HUMAN RIGHTS YOUTH ADVOCACY INC

SEPT. 2023 | VOL. 2

HRYA MAGAZINE

TABLE OF CONTENTS

SECTION 1

NEW INITIATIVES

FIRST AID COMMUNITY EDUCATION

HRYA In-person members are hosting first aid community education seminars throughout the Gulf Coast region of Florida! We'd love to see you at one of our events.

LGBTQ+ MOVIE NIGHT

HRYA hosted an LGBTQ+ movie night in collaboration with an in person queer support group. Over 25 youth attended the event, and there was discussion questions and panels after the movie ended,

FEMININE HYGIENE PRESENTATION

HRYA presented topics of feminine hygiene, HPV, and menstrual education to youth in rural Chongqing as a way to de-stigmatize certain diseases and raise awareness for female hygiene.

FIRST AID PRESENTATION

Transforming Lives Through First Aid Education

HRYA In person members gave a first aid presentation to library patrons of Fruitville Library, Sarasota, Florida on September 9th, 2023. They used knowledge from the 3 hour first aid training they had received back in August in collaboration with Landes Emergency Training Services to teach the audience about first aid action steps!

Collaborating with LETS

The hour-long presentation covered action steps in the case of heart attack, cardiac arrest, Heat stroke, excessive bleeding, seizures, and more!

Presenters also gave away free first aid kits to event attendees.

This event and all future first aid presentation events are possible because of Landes Emergency Training Services.

LGBTQIA+ MOVIE NIGHT

BUILDING A SUPPORTIVE COMMUNITY

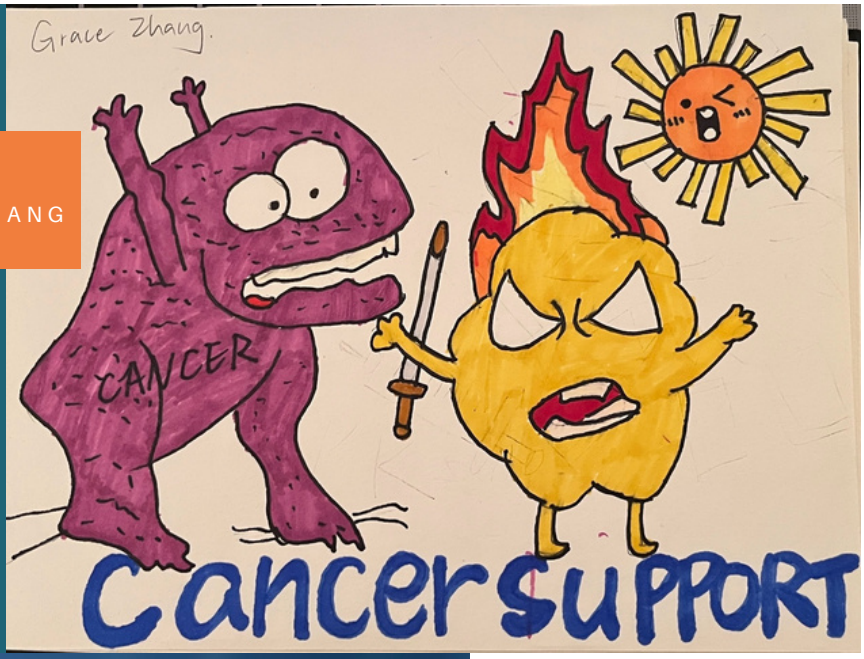
> we should use a torch and set ablaze the entangled thorns so that the colorful castles can continue their beautiful existence.
> We as viewers doubt the diagnosis results given to the queer community in the film, but in reality, many people are forced to accept cognitive corrections
>
> **- CECILIA L.**

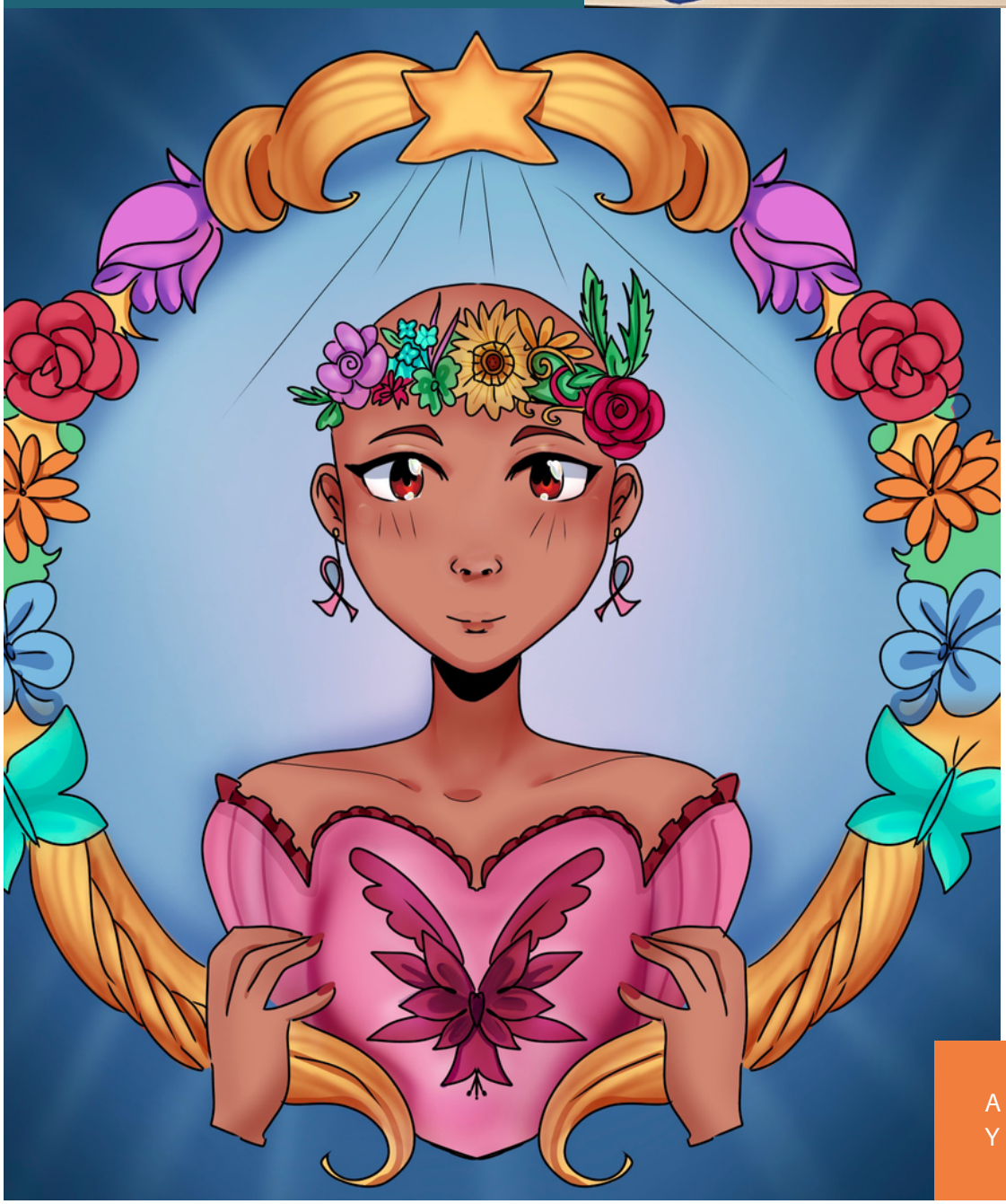
HRYA MAGAZINE

@HRYA.ORG
NOW FOCUS ON:

ART GALLERY

ART BY:
GRACE ZHANG

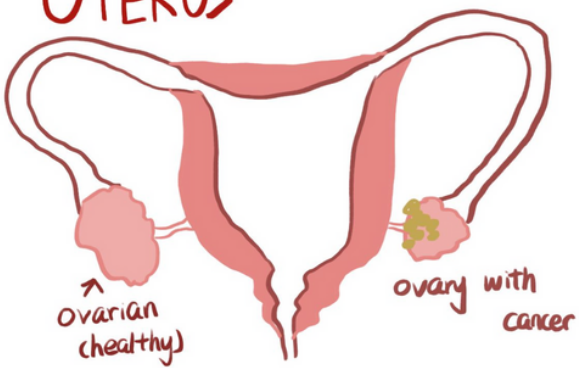




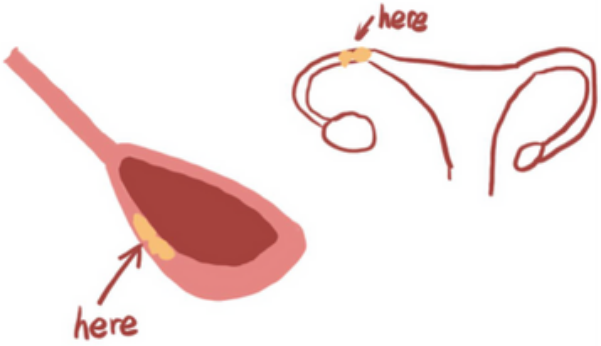
ART BY:
YARU CAO

Art gallery team is a section under HYRA. They believe in the power of creativity and artistry to make a positive impact on society. They are a diverse and inclusive team that welcomes talented volunteers from all corners of the world. Their mission is to use art as a platform to address and shed light on various social topics that matter to us all.

UTERUS



EPITHELIAL OVARIAN CANCER



Causes and Risk factors

- not clear
- smoking
- exposure to carcinogens
- old age
- family genetics

Symptoms and timeline

Stage 1 → Stage 2 → Stage 3

Stage 4

~~Prevention~~ A lower chance and treatment

(No known way)

- taking birth control pills } 50% lower risk
- avoiding carcinogens
- healthy diet

- Surgery
- Chemotherapy
- targeted therapy immunotherapy
- radiation therapy
- hormone therapy

ART BY:
CINDY HUANG

Other relevant information

21000 → every year!!

14000 → die

Section 2

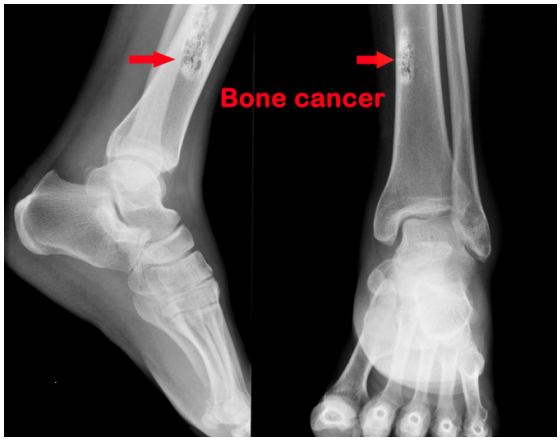
Cancer Advocacy

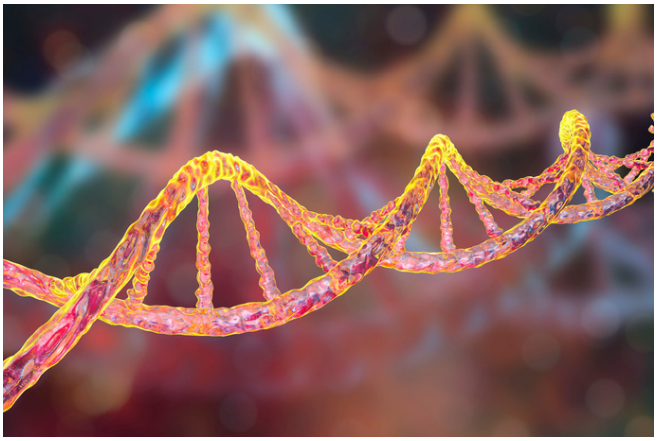
An Overview of Bone Cancer

AUTHOR - YOULAN LI

Abstract

Bone cancer refers to a specific type of cancer that occurs in any bone in the human body, in particular, affects the pelvis or the long bones in the limbs. Various bone cancers affect different groups of people in the population, such as chondrosarcoma which tends to have an impact on adults than children. Treatments for bone cancer depend on the type of bone cancer, some of the common treatments include surgical removal, chemotherapy, and radiation therapy. Even though the exact causes of the majority of bone cancer remain unknown to doctors and researchers, a couple of bone cancers have been proven to be linked to hereditary influences, whereas some of the rest of bone cancers are related to radiation exposure.





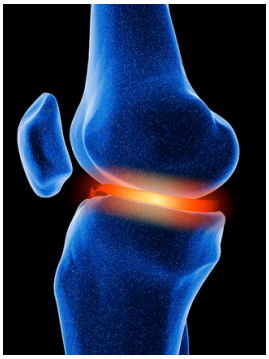
Pathophysiology

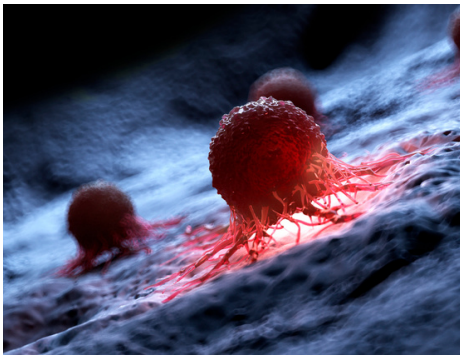
In general, bone cancer is defined by the location where it develops. As a result, the stages of bone cancer development can be classified as primary bone cancers, which are the cancers that initially occur in the bone itself. In contrast, the cancers that are later spread into the bones are named secondary or metastatic bone cancer, such as tumors in the breast, lung, and prostate tumors are some of the most prevalent locations for metastasizing into the bone. According to the statistics estimated by the American Cancer Society and Mayo Clinic, there are about 3,970 new cases diagnosed (2,160 in males; 1,810 in females), with less than 1 percent of all cancers. While some individuals may die of bone cancer, a significant proportion of patients achieve full recovery. The five-year relative survival rate for bone cancer stands at around 66.8%, reflecting the percentage of patients still alive five years after diagnosis.

Like many other cancers, bone cancer initiates when healthy bone cells undergo abnormal changes and proliferate uncontrollably, thus forming a mass known as a tumor. Such tumors in the bone have been sorted as either cancerous (malignant) or benign (non-cancerous). A malignant tumor can invade immediately into other parts of the body, causing damage to the bone and may spread to nearby tissues. If tumor cells enter the bloodstream, they can spread and proliferate to distant organs, particularly the lungs, through the process of metastasis. While a benign tumor may also grow, it doesn't spread to other areas of the body. Even though it remains localized in the bone, a benign tumor can gain considerable size, exert pressure on surrounding tissues, weaken the bone, and lead to fractures.

