



Action FA0702

Maternal Interaction With Gametes and Embryos

Participating countries: AT, BE, DK, EE, FR, DE, GR, HU, IL, IT, LT, NL, PL, PT, SL, SK, ES, SE, CH, UK, AUS, NZ

Chair of the Action: **Dr Alireza Fazeli**, a.fazeli@sheffield.ac.uk

Vice Chair of the action: **Prof Fulvio Gandolfi**, fulvio.gandolfi@unimi.it

COST Science Officer: **Dr Ioanna Stavridou**, istavridou@cost.esf.org

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A message from the Chairman Dr Alireza Fazeli

Dear All

I hope you are all fine and starting to enjoy the partially warm weather and sunshine. It completely depends where you are. It seems in Sheffield we have always rain. But I should not complain. Sheffield has it's own beauties too!

The last six months was as busy as ever for Gemini. As planned, we had the first workshop of working group one in Lansk, Poland. Thanks to the hard work of Adam, the Polish team and Ann, it went very well. Now we are trying to put the invited reviews together and prepare them for a special issue of Theriogenology. Unfortunately it will not be printed before the Algehro meeting. But I hope we will have it printed and published before the end of the year. You will have a good chance to see different views about the Lansk workshop in this issue of the newsletter.

In our action STSMs are very popular. Soon we will reach a situation that the number of STSM applications we get is over our budget capacity. Therefore for the time being I have stopped accepting new applications. This is a temporary measurement and I hope to re-open the application process in the winter of 2009 (or maybe before that). We have some nice reports of some of the STSMs completed so far in this issue of the newsletter for you.

Recently I had to take part in an annual evaluation meeting arranged by the COST Office in Prague and present our achievements so far. I think it went very well. I presented our data and compared to other actions with the same age, we are one of the most active actions. Many thanks for all messages of your achievements that you sent me for my report. It was very helpful. Sara is trying to contact you and arrange for short reports about these achievements to be published in the newsletter for others to know. This will help all of us to know about potential means of getting funding and how to increase our collaborations and research activities.

Finally the Algehro meeting is fast approaching. We have an impressive collection of speakers. In addition, ample time has been dedicated during the meeting for discussions and networking. Sergio and Fulvio have arranged for an amazing venue and impressive social events. I am sure like Volos, Algehro will be a memorable meeting. The deadline for registration and submission of abstracts is fast approaching. Please register as soon as possible and pay your registration fees. Once we reach the deadline or if we get more registrations than our capacity we will close the registration!

I look forward to seeing you in Algehro.

Alireza Fazeli
Chairman COST Action FA0702 (GEMINI)

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Message from the Editor

The action is now just over a year old and we have already made some impressive achievements. This newsletter is a summary of GEMINI's activities since the first newsletter in January 2009 and also provides information on future Gemini initiatives.

If you would like to contribute to future editions please email: secretary@cost-gemini.eu

I hope you enjoy this second edition!

Best wishes
Sara Gottliebsen
Gemini Administrator

2nd Annual GEMINI Meeting – Alghero 1-3 October 2009

www.cost-gemini.eu/meetingalghero.html



ANNUAL MEETING

The Gemini Meeting Organizing Committee is pleased to invite you to the second meeting of the COST Action (FA0702) "Maternal Interactions with Gametes and Embryos" which will be held in Alghero (Sardinia, Italy), on 1st-3rd October 2009. The meeting is expected to be the platform for researchers working in the field to exchange ideas and to build up new co-operations.

ABSTRACT SUBMISSION

Open to all researchers that work on different aspects of maternal interactions with gametes and embryos.



If you would like the opportunity to showcase your work, improve collaborations and network, this meeting will be an ideal opportunity for you to submit an abstract to be considered for an oral or poster presentation.

Submitted abstracts should not exceed 300 words and should be submitted on the meeting's abstract form. Abstract submission will be open on 1st May 2009 and must be received by the meeting secretary (secretary@cost-gemini.eu) by no later than **17:00 (UK time) on 10th August 2009**. For your abstract to be accepted you must also complete a registration form (for how to register see below) and pay all registration fees. All abstracts will be published in an abstract book and online at the COST-GEMINI website.



TRAVEL

Flights: Alghero Fertilia Airport is about 11km from town. Orange FdS bus AA leaves for Piazza della Mercede in town, with departures between 05.45 and 22.40, but does not link with all flight arrival times. Journey time: 20 minutes. Fare: €0.70. Taxi from the airport, about €20, journey time 15 minutes.

