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RESEARCH ARTICLE

UTERINE CANCER: SEX DOMINANT CHARACTER

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Abstract

The undermentioned research describes the relationship between uterine cancer and genetic disorder, the research aims at providing a strong relationship using mathematical analysis based on the pedigree of a patient's family, it describes that recurrence of the disease in the family is due to sex linked dominance of the character.

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Introduction:-

Various studies have shown that cancer could be genetic, It has been difficult to find a common cause for the many and complex phenotypes of cancer such as dedifferentiation, invasiveness, abnormal morphology, growth rate and metabolism, genetic instability, progression to malignancy, cellular heterogeneity of phenotypes and karyotypes, and clonal origin despite heterogeneity. Over 100 years ago aneuploidy, an abnormal balance of chromosomes, was proposed to cause cancer. However, the aneuploidy hypothesis has since been abandoned, in favor of the gene mutation hypothesis, because it could not offer conventional explanations for cancer-specific phenotypes, so based on this knowledge there can be a relationship between Uterine cancer and sex dominant character.

Theory and Methodology:-

Pedigree analysis is the study of inheritable traits in a group of related individuals considering the nature of trait, the onset time and the duration of expression with the degree of effect. This study could categorize the disease into following as shown in the Fig.1

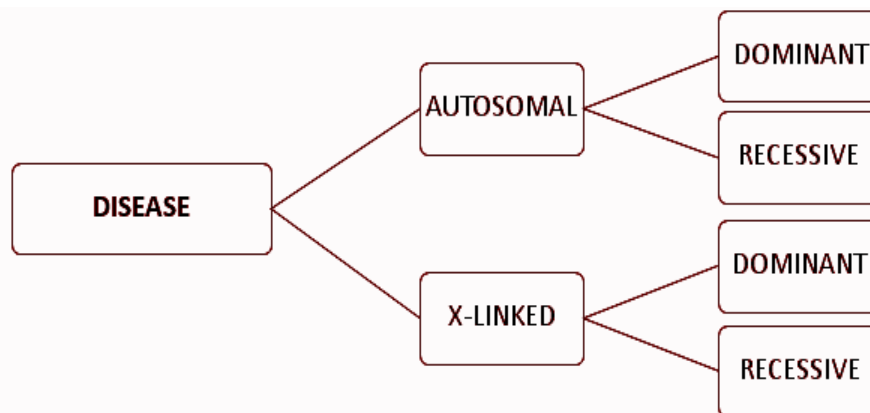


Fig. 1:-

Autosomal Dominant:

Diseases which are dominant can be expressed even in heterozygous form. To determine whether the trait is dominant is:

It is found in every successive generation.

Half of the offspring have it.

E.g.: Huntington's disease

Autosomal Recessive:

To determine whether the trait is recessive or not following should be considered:

Diseased individuals have unaffected parents.

1/4th of progeny is diseased with heterozygote.

E.g.: Phenylketonuria, Albinism

X-linked recessive:

Following are the characteristic features:

Affected males have unaffected mothers.

Affected female has an affected father and a carrier or unaffected female.

Only females can be the carrier of such disorders.

Skipping of generation can be observed.

E.g.: Hemophilia, Duchenne muscular dystrophy

X-Linked Dominant:

The characteristic features are:

Diseased father has all diseased daughters, but no son will be affected.

If a mother is affected, she has 50% chances of passing it to her offspring.

E.g.: Hypophosphatemia

Morgan's theory of linkage and recombination:

from where we concluded that recombination is inversely proportional to linkage.

Pedigree analysis is well known for the study of genetic disorders. Pattern for the occurrence of uterine cancer in the generation of family was studied using pedigree analysis:

Study began when a lab report of a 55 years old woman showed uterine endometriosis carcinoma grade 2. The study was conducted in 3 major steps:

Collection of data:

Related medical reports of the patient(B₃C₁) and the medical history of the rest of the related family members were collected.

Establishing relation:

The medical history of the entire family, considering only the uterine cancer was assembled in the form of pedigree which helped us to determine it as a genetic trait. In the pedigree the diseased person is having a non-diseased mother and non-diseased progeny as well which indicates it to be X- linked dominant.

Study:

A brief study was carried out from Mendel's to Morgan's theories based upon which the proving was done.