Types of Primary Bone Cancer

The first type of primary bone cancer is osteosarcoma, also known as osteogenic sarcoma. Osteosarcoma is the most prevalent type of bone cancer and typically starts in bone cells in limbs or pelvis. It affects individuals between 30 and 60, exhibiting a higher occurrence in males than females. Osteosarcoma is further classified into three subtypes based on the microscopic appearance of bone cells. Low-grade osteosarcoma demonstrates gradual growth, with the majority of bone cells appearing normal, only a small fraction shows active division. Intermediate-grade osteosarcoma displays slightly accelerated growth compared to the low-grade subtype. Unlike low and intermediate-grade osteosarcoma, high-grade osteosarcoma demonstrates rapid growth. Among children and adolescents, high-grade osteosarcoma is the most frequently occurring. The overall five-year survival rate for all osteosarcoma subtypes averages around 60%, as reported by the American Cancer Society. Secondly, chondrosarcoma originates from cartilage cells and represents the second most common type of this bone cancer. The chances of getting chondrosarcoma increase with age, thus this type rarely emerges in children and adolescents. Even though chondrosarcoma predominantly develops in the pelvis and limbs, with less frequent occurrences in the ribs, skull, chest, shoulder blades, larynx, and trachea, any part of the body containing cartilage is susceptible to the attack of cancer cells. The overall five-year survival rate for chondrosarcoma stands at 75.2%. Except for these 2 common types, there are also other types of cone cancer, such as ewing tumor, fibrosarcoma, malignant fibrous histiocytoma, giant cell tumors of the bone, chordoma, and more.





Diagnosis & Treatment

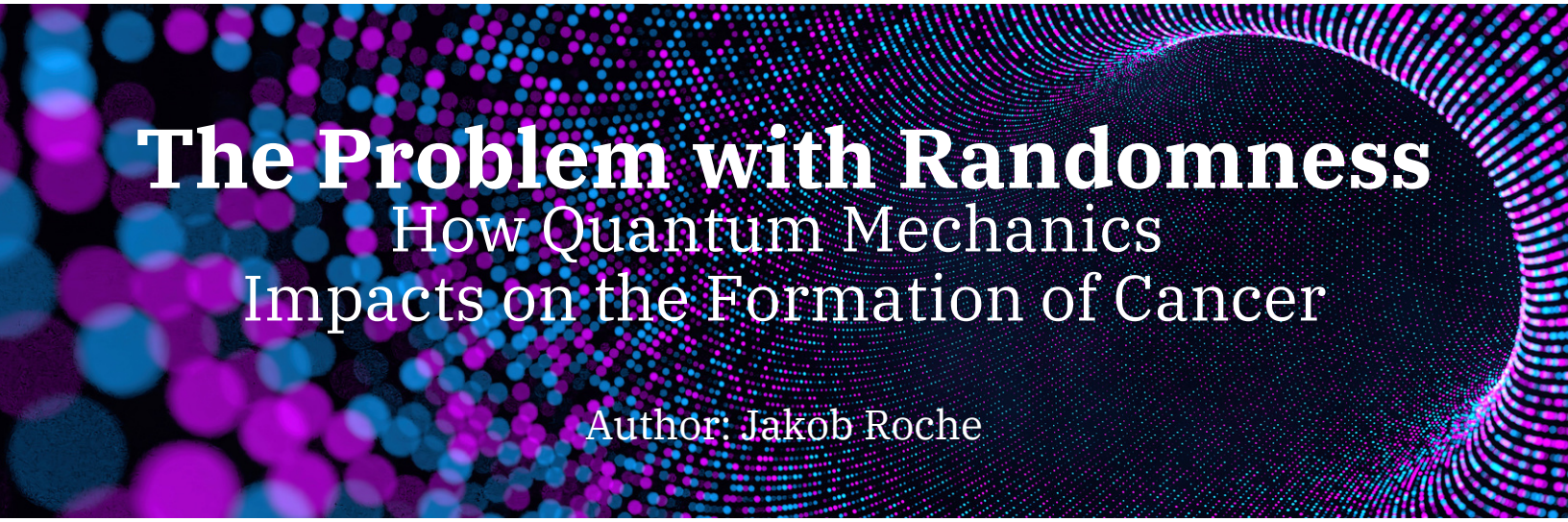
The diagnosis of bone cancer involves examining the patient's health history and the results from the physical exam. Diverse imaging techniques aid in this diagnosis, with X-ray imaging being the initial tool due to its ability to distinctly reveal most bone tumors. Magnetic resonance imaging (MRI) uses radio waves to produce cross-sectional images of organs, tissues, bones, and blood vessels, and more. These images are then transformed by a computer into a 3D representation. MRI plays a pivotal role in determining whether the cancer has spread to nearby tissues. CT scans, biopsies, and bone scans are some of the other valuable techniques used Tailoring treatment options is contingent upon a range of factors, including the cancer type, size, location, stage, the patient's age, and overall health. Surgical intervention, chemotherapy, radiation therapy, cryosurgery, and targeted therapy are other methods to treat bone cancer other than X-ray and MRI.

Discussion

In essence, bone cancer originates from aberrant cells within the body's bones or cartilage. Different types of bone cancer have different impacts on different age groups, with different five-year survival rates as well. Imaging tools such as X-rays and MRIs are used to diagnose bone cancer and determine specific details (e.g., locations, and sizes). New research from the Journal of Bone Oncology has revealed a new drug called 'CADD522' that blocks a gene associated with spreading the cancer. Ongoing studies are currently discovering the fundamental factors and mechanisms, promoting treatment approaches, and enhancing the overall well-being of individuals living with bone cancer.

Works Cited

"Bone cancer - Illnesses & conditions." NHS inform, 13 February 2023, https://www.nhsinform.scot/illnesses-and-conditions/cancer/cancer-types-in-adults/bone-cancer. Accessed 11 August 2023.
"Bone cancer - Symptoms and causes." Mayo Clinic, 11 May 2023, https://www.mayoclinic.org/diseases-conditions/bone-cancer/symptoms-causes/syc-20350217. Accessed 11 August 2023.
"Bone Cancer: Symptoms, Signs, Treatment, Causes & Stages." Cleveland Clinic, 8 November 2021, https://my.clevelandclinic.org/health/diseases/17745-bone-cancer. Accessed 11 August 2023.
"Diagnosis of bone cancer." Canadian Cancer Society, https://cancer.ca/en/cancer-information/cancer-types/bone/diagnosis. Accessed 11 August 2023.
"Key Statistics About Bone Cancer | Bone Cancer Statistics." American Cancer Society, 12 January 2023, https://www.cancer.org/cancer/types/bone-cancer/about/key-statistics.html. Accessed 11 August 2023.
"Types of Bone Cancer: Common, Rare and More Varieties." Cancer Treatment Centers of America, 8 June 2022, https://www.cancercenter.com/cancer-types/bone-cancer/types. Accessed 11 August 2023.



The Problem with Randomness

How Quantum Mechanics Impacts on the Formation of Cancer

Author: Jakob Roche

Abstract

A quantum mechanical view of cancer is one that is rarely discussed. The effects that quantum phenomena have on the formation of cancer are even less studied. This paper brings together a wide variety of research, including the works of some of the greatest scientific minds of our time. The paper seeks to evaluate whether quantum tunnelling significantly impacts the formation of cancer-causing mutations to direct future experimental research. In addition, it tries to create an easily digestible resource that covers both the quantum mechanical and the biological foundations of the subject in a way that requires no prior knowledge of these concepts to understand. This is necessary because the data reviewed suggests that there may be a significant likelihood that quantum tunnelling is potentially a major cause of cancer, justifying future research.

Introduction Reality is solid. This is our most basic way of understanding the world around us. One can place their hand on a desk without it falling through. Most physical phenomena, be it a fly landing on a table or the colliding of planets lightyears away from us, seem to have an underlying truth to them: they are the product of the actions of solid objects. Even something as pervasive as air is usually seen as something ethereal: science tells us that there should be something there – we breathe it, after all – but, since one cannot see air, we think of it as if it is nonexistent. It is as if for something to seem real, it must be solid. Perhaps this is why it is so jarring to be told otherwise. Advancements in physics have shown that, in fact, not even solids are truly solid. While we have known about the existence of atoms since the early 1800s, quantum mechanics asserts that matter is in a state of constant flux. But what exactly does this mean in terms of cancer? Does it pose a risk to the general population? To find this out, we must first dissect this quantum physical view of matter.

Physical At its very core, quantum mechanics is based on a few key ideas. One of the most important of them is known as Heisenberg's Uncertainty Principle. In our world of solid masses, measuring the speed of an object is relatively easy. A policeman, for example, can measure the speed of a car using machinery that is widely available. However, the more one zooms in on the world around them, the harder it is to accurately measure the speed and position of an object. If we were to isolate a minuscule particle, such as an electron, we would find that it is impossible to accurately calculate both its speed and position. Despite our best efforts, we can only calculate one of these values precisely. This is where the Uncertainty Principle comes in. It tells us that there is this trade-off between speed and position. (Busch et al., 2007). The more we know about a particle's speed, the less we know about its position and vice versa. In effect, this means that we can never know exactly where a particle is. If we try to measure both the speed and position of a particle, the results become blurred (Schirber, 2009), that is, both do not represent the actual position of the particle, but rather an approximation of the true value. To understand this concept more, let us go back to the electron. Keeping the Uncertainty Principle in mind, let's construct a model of the behaviour of electrons when they are part of an atom. Thinking about electron motion harkens back to a familiar model of the atom: one where electrons neatly orbit the nucleus in circular paths, not unlike how the planets in our solar system orbit the sun (Schwarz, 2013).

Let us try to apply the Uncertainty Principle to this model of the atom. We know that the electrons in an atom, being subatomic particles, are subject to the Uncertainty Principle. One can measure the position of every electron in an atom, but this poses a problem. Knowing only the positions of the electrons makes it impossible to predict their future motion around the nucleus. Any scientific model worth its salt must be able to make predictions. After all, trying to predict future events is one of the reasons why science exists.

However, we cannot use only the speed of the electron, either. One cannot predict where a car is going to be based on the statement that "It is traveling at 100 miles per hour." Similarly, one cannot predict the future position of an electron given only its speed. This leaves us with one alternative: to use the blurred values given when we try to measure both speed and position.

Naturally, neither of the blurred values will be very precise. But they will tell us the general location of where the electron will be. In order to use this for any predictive models, we must harness the power of an idea that lies at the heart of quantum mechanics: the Probability (Rédei & Summers, 2007).

An electron in a water molecule that is in a drop of rain falling over Spain will almost certainly not appear on the other side of the universe. If we took blurred measurements of the electron's position and speed, we could piece together where the electron is likely to be located. (Dirac, 1926) We can picture this space where the electron is probably located as a spherical shell encasing the atom. The further out we go from this shell, the less likely the electron is to be positioned there. The same applies for the further in we go. If we combine these different layers of probability surrounding the atom, we get a sphere – a 'cloud' of probability that gradually fades out at the edges. We can use this to predict the most likely position of the electron at any given moment. This is widely accepted to be the true model of the atom – the aptly named Electron Cloud Model (Vlasov, 1993). However, the outer edge of the electron cloud never really tapers off completely. While the electron will almost certainly not be a few inches away from the atom – an almost astronomical distance for a subatomic particle – the probability of it happening never quite reaches zero. After all, we can never be exactly certain where a particle is until its position is measured. All this information points toward one thing: a more fluid, gelatinous picture of reality, with the location of particles being hazy rather than clearly defined. Our typical view of the world is significantly altered when this is taken into account. To understand how this radically changes our view of cancer, we must also understand the chemical basis of genetics.

Biological

DNA, or Deoxyribonucleic Acid, holds the key information necessary to construct biological forms. The precise process that genes follow is somewhat more complex than this simple statement would imply, however.

It all starts in the nucleus. The nucleus lies inside our cells and is what sets our cells apart from that of bacteria and other simple organisms (Vellai & Vida, 1999). The heart of the nucleus contains a gigantic mass of genetic information – about 6 feet of DNA, all intertwined in a tiny ball that can only be described as what looks like a knitting project gone terribly wrong. This genetic tangle works out to be about 3 billion base pairs. (Nurk et al., 2022) But what exactly is a base pair?

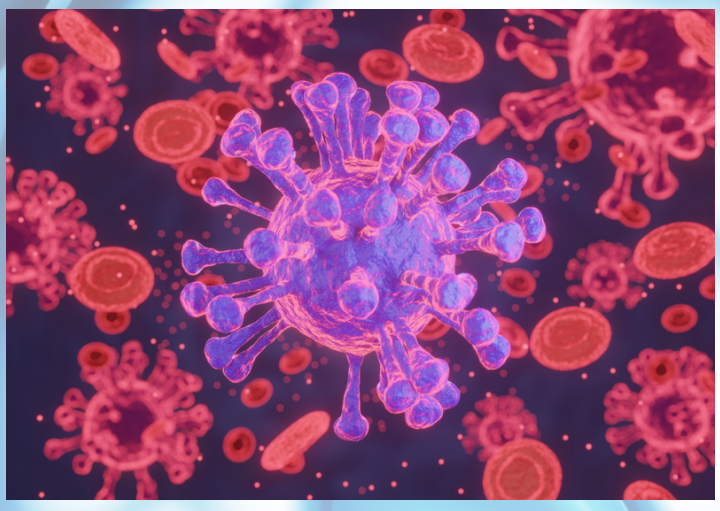
DNA is a polymer. That is, it is made up of long chains of molecules that are generally referred to as monomers. The monomer that is specific to DNA and other nucleic acids are called nucleotides. A single nucleotide consists of a chain of atoms referred to as a phosphate group, because of the presence of phosphorous atoms in the structure (Baur, 1974). This phosphate group is bound to a simple sugar, which gives the nucleotide structure. The last part of the nucleotide is the most crucial: the nitrogenous base. There are 4 different nitrogenous bases in DNA, all with slightly different atomic structures (Watson & Crick, 1953). These bases can be thought of as adding different ‘flavours’ to the ucleotides. The nitrogenous bases directly correspond to the various types of nucleotides, which we will get to a little later. All in all, there are around 35 atoms in a nucleotide on average. This varies a small amount depending on which nitrogenous base a specific nucleotide has in it. The phosphate group sticks out of each nucleotide and binds itself to another nucleotide, which in turn is bound to another, and so on and so forth. In the end, this forms a long chain of nucleotides (Calladine & Drew, 1992). But this is not enough to form DNA. There needs to be another chain of nucleotides. In order to successfully bond with the initial chain, the new chain cannot be a copy of the initial. In fact, it must be the exact opposite. This leads us back to the nitrogenous bases.