Internet: www.aeroportoalghero.it

THE CONFERENCE VENUE

The Conference will be held in Quartè Sayal, a former 17th century convent fully restored in 2008 and transformed in to a modern Conference Centre. Located a few minutes walk from the conference hotels it includes not only all the modern conference facilities (including WiFi Internet access) but also pleasant areas with bars, restaurants and meeting points.

REGISTRATION

Registration will open on 1st May 2009. To register for the meeting please complete the registration form that will be uploaded on to the website by 1st May 2009. Registration forms should be submitted to secretary@cost-gemini.eu. Accompanied by the copy of receipt of registration fee payment (please scan and e-mail the receipts to us). The only payment method available is through international bank transfer. The registration for this meeting will close at **17:00 (UK time) on 10th August 2009**.



Registrations of those that are not accompanied by proof of full payment will not be accepted.

GRANTS

A number of grants are available to support attendance of this meeting. These grants will be allocated based on the quality of submitted abstracts between conference participants.

Public transport: Alghero's Old Town is made for walking, but line AO buses are useful for reaching the beaches. The fare is €0.70. Buy tickets at a tabacchi or from the bus kiosk in the Giardini Pubblici. Cycle hire is available from Cicloexpress on Via Garibaldi

Internet: www.cicloexpress.com



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Second General Conference

Alghero, Sardinia, Italy

1st – 3rd October 2009

Speakers that have already accepted our invitation:

Philippe Andrey, INRA, France

How-to: A practical approach to the mathematical modeling of biological systems

Veronique Duranthon, INRA, France

Rabbit as a pre and post-implantation developmental model

Yuri Lazebnik, Cold Spring Harbor Laboratory, USA

Can a biologist fix a radio?

Heiner Niemann, Institute of Farm Animal Genetics, Germany

Unravelling the transcriptome of bovine preimplantation embryos derived in vivo

Kevin Sinclair, University of Nottingham, UK

Developmental origins of health and disease: Maternal diet and epigenetic programming in the oocyte and pre-implantation embryo

Thomas Werner, Genomatix Software, Germany

Next generation sequencing: Opportunities and challenges on the example of ChIP-seq application

Mike White, University of Liverpool, UK

Spatial and temporal information coding by the NF- κ B system



Organising Committee

Chair: Prof Fulvio Gandolfi, University of Milan
 Vice Chair: Prof Sergio Ledda, INISS, Italy
 Member: Dr Alireza Fazeli, University of Sheffield
 Member: Dr Ann vanSoom, Gent University
 Member: Dr Andras Dinnyes, Hungary
 Member: Prof Eckhard Wolf, University of Munich
 Member: Prof Tom Fleming, University of Southampton
 Member: Dr Jean-Pierre Ozil, INRA
 Member: Dr Pascale Chavatte-Palmer, INRA

Meeting Details:

- Abstract deadline – **Monday 10th August 2009**
- Website: www.cost-gemini.eu/meetingalghero.html
- Abstract forms can be downloaded from the website and should be returned to secretary@cost-gemini.eu
- To register complete the online registration form and return to: secretary@cost-gemini.eu
- For further information please contact: secretary@cost-gemini.eu

Working Group I Workshop – Experimental Models: Impressions after organising a workshop in Poland

By Ann Van Soom

Immediately after our arrival in Lansk, Poland, we could already conclude that the meeting venue had two important things in common with Volos, Greece:

1. It took an awful lot of time to get there!
2. The location was absolutely wonderful!

During the first evening and night, participants were trickling in individually or in small groups, but fortunately everyone was present the next morning at the opening of the meeting. When Adam and I welcomed the participants, I felt obliged to tell everybody how it all started and how we finally arrived, at this sunny day in May, on this very beautiful location in the old Prussian woods of Poland.

Let me take you back to October 2008. Alireza, Fulvio, some other passengers and I were driving back in a hired car from Volos to Thessaloniki, after the first annual meeting of the GEMINI COST action. Adam Ziecik had presented in Volos the attractive conference site of Lansk in the North of Poland and volunteered to act as local organizing committee, and in combination with the irrefutable enthusiasm of Alireza Fazeli, who wanted a workshop on models, I had no other choice than to help organize this workshop on “Experimental models in animal reproduction: theoretical and practical approaches.” As soon as we had developed a strategy for the programme, Adam, Alireza and me started e-mailing back and forth to suggest and invite possible speakers, to arrange the location (which turned out to be terrific), to accommodate and supply everybody with the best food and drinks and after a suggestion of Adam, also to include a practical session, which is necessary to make all these modeling more accessible and to allow hands-on experience for the participants.

