

Scientific Report

1st GEMINI MEETING

DOMOTEL – XENIA

The first general meeting of Cost action FA0702 was held in Volos, Greece from 9th-12th October 2008. This meeting consisted of three workshops organised by working groups I, II and III. Over 85 scientists from different European states (AT, BE, DK, EE, FR, DE, GR, HU, IT, NL, PL, SL, ES, SE, CH, UK), Australia, Hong Kong and USA took part in this meeting.

The meeting started on the evening of 9th October by registration of participants and networking. It was followed next morning by the welcoming lecture of Dr. Georgios Amiridis, the chair of organising committee welcoming the participants to Volos. Dr Alireza Fazeli (chair of Gemini) opened the meeting by presenting an overview of the aims and goals of Cost Action FA0702 stating the objective of the meeting “knowing each other”. He continued his presentation by setting the scene for the meeting as an ideal place for discussion on preparatory road map for maternal communication with gametes and embryos and proposing the publication of a book on establishment of the general pathways of maternal communication with gametes and embryos.

Dr. Thomas Spenser from Texas A & M University, USA was the other plenary speaker of this session, presenting an overview of maternal communication with gametes and embryos.

The morning session was followed by the opening of the first workshop by Prof. Ann van Soom and Prof. A. Dinnyes. Several participants were called on to present a summary of their in vivo and in vitro models (see Annex I). Finally a moderated discussion took place. It was agreed several different models exist to learn maternal interaction with gametes and embryos. Establishment of a guideline may help researchers in the field to be able to compare their results. Prof. A. van Soom was asked to lead a task force on establishing such a guideline in the field.

The other plenary lecture on this day was given by Prof. Colin Bishop from The Wake Forest Institute for Regenerative Medicine in USA. Prof. Bishop’s lecture concerned the latest progress in regenerative medicine and production of tissue for use in organ transfer and transplantation. This was regarded as an introduction for opening the second working group session entitled “Tools, Technologies and Systems Biology: From Tissues to Models”. The working group II session was chaired by Prof. Eckhard Wolf and Prof. Jean-Pierre Ozil. Several speakers explained different methodologies used in the field. This session was followed by a moderated discussion on how it is possible to progress towards a systems biology approach on understanding the maternal communication between gametes and embryos.

Finally this day was ended by a moderated discussion chaired by Prof. Fulvio Gandolfi. Participants were asked on suggestions for future structure of Gemini meetings and suggestions for improving Gemini activities.

The next day of the meeting started with three presentations by Prof. A. Dinnyes, Prof. G. Chauat and Prof. Meyer stating their experiences and opinions on securing

funding from European funding agencies. This session ended with a moderated discussion chaired by Dr. Alireza Fazeli.

The Workshop of working group III, “Maternal nutrition effects on embryo and long term development” was the last workshop held in this meeting. This workshop was chaired by Prof. Tom Fleming and Prof. Pascale Chavatte. During this workshop Dr. Karen Kind from University of Adelaide, Australia presented the latest information on “Dietary and environmental factors: effects on embryos and long-term development”. This was followed by several presentations (see Annex I) and a moderated discussion chaired by Prof. Fleming and Chavatte.

Dr. Fazeli, Chairman of Gemini closed the meeting and in his concluding remarks he thanked all speakers and participants of the meeting for their contribution. He mentioned that the next year’s focus of Gemini meeting would be “to learn from other disciplines!”

Annex I

1st GEMINI MEETING PROGRAM

DOMOTEL – XENIA

1 Plastira str, 38222

Volos, Greece

9th-12th October 2008

Thursday 9th October 2008:

18.00: Registration open and Reception

Friday 10th October 2008:

8.30: Registration open

8.45-9.15: Chairman opening, **Dr. Alireza Fazeli, University of Sheffield, UK**

9.15-10.05: Plenary lecture, **Dr. Thomas E. Spencer, Texas A&M University, USA**

Morning session WG 1. Experimental models,

“The standardization of in vitro models”

10.05-10.10: Introduction

"Which are the functions of the oviduct that we should mimick in vitro?"

• **Prof. Ann Van Soom, The University of Gent, Belgium.**

10.10-11.10: Short communications

"Experiences with in vivo and in vitro models of the oviduct" (with the emphasis on standardisation, advantages and shortcomings)

10.10-10.25 • Wolf E. (transcriptome and proteome studies in an in vitro model of oviduct-embryo interaction)

10.25-10.40 • Fazeli A. (gametes and the oviduct proteome)

10.40-10.55 • Gualtieri (sperm adhesion and release from oviduct in vitro)

10.55-11.10 • Ziecik AJ (hormonal influences on the pig oviduct in vitro)

11.10-11.40 Coffee break

11.40-12.10: Discussion workshop: What should a good experimental model look like?