The four nitrogenous bases, A, C, T, and G (which correspond to the chemical names of Adenine, Cytosine, Thymine and Guanine) have specific preferences when it comes to pairing up. A will only bond with T, and C will only bond with G. So, if we had one strand of DNA that was comprised of the letters ATCGA, it could only bond with the strand that was made of the letters TAGCT. When the two strands bond, they coil around each other and form the familiar double helix of DNA. (Watson & Crick, 1953) A base pair is a combination of two bonded nucleotides, such as an A and a T or a C and a G. All of the DNA in a human cell was there when that person was born. It originally came from their parents and was copied into every cell formed since. In order to utilize this DNA, every cell comes equipped with the tools to read DNA and turn it into useful materials: proteins. However, DNA is simply too massive to ever leave the nucleus. Therefore, the first step a cell must take to make use of DNA is to first make a short copy. (Bramham & Wells, 2007) If a cell e cell needs to make a certain protein, it will make a copy of the small section of DNA that encodes for that protein. But it only makes a copy of one of the sections on one of the strands. So, the copy the cell makes is not really DNA anymore. It is Messenger RNA, or mRNA. (RNA, or Ribonucleic Acid, is the single-stranded cousin of DNA.) This short segment of mRNA can travel freely outside of the confines of the nucleus, and it eventually navigates to the cell's protein-making factories, the ribosomes. mRNA neatly slides into the ribosome, which itself is made of two strands of RNA (which are called Ribosomal RNA, or rRNA) joined together. (Steitz, 2008) In order to find out what happens next, we must recall what exactly a protein is. Proteins are like the building blocks of tissues. We usually think of them in terms of muscle (bodybuilders drink protein shakes), but proteins are used to build everything from the skin to the interior walls of the stomach. Like nucleic acids, proteins are also polymers. Instead of nucleotides, proteins are constructed from long chains of amino acids. (Richardson, 1981) Amino acids are delivered into our body when it breaks down anything containing proteins.

While one usually thinks of animal products as the type of food that harbours proteins, plant products have them as well, albeit in lower concentrations most of the time. Now, we can return to the ribosome. Once mRNA slides into the ribosome, a protein can begin to be made. This process begins with Transfer RNA or tRNA. (Hopper & Phizicky, 2003) Each unit of tRNA has three nucleotides attached to its bottom. This is referred to as an anti-codon. A codon is a set of three nucleotides on mRNA, so an anti-codon must be its opposite. A codon and its matching anti-codon can bond together much like two strands of DNA do. For example, the codon CCG bonds with the anti-codon GGC (Cochella & Green, 2005). The second major part of tRNA is the top part, which attaches to a specific amino acid. The amino acid carried by tRNA is determined by the anti-codon on the bottom, and, by extension, the specific codon on mRNA that the anti-codon bonds to. tRNA moves to the ribosome and hooks into a specialized 'docking port' that leads down through the ribosome directly to the strand of mRNA. The tRNA that has the anti-codon that corresponds to the first codon of mRNA on the strand docks into the ribosome first, bonds with the mRNA, and then deposits its amino acid (Cochella & Green, 2005). It then undocks from the mRNA strand, making room for more tRNA to travel to the ribosome and adds amino acids to a chain in the order that is specified by mRNA. In this way, proteins are formed. The newly formed amino acid chain folds in on itself in intricate ways. The specific folding patterns of proteins are key to their functions in the body (Orengo et al., 1999). However, this contains a potential for mistakes in the protein manufacturing system: the overreliance on singular codons. Since proteins fold using the atomic bonds between amino acids, just a single letter switch in a codon can bring the wrong amino acid into the wrong place in a protein. (Maquat, 2001) In this way, a single letter of a codon can cause the protein to misfold and, in the best-case scenario not be able to carry out its function efficiently, or, in the worst case, lethally impact the organism. This change in DNA structure is known as a mutation. If the proteins regulating the changes cells undergo to divide fail to function, a particularly disastrous outcome can occur: cancer. (Hartwell & Kastan, 1994)

Normally, during the cell cycle, there are specific mechanisms to prevent cells with mutated DNA from spreading in the organism. This regulates the spread of mutation. Specifically, certain proteins go to work ensuring that the cell that is going to clone itself and divide has intact DNA. If not, the cell is sent instructions to self-destruct. (Lawen, 2003) However, the regulatory protein system that is crucial to preventing the spread of mutations itself can be compromised by a mutation. This can be viewed as a fatal flaw in the cell cycle. Cells that evade self-destruction, or apoptosis, via a mutation, are freed from the constraints of the cell cycle. (Wong, 2011) They divide much faster than the surrounding normal cells, soon forming a colony of mutated cells inside the organism that continues to grow. This is what we refer to as cancer. There are many causes of mutation, ranging from mistakes in the cell's routine copying of DNA to radiation. (Little, 2000) However, the impact of quantum mechanics on mutation, and, subsequently, cancer, has garnered little attention. The question still stands: How much of a role does quantum mechanics play in the formation of cancer? The answer may lie in a seemingly unexplainable phenomenon known as quantum tunnelling. If one wants to change something, one needs energy. One must heat water in order to bring it to a boil, and an engine needs fuel to work. Despite this seemingly universal property of matter, quantum mechanics provides a workaround, provided one is patient enough. Let us go back to the electron cloud and the Uncertainty Principle. In classical mechanics, if a particle leaves an atom, there must be a force moving it outwards. However, in quantum mechanics, things are a bit different. This is due to the clouds of probability that surround these subatomic particles. Akin to how electrons have clouds of probability governing where they can be found, other particles such as protons also have such clouds around them as well (The Proton Radius Problem on JSTOR, n.d.).

As we found previously, there is a very low, but nonzero, chance that the particle will be found on the outer fringes of its probability cloud. Sometimes, the cloud extends out of the atom itself, and the particle's position can be measured to be outside the atom itself. Physicists refer to this phenomenon as Quantum Tunneling. In this way, particles can move without having any force applied to them. (Grifoni & Hänggi, 1998) While this phenomenon is usually inconsequential to our daily lives, it could potentially mean disaster for our DNA. While there are billions of atoms in a strand of DNA, the number of atoms in a single nucleotide is under 50. So, in a nucleotide, every atom counts. On top of this, DNA uses relatively simple atoms. The heaviest atom in DNA is phosphorus, with 15 protons (Valsami-Jones, 2015). The rest of the atoms in DNA have even lower atomic masses. If a Quantum Tunneling event occurred with a proton escaping an atom in a nucleotide, compromising that atom's role, it very likely would make the nucleotide malfunction. If an e-nucleotide cannot be read, that codon does not work as intended. And, as expressed before, a single codon can cause an entire protein to malfunction (Studer et al., 2013). Even if a tunnelling event happened once per billion nucleotides, or 6 times in the DNA of every cell, there are still around 30 trillion cells in the average adult human (Sender et al., 2016). Assuming that the average chance of a proton tunneling event is one in a billion over the lifetime of a cell, that's one hundred and eighty trillion mutations per body. If the mutations are truly random, this means that 30,000 genomes' worth of nucleotides are mutated.



While this is just a thought experiment to illustrate how much of an impact quantum tunnelling might have on our DNA even at an extremely low probability of it happening (In the range of 0.000000001%), the thought still raises some questions. Are tunnelling events truly random? Can some pattern be discerned? If so, why does tunnelling happen more in some areas of the genome and less in others? Are there things we can do to mitigate the risk of tunnelling events, possibly making cancer less frequent? The truth is, we don't really know. Many more experiments are needed to answer these questions about phenomena that could be secretly pulling the strings behind one of our society's most feared diseases. The problem with randomness, it seems, is that we don't know enough to protect ourselves from it. However, one ray of hope for a better understanding of cancer comes from researcher Megan Wolfe of Drexel University, who confirms our suspicions about tunnelling. She says that, while the probability of a proton tunnelling event is low, it is likely that such events do take place with some frequency, and that they could be a cause of diseases such as cancer. Conclusion Despite the significant lack of data surrounding spontaneous DNA mutations caused by quantum tunnelling, it seems that the phenomenon does not play a negligible role in mutating DNA. It appears that a single codon in one of the many that play a role in forming regulatory proteins being compromised by tunnelling is possible, if not probable. The next step in studying this phenomenon should be the evaluation of exactly how much of a role it plays in the formation of cancer. It very well may be one of the governing forces in its proliferation, affecting countless lives. If this were proven, it would significantly impact the way we understand the disease and ultimately, the way we try to cure it.

References

Baur, W. H. (1974). The geometry of polyhedral distortions. Predictive relationships for the phosphate group. Acta Crystallographica, 30(5), 1195–1215. https://doi.org/10.1107/s0567740874004560

Bramham, C. R., & Wells, D. G. (2007). Dendritic mRNA: transport, translation and function. Nature Reviews Neuroscience, 8(10), 776–789. https://doi.org/10.1038/nrn2150

Busch, P., Heinonen, T., & Lahti, P. (2007). Heisenberg's uncertainty principle. Physics Reports, 452(6), 155–176. https://doi.org/10.1016/j.physrep.2007.05.006

Calladine, C. R., & Drew, H. R. (1992). Understanding DNA: the molecule and how it works. http://ci.nii.ac.jp/ncid/BA19208973

Cochella, L., & Green, R. (2005). An active role for TRNA in decoding beyond Codon:Anticodon pairing. Science, 308(5725), 1178–1180. https://doi.org/10.1126/science.1111408

Dirac, P. a. M. (1926). Quantum mechanics and a preliminary investigation of the hydrogen atom. Proceedings of the Royal Society of London, 110(755), 561–579. https://doi.org/10.1098/rspa.1926.0034

Grifoni, M., & Hänggi, P. (1998). Driven quantum tunneling. Physics Reports, 304(5–6), 229–354. https://doi.org/10.1016/s0370-1573(98)00022-2

Hartwell, L. H., & Kastan, M. B. (1994). Cell cycle control and cancer. Science, 266(5192), 1821–1828. https://doi.org/10.1126/science.7997877

Hopper, A. K., & Phizicky, E. M. (2003). tRNA transfers to the limelight. Genes & Development, 17(2), 162–180. https://doi.org/10.1101/gad.1049103

Lawen, A. (2003). Apoptosis an introduction. BioEssays, 25(9), 888–896. https://doi.org/10.1002/bies.10329

Little, J. B. (2000). Radiation carcinogenesis. Carcinogenesis, 21(3), 397–404. https://doi.org/10.1093/carcin/21.3.397

Maquat, L. E. (2001). The power of point mutations. Nature Genetics, 27(1), 5–6. https://doi.org/10.1038/83759

Nash, L. K. (1956). The origin of Dalton's chemical atomic Theory. Isis, 47(2), 101–116. https://doi.org/10.1086/348480

Nurk, S., Koren, S., Rhie, A., Rautiainen, M., Bzikadze, A. V., Mikheenko, A., Vollger, M. R., Altemose, N., Uralsky, L., Gershman, A., Aganezov, S., Hoyt, S. J., Diekhans, M., Logsdon, G. A., Alonge, M., Antonarakis, S. E., Borchers, M., Bouffard, G. G., Brooks, S., . . . Phillippy, A. M. (2022). The complete sequence of a human genome. Science, 376(6588), 44–53. https://doi.org/10.1126/science.abj6987

Oppenheim, J., & Wehner, S. (2010). The uncertainty principle determines the nonlocality of quantum mechanics. Science, 330(6007), 1072–1074. https://doi.org/10.1126/science.1192065

Orengo, C. A., Todd, A. K., & Thornton, J. M. (1999). From protein structure to function. Current Opinion in Structural Biology, 9(3), 374–382. https://doi.org/10.1016/s0959-440x(99)80051-7

Rédei, M., & Summers, S. J. (2007). Quantum probability theory. Studies in History and Philosophy of Modern Physics, 38(2), 390–417. https://doi.org/10.1016/j.shpsb.2006.05.006

Richardson, J. S. (1981). The anatomy and taxonomy of protein structure. In Advances in Protein Chemistry (pp. 167–339). https://doi.org/10.1016/s0065-3233(08)60520-3

Schirber, M. (2009, January 16). Quantum Blurring. Physics. https://physics.aps.org/story/v23/st2

Schwarz, W. H. E. (2013). 100th anniversary of Bohr's Model of the Atom. Angewandte Chemie, 52(47), 12228–12238. https://doi.org/10.1002/anie.201306024

Sender, R., Fuchs, S., & Milo, R. (2016). Revised estimates for the number of human and bacteria cells in the body. PLOS Biology, 14(8), e1002533. https://doi.org/10.1371/journal.pbio.1002533

Steitz, T. A. (2008). A structural understanding of the dynamic ribosome machine. Nature Reviews Molecular Cell Biology, 9(3), 242–253. https://doi.org/10.1038/nrm2352

Studer, R. A., Dessailly, B. H., & Orengo, C. A. (2013). Residue mutations and their impact on protein structure and function: detecting beneficial and pathogenic changes. Biochemical Journal, 449(3), 581–594. https://doi.org/10.1042/bj20121221

The proton radius problem on JSTOR. (n.d.). https://www.jstor.org/stable/26039774

Valsami-Jones, E. (2015). Phosphorus in environmental technology: principles and applications. Water Intelligence Online. https://doi.org/10.2166/9781780402758

Vellai, T., & Vida, G. (1999). The origin of eukaryotes: the difference between prokaryotic and eukaryotic cells. Proceedings of the Royal Society B: Biological Sciences, 266(1428), 1571–1577. https://doi.org/10.1098/rspb.1999.0817

Vlasov, A. D. (1993). The Schrödinger atom. Physics-Uspekhi, 36(2), 94–99. https://doi.org/10.1070/pu1993v036n02abeh002132

Watson, J. D., & Crick, F. H. C. (1953). A Structure for Deoxyribose Nucleic Acid. Nature.

