Oncofertility Saturday Academy Poster Abstract Form

NAME: Ruchi Agashe

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Abstract Categories

Check one only:

☐ **Reproductive Biology** ☐ **In Vitro Fertilization** ☒ **Cancer Biology** ☐ **Oncofertility**

☐ **Other** _____

ABSTRACT TITLE: Targeting EGFR-mutations Identified from Blood-Derived Circulating Tumor DNA for Patients with Advanced Lung Adenocarcinoma

AUTHOR: Ruchi Agashe

LEARNER OBJECTIVE: Please state the educational objective in a measurable, testable question. Then state what the participant's poster will be able to demonstrate to the viewer(s)/audience.

How can genomic analysis in blood-derived circulating tumor DNA identified by next-generation sequencing be used to detect EFGR mutations and identify therapeutic targets in patients with advanced lung adenocarcinoma?

The participant will be able to demonstrate how ctDNA can be used to identify genomic alterations in patients with advanced lung adenocarcinoma for therapy and have potential clinical application as a blood-derived liquid biopsy.

CONTENT (TOPICS): Please provide a brief statement or outline of the content/topic(s) to be presented:
Topics include an overview of circulating tumor cells and circulating tumor DNA, the analysis of ctDNA in patients with advanced lung adenocarcinoma as a potential blood-derived liquid biopsy, the use of genomic analysis to identify EGFR mutations as potential therapeutic targets.

ABSTRACT: Abstract content should be single spaced, typed using (10-12 pt font) and between 250-300 words. The abstract content should be typed in the space below and **MUST** include the following:

Lung cancer is the second most common type of cancer and the leading cause of cancer-related death in the world. Non-small cell lung cancer (NSCLC), which often identified in later stages[5], is the most common histological variant, making up approximately 85% of all cases.[3] Mutations in epidermal growth factor receptor (EGFR), a driver of NSCLC, are correlated with decreased response rate and progression-free survival.[5] Genomic profiling of circulating tumor DNA (ctDNA) is an alternative to repeat invasive biopsies in NSCLC patients with tissue insufficient for genomic profiling. Circulating tumor cells (CTCs) are shed off primary tumors into the bloodstream and release ctDNA after cell death.[4] ctDNA tests require small amounts of blood, are a more affordable option than tissue biopsies, and can identify resistance mutations.[1,2] The utility of ctDNA analysis needs to be tested to facilitate the use of blood-derived liquid biopsies in advanced lung adenocarcinoma. 88 patients with lung adenocarcinoma were followed at UC San Diego Moores Cancer Center. 34 had NGS, 29 had other forms of genotyping, and 25 had no tissue testing due to contraindications. ctDNA was isolated from their plasma, mutations were identified, therapy was matched to the alterations, and therapeutic efficacy was measured. The results indicated that 82% had ctDNA alterations. 27.35% were EGFR mutations. The overall concordance rate for EGFR alterations was 76.5%. Excluding patients with no ctDNA detected, the overall concordance rate was 80.8% for EGFR mutations, and 100% in patients whose time interval between the blood draw and tissue biopsy was less than 1 month. Of the 28.4% of patients who were matched to a therapy, 85% received matched therapy to EGFR mutations, and 73% achieved stable disease. In conclusion, liquid biopsies via ctDNA provides an affordable and effective way to detect resistance genomic mutations that can revolutionize cancer detection methods and improve matched therapy.[5]

References

1. Alix-Panabières, Catherine, and Klaus Pantel (Jan. 2013). "Circulating Tumor Cells: Liquid Biopsy of Cancer." Retrieved from Clinical Chemistry, clinchem.aaccjnls.org/content/59/1/110?ijkey=c95728b19549be898c7b712ffda250a7df561aa2&keytype2=tf_ipsecsha

2. Gkountela, Sofia, et al. "Recent Advances in the Biology of Human Circulating Tumour Cells and Metastasis." Bmj, vol. 316, no. 7149, 1998, doi:10.1136/bmj.316.7149.3a

3. Knight S, Crosbie P, Balata H, Chudziak J, Hussell T, Dive C, (Sep. 2017). "Progress and prospects of early detection in lung cancer." Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5627048/

4. Schwaederle M, Chattopadhyay R, Kato S, Fanta PT, Banks KC, Choi IS, Piccioni DE, Ikeda S, Talasaz A, Lanman RB, Bazhenova L, Kurzrock R (Oct 2017). "Genomic Alterations in Circulating Tumor DNA from Diverse Cancer Patients Identified by Next-Generation Sequencing." Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/28807936

5. Schwaederlé MC, Patel SP, Husain H, Ikeda M, Lanman RB, Banks KC, Talasaz A, Bazhenova L, Kurzrock R (Sep 2017). "Utility of Genomic Assessment of Blood-Derived Circulating Tumor DNA (ctDNA) in Patients with Advanced Lung Adenocarcinoma." Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/28539465

Oncofertility Saturday Academy Poster Abstract Form

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Abstract Categories

Check one only:

☐ **Reproductive Biology** ☒ **In Vitro Fertilization** ☐ **Cancer Biology** ☐ **Oncofertility**

☐ **Other** _____

ABSTRACT TITLE: Neonatal Outcomes Between IVF/ICSI Singletons and Twins Conceived Naturally and Through Assisted Reproduction

AUTHOR: Alyson Brown

LEARNER OBJECTIVE:

Is there a correlation multiple births and decreased physical abilities in children born using assisted reproduction technologies such as IVF/ICSI?

The participant will be able to demonstrate: This poster will be able to demonstrate the effect of IVF on both singletons and twins born, and some of the detrimental physical impacts it may have on their future development.

CONTENT (TOPICS): The content includes several studies comparing the immediate post-conception and future outcomes between children born through IVF, the risks of twin pregnancies, and the rate of morbidity comparing IVF and non-IVF children.

ABSTRACT:

Record numbers of women are turning to IVF to increase their chance of fertility. While most IVF centers perform single embryo transfer, some will implant multiple embryos if a women chooses to have twins or wants to have a higher chance of a successful implantation.[2] As demonstrated by research, there is a clear difference in health outcomes between those infants conceived without assisted reproduction and those through IVF. A study done by the Groningen ART Cohort compared outcomes between three groups: children born through conventional IVF–ICSI vs. modified natural cycle IVF vs. natural conception. They studied 26 twin infants and 63 singletons, comparing rates of attrition in development after four years.[3] A secondary study done in Denmark compared morbidity between 472 IVF/ICSI twins, 1132 non-IVF/ICSI twins and 634 IVF/ICSI singletons. The Groningen study demonstrated that 4-year-old IVF twins have a significantly lower total IQ and neurological development, a lower body weight and a smaller height than 4-year-old IVF singletons. Supporting the primary findings, the Denmark study indicates that physical health of IVF/ICSI twins is comparable with that of non-IVF/ICSI twins. However, physical health of IVF/ICSI twins is poorer and the negative implications for the families are stronger compared with IVF/ICSI singletons. Not only were these children physically impacted, but their parents also faced increased marital stress.[1] Overall, this supports that IVF has only minimal impact on overall development. However, twins born through IVF have significantly decreased abilities in comparison to their peers.[4] This is shown through higher rates of anencephaly and preterm birth, as well as a significantly increased chance of respiratory complications, sepsis, and jaundice in later life.[5] The information gathered in these studies raises concerns about the birth of multiple embryos, and indicate that single embryo transfer may be a better option.

