



JSS
ACADEMY
OF HIGHER
EDUCATION
& RESEARCH
MYSURU
(DEEMED TO BE UNIVERSITY)

Special Interest Group

On

Placental Microbiome and Factors Affecting It

An Initiative
of

Research Division

JSS AHER, Mysuru-15.

Team Lead

Dr. Archer Ann Catherine

Assistant Professor

Department of Microbiology

School of Life Sciences,

JSSAHER, Mysuru



Started on 2019-20

JSS Academy of Higher Education & Research
(Deemed to be University)
Accredited "A+" Grade by NAAC



REG/ACA/SIG/PMFA/443/2019-2020

Date: 04.03.2020

NOTIFICATION

Sub: Constitution of Special Interest Group in "Placental Microbiome and Factors affecting it".
Ref: Your request letter No. REG/FLS/GEN/2019-20/1042 dated 12.02.2020.

Special Interest Group (SIG) – "Placental Microbiome and Factors affecting it"

In exercise of powers conferred under Section 50 (xxii) and 12 [xi (a)] of the MoA/Rules of JSS Academy of Higher Education & Research as per UGC Regulations 2016, the Special Interest Group (SIG) in the area of "Placental Microbiome and Factors affecting it" has been constituted for focusing on basic and applied research in the mentioned area with the following members:

Sl.No.	Name of the member	Remarks
1	Dr. Archer Ann Catherine Assistant Professor Division of Microbiology & Tissue Culture Dept. of Water & Health (FLS) JSS AHER	Group Leader
2	Dr. Suma KB Professor & Head Dept. of Obstetrics and Gynaecology JSS Medical College.	Member
3	Dr. Sumana M N Professor, Dept. of Microbiology JSS Medical College.	Member
4	Dr. Sapna Patel M C Associate Professor Dept. of Pathology, JSS Medical College.	Member
5	Dr. Asha Srinivasan Assistant Professor Division of Nanoscience and Technology Faculty of Life Sciences, JSS AHER	Member
6	Smt. Kalpana Chief Dietician JSS Hospital.	Member
7	Dr. Mukesh Kapoor Principal Scientist, Department of Protein Chemistry and Technology CSIR – CFTRI, Mysuru.	External Member
8	Dr. Prameela Professor & Head, Dept. of OBG K R Hospital, Mysuru.	External Member
9	Dr. Jeyakumar N Professor & Head, Dept. of Bioinformatics Bharathiar University, Coimbatore.	External Member

The SIG "Placental Microbiome and Factors affecting it" shall function for a period of three years from the date of Notification.

The SIG shall submit their report once in six months to the JSS AHER. The budget for the functioning shall be submitted by the Group leader of the SIG and approval shall be obtained from the JSS AHER for carrying out their various activities.


REGISTRAR

To,

All the above members,

Copy to:

1. The Pro Chancellor, JSS AHER.
2. The Vice Chancellor, JSS AHER.
3. The Controller of Examinations, JSS AHER.
4. The Director (Academics), JSS AHER.
5. The Director (Research), JSS AHER.
6. The Dy. Registrar (Senior Grade), JSS AHER.
7. The Dy. Director (Academics), JSS AHER.
8. The Dy. Director (Authorities), JSS AHER.
9. The Associate Director (Research), JSS AHER.
10. The IQAC Coordinator, JSS AHER.
11. The Asst. Director (Academics), JSS AHER.
12. The Asst. Director (Research), JSS AHER.
13. The Principal, JSS Medical College.
14. The Principal, JSS Dental College & Hospital.
15. The Principal, JSS College of Pharmacy, Mysuru.
16. The Principal, JSS College of Pharmacy, Ooty.
17. The Head, Dept. of Water & Health (FLS), JSS AHER.
18. The Coordinator, Dept. of Health System Management Studies, JSS AHER.
19. Office Copy.

Guidelines for the formation of Special Interest Groups:

Objective: To promote research in specific area by a group of individuals working in the constituent colleges of the JSS AHER, who are desirous of promoting research in a specific area through

- Continuous dialogue
- Conducting Group meetings
- Submitting research projects
- Development of new ideas in research in the identified area and translating the same into research proposals to external funding agencies and research publications in indexed journals.
- Translating research findings into the clinical applications
- Organizing seminars related to objectives of the Group.