Wolfe, M. (2013). Quantum Tunneling in DNA. Drexel University.

Wong, R. S. Y. (2011). Apoptosis in cancer: from pathogenesis to treatment. Journal of Experimental & Clinical Cancer Research, 30(1). https://doi.org/10.1186/1756-9966-30-87

THE GENETICS OF CANCER

Author: Youlan Li

Abstract:

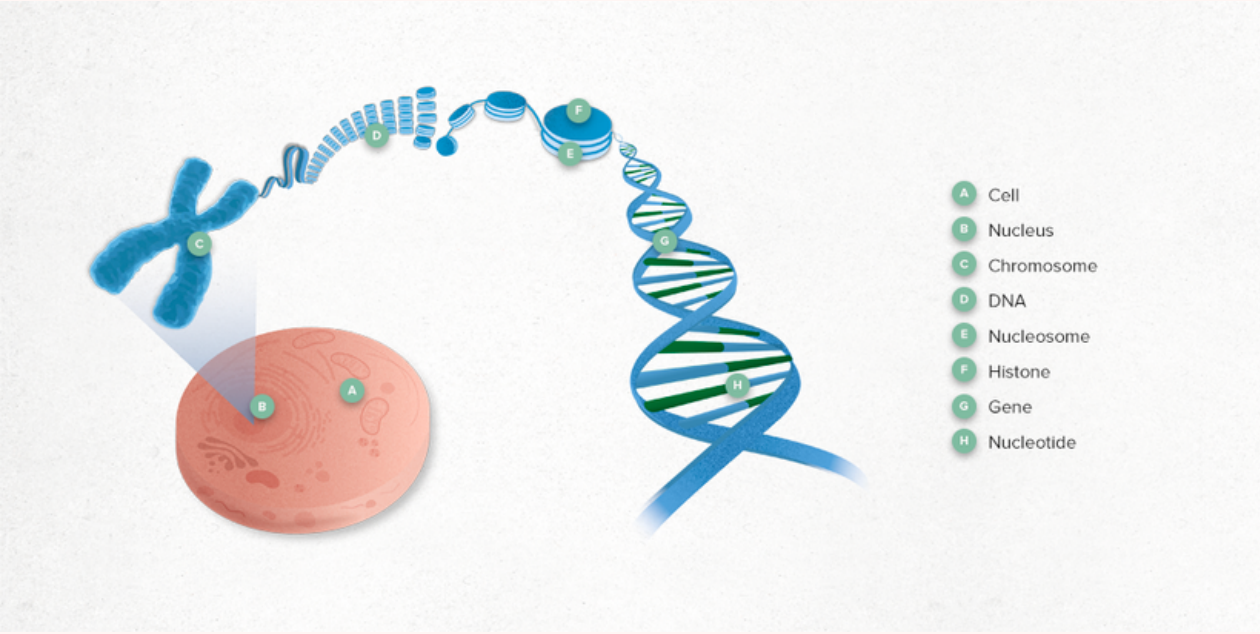
Cancer is a genetic disease, which originates from mutations in the gene that control the growth and division of cells. However, not all mutations lead to cancer, and their impact on the body varies. In most cases, only one mutation won't directly lead to the occurrence of cancer, which is more likely to build up over a certain period, as evidenced by older people having cancer more often than younger populations do. This paper will review the genes linked with cancer, what research has been done, and future research directions discussion.

Introduction:

Cancer results from changes in genes that carry instructions for producing one or multiple proteins. Researchers have identified numerous alterations in DNA sequences that contribute to cancerous cells' onset, growth, and proliferation. The potential reasons behind the changes in DNA include random errors during cell division, carcinogens in the surrounding environment such as chemicals, UV lights, and HPV, and inherited genes from one of the parents. As aforementioned in the abstract section, even though a single mutation in the gene might not significantly impact the appearance of cancer, the accumulation of genetic changes over the years can transform normal cells into cancerous cells. Most cancer cases are believed to occur spontaneously over time due to this cumulative process.

Notably, cancer and genetic alterations cannot be passed down to the offspring, rather, the genetic modification that enhances cancer susceptibility can be inherited if it exists within a parent's egg or sperm cells. For instance, if a parent transmits a mutated BRCA1 or BRCA2 gene to their offspring, their child's likelihood of developing breast cancer and several other types of cancer that link with this gene significantly rises. This is why sometimes cancer seems to cluster and has a higher chance of occurrence in families. It's estimated that as much as 10% of all cancers may stem from genetic changes that are inherited.

There's a rare condition, referred to as family cancer syndromes, in which the gene chance increases the cancer risk that runs in the family. It's crucial to understand that not all cases of cancer clustering within a family can be attributed to a family cancer syndrome. For example, sometimes the prevalence of cancer might be higher in specific families due to shared behaviors or exposures to chemicals or carcinogens, such as smoking, or other factors like obesity. Cancer can also exhibit a familial pattern if family members have a combination of numerous genetic variations, each carrying a risk for cancer.



Specific “cancer genes” linked with cancer:

Some genetic mutations are associated with specific genes. The first to introduce here are tumour suppressor genes, designated as tumour suppressors because they shield against cancer. Essentially, they control the growth of tumour cells by governing the rate of cell division to create new cells, rectifying the errors of DNA, and managing apoptosis (programmed cell death). That being stated, alterations in tumour suppressor genes undermine the regulatory mechanism, leading to uncontrolled cell proliferation, ultimately culminating in the development of a tumour. Among individuals with cancer, the most common mutation in a tumour suppressor gene is observed in p53 or TP53. Due to the vital role that p53 plays in regulating DNA repair and cell division, it has been nicknamed the “guardian of the genome”.

Cancer results from changes in genes that carry instructions for producing one or multiple proteins. Researchers have identified numerous alterations in DNA sequences that contribute to cancerous cells' onset, growth, and proliferation.

The potential reasons behind the changes in DNA include random errors during cell division, carcinogens in the surrounding environment such as chemicals, UV lights, and HPV, and inherited genes from one of the parents. As aforementioned in the abstract section, even though a single mutation in the gene might not significantly impact the appearance of cancer, the accumulation of genetic changes over the years can transform normal cells into cancerous cells. Most cancer cases are believed to occur spontaneously over time due to this cumulative process.

Current research done:

From Nature, the latest research and reviews on cancer genetics focus on topics such as the identification of a two metastasis-related prognostic signature in the process of predicting the survival of laryngeal squamous cell carcinoma, sub-clonal accumulation of immune escape mechanisms in micro-satellite instability-high colorectal cancers, the clinical impact of the genomic landscape and leukemogenic trajectories in non-intensively treated elderly acute myeloid leukemia patients, and more.

Future research discussion:

One of the ongoing research directions is relating inherited risk factors to cancer genomics. Researchers in NCI's Division of Cancer Epidemiology and Genetics (DCEG) are actively engaged in discovering innovative molecular and genomic patterns within tumours that correlate with inherited genetic variations and environmental influences. This strategy aims to uncover previously unidentified risk factors and provide fresh perspectives into the biological processes underlying cancer development.

Conclusion:

In conclusion, cancer is a genetic disease due to various gene mutations that control the growth and division of cells, including tumour suppressor genes and oncogenes. Current ongoing research by DCEG investigators focuses on innovative molecular and genomic patterns connected with inherited genetic variations and environmental influences.

References

Family Cancer Syndromes | American Cancer Society. (2022, September 14). American Cancer Society. Retrieved August 22, 2023, from https://www.cancer.org/cancer/risk-prevention/genetics/family-cancer-syndromes.html

Genes and Cancer. (n.d.). Cancer.Net. Retrieved August 22, 2023, from https://www.cancer.net/navigating-cancer-care/cancer-basics/genetics/genes-and-cancer

The Genetics of Cancer - NCI. (2022, August 17). National Cancer Institute. Retrieved August 22, 2023, from https://www.cancer.gov/about-cancer/causes-prevention/genetics

Research Areas: Cancer Genomics - NCI. (2018, November 20). National Cancer Institute. Retrieved August 22, 2023, from https://www.cancer.gov/research/areas/genomics

TP53 gene. (2020, February 1). MedlinePlus. Retrieved August 22, 2023, from https://medlineplus.gov/genetics/gene/tp53/

THE INTRIGUING LEGACY OF HENRIETTA LACKS

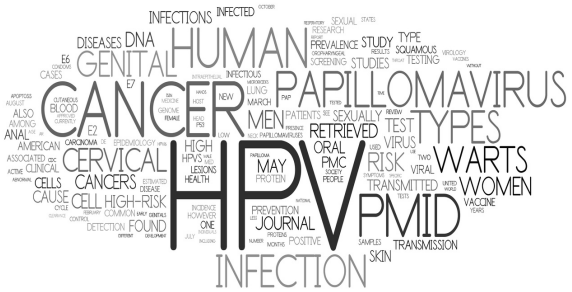
AUTHOR:
AFRIN PAJULLULAH

It's 1951, a poor young African-American woman named Henrietta Lacks had just been diagnosed with cervical cancer. Though tragic, this may seem like an everyday occurrence, as what could ever be so significant about a woman more than 70 years ago getting diagnosed with cancer? However, this seemingly mundane diagnosis led to a plethora of research with her cancer cells being revolutionized in an immortal cell line named HeLa, one of the first boundless cell lines that is still being used today to further cancer research. There's no doubt her cells contributed a lot to modern-day cancer research, but one cannot turn a blind eye to this young mother's early death due to the horrible illness along with the complete lack of patient and family consent as her cells were unknowingly taken from her. Her story raises many questions not just about the nature of cancer and why it is so resistant, but also about patient confidentiality, racial and socioeconomic equality, and rights to privacy. [1]

Lacks received radium treatment for her malignant tumour, something that would be more frowned upon today noting how harmful the effects of radium are on the human body. Her cells were taken for a biopsy, a procedure involving analysis of living tissue, and taken to a lab for research. A researcher had been keeping cells from all patients with cervical cancer without asking for their consent, and despite that being incredibly unethical, this led to an epiphany for the research when he observed Lacks' cancer cells – unlike all the other cells that quickly died in his lab, her cells actually started doubling almost every day.

Lacks' cancer cells were definitely one of a kind; so fascinating that even today we don't know the full basis of what made them so impervious to death. It's more or less inferred that the severity of her cancer, numerous duplicates of the human papillomavirus (HPV) genome in those cells, and her having syphilis all contributed to the cancer's extreme resistance. HPV, as a virus, will insert its own DNA into the body of its host, transforming it into a hybrid. In Henrietta Lacks' case, the virus caused her cervical cancer and also contained two major mutations that allowed her cancer cells to thrive that long: the ability to divide uncontrollably and the increased presence of telomerase – enzymes activated during cell division that reconstructs the telomeres, or repeating fragments of DNA at the end of chromosomes, so that they never shorten as an increasing rate of telomere reduction normally causes cells to stop dividing. Lacks also having syphilis would have contributed to her undying cells as her immune system would be weaker than ever before, allowing the cancer to metastasize easily.[2][3]

It's evident her cells contributed a lot to cancer research. The profound discovery that HPV could lead to cervical cancer carved a path to creating the first anti-cancer vaccine that led to a Nobel Prize in 2008 for a doctor involved in that. HeLa cells were also used to determine how the infamous bacterium Salmonella causes infection, create effective treatments against blood disorders, advance the knowledge of HIV infection and its works, deeply analyze how the respiratory illness Tuberculosis works, and so on, with numerous other contributions to oncology. There is even a price tag allotted to HeLa cells, as they can go for over two thousand dollars per millilitre. Profits rising from the cells reached more than 40 billion dollars as of 2021, and the number of studies they were in total to almost 120,000.[4][5]



Alas, the question has to be asked: Was Henrietta Lacks and/or her family ever compensated for her contribution to science? Unfortunately, Lacks died unaware of the legacy her cancer cells left behind, and her family had no inkling of any of this until the early 1970s after some scientists sought them out to research their blood samples. It's safe to say that they were incredibly unhappy with this news, although it was not until 2021 that the Lacks family estate started to demand compensation through a lawsuit for the massive revenue stocked up by some biotechnology companies (i.e. Thermo Fisher Scientific) by using Henrietta Lacks' cells without her consent or knowledge. Although they didn't receive any financial compensation from them, they did get some from John Hopkins University, the one that used her cells in the first place and had managed to reach an agreement with the National Institutes of Health back in 2013 on implementing stricter rules on how and when HeLa cells should be used so that the family can be aware at all times.

Henrietta Lacks remains an important figure in the science community to this day due to her incredible immortal cells, and her immense contribution will continue to be remembered and honoured. She is the reason we have advanced so far in cancer research along with research into other diseases and treatments, and we still have uncharted territory in the medical world that can be guided by her cells. It is amazing to think how we have cultivated so much knowledge from a clump of tiny, stubborn cells swarming in a petri dish, but that's exactly what happened. Through all this, however, we must remember the injustice faced by her and her family as we strive to create an environment in the future with patient confidentiality rules set in stone when we venture out into the unknown.

Bibliography

[1]
Butanis, Benjamin. “The Legacy of Henrietta Lacks.” Johns Hopkins Medicine, 18 Feb. 2022, www.hopkinsmedicine.org/henriettalacks/.

[2]
Kent, Chloe. “Immortal Cells and Informed Consent: The Legacy of Henrietta Lacks.” Pharmaceutical Technology, 11 Jan. 2023, www.pharmaceutical-technology.com/features/hela-consent-henrietta-lacks/?cf-view.

[3]
Ronson, Jacqueline. “How Henrietta Lacks’ Immortal ‘Hela Cells’ Transformed Medicine.” Inverse, Inverse, 2 Aug. 2023, www.inverse.com/health/henrietta-lacks-immortal-hela-cells-transformed-medicine.

[4]
“Significant Research Advances Enabled by Hela Cells.” National Institutes of Health, U.S. Department of Health and Human Services, 3 Oct. 2022, osp.od.nih.gov/hela-cells/significant-research-advances-enabled-by-hela-cells/.