Moderators: **Prof. A. Van Soom and Prof. A. Dinnyes**

12.10-13.00: "Progress in tissue engineering"

- **Prof. Colin E. Bishop, The Wake Forest Institute for Regenerative Medicine, USA**

13.00-14.30: Buffet Lunch and Poster Session 1

Afternoon session WG 2. Technologies

"From tissues to models"

14.30-14.35: Introduction

"Conceptual and Technical Challenges for Modeling Complex Interactions in the Reproductive Tract"

- **Prof. Eckhard Wolf, The University of Munich, Germany and Dr. Jean-Pierre Ozil, INRA, France.**

14.35-15.15: "Principles of systematic sampling and stereological investigation of complex tissues"

- **Dr. R. Wanke, Institute of Veterinary Pathology, LMU Munich, Germany**

15.15-15.30: Tea-Coffee-Break

15.30-16.00: "Holistic proteome studies of minimal samples: immature vs. in vitro matured oocytes"

- **Dr. G. J. Arnold, Gene Center, LMU Munich, Germany**

16.00-16.30: "Mathematical modelling and control of physiological systems: application to the gonadotropic axis"

- **Dr. F. Clement, INRIA Paris-Rocquencourt Centre, France**

16.30-16.45: Procedural Reconstruction of a Three Dimensional Graphical Model of an Oviduct

- **Mr M. Burkitt, University of Sheffield, UK**

16.45-17.00: Embryo-Maternal communication in bovine oviduct: A transcriptomic approach

- **Ms B Schmaltz, INRA, France**

17.00-17.45: Discussion workshop: What are the next steps to facilitate modelling of maternal interactions with gametes and embryos?

Moderators: **Dr. Jean-Pierre Ozil, INRA, France and Prof. Eckhard Wolf, The University of Munich, Germany**

17.45-18.00: Break

18.00-18.30: Discussion workshop: How we can make the best out of the COST action

• Moderator: **Dr. Alireza Fazeli, GEMINI Chairman**

19.00: Dinner

Saturday October 11th 2008:

8.30: Registration open

8.40-8.45: “European Funding” General Session

• Moderator: **Dr. Alireza Fazeli, GEMINI Chairman**

8.45-9.10: “Experiences of obtaining European frame work programmes”

• **Prof. A. Dinnyes, Hungary**

9.10-9.35: “EMBIC: Embryo Implantation Control network”

• **Prof. G. Chaouat, Centre de recherche INSERM, France**

9.35-10.00: Discussion on how to promote GEMINI as a research topic in European frame works

Morning session WG 3

‘Maternal Nutrition Effects on Embryo and Long-Term Development’

10.00-10.05: Introduction and Welcome

• **Prof. Tom Fleming, University of Southampton, UK and Dr. Pascale Chavatte, INRA, France**

10.05 –10.50: ‘Periconception maternal low protein diet: embryo responses and long-term consequences’

• **Dr. Adam Watkins and Dr. Judith Eckert, University of Southampton, UK. Joint presentation**

10:50–11.25 Tea-coffee break (plus posters)

11.25–12.15 ‘Dietary and environmental factors: effects on embryos and long-term development’

• **Dr. Karen Kind, University of Adelaide, Australia**

12.15-12.30 High non-esterified fatty acid concentrations during murine follicle culture are detrimental for the oocyte’s developmental competence

• **Dr. J. Leroy, University of Antwerp, Belgium**

12.30-12.45 Fine tuning of blastocyst development by the insulin-like growth factor system in the rabbit

• **Dr. A. Navarrete Santos, Martin Luther University, Germany**

12.45-13.00 Effects of maternal undernutrition on the hypothalamic-pituitary-gonadal axis function in male and female sheep offspring
• **Dr. B. Kotsampasi, University of Athens, Greece**

13.00.–14.00: **Buffet lunch (plus posters)**

14.00-14.15 Developmental effects of cholesterol enriched hyperlipidic diets in rabbits
• **Dr. Pascale Chavatte, INRA, France**

14.15 – 14.45 Maternal Nutrition Discussion forum:

•Moderators: **Prof. Tom Fleming, University of Southampton, UK and Dr. Pascale Chavatte, INRA, France**

Questions to consider:

What are the mechanisms and health consequences of models discussed in above lectures?

How should we analyse oocytes and embryos in response to dietary and environmental challenges? How should we investigate the origin and propagation of long-term changes?

What areas of study do we need to set up? What new research directions for COST participants can we plan in this field? What areas of interaction can we develop with other Workshop themes within our COST group as a whole?

14.45-14.55: “Meeting Closure and Concluding Remarks”
• **Dr. Alireza Fazeli, GEMINI Chairman**

14.55 – 15.15: Tea break

15.15-18.00: “MC Meeting”

19.00: **Dinner**

Sunday 12th October 2008:

One day Excursion