Midwest Regional Chapter Society of Toxicology

Spring 2021 Newsletter

President's Message

Our 2020 Fall Meeting entitled "Application of Toxicology in Product Development and Health Policy (with a "Careers in Toxicology" Workshop for Trainees)" was held virtually on October 16, 2020. The program was well-received by the MRC/SOT membership, who were treated to excellent talks by Dr. Robert House ("Vaccine Safety Testing in the Time of COVID") and Dr. Jahan Marcu ("Cannabidiol (CBD) Tales: A Saga of Pharmacology, Safety, and Regulatory Reviews"). There were 85 registrants for the meeting, including 26 of whom were postdocs, graduate students, or undergraduate students. The workshop that followed the talks provided invaluable information and advice to those early career attendees.

The 41st Annual Spring Midwest Regional Chapter of the SOT meeting was a success with approximately 40 attendees! Due to ongoing COVID-19 restrictions around large public gatherings, a virtual format was utilized. The Program Committee, under the direction of President-elect Smita Salian-Mehta, assembled a diverse group of speakers whose talks were all well-received and inspired many questions from the audience. Morgan Walcheck, the 2019 MRC/SOT Young Investigator award winner, led off the meeting with a progress update on her research in her talk entitled "The Aryl Hydrocarbon Receptor as a Putative Tumor Suppressor in Pancreatic Cancer Development." Andressa Gonsioroski, the 2021 MRC/SOT Travel Award recipient, followed with her talk "Iodoacetic Acid Affects Estrous Cycling, Ovarian Gene Expression, and Hormone Levels in Mice." Dr. Deepak Modi, from the India-based ICMR-National Institute for Research in Reproductive Health, delivered an update on his laboratory's research into the potential reproductive toxicity effects of COVID-19 infection through his presentation entitled "Placenta, Pregnancy and COVID-19: Risk of Mother-to-Child Transmission." Dr. Kimberly Hoppe Parr from GZA GeoEnvironmental, Inc. provided an update on PFAS environmental risk through her talk "PFAS Toxicity Update – Congeners, Mixtures and Regulations." In addition, three graduate students from the University of Illinois at Urbana-Champaign presented "flash talks" showcasing their current work. We thank all involved with the planning and execution of our Spring meeting.

We would like to extend a request for future meeting topics. MRC/SOT meetings for Fall 2021 and Spring 2022 are already being planned. You can find the list of past meeting topics in the past newsletters on our website. If you have a specific area that you would like us to explore or have specific speakers that you know would be interested in presenting, please feel free to contact anyone on the executive committee with your ideas. We also want to encourage your colleagues to become members of our Regional Chapter. It is a great opportunity to meet individuals in our area that share your passion for science.

We want to acknowledge the contributions of outgoing Executive Committee members:

- Chad Vezina (University of Wisconsin – Madison) – Past President
- Ali Chesney (ToxStrategies) – Councilor

Special thanks to Brian and Ashley for drafting this MRC/SOT newsletter.

Lastly, we want to thank our membership for continued interest and contributions. Your ideas, participation and encouragements are essential to maintaining the value of the Midwest Chapter.

Charles Mattis, MS, MBA, DABT
President 2020-2021

About our Midwest Chapter

The Midwest Regional Chapter of the Society of Toxicology (MRC/SOT) has served its Illinois and Wisconsin members for over 39 years, since 1981. Our chapter is currently composed of 140 members with a professional interest in toxicology, and we continually accept new members. Our membership by affiliation for 2020 was 39% from Industry, 30% from Academia, 16% from Consulting, 13% from Contract Research Organizations, 1% from Government, and 1% from Individual membership.

Our main objective is to facilitate professional interactions amongst toxicologists in industry, academia, and government. To accomplish this, we host two scientific programs annually, in the spring and fall, with invited speakers from across our represented areas, host trainee poster sessions and talks, and support career outreach, both during our Chapter meetings and at the National SOT meeting.

