the most anxiety ethical Because touch fundamental aspects about essence human , personal identity, and dignity inherent in each individual. Because of this, study about engineering genetics based *human cloning* demand high level of caution for progress technology no leads to neglect values humanity (Suharyo, 2023).

Complexity problem ethics cloning man the more increase Because issue This No only related with dimensions scientific, but also intersecting with applicable moral, social, religious and legal aspects in society (Wahyuni, 2024). Rahmayumita (2022) emphasized that cloning man potential sue belief fundamental about man as unique and unique individuals replaced.

In perspective religious ethics, in particular Christianity, practice cloning man viewed contradictory with draft *Imago Dei* , namely belief that man created according to image and likeness Lord so that No can replicated through intervention technology (Sibarani, 2021). On the other hand, Mutik and Suciptaningsih (2020) stated that although cloning therapeutic offer benefit significant medical use embryo man as object study still cause moral dilemma because related direct with values and respect to life man since stage early (Putridisheva, 2022).

A number of study latest participate strengthen view that cloning man Still is at in a highly controversial area. Nugroho and Pramesti's (2021) study shows that majority Indonesian society tends to reject practice cloning man Because assessed potential threaten structure family traditional as well as open opportunity occurrence exploitation biological. Besides that, research Fitriani (2022) emphasized that development biotechnology must accompanied with strict and based regulations ethics so as not to threaten values humanity.

Findings the in harmony with literature international which emphasizes importance global surveillance of technology cloning remember risk medical, psychological, and social issues that may arise caused by (Hwang *et al* 2021).

METHOD

Study This use design studies literature with approach qualitative analysis focused content to three journal that discusses ethics and morals in engineering genetics and human cloning. Scope study limited to ideas, arguments and views ethics contained in third article said, so that object study in the form of content text, not practice laboratory . Materials main used is three journals that have been selected, while tools used covering device computers and applications management document for mark as well as processing data. Research done through search literature online, reading in-depth, and recording thematic use technique *document analysis.* Variables study defined through draft engineering genetics, human cloning, ethics, and morals as well used in articles The data was analyzed with method analysis content, namely grouping important statements and ideas to in themes ethical For Then interpreted in a way inductive become complete conclusion.

RESULTS AND DISCUSSION

Results

Results of the study to Literature Review: An Overview of the Ethics of Biotechnology to Cloning Humans (2024) shows that discourse cloning man until moment This Still face strong objections Because in a way direct touch problem dignity and values base humanity. Article the positioning technology cloning as a innovation that has potential big for development knowledge knowledge and medicine, but at the same time must is at in framework clear moral boundaries so as not to cause threat to identity as well as safety biological human (Pamungkas, 2022). Author confirm that without runway strict ethics and adequate supervision, development cloning man potential open room occurrence abuse technology as well as blur understanding public about meaning and value life man That alone, good from corner view ethics and social (Sutandar, 2022).

Findings in article Engineering Genetics Reviewed from Ethical and Moral Aspects in Human Cloning Studies (2022) increasingly strengthen view that practice cloning No only cause problem biological only, but also challenging moral structure and values ethics that have been This held by the community wide (Hasrianda, 2022). Author highlight potential emergence inequality social if technology cloning utilized for interest certain, such as creation man with designed characteristics in accordance will party certain, which in the end can widen canyon social and discrimination

(Rezaldi, 2024). Other risks that also highlighted is possibility occurrence disorders of the lineage as well as increasing vulnerability baby results cloning to abnormalities default, good in a way physique and genetics. Technology cloning man viewed own potential shift man from dignified beings become just object engineering biological that can formed in accordance needs and interests certai(Yulianti, E., 2024).

Studies in Review Ethical to Engineering Genetics in the Human Cloning Study (2024) shows a different approach, where the problem cloning man placed in context ethics religious, especially Christian ethics. Article This evaluate that man own position that is not can separated from spiritual values and uniqueness inherent in oneself every individual , so that No can viewed solely as object biological. Cloning man considered potential bother order the Because open opportunity duplication human beings who do not Again born through a natural process that is full of meaning theological. Another concern that also lifted is possibility occurrence damage to the structure social as well as emergence question ethical about rights, identity and status a clone in the middle society (Yulianti , 2024).

If the third findings the compared, it looks that everything move at a point relative conclusions the same , namely the need strong moral oversight in every effort development cloning human. The difference lies in the focus of each journal: articles first emphasize urgency ethics biotechnology as controller scientific developments, articles second highlight possible moral and social risks arise, while article third strengthen position religious ethics as assessor main in determine may or whether or not a technology applied . When the third perspective this assembled in a way comprehensive, formed description that issue cloning man demand approach multidisciplinary, because the impact no only touch realm scientific, but also values more humanity broad and fundamental.

Table 1 : Summary Concept and Discussion Cloning Man

No	Source	Study	Findings
1	Biotechnology Ethics Review of Human Cloning	Bio Ethics Technology	Human cloning is seen as potentially threatening human dignity & identity.
2	Genetic Engineering Reviewed from an Ethical and Moral Perspective in Human Cloning Studies	Ethics and morals of genetic engineering	Cloning is considered to raise biological and moral issues, including social risks, damage lineage, and potential genetic disorders.
3	Ethical Review of Genetic Engineering in Human Cloning Studies	Religious ethics (Christian)	Cloning is considered contrary to spiri tual values and human uniqueness, & has the potential to disrupt the social structure and moral status of a clone.