[5]
Del Greco, Christina. “The Henrietta Lacks Estate vs Thermo Fisher: An Update on the Conversation Surrounding the Origin of Hela Cells.” Edited by Ryan Schildcrout et al., Misciwriters.Com, 29 Jan. 2022, misciwriters.com/2022/02/09/the-henrietta-lacks-estate-vs-thermo-fisher-an-update-on-the-conversation-surrounding-the-origin-of-hela-cells/.

Research Papers

SAME-SEX MARRIAGE AND HUMAN RIGHTS EQUALITY:

THE LGBTQ+ COMMUNITY'S CRITICAL IMPORTANCE TO HUMAN RIGHTS DEVELOPMENT

Author: Astrid Zuo

1. Introduction and Significance of the Relevant Legislation:

Same-sex marriage in the Netherlands (Dutch: Huwelijk tussen personen van gelijk geslacht) was officially legalized on April 1, 2001, marking the Netherlands as the world's pioneer in embracing and legalizing same-sex marriage.

This legislation signifies a watershed moment for LGBTQ+ human rights, as it acknowledges the identity of the LGBTQ+ community under the law while providing them with legal protection. Notably, this legislation pertains solely to the legal institution of marriage and does not directly intrude upon private behaviors such as sexual activities. Nonetheless, by becoming the first country to legalize same-sex marriage, the Netherlands sparked a significant impact worldwide, inspiring notions of equality among the LGBTQ+ community.

As a marginalized group on a global scale, the LGBTQ+ community has endured a long history of oppression within predominantly heterosexual societies. At times, homosexuality was even wrongly classified as a mental illness, resulting in severe discrimination and violations of their human rights.

The emergence of same-sex marriage in the Netherlands not only marked the first recognition of same-sex marriage's legality but also became a beacon of hope, protecting the LGBTQ+ community's equality, freedom, dignity, and overall well-being. It stands as a testament to the protection of the human rights of this marginalized group.

1.1 Rights Upheld and Importance of the Legislation:

(1) Protection of Equality Rights for the LGBTQ+ Community: The legalization of same-sex marriage recognizes and ensures equal rights and opportunities for same-sex couples, similar to those enjoyed by heterosexual couples. This includes legal recognition of marriage and partnership, adoption rights, inheritance rights, healthcare rights, and more. The recognition of these equal rights combats the discrimination and social exclusion against the LGBTQ+ community, thus fostering a society that thrives on social inclusivity and fairness.

(2) Upholding Freedom and Dignity of the LGBTQ+ Community: The legalization of same-sex marriage not only addresses legalities; it provides an environment of freedom and dignity for LGBTQ+ individuals. The measure alleviates societal pressures and stigmatization, allowing them to openly express their sexual orientation and be respected and accepted within their families, workplaces, and society at large. This newfound freedom and dignity are vital for their psychological well-being and happiness.

(3) Enhancing the Happiness of the LGBTQ+ Community: The legalization of same-sex marriage positively impacts the health and well-being of LGBTQ+ individuals. It facilitates access to appropriate healthcare services, including sexual health counseling, HIV/AIDS prevention measures, and psychological support. Moreover, it contributes to reducing violence and abuse, enhancing the sense of safety and social integration among LGBTQ+ individuals.

(4) Providing Legal Protection for the Human Rights of the LGBTQ+ Community: The legalization of same-sex marriage serves as a significant measure to protect human rights. It reaffirms that every individual should enjoy equal human rights and fundamental freedoms, irrespective of their sexual orientation. By incorporating same-sex marriage into legal frameworks, the legislation ensures the protection of LGBTQ+ individuals' rights and provides avenues for recourse against unjust treatment.

While many countries have since followed the Netherlands' lead in legalizing same-sex marriage, discrimination and pathological phenomena still persist. This article aims to elucidate the positive impact of such legislation on human rights. By delving into the legislative impetus behind such measures and their subsequent global influence, we seek to diminish the prevailing discrimination against the LGBTQ+ community and promote greater understanding and acceptance of same-sex relationships.

1.2 Translation:
Background of the Legislation and the Societal Context at the Time:

The Netherlands, known for its historically liberal and tolerant outlook, played a significant role in shaping the legislative landscape surrounding same-sex marriage. Their decision to legalize same-sex marriage was intertwined with the progressive social developments and evolving attitudes towards LGBTQ+ rights.

During the late 1960s and early 1970s, the LGBTQ+ rights movement gained momentum globally, advocating for equality and the recognition of same-sex relationships. In the Netherlands, the emergence of same-sex marriage as a public topic in the summer of 1967 marked a significant turning point. The exchange of rings between two young men during a dedication mass in a Rotterdam church brought attention to the desire for legal recognition and societal acceptance of same-sex unions.

Notably, the LGBTQ+ rights movement in the Netherlands was diverse in its approaches and perspectives. While the Homosexuality Party, led by Harry Thomas, emphasized same-sex marriage as a key action point, the COC (Cultural and Recreational Center for Homosexuals) preferred a broader focus on relationship freedom. The COC highlighted the equal possibilities for different types of relationships, including marriage, closed relationships, and open relationships.

At the time, the prevailing societal attitudes towards homosexuality were gradually evolving. However, significant challenges remained. Some religious institutions, including the Catholic Church, expressed reservations about recognizing same-sex unions. A clergy working group's negative recommendations regarding homosexuality influenced the Catholic Church's initial reluctance to bless same-sex relationships.

ON MAY 17, 1990, THE WORLD HEALTH ORGANIZATION REMOVED "HOMOSEXUALITY" FROM THE LIST OF MENTAL DISORDERS,

GRANTING LGBTQ+ INDIVIDUALS GREATER SPACE TO LIVE AUTHENTICALLY.

The political landscape also played a pivotal role in shaping the establishment of the legislation. The first Purple Cabinet, in office from 1994, championed progressive values and social change. This political climate facilitated the development and proposal of legal arrangements for same- sex relationships, leading to the introduction of civil partnerships in 1998.

The legislative process was influenced by societal debates and discussions surrounding LGBTQ+ rights and equality. The proposal for legal relationship arrangements aimed to provide legal recognition and protections for same-sex couples while addressing concerns related to parent- child relationships and the dissolution of partnerships.

Overall, the background of the legislation and the societal context at the time reflected a dynamic interplay between social progress, evolving attitudes towards LGBTQ+ rights, political will for change, and the diverse perspectives within the LGBTQ+ community itself.

2. The main purpose and practical effects of the legislation.

2.1 The Main Purpose of Same-Sex Marriage Legislation

The significance of legalizing same-sex marriage transcends mere recognition of a specific form of marriage; it represents the acknowledgment of same-sex couples within a broader societal context. The journey is intertwined with the growing visibility of LGBTQ+ communities worldwide. On May 17, 1990, the World Health Organization removed "homosexuality" from the list of mental disorders, granting LGBTQ+ individuals greater space to live authentically. The legislative action taken by the Netherlands further bolstered the morale and strength of the LGBTQ+ community, symbolizing their first legal recognition as a minority group. This legislation progressively normalizes homosexuality as a valid sexual orientation and upholds the dignity and human rights of the LGBTQ+ community at a legal level.

However, the enactment of this law is not solely about ensuring equal status for same-sex marriage; it is equally integral in alleviating past societal discrimination and stereotypes against homosexuality. Legalizing same-sex marriage strives to create a more inclusive and accepting social environment where every citizen is treated equally, irrespective of their sexual orientation. This measure serves to dismantle biases and stigmatization against LGBTQ+ individuals, offering them a sense of liberation and recognition.

Furthermore, same-sex marriage legislation seeks to challenge societal norms and advocates for more diverse and inclusive views of relationships. It emphatically asserts that love and commitment are not confined to specific gender combinations but can flourish between any two consenting adults. This paradigm shift encourages the acceptance of various forms of relationships, fosters a social environment that respects individual choices, and upholds human rights.

In conclusion, same-sex marriage legislation marks a crucial turning point in the development of LGBTQ+ rights. It symbolizes both legal and societal recognition of same-sex couples, dismantling barriers of discrimination, and paving the way for a more inclusive, diverse, and accepting society. By advocating for equality and challenging prejudices, the legalization of same-sex marriage in the Netherlands becomes a beacon of hope for LGBTQ+ communities worldwide, contributing to global human rights and social progress movements.

Overall, the primary purpose of legalizing same-sex marriage is to promote equality, freedom, dignity, and well-being while fostering social inclusivity and fairness. It stands as a significant measure to ensure the protection of human rights and dignity for all individuals.

3. The human rights transformation of the LGBTQ+ community and positive societal progress.

3.1Human Rights Progress Reflected in the LGBTQ+ Community

Following the enactment of the law, the LGBTQ+ community in the Netherlands can finally live openly without the stigma of being seen as "marginalized" or "difficult to discuss," instead being recognized as an ordinary group without special significance or perspective in society. It is when what was once considered special becomes commonplace that human rights issues concerning the LGBTQ+ community can be addressed and fully respected.

The legalization of same-sex marriage represents not only a legal advancement but also a significant manifestation of human rights progress. It signifies the ackowledgment of

equal rights for LGBTQ+ individuals, elevating them from the margins of society to full-fledged citizens. Through legalized marriage, same-sex couples gain equal legal protection in areas such as marriage, inheritance, and healthcare, which exemplifies the embodiment of human rights principles. Legalizing same-sex marriage also creates an environment of freedom and dignity for LGBTQ+ individuals, allowing them to freely express their sexual orientation and be accepted and respected by society, ultimately enhancing their psychological well-being and happiness. This transformation in the social environment is of utmost importance for the happiness and human rights protection of the LGBTQ+ community.

The impact of the legalization of same-sex marriage in the Netherlands extends beyond its borders. While its primary influence is felt in the Western world, especially in Europe, it has served as a pioneering example for the global LGBTQ+ equality movement. Inspired by the Netherlands' precedent, many countries have enacted legislation or advocated for the legalization of same-sex marriage, gradually improving the legal status and social recognition of LGBTQ+ individuals. The Netherlands has emerged as a leading role model, paving the way for worldwide efforts to secure LGBTQ+ rights.

The significance of legalizing same-sex marriage in terms of human rights cannot be underestimated. It signifies a nation's steadfast commitment to equality, freedom, and dignity at the legal level. By eliminating discrimination and promoting inclusivity, the legalization of same- sex marriage makes a positive contribution to achieving a more just, equitable, and human rights- respecting society. The Netherlands' enactment of same-sex marriage showcases a promising future where every individual, regardless of sexual orientation, can enjoy equal rights and dignity.

4. Conclusion

The legalization of same-sex marriage in the Netherlands represents a significant step forward in the advancement of human rights. This measure acknowledges the equal status of the LGBTQ+ community in the eyes of the law, granting them rights and protections equivalent to those of heterosexual couples, thus liberating them from the periphery of society and integrating them into the mainstream.

The legalization of same-sex marriage is not merely a legal advancement but also a crucial manifestation of human rights progress. It bestows upon the LGBTQ+ community freedom, dignity, and happiness while promoting societal inclusivity and eradicating discrimination. The Netherlands' pioneering example serves as a catalyst for the global LGBTQ+ equality movement, inspiring many countries and regions to follow suit and provide a leading model for LGBTQ+ communities worldwide.

The legalization of same-sex marriage embodies a steadfast commitment to equality, freedom, and dignity, making a significant contribution towards the realization of a more just, equitable, and human rights-respecting society. This transformative journey signifies a bright future where every individual can enjoy equal rights and dignity, regardless of their sexual orientation.

Section 3
General Advocacy

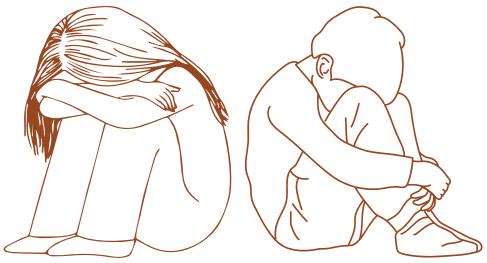
IMPROVEMENT OF MODERN-DAY CHILD LABOR

Author: Landin Huang

Child Labor has a multitude of definitions from various sources, but according to the International Labour Organization, the UN Agency that sets the standards for labor standards and policies, Child Labor is any work that dispossesses a child of their childhood, their potential, as well as their self-esteem and poses a risk to their mental as well as their social development. This definition specifically refers to work that is by any means deleterious in the moral, physical, mental, as well as social aspects for children; it also refers to any duties or tasks children undertake that might deprive them of proper education. Child Labor - one of those terms that often appear in a history textbook or a book written by an author from the era of Charles Dickens - isn't a thing of the past as many people come to believe, it is an enduring social issue that continues to pervade in contemporary society and manifests itself as a sickening disease that puts children in a cycle of never-ending grief. Child Labor violates children's rights and is one of the issues that need more awareness and more proactive measures must be taken to help reduce child labor.

BACKGROUND

As children on one side of the world obtain an education, hang out with their friends, and relax on the beaches in the summer, there are roughly 160 million children in other regions of the world that engage themselves in child labor. Of those 160 million-or-so children, 79 million find themselves working in destitute conditions daily.Examples that fit such a definition include but are not limited to, prostitution, illicit activity, slavery, work with dangerous machinery, as well as working for long hours. It is important to note that this is brief background as there are many other elements to consider when deciding whether or not child labor is being instituted, such as the child's age, the country in which the child resides, the objective of the work, as well as the conditions in which the child is performing the work in.



PHENOMENON ANALYSIS

Child Labor has become prevalent in modern society with several factors, and according to the 2016 Global Estimates of Child Labor, it is especially extensive in areas such as Africa, where around 72.1 million child laborers exist, and 31.5 million of them work in hazardous conditions, more than anywhere else in the world.

- Poverty is considered to be the main culprit in driving children to be a part of the workforce. When the parents' household income is barely enough to pass by measly, children are then subjected to child labor to help carry the burdens of the family and ensure that food can be put on the table and that they have access to other necessities. This is especially true in larger families who have more children because the parents' income is simply insufficient enough to cover all the expenses for such a large family.