The SIG should categorize their objectives as short term and long-term objectives and while submitting the progress reports, highlight their achievements under the same.

Structure: The SIG shall consist of 5-7 members with a group leader. They shall meet periodically and submit the report annually of the group activities and achievements.

The Special Interest Group shall function for a period of 3 years from the date of notification, which can be extended further, based on the outcomes and reviewed by the Board of Management of the JSSAHER.

Budget: The budget required for functioning of the SIG shall be allocated from Research and Development fund of the JSS AHER based on the budget prepared and submitted by them annually.

The budget shall be provided for following aspects.

- Meeting expenses of the Group.
- Short travels within India for the purpose of group objectives.
- Secretarial assistance as required by the Group.
- Preparation of research project proposals/reports.

The JSS AHER shall provide in its budget for the expenditure proposed by the Special Interest Groups and make the funds available to the respective group.

Evaluation of outcomes: The JSS AHER shall evaluate the SIG periodically in respect to their group objective examining the follows.

- Progress in the proposed research projects.
- Publication of research findings in periodicals and presentations
- Reports.


REGISTRAR

Name of the SIG: Placental microbiome and factors affecting it

Approval Reference: REG/ACA/SIG/PMFA/443/2019-2020

Dated: 04.03.2020

Team Lead: Dr. Archer Ann Catherine

Members

Sl. No.	Name and Designation of member	Expertise
1.	Dr. Asha Srinivasan, Assistant Professor, Division of Nanoscience & Technology, JSS AHER, Mysuru	Required to develop any preventive or prophylactic measures for maternal health
2.	Dr. MN Sumana, Department of Microbiology, JSS Hospital, Mysuru	provide necessary assistance for analysing the microbiota profile by culture dependent methods
3.	Dr. Suma, Professor, Obstetrics & Gynecology, JSS Hospital, Mysuru	required for grouping of patients and collection of samples
4.	Dr. Sapna Pathologist, Dept. of Pathology, JSS Hospital, Mysuru	provide assistance in collection of placental tissue and pathology

Sl No.	Name and Designation of member	Expertise
5.	Smt. Kalpana, Chief Dietician, JSS Hospital, Mysuru	provide inputs required to study the effects of diet and other factors
6.	Dr. Mukesh Kapoor, Principal Scientist, CSIR-CFTRI, Mysuru	expertise in studying the effects of prebiotic dietary components on probiotic bacteria using genomics and proteomics approaches
7.	Dr. N Jeyakumar, Professor, Dept. of Bioinformatics, Bharathiar University, Coimbatore	expertise in bioinformatics and computational biology

Objectives

Primary Objectives: To characterize:

- The placental microbiome of healthy term and preterm pregnant subjects
- The metabolic profile of placental microbiome in full term and pre-term pregnant subjects.
- Identification of beneficial and pathogenic microbiota associated with the placental microbiome and its source in cases of premature membrane rupture and other complications

Secondary Objectives: To investigate:

- The effects of diet (vegetarian, non-vegetarian, high fat/sugar diet etc.) on changes in placental microbiome and pregnancy outcomes
- The effect of factors such as antibiotics/probiotic supplementation, pre-pregnancy and pregnancy factors such as BMI, disease states, alcohol consumption, infection etc. on placental microbiome and pregnancy outcomes like chorioamnionitis, premature rupture of membranes etc. and foetal development.

Activities Conducted

Workshops/Seminars:

Live Webinar entitled “Microbiome: Listen to your gut!” was organised on 15th July, 2020. (Detailed report below).

Research Projects:

Placental samples (n=10) were collected from the OBG department of JSS Hospital and processed for microbiological, histopathological and metagenomics analysis. The microbiological analysis revealed the presence of pathogenic flora namely Staphylococcus hominis, Escherichia coli, Streptococcus spp, and Acinetobacter lwoffii. Notably, the presence of fungal growth in some samples added an additional layer of complexity to the placental microbiome. Histopathological observations revealed the presence of acute chorioamnionitis and funisitis in some of the samples. The metagenomics analysis of two of the samples correlated with the presence of pathogenic organisms. However, the controversy of the sterility of the placenta raises concerns of potential contaminating flora during sample processing and environmental invasion. Thus, further studies are needed to make any concrete assumptions.