Our Chapter had several noteworthy members who were recognized in 2021 for their contributions to the field of toxicology.

- One of the recipients of the 2021 SOT Undergraduate Research Award was Kathy Marie De La Torre (University of Illinois at Urbana-Champaign, Urbana, IL) for her work titled "Prenatal and Postnatal Exposure to Polychlorinated Biphenyls Alters Hormone Receptor Expression in the Rat Ovary." Kathy was also the MRC/SOT's nominee for the 2021 SOT RC4 Undergraduate Merit Award.
- Dr. Andressa Gonsioroski (University of Illinois at Urbana-Champaign, Urbana, IL) received the 2021 MRC/SOT Travel Award for her abstract "Iodoacetic Acid Affects Estrous Cyclicity, Ovarian Gene Expression, and Hormone Levels in Mice."
- Dr. Joe (Huanyu) Qiao (University of Illinois at Urbana-Champaign, Urbana, IL) was given the 2021 MRC SOT Early Career Toxicologist Award. His research was the first to identify the mechanisms by which phthalates and water disinfection by-products adversely affect meiosis in the ovary. Dr. Qiao's grant support for his research includes a K99/R00 award from NIEHS, a R01 award from NIGMS, and an award from the Roy J. Carver Biotechnology Center. Recently, he was awarded the Zoetis Animal Health Award for Research Excellence and previously received the DeLill Nasser Award in Genetics.
- Dr. Genoa Warner (University of Illinois at Urbana-Champaign, Urbana, IL) received the Best Poster Award (Reproductive and Developmental Toxicology Specialty Section), the Postdoctoral Fellow Achievement Award (Women in Toxicology Special Interest Group), and the Best Abstract Award (Molecular and Systems Biology Specialty Section) from the Society of Toxicology.

Introducing "Flash Talks"

In order to include more student participation in our Chapter spring and fall meetings, the MRC/SOT is including "flash talks" by university students to showcase their research efforts and how they relate to contemporary toxicology issues.

This opportunity for students and postdocs to showcase their work and presentation skills will enable participants to develop their communication skills and build confidence for longer platform talks in the future. Presentations are limited to a title slide and a summary slide (static text and graphics only; no animation or video), lasting no longer than 3 minutes, followed by 2 minutes for Q&As. The presentation should describe the student's research (e.g., rationale, methods, high level interpretation, impact on the field of toxicology). Selected presenters will get an opportunity to present at the upcoming chapter meetings.

Outstanding presenters will be recognized with a small monetary reward. Students interested in presenting a "flash talk" must provide copies of slides to the MRC/SOT President-Elect (Ashley Brinkman AMBrinkm@scj.com) for consideration no less than 2 weeks prior to the Chapter meeting date**.** Flash talk application announcements will likely be made in early October 2021.

MRC/SOT Award Announcement

Professional Awards

Recommendations shall consist of a letter (one-page limit) describing the accomplishments of the candidate; verbal recommendations and self-recommendations will not be considered. Letters of recommendation must be submitted to Charles Mattis (charles.mattis@abbvie.com) and Brian Chanas (chanas14@gmail.com) no later than April 15, 2022 following the nomination request. Only one recommendation letter per nomination is required. Membership in the MRC/SOT or National SOT is not required. The proposed candidate should still be in active practice in toxicology or a closely related field or recently retired and must have demonstrated a sustained and high level of activity in toxicology or a closely related field, for example, by unique research achievements, special teaching proficiency, and/or through promoting the interests and concerns of toxicology. The award will be presented by the President of the MRC/SOT at the Annual Spring Meeting of the Chapter.

The Kenneth P. DuBois Award

This Award honors an outstanding Midwest toxicologist with a career involving several years (15+) of distinguished professional experience in the field of toxicology. See professional awards section for application details.

The Early Career Toxicologist Award

This award honors an outstanding Midwest toxicologist with up to 10 years of professional experience in the field of toxicology. See professional awards section for application details.