- Interconnected to poverty is a lack of access to quality education, which may also push children into entering the labor force. In many regions of the world, education is not adequate and there are not many facilities available to let people understand the importance of attending education, so parents don't find the need to send their children to schools. Other times, education is simply out of reach due to monetary restrictions, so children have no choice but to work. Even in areas where education may be free of cost, the drawbacks outweigh the benefits when sending children to school, as there will be an immediate loss of income when a child does not work. In the case of girls, girls are more likely to work than boys because it prepares them for society better, as parents in certain regions don't find a purpose in sending their daughters to school because of patriarchal feudal ideas.

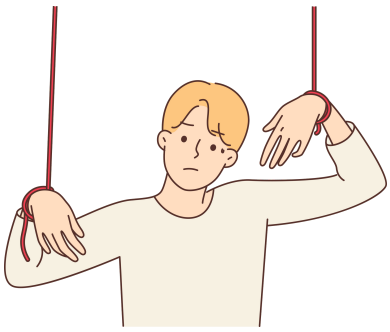
- Other external factors include traditions as well as the limited understanding of the hazards of child labor. In some poorer areas of the world, bonded labor is a thing; it happens commonly when social occasions or gatherings push impoverished families to the brink of debt, and then children are forced to work to pay off parts of the debt of parents. In some other common cases, children learn the trades of their parents, and so at a young age, they are exposed to such an environment and when they grow a little older they use the trade as a means of survival. A common theme around these cases is that the parents don't understand the dangers of child labor and the risks that it poses to children as they start developing into an adult. Thus, many parents come to believe that child labor is a good way to build character and skills for children, resulting in the cycle of child labor.

PHENOMENON EFFECT

There are examples that reveal the gruesome effects on child laborers' health physically and mentally.

- An article written by a faculty member from Baylor's College of Medicine describes some observational studies in different areas of the world highlighting the disastrous effects of child labor. One of the studies in Ecuador tested the blood samples of ten children working with glazing rooftops and ceramics and found that many of them had lead levels seven times higher than the safe limit; three of them had been working in the industry for less than three months. Higher than normal lead levels poses a threat to cognitive development in children and can cause low intelligence, damage to hearing, and decreased stature. These children were also working with no protective equipment or precautions making them vulnerable to pollutants and air particulates that are harmful to their bodies.

- Another study in Brazil highlighted how the effects may not always pertain to the physical health of the children. The study found that there was a relationship between developing mental depression and experiences of child labor. The factors that played a role in developing a mental illness included abuse, exploitation, and insufficient nurture at a young age, all of which were correlated to child labor.



SOLUTION

Child Labor can be prevented through four initiatives as noted by the International Labor Organization (ILO).

- Encourage governments in areas succumbed by child workers to expand educational opportunities to all children. With this put into effect, children would be able to say goodbye to the dangerous work they are used to doing and receive an education. By having an education, even if it's vocational, children are able to gain crucial skills needed for employment (skills not able to be gained through working at a young age), which in turn could help local and national economies.
- The implementation of "social protection" programs. Provide families that are currently in emergency situations and are in need of income to meet basic needs some help, so that they don't resort to child labor to live by.
- Provide livable wages for adults for protecting the rights of workers and preventing child labor phenomenon.
- Enforce laws and regulations. Therefore, all that is aforementioned can be held up to standard and that those who violate labor laws will receive their respective penalties.

SUMMARY

Child Labor's severity is a social issue that is very much underemphasized; more than 160 million children are working to meet ends meet and that is often complemented by working in destitute conditions and having ailing health. This endless cycle is often a result of poverty as well as a lack of educational opportunities and can bear negative implications for the physical and mental health of children, going as extreme as death in some cases. Preventing child labor is not an easy issue, and there is no "blueprint" to help tackle this problem, but by expanding educational opportunities, welfare programs, providing livable wages, and upholding regulations, we are one step closer to a world free of child labor.

WORKS CITED

Becker, Jo. “What Congress can do to end child labor in the US.” Human Rights Watch, 12. June 2019, https://www.hrw.org/news/2019/06/12/what-congress-can-do-end-child-labor-us.

“Causes” International Labour Organization, https://www.ilo.org/moscow/areas-of-work/child-labour/WCMS_248984/lang–en/index.htm. Accessed 13 Aug. 2023

“Child labour and education” International Labour Organization, https://www.ilo.org/ipec/Action/Education/lang–en/index.htm#:~:text=Non%2Dformal%20or%20transitional%20education,to%20local%20and%20national%20development. Accessed 13 Aug. 2023.

Lee, Bo R. “Child labor: What are the health and social implications?” Baylor College of Medicine, 19 Oct. 2021, https://blogs.bcm.edu/2021/10/19/child-labor-what-are-the-health-and-social-implications/.

Reid, Kathryn. “Child labor: Facts, FAQs, and how to end it.” World Vision, 7 June. 2023, https://www.worldvision.org/child-protection-news-stories/child-labor-facts#:~:text=About%20160%20million%20children%20around,children%20%E2%80%94%20work%20under%20hazardous%20conditions.

“What is child labor?” International Labour Organization, https://www.ilo.org/ipec/facts/lang–en/index.htm#:~:text=The%20term%20%E2%80%9Cchild%20labour%E2%80%9D%20is,harmful%20to%20children%3B%20and%2For. Accessed 13 Aug. 2023.

“Why does child labour happen? Here are some of the root causes.” ECLT Foundation, https://www.eclt.org/en/news/child-labour-causes. Accessed 13 Aug. 2023.

September 2023

Sexism in Workplace

Author: Elaine Zhou

HRYA

INTRO

Although people spend decades promoting gender equality in our society, Sexism in workplaces remains to be a prominent issue – it disrupts the idea of fairness and opportunity in the world. Stereotypes, bias, and discrimination against women persist in the workplace despite positive progress in closing the gender pay gap. We must deal with this obstacle and promote an equal and warm workplace for all human beings. This essay will discuss several types of sexism in the workplace and the solutions to deal with them

1. The gender pay gap

The persistent gender pay gap is one of the most apparent signs of sexism in the workplace. Women are often paid less than their male colleagues for the same work. According to Payscale, "in 2023, women will earn $0.83 for every $1 that men earn when the data is uncontrolled" (Stewart).

Sexism In the Workplace

1 the gender pay gap

This pay gap reveals a pervasive bias that undervalues women's achievements and is about more than just numbers. People always believe that female workers are less effective and powerful than male employees when they work. However, employers should have clear pay policies that guarantee equal pay for comparable work, regardless of gender.

2. Inequalities in leadership

The unequal distribution and promotion of female leaders is another example of sexism in the workplace. Under traditional conventions, females are weaker and less professional than males, they are always underrated. they are always underrated. Research data shows that "only 23 of 239 VC-backed unicorn companies worldwide have female founders, while women are underrepresented in CEO positions as well, with only 4% of US Fortune 500 companies having a female CEO" (Pavlou). The absence of women leaders is a product of systematic bias rather than a lack of ability or drive. The significant amount of difference between female leaders and male leaders illustrates the situation is statistically notable rather than by random chance.

As a result, corporations need to give more opportunities to women to make the leadership positions more diverse in a company, which eventually balances the leadership.

3. Pregnancy discrimination

Even nowadays, pregnancy-related employment discrimination is a disturbing and all-too-common problem. Companies are more likely to hire a male instead of a female employee given the same quality and background of candidates. This is due to the pregnancy situation women may face in the future. For instance, if a woman is pregnant, she will need to take maternity leave. It would lead to the loss of profit of a company. As a result, women are more likely to be depleted of good job opportunities and career promotions merely because of the pregnancy. It is important to let employers notice the unfairness women face in society and make some changes.

Also, companies should enact clear rules or policies to declare 100 percent gender equality. Furthermore, society as a whole should hold the notion that inequality should not exist in the workplace and that females should be treated equally as males.

STRATEGIES ARE GIVEN TO SOLVE DISCRIMINATION IN THE WORKPLACE:

Dealing with workplace sexism demands a diverse strategy. Companies should first and foremost create and uphold unambiguous anti-discrimination rules that specifically addres sexism. This involves putting in place procedures for impartially and privately receiving complaints and investigating them. Corporations may offer some professional training to employees to promote a warmer and more fair atmosphere.

Employers should also make an effort to diversify their leadership and decision-making teams and set quantifiable objectives to achieve gender parity in upper management. Having some programs that help women in advance to have a suitable job is critical and should be considered prioritized.

The government should also apply some courses at school to teach gender equality to children. Thus, when they grow up, they will be less likely to have the concept of sexism in the workplace. Moreover, anti-discrimination rules and regulations should be strictly enforced by governments, ensuring that businesses accept and construct them.

Change ultimately starts with people. In daily life, when people notice there is gender inequality or sexism, they should call out and speak up directly. This would effectively eliminate a similar situation happening in the same place, which indirectly reduces the chance of happening.

In conclusion, sexism in the workplace exists and makes the world an unequal place. Moreover, gender discrimination is an ongoing problem and displays itself in a variety of ways, including the gender wage gap, lack of women in leadership, and discrimination of pregnancy. However, we humans must recognize that fighting sexism in the workplace is not only our responsibility but also a chance for improvement and development. We should understand that a person's ability is more critical than their gender. Hence, we must all make an improvement to the boundary of sexism, fighting for equal opportunities and creating environments where each person can achieve themselves and reach their full potential. For the sake of people, companies and society as a whole, we must move forward hand in hand on the path to a fairer workplace.

Work Cited

Stewart, Amy. "2023 Gender Pay Gap Report (GPGR)." Payscale - Salary Comparison, Salary Survey, Search Wages, May 2023, www.payscale.com/research-and-insights/gender-pay-gap.

Pavlou, Christina. "Gender Inequality in the Workplace: A Lack of Women in Leadership." Recruiting Resources: How to Recruit and Hire Better, July 2022, resources.workable.com/stories-and-insights/gender-inequality-in-the-workplace.

The Fundamental Human Right of Freedom of Expression

Author: Landin Huang

Think about what the following four actions have in common: expressing your disapproval of the government for failing to address its promised policies; demonstrating interest in a specific prospect's political agenda and actively trying to seek information about that candidate; attending a peaceful protest supporting Black Lives Matter, and writing a blog post explaining the potentially disastrous effects that artificial intelligence can have on human development. Correct - all four of these actions have to do with freedom of expression. As briefly hinted above, freedom of expression refers to the right of being able to express one's opinions without facing any restrictions or penalizations, but there's more to this under this umbrella term. Article 19, an international organization founded on the basis to protect freedom of expression and freedom of information on a global level, defines the term as having the right to be able to speak, hear, and participate in political, artistic, and social life. Yet, in many parts of the world, freedom of expression is highly censored by the name of counterterrorism, national security, or religion, and serious ramifications follow suit if certain actions are undertaken. Thus, it is of the utmost importance for us to understand why freedom of expression is a paramount issue and what some organizations and governments are doing to make sure that this is something delineated in all legislations and constitutions across the globe.

Background

It also includes having the right to be able to seek, receive, and share information through media as well. This definition, though somewhat explicit, may seem ambiguous to some as certain actions may be more difficult to classify as protected under freedom of expression or not. Hence, some parameters help to establish what is protected under this international law and what isn't protected. It is crucial to understand that the concept of freedom of expression isn't absolute, meaning that it isn't unlimited or without limitations. Saying things that lead to racial discrimination or burgeoning violence in areas, for example, is not protected and is considered one of the circumstances in which this law does not apply.

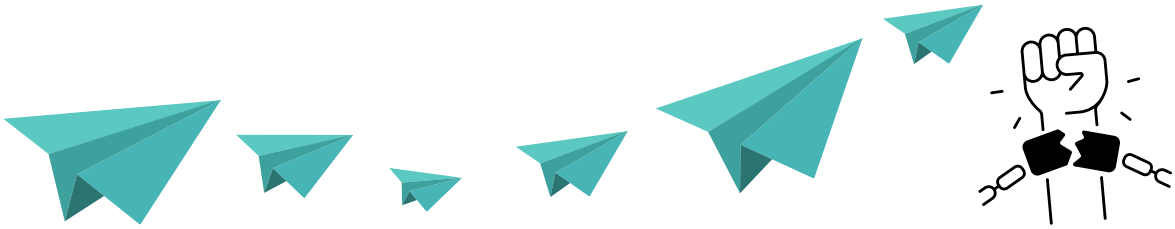
On the other hand, criticizing or challenging the existing state of affairs, even if it contrasts with social norms, is protected because it can allow people to learn about different ideas and challenge those in power. This idea is stressed because the right to freedom of expression is there to protect people from harm, not governments, powers, religions, or other entities. The general framework mentioned above is something that all countries should abide by, as the organization, Article 19 states. But for countries where freedom of expression is explicitly delineated in legislation or the Constitution, the United States, for example, there are more exceptions than those mentioned above. By federal law, some common examples of things that would not be protected under the First Amendment (freedom of speech, expression, assembly, press) are pornography, false advertising, true threats, and fighting words. Those are just some examples, and the list goes on and on, but this is mentioned so that you understand how the framework is for this law in other countries and other systems.

Importance

Whether it's being able to project your voice on controversial topics around you or being able to engage in peaceful protest, you are using your right to freedom of expression to the fullest extent. Just like many other fundamental human rights that are promised to us - such as the right to live, the right to an education, the right to work, the right to have access to clean water - the right to express yourselves freely should also most definitely be guaranteed to us.

The significance of freedom of expression is sometimes so heavily underestimated in our everyday lives. From summoning up the courage to question those in office and put a stop to tyrannical policies unsuited for the public; to exchanging ideas freely and increasing our public understanding about certain issues, to even as abstract as getting our creativity juices flowing, they are all reliant on the right to this freedom. Without this fundamental freedom, we wouldn't be able to have as healthy and stable a society as we imagined. When magnifying the significance, this freedom gives victims a platform where they can amplify their voices about the abuses they faced as well as other struggles, contributing to a collective realization of human rights both among the victims and the general public. As the organization Human Rights House remarks, "Freedom of expression allows pluralist dialogue and creates a secure platform for critical voices. It ensures that people have the right to seek, obtain, receive and hold information about human rights and human rights violations."