Then Alireza thought it would be nice to ask the speakers to put their thoughts on paper, and publish their manuscripts in a journal. If I am not mistaken this idea, of publishing as much as possible out of the COST meetings, arose in a jacuzzi in Volos. Hot water is apparently a source of enlightenment to some of us! After another email discussion, in which we discussed which journal would be most appropriate, Theriogenology, with Fulvio Gandolfi as editor, agreed to publish the refereed papers. The manuscripts are now under review and if all goes well, they will be available in print at the next COST annual conference in Alghero, Sardinia.

Back to the programme now (for a complete overview please visit www.pan.olsztyn.pl/gemini2009): during the morning session we learnt how to pick *in vivo* models. Evolutionary biology, fruit flies and salamanders, nude mice and sheep, from gene expression to surgery, all in all we got a very broad picture on the models which are available to study gamete and embryo interaction with the maternal reproductive tract. A lively discussion was brusquely interrupted by the coffee break, and immediately after we were emerged again in fascinating stories on how animals should be treated in order to get the most pure and undiluted samples of genital tract fluid for further analysis. A second talk focused on how to put embryos back in the bovine oviduct by means of transvaginal tubal endoscopy, and the nice thing about it was that you could get the embryo afterwards back too for further analysis! The amount of training which was involved to reach the level of skill



Continued from page 3...



that both scientists obviously possessed was however not covered by the talks, but probably requires more than six months according to my modest opinion!

In the afternoon we were transferred to Olsztyn and could witness several practical demonstrations, varying from microdialysis of the corpus luteum in the cow, to in vitro isolation and culture of genital cells from oviduct and endometrium in pigs and cattle. The BBQ later that evening included some very tasty fish and meat and real Polish Bison grass Wodka!



The next morning we started off by looking inside the oviduct of the cow and the mouse : swimming sperm and moving embryos and particles filmed *ex vivo* reminded me of the movie "Fantastic Voyage", in which miniaturized scientists travel inside a comatous man (a scientist by the way!) to remove a possible fatal blood clot in his brain. I am sure that within the next decades, these things will become possible in the living animal/human too, I mean not the miniaturization of humans but a virtual journey inside a body by means of videoendoscopic elements.



During the poster session every author was able to present his or her poster very shortly and then we continued with the last three speakers, who discussed how they selected an *in vitro* model for their own specific scientific purposes and what the problems were that they encountered. Both monolayers, vesicle cultures and whole oviduct cultures were thoroughly discussed and standardized for the specific application needed.



After a delicious lunch, most of the participants came back to the lecture room to engage in a final discussion on how to choose and treat your model. The level of participation was extremely high, which was probably due to the fact that most people really got to know each other during these two days and were eager to share their opinions with each other. We now need to finalize all the take-home messages in a paper which should focus on guidelines for models, and in order to achieve this, we need as much input as possible from you, the participants. By the way, there were 61 participants from 11 different countries. By the time you read this, you will probably have already received the first draft of the paper, and any feedback is more than welcome.



I will end this (rather long impression) of the "workshop on models" by thanking the local organizers, Adam Ziecik and Gabrieł Bodel, who arranged for all the entertainment and the logistics and all the others, Aneta (the dancing queen!), the people at the registration desk, Dr Skarzynski and Bah, Wojtek, and colleagues, who took care of the practical sessions and Kamil, who got up so early in the morning to get us the oviducts! See you all in Alghero!

To view more photos visit: <http://news.webshots.com/album/573395303hZgxSa>

Working Group 1 Workshop

7-8 May 2009

Lansk Poland

PhD Student Report:

The first impact with Poland was kind of tough: 4 hours drive with a techno music soundtrack makes you wonder if you're going to a rave party or a congress. Some of us decided to take it easy and stop for a romantic candle-light dinner, how sweet. However, when the following day the sun showed up and we could finally admire the beauty of Lansk, everybody's mood changed.

We learnt that female reptiles store semen up to seven years (that's being farsighted) and that women are extremely similar to cows and fruit flies, but, surprisingly, they don't like to be reminded of that. And also, while finding a decent baby sitter seems to be impossible these days, sheep and mice are more than happy to mind bovine embryos for a while. Then we talk about feminine solidarity!

