Meeting Report: *"6th Annual Symposium of the QTRN: Focus on new transgenic models and their phenotyping"*, Montreal, Canada, November 13th, 2010

On November 13th 2010, the CHUM Research Centre, located in Montreal, Canada was the host of the 6th Annual Symposium organized by the Quebec Transgenic Research Network (QTRN). This one day event was entitled: "*Focus on new transgenic models and their phenotyping"*. For a second year, this event was co-sponsored by the International Society of Transgenic Technologies (ISTT), which contributed to its organization as well as its international recognition.

The QTRN primary mission is to promote academic transgenic research and its applications in biomedical research within its member institutes. Its goals also include developing the infrastructure which will promote the integration and sharing of resources among the Quebec academic and biopharmaceutical research community. As part of its mission, the QTRN makes a priority to organize yearly symposium with the goal to bring together specialists in the field to update the Quebec scientific community on new transgenic animal models and technical developments. This year, the symposium welcomed 80 delegates primarily from Quebec and Ontario in Canada, and also several participants from the United States. The event was an excellent medium to discuss and exchange new ideas between scientists, graduate students, fellows, veterinarians and animal health technicians.

The QTRN was pleased to welcome local and international speakers doing cutting-edge work on transgenic animals. During the morning session, the topic was "Transgenic animal models in biomedical research". It was followed by a second session on "Alternative transgenic models development" and finally by a session concerning "Transgenic animal phenotyping". The lunch time was also a discussion occasion during a round table entitled "Running a transgenic core". The detailed program, as well as selected presentations with the permission of the speakers, is available at: http://www.rrtq.org/Prix.aspx?section=documents

The delegates were welcomed by Mitra Cowan, manager of the transgenic core facility at the CHUM Research Centre (CRCHUM). QTRN opening remarks were addressed by Michel L. Tremblay and Anthoula Lazaris, Scientific and Executive directors of QTRN respectively. The symposium was kicked off by a keynote address by Paul Jolicoeur (Montreal Clinical Research Institute, Canada). He explained the important role of transgenic mice in his researches on cancer and AIDS. The first session then started with Alexandre Prat (CHUM Notre-Dame Hospital, Montreal, Canada), who described animal models used in multiple sclerosis research, and how transgenesis improves humanizing animal models. Michel L. Tremblay (McGill University, Montreal, Canada) presented his work on protein tyrosine phosphatases and how transgenic models validated his work on human cancer. Jean-François Cloutier (Montreal Neurological Institute, Canada) concluded this session presenting his work on genetically-modified mouse models to understand the role of sensory perception in survival, looking at synaptic connections between specialized neurons and sensory organs.

During lunch time, the QTRN symposium offered again this year the opportunity to participate to a round-table discussion, entitled: Running a transgenic core. This discussion was directed by Mitra Cowan (CRCHUM, Canada), and its main objective was to discuss the most actual topics in transgenesis such as cryopreservation, rat transgenesis and C57Bl6 ES cells culture and germline potential. It principally allowed all Quebec transgenic core managers to get together, exchange ideas and share technical advises in order to offer better services to their scientific community.

The afternoon session on alternative transgenic models development was then opened by Gilly Griffin and Elisabeth Ormandy (Canadian Council on Animal Care, Canada), who discussed the feedback from CCAC constituents regarding the development of guidelines concerning the use of genetically-engineered animals in science, and also presented the results from a survey they did concerning the approval of protocols where analgesia is withheld. Marina Gertsenstein (Toronto Centre for Phenogenomics Transgenic Core (TCP), Canada) followed with a presentation on the potential of using a combination of ICR morula aggregation and a chemically-defined medium to generate highly efficient germline chimeras when working with C57BL/6N ES cells. Bart Smits (McArdle Laboratory for Cancer Research, University of Wisconsin, USA) discussed the development of rat models, including the ENU mutagenesis approach as well as the zinc-finger nuclease-mediated gene targeting and the rat ES cells homologous recombination. These models will certainly be very useful in understanding complex diseases such as cancer, diabetes and cardiovascular diseases. The session then allowed us to learn an "ICSI"ting technique to recover mouse frozen sperm, presented by Véronique Paradis (IRIC, Université de Montréal, Canada). For some mouse lines, such as inbred, IVF from frozen sperm is difficult or not possible. In these cases, the intra-cytoplasmic sperm injection (ICSI) is a promising technique which allows an alternative in the sperm cryopreservation process.

The third session then shifted towards transgenic animal phenotyping. The two first talks concerned the breeding of transgenic models. The first presentation, given by Janice Penney (Goodman Cancer Centre Transgenic Core, McGill University, Canada) presented breeding strategy questions which need to be evaluated when thinking about a mouse model production. The second talk on this subject was given by Bruce J. Elder (Charles River, USA), who explained to us how we can accelerate backcrossing breeding using the speed congenics method, which uses molecular genetics in order to identify animals with the desired background for subsequent generation to produce. This allows researchers to obtain the desired background in 5 generations instead of 10, saving a considerable amount of time. This presentation was followed by a very different topic: the analysis of gastrointestinal phenotypes in mice, by Nathalie Perreault (Université de Sherbrooke, Canada). She presented their platform and all specific phenotyping analyses that can be done on animal models, such as gastrointestinal cells proliferation and migration analysis, characterization of epithelial cell fate, or glucose and lipid absorption by enteric cells. The availability of this knowledge and corresponding phenotyping tools are essential in understanding animal models of gastrointestinal pathologies, such as colon cancer, ulcerative colitis or Crohn's disease. Barry Bedell (Montreal Neurological Institute, Canada) closed this last session by detailing the technique of small animal magnetic resonance imaging (MRI), a non-invasive approach in understanding the pathophysiology related to neurodegenerative diseases such as Alzheimer's.

Finally, Anthoula Lazaris closed the symposium by expressing gratitude to the speakers who gave high quality presentations and the attendees for stimulating discussions. She thanked the co-organizers of the symposium, Mitra Cowan, Suzanne Carioto (CRCHUM), and Jacinthe Sirois (QTRN). She further extended the acknowledgements to the precious partners and sponsors, without whom this type of event couldn't be held.

The continued interest from delegates, speakers and sponsors certainly confirmed that this symposium will be organized by the QTRN again next year in collaboration with one of its funding institute.

The organizers would like to thank partners and sponsors of the 6th QTRN Annual Symposium :

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