1. Barda G, Gluck O, Mizrachi Y, Bar J (2017) A comparison of maternal and perinatal outcome between in vitro fertilization and spontaneous dichorionic–diamniotic twin pregnancies. *J Maternal and Fetal Neonatal Medicine*.;30:2974–7

2. Gleicher, N., Kushnir, V., Barad, D. (May 3, 2016) Risks of spontaneously and IVF-conceived singleton and twin pregnancies differ, requiring reassessment of statistical premises favoring elective single embryo transfer (eSET) *Reproductive Biology and Endocrinologyl.* 14: 25.

3. Kuiper, D., Bennema, A., Bastide-van Germet, S., Seggers, J., Schendelaar, P., Haadsma, M., Hoek, A., Heineman, M., Hadders-Algra, Minja (June 2017). Neurodevelopmental and cardiometabolic outcome in 4-year-old twins and singletons born after IVF. *Reproductive BioMedicine Online*, 34(6), 659 - 667.

4. Sazonova, A., Kallen, K., Thurin-Kjellberg, A., Wennerholm, U., Bergh, C. (March 2013) Neonatal and maternal outcomes comparing women undergoing two in vitro fertilization (IVF) singleton pregnancies and women undergoing one IVF twin pregnancy. *Fertility and Steril*ity; 99(3), 731-737.

5. Shah, J.S., Nasab, S.H., Chappell, N. (2018) Neonatal outcomes among twins stratified by method of conception: secondary analysis of maternal fetal medicine (MFMU) network database. *Assist Reprod Genet.* 35: 1011.

Oncofertility Saturday Academy Poster Abstract Form

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Abstract Categories

Check one only:

☒ **Reproductive Biology** ☐ **In Vitro Fertilization** ☐ **Cancer Biology** ☐ **Oncofertility**

☐ **Other** _____

ABSTRACT TITLE: Exploring the potential of Metformin to Prevent the Occurrence of Endometrial Cancer

AUTHOR: Natalie Chavarria

LEARNER OBJECTIVE: Please state the educational objective in a measurable, testable question. Then state what the participant's poster will be able to demonstrate to the viewer(s)/audience.

Question: Is metformin associated with lowering the risk of endometrial cancer occurrence?
The participant will be able to demonstrate: The potential of metformin in lowering the occurrence of endometrial cancer by exploring the results of three population-based studies and an in-vivo study.

CONTENT (TOPICS): Please provide a brief statement or outline of the content/topic(s) to be presented.
Metformin, a type-2 diabetes drug, has been theorized to prevent the occurrence of endometrial cancer. This theory was explored in three population-based studies and an in-vivo study. These studies show that the potential of metformin to decrease the risk of endometrial cancer development, requires further investigation.

Metformin is a type-2 diabetes drug theorized to inhibit the growth of endometrial cancer due to the correlation between the insulin resistance found in type-2 diabetes patients and the insulin resistance found in endometrial cancer patients[6]. Evidence confirming this theory remains controversial because large population-based studies are lacking. The following four studies disprove the potential of metformin to prevent the occurrence of endometrial cancer growth. The first study, a 2016 in-vivo study, proved the inability of metformin to reduce the ki-67 expression and inhibit endometrial cancer proliferation[3]. The second study, a cohort analysis observing the US healthcare claims of 272,422 subjects from 2000-2011, found no association with metformin and decreased development of endometrial cancer[4]. The third study, a case control analysis observing 1,746 subjects from the UK-based General Practice Research Database (GPRD) between 1995-2012, resulted in no lowered risk of endometrial cancer occurrence in subjects taking metformin[1]. A fourth study observing 748 subjects from 1997-2006 utilization databases in Lombardy, Italy, found no association between metformin and decreased proliferation of endometrial cancer[2]. Overall, research indicates that there is insufficient evidence proving the association between metformin and reduced risk of endometrial cancer development. Therefore, further investigation into metformin's potential for preventing endometrial cancer is required to demonstrate its promise.

1. Becker, C., Jick, S. S., Meier, C. R., & Bodmer, M. (2013). Metformin and the risk of endometrial cancer: A case–control analysis. *Gynecologic Oncology,129*(3), 565-569. doi:10.1016/j.ygyno.2013.03.009
2. Franchi, M., Asciutto, R., Nicotra, F., Merlino, L., Vecchia, C. L., Corrao, G., & Bosetti, C. (2017). Metformin, other antidiabetic drugs, and endometrial cancer risk. *European Journal of Cancer Prevention,26*(3), 225-231. doi:10.1097/cej.0000000000000235
3. Iglesias, D. A., Zhang, Q., Celestino, J., Sun, C. C., Yates, M. S., Schmandt, R. E., & Lu, K. H. (2016). Lean Body Weight and Metformin Are Insufficient to Prevent Endometrial Hyperplasia in Mice Harboring Inactivating Mutations in PTEN. *Oncology,92*(2), 109-114. doi:10.1159/000450615
4. Ko, E., Sturmer, T., Hong, J., Camelo, W., Bae-Jump, V., & Funk, M. (2014). Metformin and the risk of endometrial cancer: A population-based cohort study. *Gynecologic Oncology,133*, 32. doi:10.1016/j.ygyno.2014.03.099
5. Tang, Y., Zhu, L., Li, Y., Yu, J., Wang, J., Zeng, X., . . . Xu, J. (2017). Metformin Use Is Associated with Reduced Incidence and Improved Survival of Endometrial Cancer: A Meta-Analysis. *BioMed Research International,2017*, 1-9. doi:10.1155/2017/5905384

Oncofertility Saturday Academy Poster Abstract Form

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Abstract Categories

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☒ **Reproductive Biology** ☐ **In Vitro Fertilization** ☐ **Cancer Biology** ☐ **Oncofertility**

☐ **Other** _____

ABSTRACT TITLE: Advances in Stem Cell Technology Leading to Increased Live Births Rates in Mice

AUTHOR: Molly Demer

LEARNER OBJECTIVE: Please state the educational objective in a measurable, testable question. Then state what the participant's poster will be able to demonstrate to the viewer(s)/audience.

Educational Objective: How does the use of a dox-inducible promoter impact the live birth rate of iPSC mice?

The participant will be able to demonstrate: The different techniques used in generating iPSCs and how they pertain to human reproductive science.

CONTENT (TOPICS): Please provide a brief statement or outline of the content/topic(s) to be presented:
A history of the use of embryonic and induced pluripotent stem cells(iPSCs) and methods for developing iPSCs,

ABSTRACT: Abstract content should be single spaced, typed using (10-12 pt font) and between 250-300 words. The abstract content should be typed in the space below and **MUST** include the following:

Standard Research Format

New applications of stem cell research, more specifically, the use of induced pluripotent stem cells (iPSCs) may provide another avenue to further the progress of human reproductive science when gametes are not an option or desired. In 2006, the Yamanaka lab demonstrated that iPSCs can be generated from somatic cells through transfection of Oct4, Sox2, Klf4, and c-Myc which are transcription factors known to affect genetic reprogramming of somatic cells back to full pluripotency.[3] This report will explore the methodology of iPS cell line production and whether the use of a dox-inducible promoter increases the efficiency of live mouse pup births. Dox-inducible promoter prevents the inappropriate expression of the Yamanaka factors in the developing embryo. The Baldwin lab, which utilized the dox-inducible promoter in eight cell lines produced 29 pups from 1,378 injected 4N blastocysts, a 2.1% live birth rate. Their highest producing cell line, iMZ-21, produced 18 pups from 140 injected 4N Blastocysts, a 13% live birth rate.[2] The Zhou lab developed six cell lines yielding 27 pups from 1554 injected 4N blastocysts, a 1.7% rate of live birth. Cell line IP14D-1 being the most productive, given that it produced 22 live pups from 624 injected 4N blastocysts, a 3.5% yield.[5] Although the methods used by the Baldwin lab indicate an overall higher efficiency, the difference in yields is not statistically significant. However the highly efficient iMZ-21 cell line should be further investigated for other factors, such as the use of Valporic acid treatment, that influence live birth rate. [2]