After a nice bus trip in the Polish country, we reached the pleasant Olsztyn, where the practical sessions were very well organized and everyone, dressed up like a frog, could actually understand how much work a bunch of cells requires.

During the gala dinner, it was very interesting to see the different reactions to the Polish dancers' invitations. Some of us made up the most original excuses (bad knees, sore throats, and massive headaches) while others showed unexpected abilities that made the professional dancers go pale.

The tour was amazing; after an organ concert with trumping gold angels in the Marian Sanctuary, history ejected us to Adolf Hitler's war headquarters between bunkers and starving mosquitoes. Then, the Teutonic Knights period started, and we had lunch in a beautiful castle in Ryn. Digestion was helped by a walk in the forest, with loving mooses and deers as friendly as dogs, and a grouse more hard-fighting than wolves!

So we left Lansk with the take-home message that we really need to take time when choosing our next model and that, when we'll be struggling with our cells or cows, we'll feel less lonely.

See you in October,

Barbara Merlo & Francesca Mossa

The Spanish Ministry of Science and Innovation Grants a Project under the GEMINI Umbrella

A research project in the framework of the COST-action FA0702 (Maternal Interaction with gametes and embryos) has been approved for funding by the Spanish Ministry of Science and Innovation (MCINN) (funding period: January 2010 to December 2012). The project, entitled "Identification and functional analysis of specific proteins synthesized in the bovine uterus during the early development of male and female embryos (AGL2009-10059)", will develop a research headed by the group of Animal Genetics and Reproduction in SERIDA (E. Gómez, Spain) with the participation of Hospital Universitario Central de Asturias (HUCA); Sexing Technologies (Texas, USA), and collaborations from Spanish National Institute of Bioinformatics (J. Dopazo); Proteored (a Spanish Proteomics network; F. Corrales, from CIMA, Pamplona); Ludwig Maximilian University (F. Sinowatz; Germany) and Sheffield University (A. Fazeli, UK).

The project will develop a strategy to analyze maternally-secreted proteins in the uterus during the initial embryonic uterine life in cattle. At this stage, the role of these proteins and how they interact with the developing embryo are not enough studied in the bovine species. On days 4 to 5, we will transfer to the uterus tens of male or female IVP embryos (produced with sorted sperm), which will be flushed few days later. The presence of differentially expressed proteins will be searched in flushes obtained from the same cow between cycles with and without embryos.

Uterine fluid proteins and recovered embryos will be analyzed by Differential Bi-dimensional Electrophoresis (DiGE) coupled to Mass Spectrometry (MS).



Validation of the maternal origin of the selected, differentially expressed proteins will be made upon slaughter. Discrimination of the embryonic origin of proteins will be accomplished by investigating the presence of the corresponding mRNA (RT-PCR and in situ hybridisation) and the proper protein (immunocytochemistry) in embryos and endometrium. The endpoint of the project is testing the ability of such proteins, made by recombinant synthesis, to improve in vitro culture systems, such a way a higher reflection of maternal conditions lead to improved embryonic viability and more healthy offspring.

We wish to acknowledge to Dr. E. Wolf for valuable suggestions during the preparation of the project.

Enrique Gomez Piñeiro

Área de Genética y Reproducción
Spain

Short Term Scientific Mission Grants

In its first year and a half COST-GEMINI has funded a number of Short Term Scientific Mission (STSM) grants. The following are a series of reports from the grants that Gemini has funded:

Barbara Merlo
Italy – Belgium
Feb-Mar 2009



My name is Barbara Merlo, I am a researcher of the Veterinary Clinical Department, University of Bologna Italy. I'm working on *in vitro* embryo

production and cryopreservation in the cat, in order to perform non surgical embryo transfer in that species. I went to the laboratory of Professor Ann Van Soom during the first two weeks of March 2009. The main purpose of this short visit was to learn embryo immunofluorescence techniques for apoptosis detection in order to be able to introduce these techniques in my laboratory, to observe the effects of *in vitro* culture and embryo vitrification, and to improve the embryo selection criteria for transfer.

During my staying I could also follow sperm fluorescent stainings and the research activity on *in vitro* production of cat embryos, gaining the opportunity to compare and share information on the same activity I perform at my lab. Furthermore, the STSM allowed to set up a collaboration for transferring vitrified cat embryos in experimental cats (perhaps another STSM might be necessary) and I'm in contact with the lab's staff exchanging information on different topics and helping each other when possible. I really felt at home, and I still miss Belgian waffles!