Projects and Patents

- **Ongoing/Completed Projects:** Nil
- **Patents/Prototypes:** Nil

Achievements

Publications:

Kotthapalli Prashanth, Ann Catherine Archer. An Introduction to Human Microbiome. In “Human Microbiome - Techniques, Strategies, and Therapeutic Potential”, Springer (In Press).

Awards and Recognitions: Nil

Student/Faculty Involvement:

- Primary goals of the project were materialised as two M.Sc. Summer project thesis:
- Microbial evaluation of placental tissue for presence of microbiota – Ms. Kanasu RP
- Evaluation of chorioamnionitis through histopathological examination of placenta samples of full-term and pre-term gravid patients – Ms. Srilatha N

Future Plans

Upcoming Events:

EMBO workshop on Microbiome analysis is envisaged in early 2025.

Long-Term Goals:

To characterise the microbiome patterns of indigenous populations with respect to dietary patterns and disease outcomes.

Conclusion

Summary

Currently the studies on placental microbiome are reported from US and European groups. Our country is rich with diverse geographical locations, dietary habits and status of living and characterizing the placental microbiome in relation to effects of diet, supplementation, disease states etc. would be helpful in better understanding the placental microbiome, effects of maternal factors such as pre-pregnancy BMI, disease and other complications, effects of physical and environment factors on the adverse outcomes of pregnancy and development of foetus. Ultimately the aim of the SIG would to develop therapeutic targets to improve pregnancy outcomes.

The SIG within the institute will help develop a core interdisciplinary group working on microbiome and develop approaches for its correction using probiotics and prebiotics. The SIG aims to create a specialised Center of Microbiome with advanced facility for metagenomics and proteomic analysis.

Report

Live Webinar ‘Microbiome: Listen to your gut!’