Student and Postdoctoral Awards

The same research project may be submitted for the Undergraduate/Graduate/Postdoc Travel Award and Young Investigator Award; however, one individual will not be eligible to receive two awards for the same research in the same year. We do not accept submissions on similar projects for two years in a row.

MRC/SOT Undergraduate/Graduate/Postdoc Travel Award

The MRC/SOT invites applications for the Undergraduate/Graduate/Postdoc Travel Award to assist in defraying the costs for attending the 2022 SOT Annual Meeting. The number of awards will be decided based on the funds available. The application consists of your accepted SOT annual meeting abstract and a letter from the student's research advisor. Please send your application to Charles Mattis (charles.mattis@abbvie.com) and Brian Chanas (chanas14@gmail.com) by December 1, 2021. Proof of abstract acceptance will need to be confirmed (via email) prior to receiving the award.

The Young Investigator Award

This award is presented at the MRC/SOT Spring meeting to the applicant who submits the best undergraduate or graduate research proposal. In addition to the application, the advisor should submit a letter of recommendation. Winners will present their research at the following Annual Meeting of MRC/SOT and will receive funds to be used for continuing education in toxicology (e.g., travel to national or regional meeting and/or purchase of textbook(s), participation in workshops and/or research.) Please send your application to Charles Mattis (charles.mattis@abbvie.com) and Brian Chanas (chanas14@gmail.com) by April 15, 2022.

The Victor A. Drill Award
This award recognizes the top student poster presentation(s) at the MRC/SOT Spring meeting. Winners will receive funds to be used for continuing education in toxicology (e.g., travel to national or regional meeting and/or purchase of textbook(s), participation in workshops.) All student posters at the meeting will be judged.

Undergraduate Funding Opportunity for SOT 2022
The Regional Chapter Communications and Collaboration Committee of the Society of Toxicology provides merit-based awards ($500) for undergraduate students 1) to be recognized nationally at the Society's Annual Meeting (March 27-31, 2022) and 2) to present a poster of a toxicology-related project at the Meeting. There is no cost for undergraduates to register for the Annual Meeting. It is important to note that undergraduate applicants must be under the mentorship of a Midwest Regional Chapter (MRC) member in order to be considered for this award. Applications for the award must be submitted to MRC representatives Brian Chanas and Charles Mattis no later than October 2021.

Please note that this award is contingent upon the acceptance of the undergraduate's poster abstract by the Society for the 2022 Annual Meeting.

The submission deadline for poster abstracts to the Society is October 15, 2021 and poster abstract acceptance announcements will likely be made in early January 2022.

Application information can be found at:

https://www.toxicology.org/awards/sot/awards.aspx?AwardID=273

2021 MRC/SOT Spring Meeting Award Recipients

- *The Kenneth P. DuBois Award*
  Not awarded in 2021 due to lack of nominees
- *The Early Career Toxicologist Award*
  Dr. Joe (Huanyu) Qiao University of Illinois – Urbana-Champaign
- *Student and Postdoctoral Awards*
  Andressa Gonsioroski University of Illinois at Urbana-Champaign, Urbana, IL. Andressa received the 2021 MRC/SOT Travel Award for her abstract “Iodoacetic Acid Affects Estrous Cyclicity, Ovarian Gene Expression, and Hormone Levels in Mice.”

MRC/SOT 2020 to 2021 Executive Committee

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MRC/SOT Executive Committee (2021-2022)

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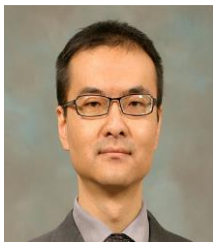

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Graduate Student Rep
To be Announced

MRC/SOT 2021 to 2022 Executive Committee

Welcome to the newly elected members of the MRC/SOT Executive Committee!