1. Baker, M.(2009). iPS Cells make mice that make mice. *Nature Reports Stem Cells,*
2. Boland, M. J., Hazen, J. L., Nazor, K. L., Rodriguez, A. R., Gifford, W., Martin, G., Kupriyanov, S., Baldwin, K. K. (2009). Adult mice generated frominduced pluripotent stem cells. *Nature*, 461, 91-94.
3. Yamanaka, S. (2012). Induced Pluripotent Stem Cells: Past, Present, and Future. *Cell Stem Cell*, 10, 678-684.
4. Zhao, X., Lv, Z., Li, W., Zeng, F., Zhou, Q. (2010) Production of mice using iPS cells and tetraploid complementation. *Nature Protocols, 5(5), 963-971.*
5. Zhao, X., Li, W., Lv, Z., Liu, L., Tong, M., Hai, T., Hao, J., Guo, C., Ma, Q., Wang, L., Zeng, F., Zhou, Q. (2009) iPS cells produce viable mice through tetraploid complementation. *Nature*, 461, 86-90.

Oncofertility Saturday Academy Poster Abstract Form

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Abstract Categories

Check one only:

☐ **Reproductive Biology** ☐ **In Vitro Fertilization** ☒ **Cancer Biology** ☐ **Oncofertility**

☐ **Other** _____

ABSTRACT TITLE: Effects of P-MAPA with Cisplatin on Survivorability from Serous Ovarian Carcinomas

AUTHOR: Arushi Dogra

LEARNER OBJECTIVE: How does immunotherapeutic treatment of serous ovarian carcinomas using P-MAPA with and without cisplatin chemotherapy increase average life span?

The participant will be able to demonstrate: The ability of protein aggregate magnesium-ammonium phospholinoleate-palmitoleate anhydride (P-MAPA) to successfully improve the rates of survival from serous ovarian cancer cells both with cisplatin and without it.

CONTENT (TOPICS): Immunotherapy, therapy through stimulation of immune response, has recently been an increasingly popular area of exploration and development for cancer treatment. Although largely successful therapies have been found for other cancers, ovarian cancer remains an area of interest. Serous epithelial ovarian carcinomas are one of the most common ovarian cancers. P-MAPA is an immunotherapy agent that has been found to improve survivorship and stimulate innate immunity in other cancers, such as bladder cancer, in humans and in ovarian cancer in rats, but its effects in combination with chemotherapy have not yet been explored. Cisplatin is a common chemotherapy agent for ovarian cancer.

ABSTRACT: Despite recent oncologic advancements, ovarian cancer (OC) is the leading gynecological cause of death in the US. The role of immunity in OC is being studied for immunotherapies that target tumors' Toll-like receptors (TLR), which contribute to innate immunity, initiate apoptosis, and arrest cell growth.[5] P-MAPA is a protein aggregate that is used in bladder cancer immunotherapy and can been shown to target TLRs in OC rats with almost 70% response rates, compared to 11-25% response with other OC immunotherapies.[1,2,3] This study determines whether P-MAPA can better increase rates of survival from serous epithelial ovarian carcinomas when used in conjunction with cisplatin (CIS), a common chemotherapy agent for OC. Forty rat models were divided into four experimental groups: OC (control), OC+P-MAPA (P-MAPA treatment), OC+CIS (cisplatin treatment), and OC+CIS+P-MAPA (cisplatin and P-MAPA treatment). OC was induced by injecting the ovaries with DMBA and treatment was conducted for 8 weeks, over which numbers of living rats were recorded on Kaplan-Meier Curves. After therapy, the tumors were sectioned and necropsied, massed, stained for Western Blotting, and put through an ELISA assay to analyze immune activity and tumor size.[2] Surprisingly, while the combined therapy caused greater expression of immune components and larger decrease in tumor size, solely P-MAPA therapy led to highest survivorship, with P-MAPA rats and P-MAPA+CIS rats living 65% and 35% longer than the control, respectively.[2] Both immunotherapies have substantially greater effects on immunity and survival than current OC therapies, making P-MAPA an extremely promising future drug for OC patients.[1,2] Applications could include usage with chemotherapy and in isolation, depending on the clinical situation.[4] P-MAPA also holds great possibilities for use in other cancers.[3] The next step is testing OC response to P-MAPA in animals closer to humans, such as primates, then move to clinical trials, which could revolutionize ovarian cancer treatment.

REFERENCES

1. Bose, C. K. (2017). Immune checkpoints, their control by immunotherapy and ovarian cancer. Contemporary Oncology, 21(3), 189–196. http://doi.org/10.5114/wo.2017.70108
2. De Almeida Chuffa, L. G., de Moura Ferreira, G., Lupi, L. A., da Silva Nunes, I., & Fávaro, W. J. (2018). P-MAPA immunotherapy potentiates the effect of cisplatin on serous ovarian carcinoma through targeting TLR4 signaling. Journal of Ovarian Research, 11, 8. http://doi.org/10.1186/s13048-018-0380-5
3. Garcia, P. V., Seiva, F. R. F., Carniato, A. P., de Mello Júnior, W., Duran, N., Macedo, A. M., … Fávaro, W. J. (2016). Increased toll-like receptors and p53 levels regulate apoptosis and angiogenesis in non-muscle invasive bladder cancer: mechanism of action of P-MAPA biological response modifier. BMC Cancer, 16, 422. http://doi.org/10.1186/s12885-016-2474-z
4. J A Ledermann; Front-line therapy of advanced ovarian cancer: new approaches, Annals of Oncology, Volume 28, Issue suppl_8, 1 November 2017, Pages viii46–viii50, https://doi.org/10.1093/annonc/mdx452
5. Torre, L. A., Trabert, B. , DeSantis, C. E., Miller, K. D., Samimi, G. , Runowicz, C. D., Gaudet, M. M., Jemal, A. and Siegel, R. (2018), Ovarian cancer statistics, 2018. CA: A Cancer Journal for Clinicians, 68: 284-296. doi:10.3322/caac.21456

Oncofertility Saturday Academy Poster Abstract Form

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Abstract Categories

Check one only:

Reproductive Biology **✓ In Vitro Fertilization** **Cancer Biology** **Oncofertility**

ABSTRACT TITLE: Decreased Expression of MUC1 in Endometrial Tissues Correlates with Recurrent Embryo Implantation Failure

AUTHOR: Gillian Folk

LEARNER OBJECTIVE: Please state the educational objective in a measurable, testable question. Then state what the participant's poster will be able to demonstrate to the viewer(s)/audience.

QUESTION: Does decreased expression of MUC1 in endometrial tissues correlate with recurrent embryo implantation failure?

The participant will be able to demonstrate the correlation between recurrent embryo implantation failure and the expression of MUC1 in lumina and glandular epithelium.

CONTENT (TOPICS): Please provide a brief statement or outline of the content/topic(s) to be presented:

Endometrial receptivity may contribute to recurrent implantation failures in females experiencing infertility. Mucin 1 (MUC1) expression in endometrial tissues was examined using semi-quantitative immunohistochemistry. It is strongly suggested that MUC1 expression correlates with embryo implantation failure.