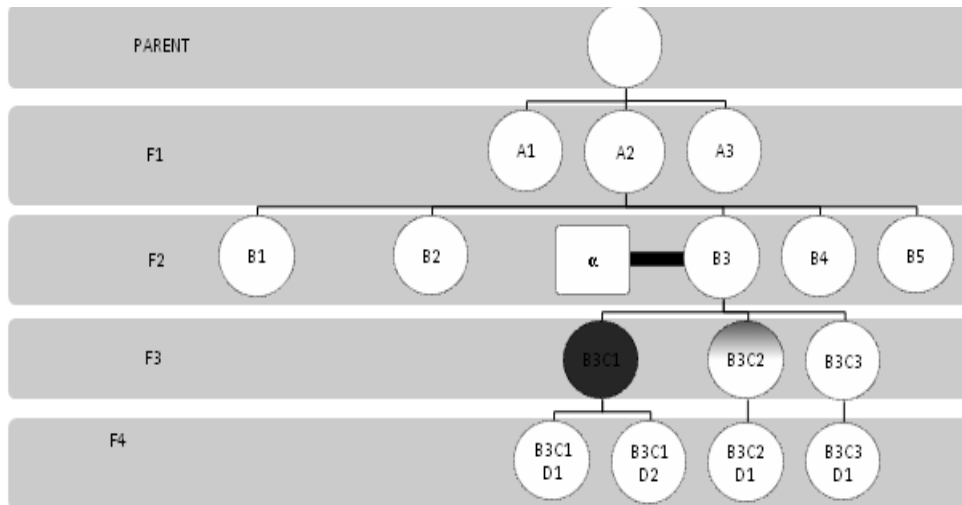
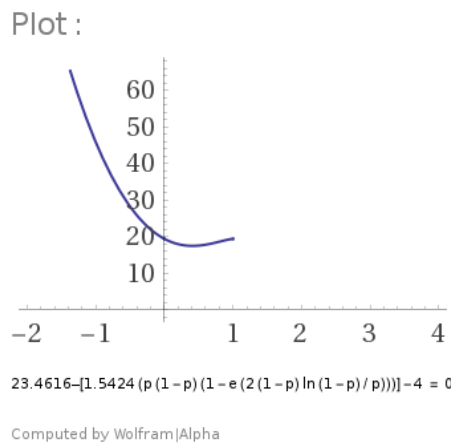


Fig. 2:- Pedigree chart of patient’s generation suffering with endometrioid carcinoma.

Results and Discussion:-

The pedigree could be predicted as the α (male) is the carrier which happens to be the father of the patient. Since α is carrier and B_3C_1 is affected (allele value = 1), the 4th filial, $B_3C_1D_1$ and $B_3C_1D_2$ may or may not be affected. Similarly, B_3C_2 may or may not be affected (allele value = 0.25) and it is filial $B_3C_2D_1$ may or may not be affected (allele value = 0.25). These character alleles of uterine cancer are shown to be X-linked, keeping the allele of uterine cancer as a newly introduced allele; it should become a fixed allele in generation and must satisfy the micro-evolution equation. Using the micro-evolution equation given by Bharat Kwatra, et al Int J Sci Res Sci Technol. March-April-2020; 7 (2) : 313-339 of a dominant allele becomes fixed through generations:

$\alpha - 1.5424 \{p(1-p) (1 - e^{-x})\} = x$
 where; x= number of generations passed
 $\alpha = 23.4616 \beta = \{2(1-p)\ln(1-p)/p\}$
 p= population with different allele
 Solving the equation:



$1.5424 (1 - p) (p + 2 e^{(p - 1) \log(1 - p)}) = 19.4616$
 $1.5424 p^2 + 8.38536 p^2 \log(1 - p) - 1.5424 p - 16.7707 p \log(1 - p) + 8.38536 \log(1 - p) + 19.4616 = 0$
 $\Rightarrow p \approx 0.2196906531448947604279008599 - 1.165985100112388490814257 \approx -0.946$
 Or
 $\Rightarrow p \approx 0.2196906531448947604279008599 + 1.16598510011238849081425 \approx 1.386$

The positive “p” is taken into consideration, which suggests 1.386 should be the occurrence of alleles in the 4 generations and according to pedigree analysis it suggests the range of 1.25-1.5. Using the above equation and Morgan law of recombination it was clear that the allele is dominant.