René Thieme
Germany - France
March 2009

In March 2009 I had the opportunity to spend 6 weeks in the INRA Jouy-en-Josas, France, within a short-term scientific mission.

I worked in the "Gestation and Physiological Adaptations to the Environment Group" led by Dr. Pascale Chavatte-Palmer, within the UMR INRA-CNRS Biologie du Développement et Reproduction (BDR).

I am a PhD student in the Department of Anatomy and Cell Biology, Martin Luther University Halle-Wittenberg, studying nutritional factors, transcriptional and developmental changes in rabbit blastocysts grown in diabetic and normoglycaemic mothers (supervisor: Professor Bernd Fischer). In Jouy I had the chance to use the only currently available rabbit specific microarray. This microarray has been developed by Dr. Veronique Duranthon in Jouy and my work was supervised by her and Dr. Pascale Chavatte-Palmer. I analyzed broad-scale transcriptional changes in diabetic and normal blastocysts. I also took part in the daily laboratory work and helped to transfer the diabetic rabbit model to Jouy.



Based on this model two French-German collaborative research grants have been submitted to ANR (France) and DFG and BMBF (Germany) by now.

For me it was the first scientific exchange to another laboratory abroad. It was a great experience and highly stimulating to work in this excellent laboratory. I was integrated very well, learned a lot and enjoyed the great time in France professionally and privately. I can strongly encourage other young scientists to use the unique chance, offered by COST STSM visiting first-class laboratories within Europe.

Short Term Scientific Mission Grants

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Judith Eckert
UK – Germany
May 2008

Both our Institutions, the Veterinary School Hanover, Germany, and University of Southampton, UK, are interested in the impact maternal diet has on early development. In May 2008, I visited Dr. Wrenzycki's and Prof. Proepsting's groups at the Veterinary School, Hanover, to explore potential for future collaboration. Whilst Southampton uses the mouse model, Hanover is specialised on domestic species such as the cow. The main purpose of the visit was to explore strategies how we could benefit from combining the advantages of both models to complement each other for future projects. This included planning project areas which were feasible and where exchange of material could be arranged to generate preliminary data. Technically, the specific focus lay on the analysis of lipid composition of both mouse embryos and corresponding maternal tracts derived from mothers exposed to a high fat diet from fertilisation to blastocyst development. Prof. Proepsting's expertise helped to show that lipid profiling is possible in small amounts of material (mouse blastocyst) and that maternal dietary lipid content may impact on fatty acid composition within her reproductive tract and within the embryo. RNA expression analysis is well underway (with Dr. Wrenzycki). The idea is that we gain better understanding how the long-term consequences of maternal dietary challenge during early pregnancy impact on offspring phenotype, a phenomenon that is well established for this mouse model.

Considering the visit comprised 5 working days, practical laboratory work could only be initiated. During the visit, we have developed an outline plan for scientific content, logistics and shared data analysis for a joint grant proposal and will consider potential involvement of further GEMINI members as collaborators once we have some additional preliminary data.

Overall, I found the STSM very successful and it has intensified the mutual interest in working together on our diet models. I am grateful to COST-GEMINI for giving me the opportunity to kick-start a very promising and fruitful collaboration. We hope to be able to present our initial data at the next annual meeting and are looking forward to taking up similar opportunities in the future.

COST-Gemini Exec Committee

POST	NAME	COUNTRY
Chairman	Dr Alireza Fazeli	UK
Vice Chairman	Prof Fulvio Gandolfi	Italy
WG1 Lead	Prof Ann Van Soom	Belgium
WG1 Deputy	Dr Andras Dinnyes	Hungary
WG2 Lead	Prof Eckhard Wolf	Germany
WG2 Deputy	Dr Jean-Pierre Ozil	France
WG3 Lead	Prof Tom Fleming	UK
WG3 Deputy	Dr Pascale Chavatte-Palmer	France

Gemini Members

For a list of Gemini members visit:

www.cost-gemini.eu/members.html

Letters

As a GEMINI member we would love to hear your news on say successful grant applications, or how much you enjoyed attending a meeting. If you are looking to solve a problem and need a collaborator make a pitch for all to see and hopefully someone will come forward to help solve your research problem!!

If you would like to contribute to the next edition of the newsletter please email your article to secretary@cost-gemini.eu.