

# International Conference on the Female Reproductive Tract (Frauenchiemsee, May 30 – June 2<sup>nd</sup> 2003)

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The International Conference on the Female Reproductive Tract has been organized for the second time at the nunnery of Frauenwörth on the island Frauenchiemsee. The conference had a limited number of participants with only invited speakers and an intense and extended poster session. This meeting was sponsored by the DFG, DGZ, ETCS as well as several pharmaceutical companies.

The sessions have focussed on cell and molecular aspects of hormonal regulation in ovaries and endometrium and with the results of its impairment. In addition, regulation in trophoblast differentiation and the consequences for placental development was included. It has been a very comprehensive meeting with intense discussions stimulated by the specific atmosphere of this island.

The sessions started with a key lecture given by Ken Korach, NIEHS USA, about the different functions of the estrogen receptors ER-alpha and -beta in the reproductive tract. Both receptors do show specific expression patterns, but it is still not clear whether this is the reason for tissue-specific estrogen responsiveness of the reproductive tissues. More evident is the fact that both receptors act as counterplayers in transactivation target genes within one tissue.

A real highlight of this conference has been the series of talks about phenotypes resulting from the "knockout" of different ovarian pituitary gland hormones or receptors as well as in hormone converting enzymes in mice. All these gene inactivations, including the aromatase knockout mouse generated by E. Simpson, Australia, the FSH-receptor knock-

out mouse presented by R. Sairam, Canada, as well as the androgen receptor deficient mouse from S. Kato, Japan, resulted in a testicularisation of the ovaries. Granulosa cells were replaced by sertoli cells and the ovary was polycystic. These findings corroborated the results presented at the last conference demonstrating that the double-knockout of ER alpha and -beta led to the formation of testicular tubules instead of follicles. This session generated intensive discussions since all talks demonstrated that deleting genes acting on different levels of the hormone cascade resulted in the same phenotype: a switch from follicles to testicular tubules lined by sertoli cells.

The session about implantation has mostly focussed on the interaction between blastocyst and endometrium necessary for the implantation process. In this context S.K. Dey, USA, has followed up the molecular mechanisms involved in the blastocyst-induced signal cascades in the endometrium. He could show that COX2 but not COX1 were induced by embryonic signals which are required for the decidualization process as evidenced by knockout mice.

The nature of embryonic signals, which are able to induce the implantation reaction, are not very well known. In primates, however, chorionic gonadotrophin seems to be the important signal of the preimplantation embryos which induces IL1 $\beta$ , followed by COX-2 expression which, in turn, lead to an increase in cAMP levels (A. Fazleabas, USA). cAMP again triggers the synthesis IGF-binding protein 1 which induces at least the deci-

dualization process. For the first time a nearly complete signalling pathway induced by embryonic signals could be followed up in the maternal compartment.

Another session dealt with the influence of phyto- and xenoestrogens and their tissue-specific action, as demonstrated by G. Vollmer, Germany. The potential high risk of all these substances and nutrients with estrogenic activity is not very well examined and contains seeds of discontent as far as the human population is concerned because the marketing promotes such biological substances as being harmless. Fascinating in this context was the talk by A. Maggi, Italy about a transgenic mouse model. These mice contain a luciferase reporter gene which reacts upon estrogen receptor activation. This model could serve as a screening tool to test compounds and nutrients for estrogenic activity and tissue specificity in an in vivo situation.

Additional discussions of the conference were devoted to placental development and trophoblast cell lineage regulation. They revealed that the reasons for spontaneous abortion, insufficiency of placental functions and preeclampsia are probably related to a non-appropriate differentiation of the trophoblast cell lineage.

*Anschrift der Autorin:*

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