ABSTRACT: Abstract content should be single spaced, typed using (10-12 pt font) and between 250-300 words. The abstract content should be typed in the space below and **MUST** include the following:

The endometrium plays a critical role in a successful embryo implantation.1 Disruptions in implantation may account for women suffering from infertility. During the implantation window, approximately 7 days after a surge of luteinizing hormone, the endometrium becomes receptive to the implantation of the embryo.4 Abnormal endometrial receptivity may contribute to recurrent implantation failures in females experiencing infertility.5 It has been proposed that certain molecules are markers for endometrial receptivity but the exact molecular changes surrounding this issue are not well understood. MUC1, a member- associated protein expressed in luminal and glandular epithelium, is found at a higher level of expression in fertile patients than infertile.2 Subjects include 14 women with RIF, 25 with recurrent miscarriage (RM), and 20 fertile controls who participated in endometrial biopsy during the implantation window. The spatial and temporal expression of MUC1 was studied using semi-quantitative immunohistochemistry. It was found that MUC1 expression in both lumina and glandular epithelium in women with RIF were significantly decreased compared to that of RM and control groups. This decreased expression was also not found to be associated with demographics or clinical characteristics.5 Another study investigating MUC1 expression in females with implantation issues suggested that MUC1 expression in an infertile endometrium differs greatly from fertile and appears to be a component of altered gene expression.3 Therefore, it can be strongly supported that decreased expression of MUC1 in endometrial tissues correlates with recurrent embryo implantation failure, and could be a potential target for therapeutics for enhancing success rates with implantation.

REFERENCES

1. Albaghdadi, A. J., & Kan, F. W. (2012). Endometrial Receptivity Defects an Impaired Implantation in Diabetic NOD Mice.
2. Jeschke, U., Walzel, H., Mylonas, I., Papadopoulos, P., Shabani, N., Kuhn, C., ... Kupka, M. S. (2009). The Human Endometrium Expresses the Glycoprotein Mucin-1 and Shows Positive Correlation for Thomsen-Friedenreich Epitope Expression and Galectin-1 Binding. Journal of Histochemistry and Cytochemistry, 57(9), 871–881.
3. Margarit, L., Taylor, A., Roberts, H., Hopkins, L., Davies, C., Brenton, A. G., Conlan, R. S., Bunkheila, A., Joels, L., White, J. O., & Gonzalez, D. (2010, December 01). MUC1 as a Discriminator between Endometrium from Fertile and Infertile Patients with PCOS and Endometriosis | The Journal of Clinical Endocrinology & Metabolism | Oxford Academic.
4. Singh1, H., Nardo1, L., & And, S. J. (2010, May 01). Early Stages of Implantation as Revealed by an In Vitro Model. H Singh.
5. Wu, F., Chen, X., Liu, Y., Liang, B., Xu, H., Chiu Li, T., & Chiu Wang, C. (2018). Decreased MUC1 in endometrium is an independent receptivity marker in recurrent implantation failure during implantation window.

Oncofertility Saturday Academy Poster Abstract Form

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Abstract Categories

Check one only:

☐ **Reproductive Biology** ☐ **In Vitro Fertilization** ☒ **Cancer Biology** ☐ **Oncofertility**

ABSTRACT TITLE: Using the overexpression of RHAAM (hyaluronan-mediated motility receptor) as a prognostic marker for ovarian cancer.

AUTHOR: Yasmin Khajenoori

LEARNER OBJECTIVE: Please state the educational objective in a measurable, testable question. Then state what the participant's poster will be able to demonstrate to the viewer(s)/audience.

Question: Does the overexpression of RHAAM have the potential for use as a prognostic marker to increase survival in ovarian cancer?

The participant will be able to demonstrate: The participant will demonstrate to the audience the newly discovered correlation between ovarian cancer and RHAAM overexpression as well as determine its use as a potential diagnostic marker.

CONTENT (TOPICS): Please provide a brief statement or outline of the content/topic(s) to be presented:
The poster will present the biological implications of RHAAM overexpression as well as the functioning role of RHAAM in normal patients. Additionally, the poster will present the biotechnological advancements that can be derived from the research done in this field and will connect to the potential for impact on OC survival rates.

ABSTRACT: Ovarian Cancer (OC) is the fifth leading cause of death in women and the leading gynecological disease that results in death.[1] This is due to inadequate diagnostic markers for women with OC, coupled with late detection and minimal early symptoms. If detected in early stages, OC patients have a 90% or greater chance of survival, whereas in late stages, the survival rate dwindles to a mere 30%.[1] The identification of a potential prognostic marker provides key information aiding early detection. Currently, CA-125 tests are occasionally used for early detection, however they cause false positives for benign diseases and detect only 50% of early stage OC- creating the necessity of a novel early detection marker.[3] RHAAM overexpression has been correlated with metastasis as well as the promotion of an invasive phenotypic expression in certain cancers, including OC.[4] In normal tissue, RHAAM has been known for its role in mitosis and cell growth. RHAAM expression has been studied through urinalysis, ELISA, and tissue staining in normal patients and OC patients.[3] The results found that patients with OC exhibited elevated tissue RHAAM levels, while staining intensity increased with escalating cancer stage and tumor grade. Additionally, urinary RHAAM levels were elevated in OC patients. In all control patients, urinary RHAAM levels were undetectable, while 6/9 OC patients exhibited elevated RHAAM levels.[1] Furthermore, urinary RHAAM in women with benign gynecological disease were significantly lower than OC patients. When measured in OC cell lines, RHAAM levels were 20–70 times higher versus control ovarian cell lines.[1] Using RHAAM as a prognostic marker for OC is highly effective and exhibits increased reliability to current methodologies. The use of RHAAM as a prognostic marker can revolutionize early detection, as it is noninvasive, reproducible, and relatively inexpensive.[3]

References:

1.Buttermore, S. T., Hoffman, M. S., Kumar, A., Champeaux, A., Nicosia, S. V., & Kruk, P. A. (2017). Increased RHAMM expression relates to ovarian cancer progression. *Journal of Ovarian Research*, *10*, 66. http://doi.org/10.1186/s13048-017-0360-1

2.Chen, Y.-T., Chen, Z., & Du, Y.-C. N. (2018). Immunohistochemical analysis of RHAMM expression in normal and neoplastic human tissues: a cell cycle protein with distinctive expression in mitotic cells and testicular germ cells. *Oncotarget*, *9*(30), 20941–20952. http://doi.org/10.18632/oncotarget.24939

3.Dong X, Men X, Zhang W, Lei P. Advances in tumor markers of ovarian cancer for early diagnosis. Indian J Cancer. 2014;51(Suppl 3):e72–e76. doi: 10.4103/0019-509X.154049

4.Hamilton, S. R., Fard, S. F., Paiwand, F. F., Tolg, C., Veiseh, M., Wang, C., … Turley, E. A. (2007). The hyaluronan receptors cd44 and rhamm (cd168) form complexes with erk1,2, which sustain high basal motility in breast cancer cells. *The Journal of Biological Chemistry*, *282*(22), 16667–16680. http://doi.org/10.1074/jbc.M702078200

5.Nikitovic, D., Tzardi, M., Berdiaki, A., Tsatsakis, A., & Tzanakakis, G. N. (2015). Cancer Microenvironment and Inflammation: Role of Hyaluronan. *Frontiers in Immunology*, *6*, 169. http://doi.org/10.3389/fimmu.2015.00169

Oncofertility Saturday Academy Poster Abstract Form

NAME: Victoria Li

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E-MAIL ABSTRACT FORM TO: Dr. Ericka Senegar-Mitchell at ebellmitchell@yahoo.com (Please cc Mrs. Patricia Winter at patriciawinter09@gmail.com)

Abstract Categories

Check one only:

☐ **Reproductive Biology** ☒ **In Vitro Fertilization** ☐ **Cancer Biology** ☐ **Oncofertility**

ABSTRACT TITLE: Incidence of Ovarian Hyperstimulation Syndrome in IVF Patients Using Kisspeptin-54 for Ovulation Induction

AUTHOR: Victoria Li

LEARNER OBJECTIVE: Please state the educational objective in a measurable, testable question. Then state what the participant's poster will be able to demonstrate to the viewer(s)/audience.