Date: 15th July 2020



Mr. Kumar Sankaran
Leucine Rich Bio,
Bengaluru



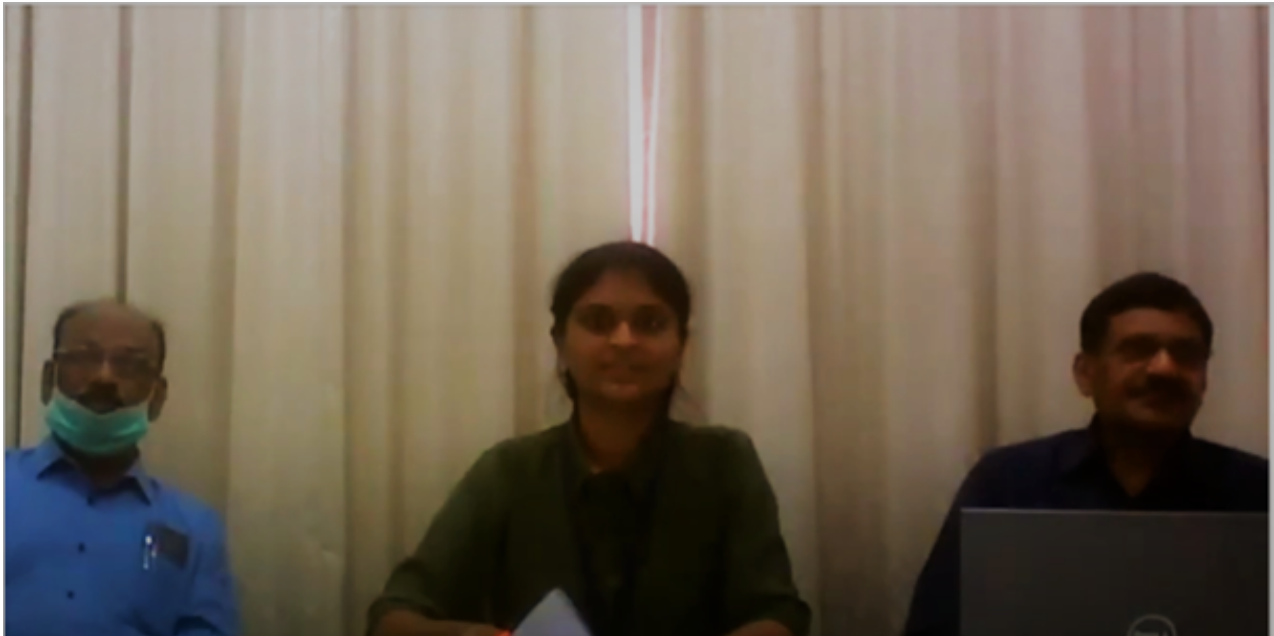
**Prof. Yogesh
Shouche**
NCCS, Pune



Dr. Mukesh Kapoor,
CSIR-CFTRI, Mysuru

A Live Webinar entitled “Microbiome: Listen to your gut!” was organised by Special Interest Group ‘Placental microbiome and factors affecting it’, Dept. of Water & Health-Faculty of Life Sciences, JSS Academy of Higher Education & Research, Mysuru on 15th July, 2020. Our gut harbours an entire universe of microorganisms with its own unique identity. The gut microbiome protects us from diseases, is shaped and affected by the diet we intake. The microbiome is a collection of genes of these tiny microorganisms comprising of hundreds of different bacteria, fungi, viruses and other life forms. This microbiome which itself is an ‘organ’ affects digestion, aging, immune function, cognitive function and even mood and behaviour. Three eminent scientists in the area of gut microbiome namely, Dr. Yogesh Shouche, Scientist and Principal Investigator, National Center for Microbial Resources, NCCS, Pune; Mr. Kumar Sankaran, CEO of micobiome and genomics based company, Leucine Rich Bio Pvt. Ltd., Bengaluru and Dr. Mukesh Kapoor, Principal Scientist, CSIR-CFTRI, Mysuru were the speakers on the theme of the webinar. Director (Research) and Dean (FLS) Dr. Balasubramanian S inaugurated the event. Dr. Raveesha KA, Head (FLS) gave the opening remarks.

Dr. Yogesh Shouche, delivered a talk on the topic “Human Gut Microbiome: Global and Indian perspective”. He emphasised on the diversity of gut microbiota around the globe and the influence of geographical distribution, diet and ethnicity on the composition of the microbiome. His studies also showed that the Indian gut microbiota had a unique microbiome signature compared to other Asian populations as well as the populations worldwide. Mr. Kumar Sankaran’s talk “Role of Microbiome in Healthcare-the different vantage points” focussed on the effects of gut microbial balance in the development and treatment of diseases. His talk also highlighted the relationship between gut microbiota and our immunity and the possible impact of the ecosystem on our microbiome. Lastly, Dr. Mukesh Kapoor deliberated on the “Role of prebiotics in modulating the gut microbiome” in which he deciphered the importance of prebiotic (dietary fiber) constituents in our diet which could beneficially promote a healthy gut microbiota. Overall, the webinar was attended by more than 250 participants across the country and yielded in productive discussions and deliberations. Feedback was obtained from the participants with positive response towards the webinar and commended the efforts of the organisers. The take home message from the deliberations highlighted the importance of natural mode of delivery which transferred beneficial microbes to the new born infant and provided development and immunity up to 14 years of age. In addition, the speakers also emphasised on the consumption of traditional Indian fermented foods rich in dietary fiber including idli and dosa which are instrumental in maintaining the ideal gut microbial balance and immunity of an individual compared to the Western diet. The programme was conceptualized, conducted and moderated by Dr. Ann Catherine Archer, Group Leader (SIG), Faculty of Life Sciences, JSS AHER, Mysuru.



