**PHYSIOLOGY OF PRETERM BIRTH:**

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**SCRIBE:** Rachel Tribe

**PARTICIPANTS:** Mark Johnson, Stephen Lye, Gang Sun, Nanbert Zhong, Sam Mesiano, Florian Herse (day 1), Gunvor Ekman-Oreberg, Lucezia Pignatti & Yanfang Gu and Mira Noura Moufarrej (day 2).

**PURPOSE:** Basic/Clinical research strategies to unravel the cause of preterm birth and identify therapeutic strategies.

**BACKGROUND INFORMATION:** During the first **PREBIC Meeting at Michigan State University in 2003** the following **Six Working Groups** were selected: #1 **GENETICS**, #2 **PATHOLOGICAL UTERINE ACTIVITY**, #3 **INFECTION & INFLAMMATION,** #4 **COAGULATION & VASCULAR PATHOLOGY**, #5 **OXIDATIVE STRESS**, #6 **STRESS: HPA AXIS ACTIVATION.**

**FIFTEEN WORKING GROUPS WERE ADDED BETWEEN 2004 & 2013 TO MAINTAIN SIX WORKING GROUPS PER YEAR:** To facilitate the use of **Concept Mapping** *to better understand the cause of preterm birth* **& Logic Model Development** *for short term and long-term planning.* The following working groups are listed below with year implemented.

2004 2005 2006-2012

#1\_\_\_ Epidemiology # 6 \_\_\_Biomarkers #11\_\_\_ International Efforts

#2 \_\_\_Biomarkers #7 \_\_\_Inflammation #12\_\_X\_Placental Biology 2008

#3 \_\_\_Risk Factors #8 \_\_\_Clinical Trials #13 X\_Animal Models 2010

#4\_\_\_ Intervene/Prevent # 9\_\_\_ Nutrition #14 \_\_\_Global Alliance 2011

#5\_\_X\_ Pathways #10\_X\_ Cohort Studies #15\_\_\_ Sex/Gender Issue 2012

**Note!** At the completion of the working group, please MARK WITH \_X\_ which of the Working 15 working groups listed would be important considerations in advancing the effectiveness of the Working Group for the Prevention of Preterm Birth.

**SUMMARY OF THE TWO-DAY WORKING GROUP SESSIONS:**

**WHAT KEY AREAS WERE DISCUSSED**:

1. Physiology of maternal-fetal interactions (immunological, structural, multi-systemic); mechanisms of parturition – physiological or PTB-related; multiple possible inputs especially to PTB; consideration of emergent stressors and the possibility of developing an assessment of relative influences. Models – humans (in vivo, ex-vivo), animals (mentioning insights possible from different models).  Forward and reverse translation. Materials- patient classifications, biopsy sampling (physiological baseline).
2. Defining a healthy baby rather than gestation length.

Creating an optimal pregnancy – focus on early events and successful placentation.

Understanding pregnancy and parturition from pre-conception to birth. Understanding healthy

pregnancy so that deviation from the path (PET, IUGR and preterm labour) can be identified and

pathophysiology determined.

1. In addition to reviewing previously published data, considered where data and tissues for defining healthy pregnancy and fetus, and developing risk scores, could come from. Open access Omics data repositories, collaboration with groups in PREBIC already undertaking omics studies, analysis of tissue from existing or prospective cohorts. Large clinical e-health record data linkage. Also discussed need for minimum data set; woman followed preconception, longitudinally clinical information-electronic health record, diet, environmental exposure, social data, sleep, blood, urine, saliva, cervico-vaginal fluid, urine, ultrasound cervical length, placenta, MRI, myometrium.

**WHAT KEY ISSUES NEED TO BE ADDRESSED?**

1. Review and integrate existing knowledge into a ‘human pregnancy and parturition map’ to identify gaps and make recommends how to address these gaps in knowledge. Frame concepts such as: (i) What enables successful implantation? (ii) What maintains pregnancy? (iii) What causes physiological parturition? (v) What is the optimal maternal environment for pregnancy?
2. Defining a healthy baby as the important clinical end point and research focus.
3. Harmonized data and biological sample data core information sets to allow sharing of samples and data across PREBIC teams from high and low/middle income countries, (HIC and LMIC) to address #1 and #2 and preterm birth. Consider updating and refining minimal data set (clinical data and sample data) previously published by PREBIC to ensure fit for purpose for both HIC and LMIC. Compare protocols currently in use by groups (e. Lye, Gravatt and GAPPS, Tribe and PRECISE etc.). Reference other published pregnancy core outcomes for preterm labour, IUGR and pre-eclampsia (e.g. International Consortium for Health Outcomes Measurement, ICHOM; Global Pregnancy Collaboration, COLLECT) and open-source, web-based information and sample tracking systems (e.g. HMIS platform, Norwegian Institute of Public Health, NIPH and Baobab LIMS etc.) as well as data repository and analysis tools such as GEneSTATION.

\* From feedback session – also include post-pregnancy maternal health in the ‘Human Pregnancy and Parturition Map’.

**WHAT RECOMMENDATIONS DO YOU SUGGEST FOR FUTURE WORKING GROUPS INTERACTIONS?**

1. Workgroups to pick up actions and tasks in between meetings and report back on progress
2. Use the progress and previous outcomes to inform discussions next time.

THANK YOU FOR YOUR TIME AND PARTICIPATION IN REACHING PREBIC GLOBAL ISSUES OF PRETERM BIRTH.

Please use the additional page for diagrams or special notes:

**Please see presentation slides below.**