President-Elect (2021-2022)
Ashley M. Brinkman (SC Johnson & Son, Inc.)
PhD, DABT

Dr. Brinkman is an Associate Manager - Toxicology in the Global Safety Assessment and Regulatory Affairs division at S.C. Johnson & Son, Inc., where she performs human health risk assessments to support the safe use of home cleaning and personal care products. She received her doctorate in Molecular & Environmental Toxicology from the University of Wisconsin-Madison in 2015 and obtained certification from the American Board of Toxicology in 2019. She is author/co-author of six peer-reviewed publications on hormone receptors, breast cancer therapeutics, and machine learning models for endocrine pathways. She has been a member of SOT since 2011 and is also a member of the Women in Toxicology and Out Toxicologists and Allies groups. Dr. Brinkman served as the MRC/SOT Secretary (2019-2021) and has been actively involved with national SOT through oral and poster presentations, as well as being the recipient of multiple SOT awards during graduate school.

Secretary (2021-2023)
Matt Wolter (SC Johnson & Son, Inc.)
PhD, CQA

Matt Wolter, PhD, CQA is a Senior Associate in Human Toxicology at SC Johnson in Racine, WI. He is responsible for supporting their air care and home storage products and a few other specialty projects. Matt holds a Ph.D. in public health from the University of Wisconsin-Milwaukee. He has over 9 years of work experience in Human and Environmental health. Matt has been an SOT member since 2012. He previously served as a Midwest Regional Chapter (MRC) Councilor and a member of the Regional Chapter Communications and Collaboration Committee (RC4) from May 2018 to May 2020. He has presented several times on the national and regional SOT level.

Councilor (2021-2023)
Kimberly Keil Stietz (University of Wisconsin-Madison)
PhD

Kimberly Keil Stietz, PhD is an Assistant Professor in the Comparative Biosciences Department at the University of Wisconsin-Madison, responsible for running a research lab focused on elucidating effects of environmental chemicals on the morphology and function of the lower urinary tract, and also serves as the course coordinator for Veterinary Toxicology within the School of Veterinary Medicine. Dr. Keil Stietz holds a PhD from the University of Wisconsin-Madison and a BS from St. Norbert College in DePere, Wisconsin. Dr. Keil Stietz is the author/co-author of 38 peer-reviewed articles and has been a member of the SOT since 2014. Dr. Keil Stietz is looking for opportunities to serve on SOT or MRC/SOT committees to become more involved in the organization and help future students receive the excellent resources that she benefitted from.

Councilor (2021-2023)
David Belair (AbbVie)
PhD, DABT

David Belair, PhD, DABT is a Senior Scientist in Toxicology at AbbVie, responsible for serving as Study Director or Study Monitor on general toxicology studies. David holds a bachelor's degree in chemical engineering from Purdue University and a doctorate in biomedical engineering from UW-Madison. David gained experience as a toxicologist through his postdoc at the US EPA, his role as an investigative toxicologist at Celgene, and through preparing for and earning his DABT certification in 2019. David has authored 19 peer-reviewed publications to-date and has been a member of SOT since 2015. David has held leadership positions for other symposia and professional societies and seeks to bring his broad background and leadership experience to a councilor position with MRC/SOT.

Want to know more about the Midwest Regional Chapter?

Regional Chapter newsletters, information pertaining to membership, MRC/SOT awards, and nomination/application forms may be viewed or printed from our website:
http://www.toxicology.org/groups/rc/midwest/index.asp

41st Annual MRC/SOT Virtual Spring Meeting
May 14th, 2021
"Contemporary Topics in Toxicology"

Trainee Presentations

Morgan Walcheck, BS
University of Wisconsin-Madison
2019 MRC-SOT Young Investigator Award Recipient
"The Aryl Hydrocarbon Receptor as a Putative Tumor Suppressor in Pancreatic Cancer Development"

Andressa Gonsioroski, DVM, MS
University of Illinois-Urbana Champaign
2021 MRC-SOT Travel Award Recipient
"Iodoacetic Acid Affects Estrous Cycling, Ovarian Gene Expression, and Hormone Levels in Mice"