Question: Can kisspeptin be used to safely induce ovulation in at-risk patients undergoing *in vitro* fertilization (IVF)?

The participant will be able to demonstrate: The participant will demonstrate the ability of subcutaneous kisspeptin to induce ovulation by triggering the LH surge immediately prior to ovulation, much like human chorionic gonadotropin (hCG) in IVF, only without the potential to cause serious health complications related to ovarian hyperstimulation syndrome (OHSS).

CONTENT (TOPICS): Please provide a brief statement or outline of the content/topic(s) to be presented:
Kisspeptin-54 is essential to the hypothalamic-pituitary-gonadal (HPG) axis, notably stimulating GnRH and LH activity. Human chorionic gonadotropin (hCG) is commonly used in IVF, but its long half-life can cause ovarian hyperstimulation syndrome, with symptoms including ascites, kidney failure, and even death.

ABSTRACT: Abstract content should be single spaced, typed using (10-12 pt font) and between 250-300 words. The abstract content should be typed in the space below and **MUST** include the following:

Ovarian hyperstimulation syndrome (OHSS) is a serious condition that occurs in up to 6% of *in vitro* fertilization (IVF) patients, but it is four times more likely to manifest in women with abnormally high antral follicle count (AFC). OHSS is commonly attributed to the use of human chorionic gonadotropin (hCG) as an ovulation trigger.[1] While hCG induces ovulation at the ovarian level, the hypothalamic protein kisspeptin stimulates the preovulatory luteinizing hormone (LH) surge upstream of hCG.[5] Kisspeptin can induce ovulation in patients with normal ovarian reserve,[4] but the magnified threat of OHSS with current hCG treatment necessitates an investigation of whether kisspeptin can safely and successfully effect oocyte maturation in those with high AFC.[2] Subjects were selected for high risk of OHSS based on an AFC > 23. After a standard FSH/GnRH antagonist treatment, researchers administered kisspeptin-54 subcutaneously at varied doses (single bolus 3.2–12.8 nmol/kg; split dosing 19.2 nmol/kg over 10 hours), and oocytes were retrieved after 36 hours. Following follicular aspiration, OHSS severity was determined through ultrasound examination and patients' self-reported symptoms. Typical IVF protocol proceeded in subjects given kisspeptin-54, as well as in those given hCG or GnRH agonist.[1] For subjects who received kisspeptin-54, there was a 45% live birth rate per embryo transfer, comparable to an average 46.5% for non-kisspeptin IVF patients.[3] Only 3 out of 60 women developed mild symptoms of OHSS, but none were high-risk prior to IVF nor did anyone develop life-threatening symptoms.[2] Another study has directly compared the efficacy of kisspeptin to that of hCG, revealing a severe OHSS incidence rate of 15% with hCG versus 0% with kisspeptin.[1] Thus, kisspeptin is a reliable, more suitable trigger for ovulation in patients predisposed to OHSS.

REFERENCES:

1. Abbara, A., Islam, R., Clarke, S. A., Jeffers, L., Christopoulos, G., Comninos, A. N., … Dhillo, W. S. (2018). Clinical parameters of ovarian hyperstimulation syndrome following different hormonal triggers of oocyte maturation in IVF treatment. *Clinical Endocrinology, 88*(6), 920-927. doi:10.1111/cen.13569
2. Abbara, A., Jayasena, C. N., Christopoulos, G., Narayanaswamy, S., Izzi-Engbeaya, C., Nijher, G. M. K., … Dhillo, W. S. (2015). Efficacy of Kisspeptin-54 to Trigger Oocyte Maturation in Women at High Risk of Ovarian Hyperstimulation Syndrome (OHSS) During In Vitro Fertilization (IVF) Therapy. *Journal of Clinical Endocrinology and Metabolism, 100*(9), 3322–3331. doi:10.1210/jc.2015-2332
3. Centers for Disease Control and Prevention. (2015). *2015 Assisted Reproduction Technology National Summary* [Data summary]. Retrieved from https://ftp.cdc.gov/pub/Publications/art/Clinic_PDFs/2015/ART_9999_2015_Fertility_Clinic_Report.pdf
4. Kasum, M., Franulić, D., Čehić, E., Orešković, S., Lila, A., & Ejubović, E. (2017). Kisspeptin as a promising oocyte maturation trigger for in vitro fertilisation in humans. *Gynecological Endocrinology, 33*(8), 583-587. doi:10.1080/09513590.2017.1309019
5. Skorupskaite, K., George, J. T., & Anderson, R. A. (2014). The kisspeptin-GnRH pathway in human reproductive health and disease. *Human Reproduction Update, 20*(4), 485–500. doi:10.1093/humupd/dmu009

Oncofertility Saturday Academy Poster Abstract Form

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Abstract Categories

Check one only:

X Reproductive Biology In Vitro Fertilization Cancer Biology Oncofertility

Other _____

ABSTRACT TITLE: Teratogenic Effects of Immunosuppressive Drugs Given to Expectant Mothers after Organ Transplantation

AUTHOR: Kendall Ota

LEARNER OBJECTIVE: Please state the educational objective in a measurable, testable question. Then state what the participant's poster will be able to demonstrate to the viewer(s)/audience.

Question: How is fetal development impacted when expectant mothers are given immunosuppressive drugs after organ transplantation?

The participant will be able to demonstrate: Whether there is increased risk of congenital defects and other serious neonatal complications as a result of immunosuppressive drugs, such as antiproliferative agents, given to women after organ transplantation to minimize the risk of graft rejection.

CONTENT (TOPICS): Please provide a brief statement or outline of the content/topic(s) to be presented:
Uterine transplantation is a new possible solution for women suffering from absolute uterine factor infertility. However, such transplantations result in the necessity of immunosuppressive drugs, such as antiproliferative agents, which can negatively impact the in utero development of future children.