Based on the three sources in Table 1, human cloning is seen as raising ethical, moral, and spiritual dilemmas. From a biotechnology ethics perspective, cloning threatens the dignity and uniqueness of human identity because it treats humans as objects that can be manipulated. Studies of the ethics and morals of genetic engineering highlight the biological risks (e.g., damage to the lineage, genetic abnormalities) and the social impacts that can disrupt social order. Meanwhile, Christian religious ethics considers cloning to be contrary to spiritual values regarding the uniqueness of human creation and could affect social structures and the moral status of clones. In conclusion, these three perspectives consider human cloning problematic and require in-depth consideration before it can be justified.

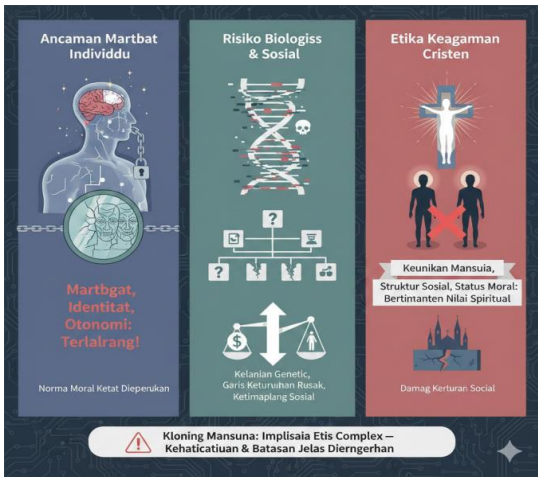

Figure 1 *:* Summary Concept and Discussion Cloning Man

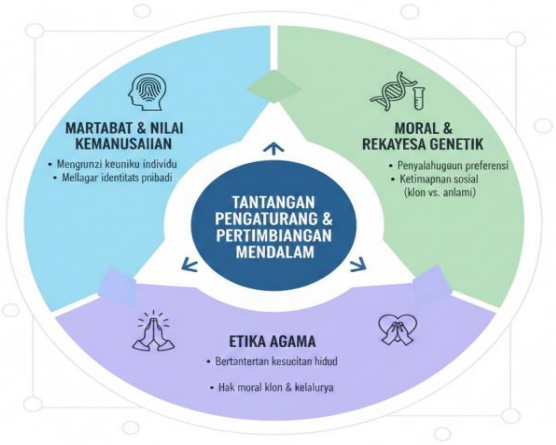

Figure *2 :* Ethical Review and Aspects Social Cloning Man

Table 2 : Ethical Review and Aspects Social Cloning Man

No	Aspect	View	Impact Social
1.	Human dignity and values	Cloning is considered to reduce the unique value of individuals and cross moral boundaries.	Loss of public understanding of the value of life and personal identity
2.	Morals and genetic engineering	The risk of misusing technology to create humans according to one's wishes	Social inequality and the emergence of a new class between “natural” humans and “clones”
3.	Religious ethics Human Cloning Studies	Cloning is seen as contradictory to teachings that emphasize the uniqueness and sanctity of human life .	Questions regarding the moral rights of clones and potential changes in family and community structures

In the results of table 2 and figure 2 about review ethics and aspects social cloning humans can refer to the designation A description of three main aspects highlighted in the debate over human cloning: human dignity, genetic engineering morals, and religious ethics. From the perspective of human dignity and values, human cloning is seen as potentially reducing individual uniqueness because it allows humans to be replicated through standardized technological processes. This view risks shifting the intrinsic value of humans and blurring the line between dignified subjects and technological objects, thus affecting how society values life and human rights.

From a moral and genetic engineering perspective, human cloning raises serious issues related to the potential misuse of the technology for non-therapeutic purposes, such as selecting for specific genetic traits based on social standards or economic interests. Furthermore, from a social ethics perspective, the existence of cloned humans has the potential to create identity and psychological conflicts, both for the cloned individual and for their social environment. Unclear social roles, kinship relationships, and societal expectations of the cloned individual can impact personality development, self-esteem, and psychosocial well-being. This situation demonstrates that the impact of cloning is not only biological, but also touches on complex psychological and sociocultural dimensions.

From a religious ethics perspective, human cloning is generally viewed as contradictory to teachings that emphasize the sanctity of life, the uniqueness of God's creation, and the involvement of divine will in the process of human creation. The act of creating humans through technological engineering is considered to have the potential to exceed the limits of humankind's role as created beings, while also raising fundamental questions about the moral status, human rights, and the legitimacy of the cloned individual's family and social relationships.

Table and Figure 3 illustrate that each type of cloning presents distinct ethical concepts and challenges. Reproductive cloning is the most controversial because it produces genetically identical individuals and raises issues of dignity and biological risk. Therapeutic cloning is considered beneficial for medicine, but continues to spark debate regarding the use of embryos and the potential commercialization of the human body. Meanwhile, genetic cloning, which only duplicates a segment of DNA, is considered the most acceptable, although it still raises concerns about excessive genetic manipulation. Overall, the greater the involvement of cloning in the creation of a living organism, the greater the ethical issues that arise.

CONCLUSION

Based on results review to third journal , concluded that engineering genetics in the context of human cloning is seen as demanding field supervision strong ethics Because potential bother dignity , identity and status human beings . Through method studies literature , research This show that third article agreed put cloning man as practice that is full of risk , good from side biological , social , and moral, so that objective study directed For understand boundaries ethics that must be implemented before technology the develop more far away . In a way overall , findings study confirm that every development biotechnology must built on clear moral values so as not to deviate from principle humanity.

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