Presentations

Deepak Modi, PhD, FNASc
ICMR-National Institute for Research in Reproductive Health
"Placenta, Pregnancy and COVID-19: Risk of Mother-to-Child Transmission"

Kimberly Hoppe Parr, PhD
GZA, GeoEnvironmental, Inc.
"PFAS Toxicity Update – Congeners, Mixtures and Regulations"

Invited Student 'Flash' Talks (from the University of Illinois at Urbana-Champaign)

Ning Liu
"Perfluorononanoic acid (PFNA) impedes mouse oocyte maturation by inducing mitochondrial dysfunction and oxidative stress"

Vasiliki E. Mourikes
"Imidacloprid Interferes With Ovarian Antral Follicle Growth, Steroidogenesis, and Receptor Expression"

Rachel Braz Arcanjo
"Contemporary toxicants and their effects on female reproductive system"

"The Aryl Hydrocarbon Receptor as a Putative Tumor Suppressor in Pancreatic Cancer Development"

2019 MRC/SOT Young Investigator Presentation

Morgan Walcheck, BS
Doctoral Candidate
University of Wisconsin-Madison

Abstract

Only 10% of those diagnosed with pancreatic ductal adenocarcinoma (PDAC) live beyond 5 years. These dismal outcomes reflect a poor understanding of PDAC pathogenesis, which has hindered the efforts to develop more effective therapies. Recent discoveries show the Aryl Hydrocarbon Receptor (AhR) plays a crucial role in the pathogenesis of several cancers through mediation of immune cell infiltration. Although there is some data suggesting a putative tumor suppressor function in PDAC, the extent that AhR suppresses pancreas cancer development has not been well studied. For this reason, we sought to evaluate the effect of AhR loss in the development of PDAC *in vivo* using a novel mouse model. We used a well-accepted PDAC model (KC mice), where the primary PDAC driver mutation (*Kras*^{G12D}), is present in pancreas lineage cells (*Pdx1-Cre*). KC mice were crossed to AhR null (Ah--/--) mice to understand how AhR heterozygosity (Ah+/--KC) and loss of AhR (Ah--/--KC) affects PDAC formation and progression. Using this model, we discerned the differences in grade and incidence of pancreatic cancer pre-cursor lesions and PDAC between KC and AhKC mice. Originally, we selected a 9 month end point based on existing literature of KC mice. Only 30% of Ah--/--KC survive to 9 months compared to 70% of KC mice, but the etiology of the increased lethality was often difficult to discern (autodigestion of pancreas). Due to this substantial decrease in survival, we selected the end-point at a time prior to onset of most deaths (5-months). At 5 months, chronic pancreatitis (CP) severity, incidence of pancreas precursor lesions (PanIN-1,2,3) and incidence of PDAC were determined via histopathologic analysis in KC, A$^{+/-}$KC, A$^{-/-}$KC and control mice. To date, the pancreas of KC (n= 24) and A$^{+/-}$KC (n=14) mice demonstrate no significant difference in extent of CP involvement (10.1% vs 15.7%, p=0.203). As expected, both groups developed pancreatic intra-epithelial neoplasia (PanIN)-1 (known phenotype of KC mice), the earliest PDAC precursor lesion. This suggests no histopathologic difference exists due to AHR heterozygosity. In contrast, there were significant differences in the A$^{-/-}$KC group (n=13) compared to both groups. Notably, one mouse presented with an advanced PanIN 3 lesion and two had invasive PDAC. Furthermore, In A$^{-/-}$KC mice, the pancreas demonstrated 32% involvement of CP (p-value =.002). This suggests the influence of AhR in PDAC may be through mediation of pancreatic inflammation. Specifically, these data suggest deletion of AHR may exacerbate the progression of CP leading to increased incidence of PDAC. Currently, our lab is evaluating the differences in the infiltrating immune cells between these groups. Further elucidation of the underlying mechanism of CP in the development of PDAC could help lead to new PDAC prevention strategies.