Conclusions:-

It was concluded from the pedigree analysis and mendelian genetics that the allele responsible for the uterine cancer is x linked and using the micro-evolutionary relations with Morgan law it was mathematically proved to be dominant. Which draws the conclusion to Uterine cancer is a x linked dominant character.

References:-

1. Kwatra B. HACKING THE BLOOD-BRAIN BARRIER. Eur J Biol Med Sci Res [Internet]. 2017;5(4):10–3. Available from: <https://www.eajournals.org/journals/european-journal-of-biology-and-medical-science-research-ejbmsr/vol-5-issue-4-june-2017/hacking-blood-brain-barrier/>
2. Kwatra B. A REVIEW ON POTENTIAL PROPERTIES AND THERAPEUTIC APPLICATIONS OF LYCOPENE. Int J Med Biomed Stud [Internet]. 2020;4(4):33–44. Available from: <https://doi.org/10.32553/ijmbs.v4i4.1081>
3. Kwatra B, Mudgil M. LIGHT ASSISTED TIO₂-BASED NANOCOMPOSITE SYSTEMS: A NOVEL TREATMENT FOR CANCER. Int J Med Biomed Stud [Internet]. 2020;4(4):28–32. Available from: <https://doi.org/10.32553/ijmbs.v4i4.1080>
4. Kwatra B, Arora C. THE UNEXPLAINED SIMILARITY BETWEEN THE ATOMIC AND GRAVITATIONAL MODELS. Int J Adv Res [Internet]. 2020 Mar 31;8(3):1099–107. Available from: <http://www.journalijar.com/article/31993/the-unexplained-similarity-between-the-atomic-and-gravitational-models/>
5. Kwatra B. A Review on Potential Properties and Therapeutic Applications of DHA and EPA. ijpr.humanjournals [Internet]. 2019;16(4):140–76. Available from: https://www.researchgate.net/publication/337745268_A_Review_on_Potential_Properties_and_Therapeutic_Applications_of_DHA_and_EPA
6. Kwatra B. Tinospora Crispa As A Future Cure For Obesity/Cholesterol. Int J Sci Technol Res [Internet]. 2017;6(7):340–1. Available from: <https://www.ijstr.org/final-print/july2017/Tinospora-Crispa-As-A-Future-Cure-For-Obesitycholesterol.pdf>
7. Bharat Kwatra. Procuring Natural Dye for Solar Cell Using Leaf Waste. Int J Sci Eng Res [Internet]. 2019;7(5):46–7. Available from: <https://www.ijser.in/archives/v7i5/21051905.pdf>
8. Kwatra B. THE SIMVASTATIN AND DMXAA ON THE CO-CULTURE OF B16.F10 MELANOMA CELLS AND MACROPHAGES SHOWS ANTITUMOR ACTIVITY. World J Pharm Res [Internet]. 2019;8(9):1318–9. Available from: https://wjpr.net/dashboard/abstract_id/12821
9. Kwatra B. Bioactive-Compounds: alternative to control Candida spp. Int J Sci Res Rev [Internet]. 2019 [cited 2015 Mar 8];8(3):221–3. Available from: https://www.ijssr.org/down_83045.php
10. Kwatra B. Effects of Mineral Separation by Time and Enteric Coating Mechanism for Calcium and Iron Absorption in Mammalia. Int J Sci Res [Internet]. 2019;8(12):1265–70. Available from: https://www.ijssr.net/get_abstract.php?paper_id=13121901
11. Kwatra B. Maprovit 3, 6, 9: Perfect Companion of your Immune System to Fight Corona Virus Hit. Int J Sci Res [Internet]. 2020;9(4):241–241. Available from: https://www.ijssr.net/get_abstract.php?paper_id=SR20406111953
12. Kwatra B, Mudgil M. Untangling the Mathematical Relation Between Natural Selection and Adaptive Radiation Using Macromolecules and Microevolutionary Forces. Int J Sci Res Sci Technol IJSRST | [Internet]. 2020;7(2):313–39. Available from: <http://ijsrst.com/IJSRST207260>
13. Chaitanya Arora1 BK. Mathematical and Statistical Approach to Define Past Present Future Events. Int J Sci Res [Internet]. 2019;8(4):261–3. Available from: https://www.researchgate.net/publication/332594418_Mathematical_and_Statistical_Approach_to_Define_Past_Present_Future_Events
14. Kwatra B. MECHANISMS OF PATTERN FORMATION OF FBP17 IN MAST CELLS. Int J Adv Res [Internet]. 2019 Apr 30;7(4):413–4. Available from: <http://www.journalijar.com/article/27536/mechanisms-of-pattern-formation-of-fbp17-in-mast-cells/>
15. Mudgil1 M, Kwatra2 B. Mosquito Menace Aim: Observing the life cycle of Aedes aegypti mosquito and understanding its behavior towards different natural oils for encouraging natural methods of repellence. Int J Sci