ABSTRACT: Abstract content should be single spaced, typed using (10-12 pt font) and between 250-300 words. The abstract content should be typed in the space below and **MUST** include the following:

Absolute uterine factor infertility affects approximately one in every 500 women. For years, the only options for these women were adoption and gestational surrogacy. Recent advances in uterine transplantation offer the opportunity for infertile women to carry and give birth to infants.[2] However, uterine and other organ transplantations necessitate immunosuppressive drugs in order to minimize graft rejection. Immunosuppressive drugs can result in intrauterine growth restriction, congenital defects, and higher miscarriage rates of up to 48%.[5] In order to evaluate the risk and types of these fetal anomalies, data was collected from several studies measuring the extent of impact immunosuppressive drugs given to expectant mothers have on developing fetuses. Studies tested the exposure of different immunosuppressive drugs, particularly antiproliferative agents, at various points in the pregnancy of both women and animal models. Researchers separated the drugs into categories of high, medium, low, and unknown risk, and detailed each drug's embryolethality, teratogenicity, and effect on fertility.[4] Mycophenolate presented an increased risk of miscarriage (32-45%, comparable to the general population risk of 15-20%) and birth defects (26%, comparable to the general population risk of 3%). Out of 77 patients exposed to mycophenolate, 25 reported miscarriages and 14 structural malformations.[3] Azathioprine and 6-mercaptopurine, however, were considered to be generally safe; 155 pregnant women exposed to these drugs were surveyed, and there was found to be no statistical difference in conception failures, birth defects, or spontaneous abortion, though researchers strongly suggest additional ultrasound monitoring in these pregnancies.[4] Dosages of immunosuppressive medications should be tailored for conception plans in order to maintain efficacy while minimizing fetal risk.[1] The results from these studies can be applied toward helping women who have undergone organ transplantation, allowing the increase in possibility for infertile women to carry and give birth to children through uterine transplantation.

References:

1. Castellón, L. A. R., Amador, M. I. G., González, R. E. D., Eduardo, M. S. J., Díaz-García, C., Kvarnström, N., & Bränström, M. (2017). The history behind successful uterine transplantation in humans. *JBRA Assisted Reproduction*, *21*(2), 126–134. http://doi.org/10.5935/1518-0557.20170028

2. Johannesson, L., & Järvholm, S. (2016). Uterus transplantation: current progress and future prospects. *International Journal of Women's Health*, *8*, 43–51. http://doi.org/10.2147/IJWH.S75635

3. Kim, M. , Rostas, S. and Gabardi, S. (2013), Mycophenolate Fetal Toxicity and Risk Evaluation and Mitigation Strategies. American Journal of Transplantation, 13: 1383-1389. http://doi:10.1111/atj.12238

4. Leroy, C., Rigot, J.-M., Leroy, M., Decanter, C., Le Mapihan, K., Parent, A.-S., … Vantyghem, M.-C. (2015). Immunosuppressive drugs and fertility. *Orphanet Journal of Rare Diseases*, *10*, 136. http://doi.org/10.1186/s13023-015-0332-8

5. Sarkar, M., Bramham, K., Moritz, M. J., & Coscia, L. (2018). Reproductive health in women following abdominal organ transplant. American Journal of Transplantation: Official Journal of the American Society of Transplantation and the American Society of Transplant Surgeons, 18(5), 1068–1076. http://doi.org/10.1111/ajt.14697

Oncofertility Saturday Academy Poster Abstract Form

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Abstract Categories

Check one only:

Reproductive Biology **In Vitro Fertilization** **Cancer Biology** X **Oncofertility**

Other _____

ABSTRACT TITLE:

Using GnRH Agonists During Chemotherapy to Prevent Premature Ovarian Failure

AUTHOR:

Emma Ramaley

LEARNER OBJECTIVE: Please state the educational objective in a measurable, testable question. Then state what the participant's poster will be able to demonstrate to the viewer(s)/audience.

Does the use of GnRHa while receiving chemotherapy prevent premature ovarian failure and minimize ovarian damage, therefore preserving fertility?

The participant will be able to demonstrate: The participant will understand the potential for GnRHa use during chemotherapy for minimizing ovarian damage, specifically preventing premature ovarian failure (POF), which could preserve fertility.

CONTENT (TOPICS): Please provide a brief statement or outline of the content/topic(s) to be presented:

The role of GnRH in women, the function of GnRHa, the possible effects of chemotherapy on female fertility, and how GnRHa could become a potential treatment for women receiving chemotherapy to protect ovarian function so treatment does not cause POF.

ABSTRACT: Abstract content should be single spaced, typed using (10-12 pt font) and between 250-300 words. The abstract content should be typed in the space below and **MUST** include the following:

Many chemotherapy drugs can be extremely damaging to fertility, especially in a woman's ovaries.[2] The following research offers insight on a potential way for premature ovarian failure (POF) to be prevented, ultimately preserving fertility while undergoing chemotherapy. Gonadotropin-releasing hormone (GnRH) is produced in the hypothalamus that signals to the pituitary gland to make FSH and LH, which are sent to the ovaries to produce estrogen and progesterone and control follicular recruitment.[1] The agonist of this hormone has potential to protect the ovaries during chemotherapy, by temporarily suppressing ovarian activity. When the ovaries are not growing follicles, chemotherapy drugs are not able to damage this process to a full extent.[4] In one study, 146 patients were given GnRHa along with chemotherapy, and in a control group, 71 patients were just given chemotherapy. Two years later, it was observed that only 13% of the group given GnRHa suffered POF, whereas in the control group, 51% suffered POF.[3] Also, in the GnRHa group, there were 123 healthy newborns, compared to 40 in the control group, and higher rates of spontaneous conception and retainment of cyclic ovarian function. These results show that not only could GnRHa prevent POF, but also cause normal ovarian function to resume following chemotherapy. Although this is not a widely accepted idea, the use of this drug should be considered for women who are receiving chemotherapy and interested in having children. Using GnRHa during chemotherapy would eliminate the need for expensive techniques such as oocyte or embryo cryopreservation.[5] Another trial would be needed to identify an ideal dosage that would balance the protection of ovarian function yet not disrupt treatment efficacy.

REFERENCES:

1. Bedoschi, G., Oktay, K., & Turan, V. (2013). Utility of GnRH-agonists for fertility preservation in women with

operable breast cancer: is it protective?. Current Breast Cancer Reports, 5(4), 302–308.

2. Bedoschi, G., Navarro, P.A., & Oktay, K. (2016). Chemotherapy-induced damage to ovary: mechanisms and clinical impact. Future Oncology, 12(20), 2333-2344.

3. Blumenfeld, Z., Dann, E.J., & Zur, H. (2015). Gonadotropin-releasing hormone agonist cotreatment during chemotherapy may increase pregnancy rate in survivors. The Oncologist, 20(11), 1283-1289.

4. Blumenfeld, Z., Evron, A., & Katz, G. (2014). 'An ounce of prevention is worth a pound of cure': the case for and against GnRH-agonist for fertility preservation. Annals of Oncology, 25(9), 1719-1728.

5. Li, S., Li, X., Luo, S., Wang, Y., Xiao, Z., Zhang, Y. (2013). Gonadotropin-releasing hormone for preservation of ovarian function during chemotherapy in lymphoma patients of reproductive age. PLoS ONE, 8(11), e80444.

Oncofertility Saturday Academy Poster Abstract Form

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Abstract Categories

Check one only:

☐ **Reproductive Biology** ☐ **In Vitro Fertilization** ☒ **Cancer Biology** ☐ **Oncofertility**

☐ **Other** _____

ABSTRACT TITLE: Investigating the Efficacy of 5T4 as a CAR T-Cell Target to Increase Ovarian Cancer Survival

AUTHOR: Riley Saham

LEARNER OBJECTIVE: Please state the educational objective in a measurable, testable question. Then state what the participant's poster will be able to demonstrate to the viewer(s)/audience.

QUESTION: Can the 5T4 antigen used with CAR T cell therapy increase survival and decrease metastasis in ovarian cancer?

The participant will be able to demonstrate: That the 5T4 antigen is a viable CAR T cell therapy target in ovarian cancers. It will focus on recent *in vitro* and *in vivo* studies, which show the potential 5T4 specific CAR T cells have for combating cancer growth.