Biosketch

Morgan Walcheck is originally from Wisconsin and received her undergraduate degree in Pharmacology and Toxicology with a certificate in Environmental studies from the University of Wisconsin - Madison. Morgan is currently working towards her doctorate in Molecular and Environmental Toxicology at the UW Madison in the lab of Dr. Sean Ronnekleiv-Kelly. Her work focuses on understanding what role the Aryl Hydrocarbon Receptor (AhR) plays in the development of pancreas cancer. Morgan aspires to have a career in academia, running her own lab as a PI at a research university.

"Iodoacetic Acid Affects Estrous Cycling, Ovarian Gene Expression, and Hormone Levels in Mice"

2021 MRC/SOT Travel Award Presentation

Andressa Gonsioroski, DVM, MS
Doctoral Candidate
University of Illinois-Urbana Champaign

Abstract

The disinfection of drinking water was a major public health achievement of the 20th century. However, the reaction between disinfectants and organic matter in water generates water disinfection by-products (DBPs). Iodoacetic acid (IAA) is one DBP that has been shown to be an ovarian toxicant *in vitro*, but its effects on the ovaries *in vivo* are not well known. This study determined whether IAA exposure affects estrous cyclicity, ovarian expression of genes that regulate apoptosis, the cell cycle, steroidogenic factors, estrogen receptors, and the levels of reproductive hormones in mice. Adult CD-1 mice were dosed with IAA (0, 0.5, 10, 100, and 500 mg/L) in the drinking water for 35 days and estrous cyclicity was monitored for 14 days. After 35 days, ovaries were collected for analysis of expression of apoptosis regulators (*Bax, Bok, Aimf1, Bcl2* and *Bcl2l10*), cell cycle regulators (*Ccna2*, *Ccne1*, *Ccnb1*, *Ccnd2*, *Cdk4,* and *Cdkn1a*), steroidogenesis factors (*Star*, *Cyp11a1, Cyp17a1, Cyp19a1, Hsd17b1,* and *Hsd3b1*), and estrogen receptors (*Esr1* and *Esr2*). In addition, sera were collected to measure pregnenolone, androstenedione, testosterone, estradiol, inhibin-B, and follicle stimulating hormone (FSH) levels. IAA exposure decreased the time that the mice spent in proestrus compared to control. Further, IAA exposure decreased expression of the pro-apoptotic factor *Bok* (100 and 500 mg/L), the cell cycle regulator *Ccnd2* (500 mg/L), and borderline decreased expression of the anti-apoptotic factor *Bcl2l10* (10 mg/L), the pro-apoptotic factor *Aimf1* (0.5 mg/L), and the steroidogenic factor *Cyp19a1* (10 and 500 mg/L) compared to control. In contrast, IAA exposure increased expression of the pro-apoptotic factors *Bax* and *Aimf1* (500 mg/L), the anti-apoptotic factor *Bcl2l10* (500 mg/L), the cell cycle regulators *Ccna2*, *Ccnb1*, *Ccne1*, and *Cdk4* (500 mg/L), and the estrogen receptor *Esr1* (500 mg/L) compared to control. IAA exposure did not affect expression of *Star*, *Cyp11a1, Cyp17a1, Hsd17b1, Hsd3b1,* and *Esr2.* Further, IAA exposure decreased estradiol levels (500 mg/L), but did not alter pregnenolone, androstenedione, testosterone, inhibin-B, and FSH levels. Collectively, these data show that IAA exposure alters estrous cyclicity, ovarian gene expression, and estradiol levels in mice.

Biosketch

Andressa Varella Gonsioroski is a third year Ph.D. candidate at the University of Illinois at Urbana-Champaign, where she currently holds an Environmental Toxicology Scholar fellowship with the Interdisciplinary Environmental Toxicology Program at Illinois. She obtained her Veterinary Medicine Degree and Master's Degree in Animal Reproduction at the Federal University of Rio Grande do Sul, Brazil. She joined Dr. Jodi Flaws Lab in 2018 and her current project focuses on how exposure to water disinfection byproducts affects female reproduction.