More importantly, though, this right helps to keep Democracy standing. Democracy oftentimes relies on citizens who are willing to educate and inform themselves using the information surrounding them. They are able to use this information to their advantage as they partake in actions such as community affairs and ending unjust policies in the government system. For this to happen though, it all circles back to free speech, and freedom of expression as well as uncensored data and information, all at the fingertips of the general public. Through these three points made above, it is clear that freedom of expression is an integral part of our lives and needs to be kept as a fundamental right.



Statistics & Data Showing Freedom of Expression Scores

The Global Expression Report 2023 is a yearly report that collects data regarding the right to freedom of expression and information across the globe; the metric tracks this foundational right using 25 indicators across 161 countries in the world and uses that information to create a score for each country on a scale of 1 to 100. (With 80-100 being the freest, 60-79 being less restrictive, 40-59 being classified as restrictive, 20-39 as highly restrictive, and 0-19 being deemed as in a stage of a crisis.)

In this year's report, it finds that the top 10 most open countries, in terms of freedom of expression, are all found in the Europe and Central Asia Region. With the top 10 countries being Denmark, Sweden, Norway, Switzerland, Finland, Estonia, Belgium, Ireland, and Germany, respectively. Although Europe and Central Asia have taken the top 10 positions of being the freest in terms of expression, there has been a decrease in scores, with roughly 49 percent of countries in those two regions seeing declines in their scores in the last decade. Data reveals that countries in the Sub-Saharan African region have a freedom expression score that is relatively stagnant throughout a two-decade period. Most of the countries in this region fall into the middle three categories: less restrictive, restrictive, and highly restrictive. Though none of the countries in the region cracked into the open category, there have been significant advances in this region, with countries like Zambia, Gambia, Malawi, and Angola seeing remarkable growth in scores. The growth represented in this region is higher than any other region in the Global Expression report.

On the other side of the spectrum, countries in the Asia and Pacific region have seen a continuous decline in regional expression scores, and large countries like China and India are seeing declines in scores, which impact the fundamental rights of billions of people in both countries. It is estimated that around 4 billion people in both regions have had less freedom of expression as compared to a decade back. Small growth has appeared in less populated countries, but compared to the large losses in highly populated areas, it shows that the human impact is matchless. Some countries that have the least freedom of expression also are in this region, with some examples including, Turkmenistan, Iran, China, Myanmar, Uzbekistan, and North Korea.




Solution

Many efforts have been made by certain organizations such as the UN Human Rights Organization and Amnesty to improve freedom of expression all across the globe. The UN Human Rights Organization has proactively worked to protect journalists and promote uncensored media and protecting journalists and other media coverage all across the globe. While Amnesty has done specific case studies in many countries in the world such as Poland and Vietnam and collects data and reports on those findings; these findings help shed light on human rights violations all across the world. Though these are just two examples mentioned, there are many other organizations fighting against censorship and repression and vowing for governments to protect this fundamental right.

Summary

Just because the government doesn't like the things that we say regarding their policies doesn't mean that it's right to stifle our voices; our voices matter, and there's a reason why freedom of expression is considered a fundamental right. It is there to protect people, not the not the religion's feelings, not the state's feelings, and most certainly not the government's feelings. Sadly though, in many parts of the world, freedom of expression has been hampered over the last decade or so, but on a positive note, many countries in the world have seen their freedom of expression score boosted to all-time highs. Though it is hard to actively push for each and every country to be completely open, in terms of freedom of expression, supporting organizations such as the UN Human Rights and Amnesty can get us one step closer to a world free of censorship.

Works Cited

"First Amendment and Censorship." American Library Association, Oct. 2021, https://www.ala.org/advocacy/intfreedom/censorship#:~:text=Only%20that%20expression%20that%20is,true%20threats%2C%20and%20fighting%20words. Accessed 25 Aug 2023.

"Freedom of Expression." Amnesty International, https://www.amnesty.org/en/what-we-do/freedom-of-expression/. Accessed 25 Aug 2023.

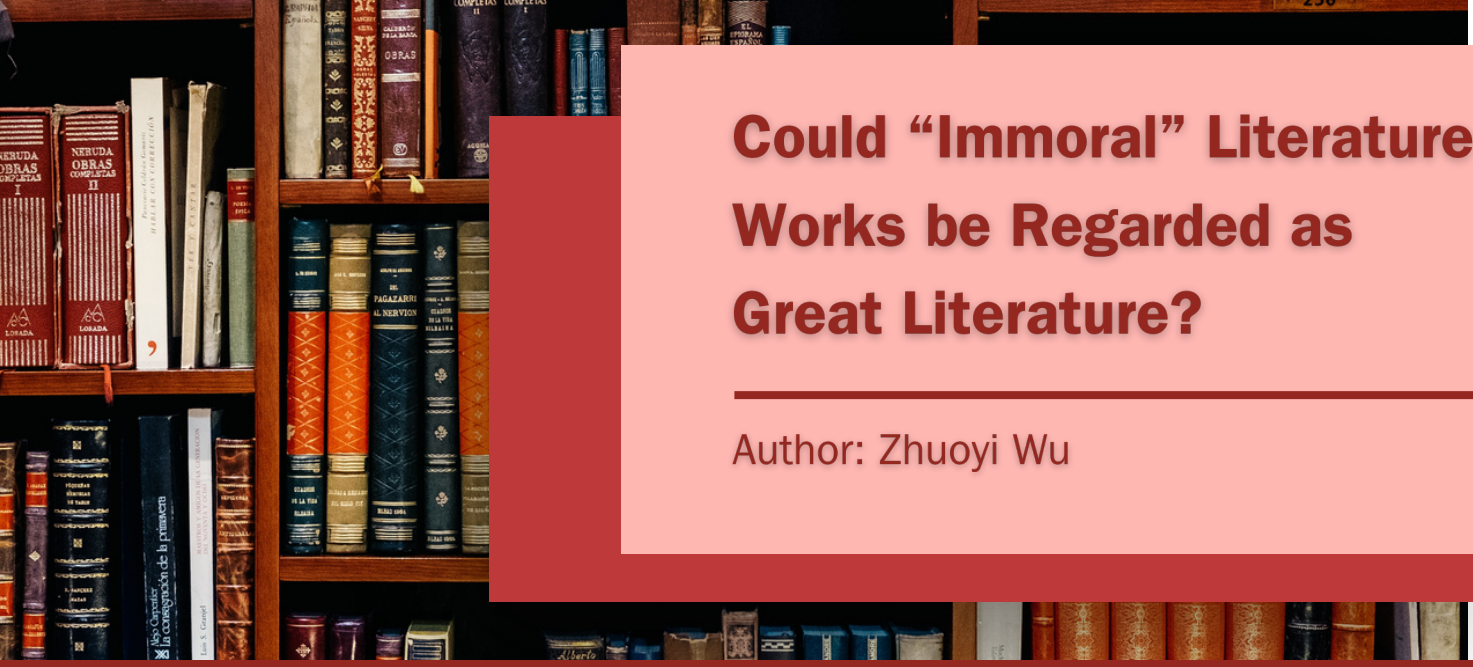
"Freedom of Expression." Human Rights House, https://humanrightshouse.org/we-stand-for/freedom-of-expression/. Accessed 25 Aug 2023.

"Freedom of expression and opinion." Office of the United Nations High Commissioner for Human Rights, https://www.ohchr.org/en/topic/freedom-expression-and-opinion#:~:text=UN%20Human%20Rights%20works%20to,conscientious%20objection%20to%20military%20service. Accessed 25 Aug 2023.

"Freedom of Speech." Principles of Democracy, https://humanrightshouse.org/we-stand-for/freedom-of-expression/. Accessed 25 Aug 2023.

"Global Expression Report 2023." Article 19, https://www.globalexpressionreport.org/. Accessed 25 Aug 2023.

"What is freedom of expression?" Article 19, https://www.article19.org/what-is-freedom-of-expression/. Accessed 25 Aug 2023.



Could "Immoral" Literature Works be Regarded as Great Literature?

Author: Zhuoyi Wu

Whether concerns about a literature work's morality should be a part of the standard of great literature is still controversial. The question is important since it determines which kind of work is fine to be taught in class and influences students or just promoted in general. In "An Image of African: Racism in Conrad's 'Heart of Darkness," Achebe claims that descriptions in Heart of Darkness represent "the Western desire to set Africa up as a foil (1)" and directly quotes descriptions of Africans as uneducated and uncivilized people and common stereotypes at that time recognizing Africans as cannibalism. He then quotes confirmation of Conrad's greatness, that Heart of Darkness is "'among the half-dozen greatest short novels in the English literature (2),'" which I interpret as his condemnation of such an immoral literature work to be regarded as great literature. Consequentially, there are two possible answers to the question of whether literature works that contain immorality could be regarded as great literature—one that, as Achebe encourages, no immoral works could be regarded as great literature, and the other as the complete opposite. As a female, a feminist, and a reader,

I am therefore concerned about the relationships between the problems of morality and literature, and thus frequently notice how certain works that are normally regarded as great literature shows misogyny or sexism. Gabrielsen in "The Role of Literature in the Classroom: How and for What Purposes Do Teachers in Lower Secondary School Use Literary Texts?" writes that "reading literature remains at the heart not only of the language arts (LA) curriculum but of the cultural debate and the educated public sphere of imaginative and experiential reflection in general" (2), to which I interpret as other advantages that immoral literature could benefit readers. Thus, since canceling a great amount of is not only hard to achieve but also prevents other positive aspects of books from benefitting, my response is that, since works that are generally regarded as great literature, like Tolstoy's Family Happiness, Anna Karenina, and Jack Kerouac's On the Road, also contain immorality like misogyny just like how Heart of Darkness shows racism, it seems unrealistic to cancel multiple books at one time. Additionally, immoral literature works could also benefit readers from other aspects as long as they are not functioning as role models of readers' behaviors. Thus, I would claim that morality is not a necessary component of the standard of great literature.

To better illustrate that some great literature works also contain misogyny, it would be necessary to discuss what great literature is. According to Britannica, what distinguishes literature from other writings is “aesthetic excellence,” a concept that Britannica admits is hard to define and supported by different theories of criticism including ambiguity (revealing multiple meanings, open to interpretations) and literary languages. Similarly, Merriam-Webster’s Collegiate Dictionary’s definition of literature that it is “writings having excellence of form or expression and expressing ideas of permanent or universal interest.” Considering the definitions given, I believe Tolstoy’s works and On the Road could, with delicate diction of shaded meanings and artifice, be regarded as great literature. Another discourse is shown in Tim Lacy’s “Dreams of a Democratic Culture: Revising the Origins of the Great Books Idea, 1869-1921.” He claims that the etymological study of the phrase “great books” shows its complex beginning relating to the culture of Victorian “men of letters” to support means to dream of a democratic dream, and later the meaning of “great books” transfers to “an idealized collection of books, both ancient and modern, believed worthy of repeated reading” that is formed, according to most scholars, in higher education like Erskine’s seminar or Professor Charles Mills Gayley’s course at the University of California-Berkeley. I interpret Lucy’s indication that the origin and locations where the meaning “great books” are transformed are all where elites and intellectuals gather as a destructuralization of the concept of “great literature,” implying that the intrinsic trait that determines a work to be or not be great literature might do not exist at all but a result led by those who are regarded as the authority.

Still, according to this definition of great literature, since Tolstoy is recommended by Harvard Book Store and On the Road is one of the best novels according to the Guardian, they are still able to be regarded as:

“Great Literature”

After defining what great literature is, the concept of misogyny also needs to be defined, especially what could be interpreted as misogynistic. The reason why it is important is that, in the introduction section, I intend to compare misogyny in literature with Achebe’s indication of racism in literature, since they both reveal a certain extent of inequality and are thus immoral. Inequality in misogyny is often shown implicitly in writings. For example, for plots like a female role being portrayed as merely a wife or in which women are always absent in what is implied in the book as “intellectual” discussions of philosophy and literature, distinguishing them to be reflections of inequality seem ambiguous and thus a highly rely on personal, subjective interpretation. One might argue that such plots are mere coincidences or a portrayal of a common social phenomenon at that time. However, considering that interpretations of both sides are subjective, opposing interpretations do not necessarily undermine the other side nor lift themselves to a higher position, which means to be more persuasive or more “correct” in general, but function more like an alternative. Thus, interpretations indicating misogyny are not weakened nor attacked but remain a relative balance. On the other hand, I expect multiple examples showing similar problems of misogyny and sexism could strengthen the persuasiveness of feminist interpretations.

The conflict between morality and great literature is shown in Tolstoy's works and On the Road. Unlike racism which is shown obviously in Heart of Darkness through directly describing Africa unfairly as an uneducated, uncivilized place and implying cannibalism, misogyny in Tolstoy's Family Happiness is less explicit. In Family Happiness, Tolstoy adapts the first perspective narration from the view of the heroine, Masha, to make the expression of her feelings after marrying her husband Sergey more realistic and seem not to be the author's thoughts but what came from an ignorant girl's heart. But still, such writing could be interpreted as misogyny and thus contain immorality. With admiration for Sergey's knowledge and a firm belief that he inspires her, what Masha shows is always beyond tolerance and understanding. For example, when Sergey makes fun of her make-up and appearance, she convinces herself that it is because he values more on inner beauty more and tries to persuade her to develop the same value. It is explained and concluded by Tolstoy in the novella, where Masha says to herself that "all my thoughts and feelings of that time were not really mine: they were his thoughts and feelings, which had suddenly become mine and passed into my life and lighted it up" (13). Those words reveal her as an empty vessel filled with the thoughts of the man who is will be her husband, an incomplete person who needs a man's thoughts to fulfill her mind and develop her philosophy. A response to this is Xinhua Liu's "Misogyny in Russian Classics" where she questions if the heroine is portrayed to be too dependent since she seems to lack her own ideas. I develop further on her question and interpret the plot as a reflection of misogyny since Masha is shaped unequally as a submissive person without opinion and thus is closer to a foil of man than a complete person. In the later chapters, the husband answers Masha's question about why he gives the freedom that she would not use to her (which is also a suspicious question since it implies a natural right as something that needs to be given), saying that "all of us, and especially you women, must have personal experience of all the nonsense of life, in order to get back to life itself. the evidence of other people is no good" (65). "The nonsense of life" refers to the former plot where Masha falls in love with someone else, which is emphasized by Xinhua Liu as Tolstoy's intention. Here I believe that, especially by the phrase "especially you women," Tolstoy implies unfairly that women as more emotional and less driven by logic, reason, and intelligence, since others' experience is not sufficient for them to choose the reasonable life but only after having first-handed experience could them understand what is the good, "real life."

