

The study is published in the British journal, *Ultrasound*, this week

## Spanish researchers discover the way through which foetuses really hear and respond to musical stimuli

- The study demonstrates that a foetus of 16 weeks is already capable of properly hearing and responding to music as long as it is emitted **from the mother's vagina**.
- **The foetus can hardly hear sound from an external source and from its mother.** It perceives it in a whispered, distorted form.
- In the case of music emitted from the vagina, 87% of foetuses move their mouths or tongues and almost half pull out their tongues as far as they will go. **They perform vocalisation movements prior to the acquisition of language.**
- **The device developed for the study enables foetal deafness to be ruled out. It also makes ultrasound scans easier and reduces the stress of parents during pregnancy.**

Barcelona, 6 October 2015.: After only 16 weeks of existence, foetuses hear and respond to music as long as it is emitted **from their mother's vagina**. Foetuses respond to this stimulus by opening their mouths and pulling their tongues out as far as possible, making vocalisation movements – prior to the acquisition of language.

This is the main conclusion of the study

(<http://ult.sagepub.com/content/early/2015/09/29/1742271X15609367.full>) conducted by the team of Institut Marquès, which boasts the collaboration of Alberto Prats, Professor of Anatomy and Human Embryology of the Faculty of Medicine of the University of Barcelona.

The study, entitled **“Foetal facial expression in response to intravaginal music emission”**, is published this week in the journal Ultrasound (<https://www.bmus.org/bmus-journal-and-publications/>) of the British Medical Ultrasound Society (BMUS).

According to Dr. Marisa López-Teijón, the Head of Assisted Reproduction at Institut Marquès and the principal researcher and author of the clinical study: “We have discovered that the formula for foetuses to hear like us is to emit music **from the mother's vagina**. They barely hear the sound that reaches them through their mother's abdomen: the soft tissues of the abdomen and the inside of the mother's body absorb the soundwaves”.

### Method and results

**The pregnant women to whom music was applied from the vagina were fitted with a device designed specifically for the study.** This was capable of emitting an average intensity of 54 decibels, the equivalent of a quiet conversation or background music. The music chosen was the *Partita in A Minor for Flute Alone – BWV 1013* by Johann Sebastian Bach.

Using ultrasound scans, the research team compared the reaction of the foetuses and the results were statistically significant. *When music was applied from the vagina, 87% of foetuses moved their mouths or tongues and approximately half of them reacted with a very noticeable movement, opening their jaws very wide and pulling out their tongues as far as possible*, says Dr. Alex García Faura, the Scientific Director of Institut Marquès and co-author of the article. **On applying music emitted through the abdomen or soundwaves, these changes in the expressions of the foetuses were not observed.**

### **What is the reason for the foetus's response?**

According to Alberto Prats, the Professor of Anatomy and Human Embryology of the Faculty of Medicine of the University of Barcelona, we believe that the music induces a response through vocalisation movements because **it activates brain circuits that stimulate language and communication.**

According to this hypothesis, once the formation of the inner ear is complete, when the foetus receives an auditory stimulus that includes rhythm or melody through the cochlea, very primitive brainstem centres that induce vocalisation are activated in the area related to social behaviour.

*For the first time, Dr. Marisa López-Teijón says, **we have been able to communicate with the foetus.** From the 16th week, it is capable of responding to musical stimuli. We can say that learning begins in the womb.*

### **About the Marquès Institute**

*Institut Marquès is an integrated international centre for gynaecology, obstetrics and assisted reproduction, which boast 90 years' history in Barcelona. It possesses a team comprising 140 professionals and is headquartered in Barcelona, Great Britain, Ireland and Kuwait. It also has its own clinic in Italy, where it has become the first European fertility centre to open its doors. It welcomes patients from over 50 countries who require medical help to become parents.*

#### **Further information:**

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### **Press Event. Barcelona, October 6<sup>th</sup>, 11.30 h. (CET time)**

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