CONTENT (TOPICS): Please provide a brief statement or outline of the content/topic(s) to be presented

In the age of precision medicine, immunotherapy has been seen as the future of cancer treatment. One of the most promising types is chimeric antigen receptor (CAR) T-cell therapy. CAR T-cells help combat tumor growth and are expected to establish immune memory, keeping a constant check on cancer cells for extended periods of time. Looking at ovarian cancers, Scientists believe that the CAR T cell therapy can be used to treat ovarian cancer by targeting 5T4, an antigen that is highly expressed on the surface of cancer cells in many solid tumors, and has limited expression in normal tissues. This increased specificity will allow 5T4 CAR T-cells to exclusively target and destroy cancer cells, potentially limiting any on-target, off-tumor effects.

ABSTRACT: Abstract content should be single spaced, typed using (10-12 pt font) and between 250-300 words. The abstract content should be typed in the space below and **MUST** include the following:

In 2018, there are projected to be more than 22,000 new cases and 14,000 deaths due to ovarian cancer (OC) in the US.[5] Even with efforts to improve current treatment options, 80% of patients relapse within 18 months of completing their first treatment.[3] Chimeric antigen receptor (CAR) T-cell therapy is a promising new OC treatment, as it harnesses the power of the patient's immune system to target cancerous cells exclusively.[4,2] While the therapy's success with hematologic cancers gives hope for solid tumors, unique problems such as on-target, off-tumor effects must be addressed.[1] 5T4-antigens may be a good target for CAR T-cells as they are overexpressed in solid tumors, but have limited expression on normal tissues. The goal of this study was to conduct a series of tests to determine the utility of 5T4-antigen as a target for CAR T-cells in OC. Recently, scientist transduced two anti-5T4 CAR constructs, varying in affinity to 5T4, into T-cells taken from 12 patients, then co-cultured them with their autologous ovarian tumor. After 24 hours the supernatant was collected and IFNγ and IL-2 levels assessed. Results suggested a correlation between amounts of IFNγ and IL-2 secreted and 5T4 expression, with all r values $\geq .65$, indicating immune activation. In another experiment, NSG mice were injected with SKOV-3 cells. At day seven, those with tumors received varying doses of anti-5T4 CAR T-cells, mock-transduced T-cells, or saline, then had their tumor size monitored at regular intervals. Mice given $\leq .3\times10^7$ H8-CAR or a placebo died within 90 days while Mice given 1×10^7 H8-CAR had a 100% survival rate past 100 days.[4] This establishes 5T4 as a promising target for CAR T-cell therapy in OC, and potentially for other solid tumors that express 5T4. However, before advancing to clinical trial, 5T4's on-target, off-tumor effect must be confirmed in further studies.

References

1. Bonifant CL, Jackson HJ, Brentjens RJ, Curran KJ. Toxicity and management in CAR T-cell therapy. *Molecular Therapy - Oncolytics*. 2016;3:16011. doi:10.1038/mto.2016.11.
2. Dotti G, Gottschalk S, Savoldo B, Brenner MK. Design and development of therapies using chimeric antigen receptor-expressing T cells. *Immunological Reviews*. 2013;257(1):107-126. doi:10.1111/imr.12131
3. Genta S, Ghisoni E, Giannone G, Mittica G, Valabrega G. Reprogramming T-cells for adoptive immunotherapy of ovarian cancer. *Expert Opinion on Biological Therapy*. 2018;18(4):359-367. doi:10.1080/14712598.2018.1425679.
4. Owens GL, Sheard VE, Kalaitsidou M, et al. Preclinical Assessment of CAR T-Cell Therapy Targeting the Tumor Antigen 5T4 in Ovarian Cancer. *Journal of Immunotherapy*. 2018;41(3):130-140. doi:10.1097/cji.0000000000000203..
5. Torre LA, Trabert B, Desantis CE, et al. Ovarian cancer statistics, 2018. *CA: A Cancer Journal for Clinicians*. May 2018. doi:10.3322/caac.21456.

Oncofertility Saturday Academy Poster Abstract Form

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Abstract Categories

Check one only:

☒ **Reproductive Biology** □ **In Vitro Fertilization** □ **Cancer Biology** □ **Oncofertility**

□ **Other** Bioethics

ABSTRACT TITLE: The Correlation between Insured Women and Access to Assisted Reproductive Technologies

AUTHOR: Hallelujah Temesgen

LEARNER OBJECTIVE: Please state the educational objective in a measurable, testable question. Then state what the participant's poster will be able to demonstrate to the viewer(s)/audience.

What is the correlation between insured women and access to Assisted Reproductive Technology?

The participant will be able to demonstrate: This poster will show the issues regarding access to Assisted Reproductive Technologies for insured women. It will go in depth about the financial issues regarding ART .

CONTENT (TOPICS): Please provide a brief statement or outline of the content/topic(s) to be presented:

This poster will discuss how Assisted Reproductive Technology is not accessible to women that are insured and the reason why do not go through with reproductive care. The main reason why these women don't continue after one cycle of IVF is due to the financial burden of IVF. Not only does this affect insured women but it also affects uninsured and low income women.

Oncofertility Saturday Academy Poster Abstract Form

NAME: Amy Tutt

ADDRESS:

CITY: STATE/PROVINCE:

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Abstract Categories

Check one only:

☐ **Reproductive Biology** ☒ **In Vitro Fertilization** ☐ **Cancer Biology** ☐ **Oncofertility**

☐ **Other** _____

ABSTRACT TITLE: Congenital Malformations in Children Conceived by In Vitro Fertilization and Intra-cytoplasmic Sperm Injection

AUTHOR: Amy Tutt

LEARNER OBJECTIVE: Please state the educational objective in a measurable, testable question. Then state what the participant's poster will be able to demonstrate to the viewer(s)/audience.

Question: Do In Vitro Fertilization and Intra-cytoplasmic Sperm Injection increase the chance of a child being born with congenital malformations?

The participant will be able to demonstrate: The participant will demonstrate the increased chance of abnormalities and malformations in children conceived by In Vitro Fertilization and Intra-cytoplasmic Sperm Injection compared to the chance of abnormalities in naturally conceived children. The participant will also demonstrate the most common malformations and that the chance of abnormalities cannot be decreased or prevented.

CONTENT (TOPICS): Please provide a brief statement or outline of the content/topic(s) to be presented:
Children conceived through IVF and ICSI have an increased chance of many chronic and/or life-threatening illnesses. The presentation will include statistics of children with malformations and developmental problems, as well as the most common malformations. Prevention of these abnormalities during fetal and infant development will also be presented.

ABSTRACT: Abstract content should be single spaced, typed using (10-12 pt font) and between 250-300 words. The abstract content should be typed in the space below and **MUST** include the following:

About 10% of women and 17% of men have infertility. In Vitro Fertilization (IVF) and Intra-cytoplasmic Sperm Injection (ICSI) are the two most common methods in assisted reproduction. The first successful birth through IVF occurred July of 1978[5] and the first successful birth through ICSI was January of 1992. IVF and ICSI have helped many couples with fertility and conception problems, as well as other health issues. Five million babies have been born through IVF and ICSI, but not all of the children were born without complications and health issues. IVF and ICSI increase the chances of the child being born with congenital malformations, chronic illnesses, and developmental issues by 4.2%.[4] In a study in Belgium of 5,884 infants born through IVF and ICSI, cardiac malformations were found to be the most common.[1] Out of 281 IFV and ICSI born children in a study in the United States, 1.27% had septal heart defects, such as pulmonary stenosis (obstruction of blood flow from right ventricle to pulmonary artery) and ventricular septal defect (abnormal opening in the heart between the lower ventricles).[3] In a meta-analysis of twenty-four studies, 74,644 children born through IVF and ICSI had a 2.01% increased risk of malformations in the nervous system, 1.66% in the digestive system, and 1.64% in the cardiovascular system.[2] These studies demonstrate the risk of IVF and ICSI and the chance of abnormalities and chronic illnesses in children conceived through these two processes. A significant cause of the malformations in the children has not been identified and no processes have been found that prevent these abnormalities.