The screenshot shows a PowerPoint presentation titled "Human Microbiome" with 8 slides visible in a grid. A video call inset in the top right corner shows three participants. The slides contain the following information:

- Slide 1:** "Human Microbiome: A Global Snapshot" by Dr. Nagesh Theerth.
- Slide 2:** "Human Microbiome: Biggest thing in Biology after Human Genome Project with Extraordinary Human Health Implications".
- Slide 3:** "THE EVOLUTION OF HUMAN MICROBIOME PROJECT".
- Slide 4:** "The Importance of the MICROBIOME by the Numbers". Includes statistics: 80% of DNA in our cells is from microbes, 100 trillion microbes, 22,000 genes, and 100,000 species.
- Slide 5:** "The Microbiome: Comparative Mass". Compares human mass (70kg) to microbiome mass (2.5kg).
- Slide 6:** "Succession of microbial communities".
- Slide 7:** "Microbiota Development and Ecology".
- Slide 8:** "Actions of the Gut Microbiota".



Special Interest Group on Placental Microbiome & factors affecting it

Invites you to WEBINAR on
“Microbiome: Listen to your gut!”
 15th July, 2020; 10.30 am to 1.30 pm

SPEAKERS



Mr. Kumar Sankaran
Leucine Rich Bio,
Bengaluru



Prof. Yogesh Shouche
NCCS, Pune



Dr. Mukesh Kapoor,
CSIR-CFTRI, Mysuru

PATRONS

Dr. B Suresh
Pro-Chancellor, JSS AHER

Dr. Surinder Singh
Vice-Chancellor, JSS AHER

Dr. Manjunatha B
Registrar, JSS AHER

Dr. Kushalappa PA
Director (Academics),
JSS AHER

Dr. Balasubramanian S
Director (Research) &
Dean-FLS, JSS AHER

Dr. Raveesha KA
Head-FLS,
JSS AHER

Moderator: *Dr. Archer Ann Catherine*

Assistant Professor, Department of Microbiology, Faculty of Life Sciences, JSS AHER,
Mysuru-570 015 www.jssuni.edu.in

Register in advance for zoom meeting:

https://us02web.zoom.us/webinar/register/WN_JNhuWSynSNigJa60tloIRg

JSS AHER hosts Webinar 'Microbiome: Listen to your gut!'

Mysuru, July 21- JSS Academy of Higher Education and Research (JSS AHER), Mysuru, Department of Water and Health, Faculty of Life Sciences (FLS), had organised a Webinar entitled "*Microbiome: Listen to your gut!*" as part of Special Interest Group (SIG) 'Placental microbiome and factors affecting it', on July 15.

Our gut harbours an entire universe of micro-organisms with its own unique identity. The gut microbiome protects us from diseases, is shaped and affected by the diet we intake. The microbiome is a collection of genes of these tiny micro-organisms comprising hundreds of different bacteria, fungi, viruses and other life forms.

Dr. Yogesh Shouche, Scientist and Principal Investigator, National Centre for Microbial Resources, NCCS, Pune, delivered a talk on the topic "*Human Gut Microbiome: Global and Indian perspective.*" He emphasised on the diversity of gut microbiota and his studies showed that the Indian gut microbiota had a unique microbiome



Yogesh Shouche



Kumar Sankaran



Mukesh Kapoor

signature compared to other Asian populations.

Kumar Sankaran, CEO of Microbiome and Genomics-based company, Leucine Rich Bio Pvt. Ltd., Bengaluru, gave a talk on "*Role of Microbiome in Healthcare — The different vantage points.*" He focussed on the effects of gut microbial balance in the development and treatment of diseases.

Lastly, Dr. Mukesh Kapoor deliberated on the "*Role of prebiotics in modulating the gut microbiome*" in which he deciphered the importance of prebiotic (dietary fiber) constituents in our diet which could beneficially promote a healthy gut microbiota. Overall, the webinar was attended by more than 250 participants across the country and yielded in productive discussions and deliberations.

Feedback was obtained from the participants with positive response towards the webinar and commended the efforts of the organisers.

The speakers also emphasised on the consumption of traditional Indian fermented foods rich in dietary fiber including *idli* and *dosa* which are instrumental in maintaining the ideal gut microbial balance and immunity of an individual compared to the Western diet.

Director (Research) and Dean (FLS) Dr. S. Balasubramanian inaugurated the event. Dr. K.A. Raveesha, Head (FLS), gave the opening remarks. The programme was conceptualised, conducted and moderated by Dr. Ann Catherine Archer, Group Leader (SIG), Faculty of Life Sciences, JSS AHER, Mysuru, according to a press release.