What Anna Karenina is distinguishingly different from Family Happiness is that the former is frequently regarded as a classic of promoting morality. Though I have no intention to and theoretically cannot accuse any of such interpretations, I would like to share another perspective. The main plot involving Anna Karenina is about her betraying the original marriage for what she believes is her true love and passion, Vronsky, and ends up suicide in sorrow and regret.

I shall emphasize that at the beginning of the book, Anna is portrayed as a moral woman who reconciles the conflict in the Oblonskys'

marriage for Mr. Oblonsky cheated on his wife. It might seem to be intuitive that her tragic end and the comparison of Anna as moral and later depraved represent the author's criticizing Anna's betrayal and promoting morality. However, it could be interpreted in another way. In Xinhua Liu's "Misogyny in Russian Classics," she mentions that it is common in Russian classics to build dualistic women's roles, especially in a romantic relationship, as either being holy or Eve (the seducer and who leads to man's sin, in this case, Vronsky's intervention in Karenin's marriage). She emphasizes that Eve could be interpreted as an image of a strong woman who could break the rules set by men, in short, a revolutionary. Adapting Xinhua's arguments, I believe the mere fact that the style of creating female characters by fitting them into two roles is itself misogynistic since they are not created as complete people with complete personalities like male characters. But further, I interpret Anna Karenina to be an unsuccessful and undetermined revolutionary of patriarchy shown by her confusion and shifting between the roles of the holy and Eve.

She appears as the holy at the beginning of the book reconciling conflicts in the Oblonskys family caused by an affair of the husband. Also, the betrayal of her original marriage could be regarded as a revolution to patriarchy, since the marriage is assigned by her father, a role of the authority of a family according to psychoanalytic lenses. She is also implied to be an incomplete revolutionary through her inner struggle, which Tolstoy adds to show her remaining morality that tortures her from the beginning till the end.

Her suicide is another evidence of her inner struggle. Before ending her life, she said "no, I won't let you make me miserable" (672). In "Misogyny in Russian Classics," Xinhua Liu mentions that it is possible that male authors are afraid of powerful female characters that could fight against males, so they tend to have a tragic end. I adapt what she said. Comparing Madame Bovary and Anna Karenina who both end up miserably, the husband who betrays his assigned marriage in Jane Eyre is shaped as an innocent man with a mad wife, making his cheating totally acceptable. Similarly, in Tolstoy's other work Resurrection, Nekhlyudov forces an innocent woman to have sex and gains inner peace after his redemption—being exiled with her to Siberia. Thus, I believe Anna Karenina could be interpreted as misogyny since the author intentionally portrays Anna as an undetermined revolutionary and that such a powerful female figure with her own desire, feelings, and thoughts should not rebel successfully.

If we summarize that the reason why Tolstoy's works show misogyny is those female roles always seem to be incomplete people actively serving male roles, then On the Road is misogynistic because of the absence of women, even though an advanced atmosphere of being open-minded towards race and gender is encouraged in the novel. In "Male View of Women in the Beat Generation: A Study of Gender in Jack Kerouac's On the Road," Fredrick Olsson shows that the "masculine homosocial group" (5) where the main character Sal is in is always with traditional masculine activities, including intellectual talks about philosophy and literature. However, all active participants are male. Also, portraits of female characters are mostly as a mother with chores or introduced as "(with) a beautiful blonde hair… a tennis-playing, surf-riding doll of the west",

and as a man's sister or girlfriend. He believes the "male bonding" in the homosocial group and the descriptions of other women are marginalized women, avoiding linking them to intelligence or equal positions as men. Through his interpretation, we can see that it is possible to show On the Road as misogyny. Since the above reveals multiple cases of great literature showing misogyny, it is reasonable to accept great literature with immortality. As for the potential negative influence brought to students whose study involves the immoral part of great books, Budiati in "The Dual Purpose of Teaching Literature: to Provide Stimulating Course Content and to Develop Students' Communicative Abilities" replies that "what needs to be worked out is a feasible framework for structuring analysis and discussion of the text itself…

Also, teachers' experience in using literature in their classes need to be exposed to ideas that reflect modern literary and semiotic approaches" (3). I think what he is emphasizing is that teachers' role in class is strong enough to correct students' inappropriate behaviors as long as the analysis of literature, especially the immoral part, does not function as the model of students' behaviors but texts open to interpretations.

Susan Sontag reveals a possible way of interpretation in her Against Interpretation. In which, she writes,

> *Even in modern times, when most artists and critics have discarded the theory of art as representation of an outer reality in favor of the theory of art as subjective expression, the main feature of the mimetic theory persists. Whether we conceive of the work of art on the model of a picture (art as a picture of reality) or on the model of a statement (art as the statement of the artist), content still comes first. The content may have changed. It may now be less figurative, less lucidly realistic. But it is still assumed that a work of art is its content. (Sontag, 19)*

I interpret it as her arguing against ways of interpretations that merely translate semiotic systems into determined meanings and encouraging a shift to focus more on feelings and personal interpretations. By this mean, literature interpretations that reveal certain works as misogynistic would be less emphasized, since by shifting focus on an absolute correspondence of diction to interpretations, interpreters now can sense more directly that interpretations are reflections on themselves instead of certain truth, and thus hopefully would undermine the negative effect of literature that could be interpreted as immoral and promote the positivity of literature to play its role.

The limitation of the passage is quite clear, which is that interpretations are highly subjective and rely on personal opinions. Theoretically, any interpretation mentioned above with intentions to point out misogyny or sexism could be denied by others even without a complete, formulated counterargument. A good example of how interpretations that indicate misogyny could be ambiguous and arguable is the interpretation of the Bible (though as a religious work, it is also open to literary interpretations),

by Simone de Beauvoir in the Second Sex, where she interprets that Eve is “made from Adam’s rib and not from the earth” (464) as an autonomous birth and that “he (God) destined her for man; he gave her to Adam to save him from loneliness, her spouse is her origin and her finality; she is his complement in the inessential mode” to better prove the conclusion that “God did not spontaneously choose to create her for herself to be directly worshipped in turn.”

Controversially, Aquinas interprets that same event in his Summa Theologiae in different ways, firstly that “in order thus to give the first man a certain dignity consisting in this, that as God is the principle of the whole universe, so the first man, in likeness to God, was the principle of the whole human race. Wherefore Paul says that ‘God made the whole human race from one’” and secondly that “that man might love a woman all the more, and cleave to her more closely, knowing her to be fashioned from himself. Hence it is written (Genesis 2:23-24): ‘She was taken out of man, wherefore a man shall leave father and mother, and shall cleave to his wife.’ This was most necessary as regards the human race, in which the male and female live together for life; which is not the case with other animals” (250).

In his mind, that Eve is made from men strengthens male and female’s relationship and thus far from immorality. The limitation could also be explained by the definition of literature that it is intended to be ambiguous and open to interpretations. Still, as mentioned before, since no interpretation is above others, even other interpretations support the completely opposite claim, they do not necessarily undermine the persuasiveness of others, and thus my interpretations and those I quote remain a delicate balance to continue supporting my argument.

Exploring the Causes Behind Low Socioeconomic Status

Author: Tina Tian

Introducing the impacts of low socioeconomic status

In contemporary society, one's success is mainly determined by their socioeconomic status, and having a low socioeconomic status can bring out many barriers. A low socioeconomic status can bring out many negative impacts on one's life, such as lower educational achievement, poverty, and shorter life expectancy, which creates a chain effect that needs to be avoided. For instance, in 2014, dropout rates in US high schools among 16–24-year-olds reached a high rate of 11.6% in low-income families, while high-income families only reached 2.8%. The gap between social classes is widening every day due to factors such as historical intervention and resource scarcity, causing devastating consequences to society, yet, many parts of the world choose to neglect the issue. As wealth disparities have widened, so have differences in outcomes, wealthier people now have better access to education and health care. By reducing this gap, it will not only brighten one's future but also benefit all aspects of society.

Historical Intervention

A major cause of socioeconomic inequalities can be traced back through history. During the 17th and 18th centuries, America heavily depended on slavery for harvesting tobacco and indigo plantations. Most of them barely got the chance to attend school, which prevented them from receiving advanced knowledge and higher-paying job opportunities. They were also not given the right to own any properties or assets, leaving a significant economic disadvantage for the next generation and perpetuating a vicious cycle that is hard to break. Even after slavery was abolished, racism and discrimination were still deeply stuck in the minds of many people, making it difficult for minority groups to access equal opportunities in many areas. Today, racism still exists and continues to cause inconveniences for minorities to obtain equal opportunities. In the early 16th century, when the first group of Europeans arrived in North America, they soon began deporting the Indigenous communities from their traditional land. Undoubtedly, deportation disrupted their existing living style and forced them to adapt to new environments, which led to the loss of cultural integration. Colonizers forced Indigenous children into residential schools to eradicate their native language and background. Many survivors of residential schools endured physical and mental trauma throughout their childhood, causing unforgettable pain and raising their chances of obtaining a low socioeconomic status. Remarkable historical events such as slavery, industrialization, and colonization are the early stages of socioeconomic disparities that persist in today's society. Resource Scarcity in Developing Countries Furthermore, when the earth holds limited resources, individuals with higher socioeconomic status are more likely to get better resources. While the ones who live in developing countries with inadequate resource distribution end up with low socioeconomic status. Notably, the least peaceful countries face the most intense level of resource scarcity due to political instability. These countries with slow economic growth and high poverty rates have lower coping capacities compared to developed countries. Nearly two-thirds of the countries experiencing insecurity of food and water are struggling to maintain a politically stabilized nation. The chances of having a low socioeconomic status for individuals who live in these countries will increase every day if the problem stays unsolved. It is very rare for them to change the current situation due to resource scarcity and constant war, perpetuating another unbreakable cycle for the younger generation.

Solutions to Low Socioeconomic Status

As the COVID pandemic continues to expand across the world, it has also exacerbated socioeconomic inequalities on top of historical and political factors. The seven global experts from the World Economic Forum “Expert Network” came up with multidimensional solutions to prevent the issue from spreading. The chief executive officer of Japan—Taki Niinami said it is crucial to increase the minimum wage to prevent social unrest and division. Through implementing the policy “equal pay for equal work”, the gap between social classes will be reduced. Countries should increase taxation on personal assets so that the profit can be used to fight against global issues such as poverty. Another way to reduce inequalities is by protecting migrant workers, reducing international remittance transfer costs, and bolstering migrant’s rights throughout the migration process. To achieve this goal, the nature of knowledge creation and collaboration must be addressed to developing countries aimed at formulating effective responses to global inequalities. Only then can the designed policies truly become sustainable in reducing the issue.

Closing statement

To conclude, many factors can contribute to this universal issue, whether it's the trauma and mistakes made in the past or competitions caused by scarce resources. Socioeconomic inequalities remain a significant challenge to humanity, slowing down social growth and inflicting war. To build a world where every individual shares equal opportunities, concerted efforts are needed to address the political and historical factors that perpetuate these disparities. By implementing inclusive policies and fostering social mobility, the world will soon become a place where socioeconomic status is no longer a determining factor in individuals' life trajectories.

References

1. “Education and Socioeconomic Status Factsheet.” American Psychological Association, American Psychological Association, www.apa.org/pi/ses/resources/publications/education. Accessed 26 Aug. 2023.
2. ll_sevenpillers. “The Causes of Economic Inequality.” Seven Pillars Institute, 22 Jan. 2015, sevenpillarsinstitute.org/causes-economic-inequality/.
3. Author links open overlay panelGawain Heckley a b, et al. “A General Method for Decomposing the Causes of Socioeconomic Inequality in Health.” Journal of Health Economics, North-Holland, 7 Apr. 2016, www.sciencedirect.com/science/article/pii/S0167629616300066.
4. Author links open overlay panelMartha J. Farah 1, et al. “The Neuroscience of Socioeconomic Status: Correlates, Causes, and Consequences.” Neuron, Cell Press, 27 Sept. 2017, www.sciencedirect.com/science/article/pii/S0896627317307493.
5. “These Are the World’s Most Gender-Equal Countries.” World Economic Forum, www.weforum.org/agenda/2022/07/gender-equal-countries-gender-gap/. Accessed 26 Aug. 2023.

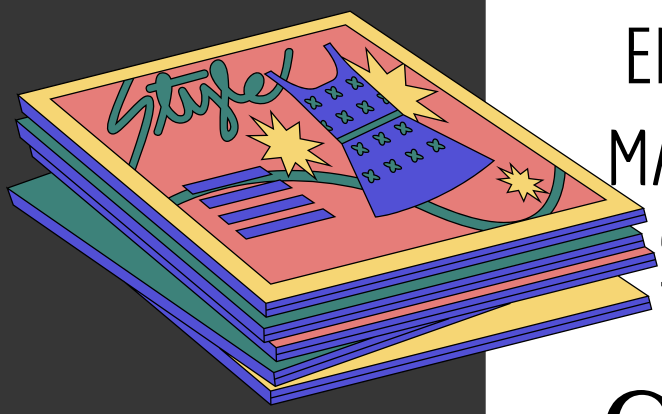
HRYA

EDITOR-IN-CHIEF:
XINYI LIU
EVA GAO

SECTION 2
EDITOR-IN-CHIEF:
HANBIN LUO

SECTION 3
EDITOR-IN-CHIEF:
SERENA SHI

CHIEF DESIGNER:
EVA GAO



WRITER:

AFRIN PAJULLULAH
ASTRID ZUO
CHARLENE ZHOU
ELAINE LI
JAKOB ROCHE
LANDIN HUANG
TINA TIAN
YOULAN LI
ZHUOYI WU

EDITOR:

ADRIAN CHEONG
ANGEL GAO
ELAINE ZHOU
MAGGIE WANG
SHEN HOU

DESIGNER:

ADRIAN CHEONG
ANGELA MA
CILEY LI
CICI NIE
SYLVIA ZHOU

ARTIST:

CINDY HUANG
CHOLE WANG
ERIC LIU
YARU CAO
YUTONG DENG
MIA LIANG

CONTRIBUTORS