REFERENCES:

1. Alukal, J. P., & Lamb, D. J. (2008). Intracytoplasmic Sperm Injection (ICSI)—What are the risks? *Urologic Clinics of North America*, *35*(2), 277-288. https://doi.org/10.1016/j.ucl.2008.01.004

2. Lu, Y., Wang, N., & Jin, F. (2013). Long-term follow-up of children conceived through assisted reproductive technology. *Journal of Zhejiang* University, 14(5), 359-371. https://doi.org/10.1631/jzus.B1200348

3. Reefhuis, J., Honein, M. A., Schieve, L. A., Correa, A., Hobbs, C. A., Rasmussen, S. A., & National Birth Defects Prevention Study. (2009). Assisted reproductive technology and major structural birth defects in the United States. *Human Reproduction*, *24*(2), 360-366. https://doi.org/10.1093/humrep/den387

4. Sagot, P., Bechoua, S., Ferdynus, C., Facy, A., Flamm, X., Gouyon, J. B., & Jimenez, C. (2012). Similarly increased congenital anomaly rates after intrauterine insemination and IVF technologies: a retrospective cohort study. *Human Repruduction*, *27*(3), 902-909. https://doi.org/10.1093/humrep/der443

5. Tandulwadkar, S., Lodha, P., & Kharb, V. (2012). Congenital malformations and assisted reproductive technique: Where is assisted reproductive technique taking us? *Journal of Human Reproductive Sciences*, *5*(3), 244-247. https://doi.org/10.4103/0974-1208.106334

Oncofertility Saturday Academy Poster Abstract Form

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Abstract Categories

Check one only:

☐ **Reproductive Biology** ☐ **In Vitro Fertilization** ☐ **Cancer Biology** ☒ **Oncofertility**

☐ **Other** _____

ABSTRACT TITLE: Letrozole as a Potential First-Line Drug Agent for PCOS Women by Providing Higher Pregnancy Rates

AUTHOR: Richa Upadhyay

LEARNER OBJECTIVE: Please state the educational objective in a measurable, testable question. Then state what the participant's poster will be able to demonstrate to the viewer(s)/audience.

Which drug therapy will yield higher pregnancy rates and healthier endometrium in women with PCOS, Clomiphene Citrate or Letrozole?

The participant will be able to demonstrate: The objective of the meta-analysis is to determine the potential and validity of Letrozole, an inhibitor of estrogen synthesis, in treating women with PCOS because the agent provides higher pregnancy rates and does not thin the endometrium, which is one the side effects of a Clomiphene Citrate treatment.

CONTENT (TOPICS): Please provide a brief statement or outline of the content/topic(s) to be presented: The meta-analysis will cover the effects of both Letrozole, an aromatase inhibitor used to treat breast cancer, and Clomiphene Citrate, the current drug therapy for inducing ovulation in infertile women, for treating women with polycystic ovary syndrome. Clomiphene Citrate is known to thin the endometrium, making implantation unlikely and culminating into failure of pregnancy. Additionally, this agent lessens the amount of cervical mucus, which is vital in sperm survival in the acidic vagina and sperm transport through the reproductive system. However, studies have found that Letrozole is a safer alternative for infertile women, in the way that because it does not have an anti-estrogenic effect, the endometrium and cervical mucus remain unharmed, and offers better results for women trying to conceive.

ABSTRACT: Abstract content should be single spaced, typed using (10-12 pt font) and between 250-300 words. The abstract content should be typed in the space below and **MUST** include the following:

Polycystic ovarian syndrome is one of the most common causes of female infertility that affects about 5% of women and is characterized by irregular menstrual bleeding, exaggerated hair growth, excess androgens in the body, and polycystic ovaries.[5] Studies and trials were conducted to explore the effects and benefits of Letrozole (LE) and Clomiphene Citrate (CC) for ovulation induction and infertility treatment in PCOS women by measuring endometrial health and pregnancy rates. LE is an aromatase inhibitor used to inhibit the growth of estrogen-dependent breast cancer cells to prevent recurring, metastatic or advanced breast cancer.[5] In contrast, Clomiphene Citrate (CC), the primary treatment for infertility, is a selective estrogen receptor modulator that stimulates the release of follicle stimulating hormone and luteinizing hormone. In a double-blind randomized controlled trial, 149 PCOS women between 18-39 years old were given either 50 mg of CC (74) or 2.5 mg of Letrozole (75) until pregnancy or for up to 6 ovulatory cycles.[1] Patients were monitored with ultrasound follicle tracking and progesterone serum measurements to assess endometrial parameters, ovulation, pregnancy and live birth (LB) rates.[1,5] Pregnancy rates of LE and CC were 61.2% and 43%, respectively, and LB rates of LE were 48.8% and 35.4% in CC. Ovulation rates in LE were 83.8% compared to 79.7% in CC-women.[1] There was no significant difference in the number of miscarriages, anomalies, multiple or loss in pregnancies. CC showed lower endometrial protein and gene expression which are primarily controlled by estradiol and responsible for endometrial proliferation, resulting in a higher percent of CC-women having a thin endometrium.[3] Possible explanations for the superiority of Letrozole over Clomiphene Citrate include a lower estradiol level during the luteal phases and higher progesterone levels from the Letrozole.[1] Overall, Letrozole lacks the adverse antiestrogenic effects that Clomiphene Citrate possesses, allowing for higher pregnancy rates and a thicker endometrium, and therefore should be considered as a potential primary ovulation induction treatment for PCOS women.

REFERENCES:

1. Amer, S. A., Smith, J., Mahran, A., Fox, P., & Fakis, A. (2017). Double-blind randomized controlled trial of letrozole versus clomiphene citrate in subfertile women with polycystic ovarian syndrome. Human reproduction, 32(8), 1631-1638.

2. Atay, V., Cam, C., Muhcu, M., Cam, M., & Karateke, A. (2006). Comparison of Letrozole and Clomiphene Citrate in Women with Polycystic Ovaries Undergoing Ovarian Stimulation. *Journal of International Medical Research, 34*(1), 73-76. doi:10.1177/147323000603400109

3. Mehdinejadiani, S., Amidi, F., Mehdizadeh, M., Barati, M., Safdarian, L., Aflatoonian, R., ... Sobhani, A. (2018). The effects of letrozole and clomiphene citrate on ligands expression of Wnt3, Wnt7a, and Wnt8b in proliferative endometrium of women with Polycystic ovarian syndrome. Gynecological endocrinology, , 1-6.

4. Nahid, L., Sirous, K. (2012). Comparison of the effects of letrozole and clomiphene citrate for ovulation induction in infertile women with polycystic ovary syndrome. Minerva ginecologica, 64(3), 253-258.

5. Wallace, K. L., Johnson, V., Sopelak, V., & Hines, R. (2011). Clomiphene citrate versus letrozole: molecular analysis of the endometrium in women with polycystic ovary syndrome. Fertility and sterility, 96(4), 1051-1056.