"PFAS Toxicity Update – Congeners, Mixtures and Regulations"

Kimberly A. Hoppe Parr, PhD
Senior Project Manager
Toxicologist/Occupational & Environmental Health Scientist
GZA GeoEnvironmental, Inc.

Abstract

In May 2016, the EPA issued lifetime health advisory levels for two perfluoroalkyl substances (PFAS), perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) of 70 parts per trillion individually or for the sum of these two chemicals. In April 2021, the EPA issued an updated toxicity assessment for perfluorobutane sulfonic acid (PFBS). As of April 2021, the EPA has yet to establish enforceable maximum contaminant levels (MCL) for any of the PFAS chemicals. In the absence of a federal MCL, individual states are establishing drinking water standards and guidelines. This presentation will examine the current toxicological information for PFAS and how state agencies have utilized this information to develop their standards.

Biosketch

Dr. Parr is an occupational and environmental health scientist and toxicologist at GZA GeoEnvironmental, Inc. in the Wisconsin office. Her project work at GZA has included exposure assessment, human health risk assessment, quantitative exposure reconstruction, industrial hygiene, and occupational and environmental health and safety. Dr. Parr has conducted sampling surveys and written exposure assessments for occupational and environmental settings for numerous materials and chemicals. Additionally, she serves as a health and safety coordinator for GZA. Dr. Parr received her doctorate in Occupational and Environmental Health from the University of Iowa. While completing her doctorate, she worked as a researcher in the Pulmonary Toxicology Facility, which is a component of the Environmental Health Science Research Center at the University of Iowa. She received her Bachelor of Science in Microbiology and Cell/Molecular Biology from the University of Wisconsin-Oshkosh.

"Placenta, Pregnancy and COVID-19: Risk of Mother-to-Child Transmission"

Deepak Modi, PhD, FNASc
Molecular and Cellular Biology Laboratory
National Institute for Research in Reproductive Health (ICMR)
JM Street, Parel Mumbai 12

Abstract

Pregnancy makes women vulnerable to infections and this poses an additional risk of congenital transmission of the virus to the unborn. The outbreak of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), causing coronavirus disease 2019 (COVID-19), has caused significant morbidity and mortality. COVID-19 alters the course of pregnancy and harms mothers and their newborns. To assess the risk of mother-to-child transmission of COVID-19, we carried out research to determine if the human placenta was permissive to SARS-CoV- infection. Using single-cell RNAseq data we identified that the human placenta has the necessary machinery for SARS-COV- infection and replication. The virus could be detected in the placental cells and was associated with fetal demise. We also established a registry (https://pregcovid.com) to collect hospital-based data of pregnant women with COVID-19 and identified several cases of systemic and placental viremia. The outcomes of our studies on placenta and pregnancy in women with COVID-19 will be presented.

Biosketch

Dr. Modi is a scientist at the ICMR-National Institute for Research in Reproductive Health where he heads the Molecular and Cellular Biology group. His current research areas include understanding of endometrial receptivity and endometrial disorders, the genetics of sexual development and male infertility and the interactions of COVID-19 and reproduction. Dr. Modi was elected Fellow of National Academy of Sciences India (NASI) in 2020 and has authored over 85 publications in several prestigious national and international journals. He is a co-investigator for the PREGCOVID registry, which collects information on pregnant women with COVID-19 and their babies in India.

Invited Student 'Flash' Talks
(from the University of Illinois at Urbana-Champaign)

Ning Liu

"Perfluorononanoic acid (PFNA) impedes mouse oocyte maturation by inducing mitochondrial dysfunction and oxidative stress"

Vasiliki E. Mourikes

"Imidacloprid Interferes With Ovarian Antral Follicle Growth, Steroidogenesis, and Receptor Expression"

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