- Res [Internet]. 2019;8(1):1314–5. Available from: https://www.ijsr.net/get_abstract.php?paper_id=ART20194593
16. Kwatra B. A REVIEW ON POTENTIAL PROPERTIES AND THERAPEUTIC APPLICATIONS OF BROMELAIN. *www.wjpps.com* [Internet]. 2019;8(11):488–500. Available from: https://www.researchgate.net/publication/337745347_A_REVIEW_ON_POTENTIAL_PROPERTIES_AND_THERAPEUTIC_APPLICATIONS_OF_BROMELAIN
 17. Kwatra B. Holothuroidea (Sea Cucumber): Key to Anti-Aging. *Int J Sci Res* [Internet]. 2019;8(6):884–884. Available from: https://www.ijsr.net/get_abstract.php?paper_id=6061901
 18. Kwatra B, Mudgil M. PROTONATED CRAB SHELL WASTE AS FUNGAL INHIBITOR. *Int J Med Biomed Stud* [Internet]. 2019 Apr 17;3(4):111–6. Available from: https://www.researchgate.net/publication/332537052_PROTONATED_CRAB_SHELL_WASTE_AS_FUNGAL_INHIBITOR
 19. Kwatra B. A Review on Potential Properties and Therapeutic Applications of Vitamin D. *Int J Sci Res* [Internet]. 2020;9(4):682–91. Available from: https://www.researchgate.net/publication/340595290_A_Review_on_Potential_Properties_and_Therapeutic_Applications_of_Vitamin_D
 20. Kwatra B. EXPRESSION AND CHARACTERIZATION IN PICHIA PASTORIS BY CLONING OF DELTA 4 DESATURASE FROM ISOCHRYSIS GALBANA. *Indian J Appl Res* [Internet]. 2019;9(5):1–2. Available from: https://www.researchgate.net/publication/332798347_EXPRESSION_AND_CHARACTERIZATION_IN_PICHIA_PASTORIS_BY_CLONING_OF_DELTA_4_DESATURASE_FROM_ISOCHRYSIS_GALBANA
 21. Kwatra B. CALCIUM AND IRON ABSORPTION: INVITRO STUDIES. *Int J Med Biomed Stud* [Internet]. 2019 Dec 14;3(12):59–61. Available from: https://www.researchgate.net/publication/337943738_CALC_IUM_AND_IRON_ABSORPTION_INVITRO_STUDIES
 22. Kwatra B. HYDROQUINONE: A novel growth inhibitor and apoptosis inducer in U-251 MG CELLS. *Int J Med Biomed Stud* [Internet]. 2019 Jun 6;3(6):15–6. Available from: https://www.researchgate.net/publication/333726255_HYDROQUINONE_A_novel_growth_inhibitor_and_apoptosis_inducer_in_U-251_MG_CELLS
 23. Kwatra B. Allicin-An After Digestion Antimicrobial Agent. *ACTA Sci Microbiol* [Internet]. 2019;2(5):48–51. Available from: <https://actascientific.com/ASMI/pdf/ASMI-02-0213.pdf>
 24. Kwatra B. LOCATOR THEORY FOR ELEMENTS IN PERIODIC TABLE “LEPT.” *Glob J Pure Appl Chem Res* [Internet]. 2017;5(1):9–10. Available from: [https://www.eajournals.org/journals/global-journal-of-pure-and-applied-chemistry-research-gjpacr/vol-5-issue-1-march-2017/locator-theory-elements-periodic-table-lept/\(1,2,11-20,3,21-24,4-10\)](https://www.eajournals.org/journals/global-journal-of-pure-and-applied-chemistry-research-gjpacr/vol-5-issue-1-march-2017/locator-theory-elements-periodic-table-lept/(1,2,11-20,3,21-24,4-10)).