



LymphoRioMove International Course on June 22-26, 2015

lymphoriomove@ioc.fiocruz.br
Lymphocyte Motility
Fiocruz campus, Rio de Janeiro

Program

June 22
June 23-26

Seminars on lymphocyte motility (open)
Practical course (12 selected PhD students)
- Real-time imaging of lymphocyte chemotaxis
- Tools to track lymphocyte displacements
- Analysis of lymphocyte polarity and protrusive activity
- Assembly of the immunological synapse
- Dynamic interactions of lymphocytes with target cells

Invited speakers

Karl Balabanian
Christopher Carman
Loïc Dupré
Christian Leibold
Daniella Arêas Mendes-da-Cruz
Jens Stein
Salvatore Valitutti

INSERM UMR S996/Paris-Sud University (France)
Beth Deaconess Medical Center/Harvard Medical School (USA)
INSERM UMR1043/University of Toulouse (France)
Ibidi GmbH, Martinsried (Germany)
Oswaldo Cruz Institute/Fiocruz (Brazil)
Theodor Kocher Institute/University of Bern (Switzerland)
INSERM UMR1043/University of Toulouse (France)

Organizers

Vinicius Cotta-de-Almeida
Loïc Dupré

Scientific Committee

Daniella Arêas Mendes-da-Cruz
Marcelo Pelajo-Machado
Javier Rey-Barroso
Ingo Riederer
Wilson Savino
Zilton Vasconcelos

Institutional support

Laboratory on Thymus Research
Oswaldo Cruz Institute/Fiocruz

Graduate Program in Molecular and Cell Biology
Confocal Microscopy Core Facility RPT07A-RJ

Supplier support



Seminar day June 22, 2015

Venue Auditorium Emmanuel Dias – Pavilhão Arthur Neiva

9:00-9:10 Opening and presentation of the Workshop
by Vinicius Cotta-de-Almeida and Loïc Dupré

Morning session chaired by Ingo Riederer and Marcelo Pelajo-Machado

9:10-10:00 **Loïc Dupré**, introduced by Camila Sanches Oliveira Gomes
"Motility strategies and decisions in lymphocyte populations"

10:00-10:50 **Jens Stein**, introduced by Juliana Barreto de Albuquerque
"In vivo imaging of lymphocyte motility and activation"

10:50-11:10 Coffee-break

11:10-12:00 **Karl Balabanian**, introduced by Julia Pereira Lemos
"CXCR4 dysfunctions in rare immuno-hematological disorders"

12:00-12:50 **Daniella Arêas Mendes-da-Cruz**, introduced by Marvin Paulo Lins
"Multivectorial trafficking in developing and mature T cells"

12:50-14:10 Lunch

Afternoon session chaired by Vinicius Cotta-de-Almeida and Zilton Vasconcelos

14:10-15:00 **Salvatore Valitutti**, introduced by Flávia Fontenelle Muylaert
"Structure and function of T lymphocyte immunological synapses"

15:00-15:50 **Christopher Carman**, introduced by Jaqueline Goes de Jesus
"Dynamic information exchange during lymphocyte migration across the endothelial barrier"

15:50-16:40 **Christian Leibold**, introduced by Monica Losada Barragán
"ibidi – cells in focus"

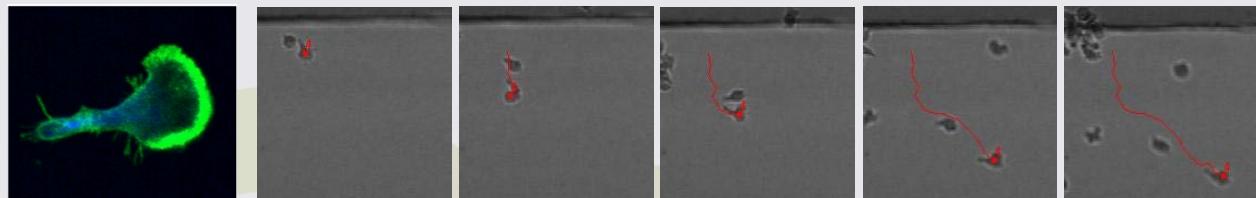
16:40-17:00 Concluding remarks by Vinicius Cotta-de-Almeida and Loïc Dupré

Overview of the practical course

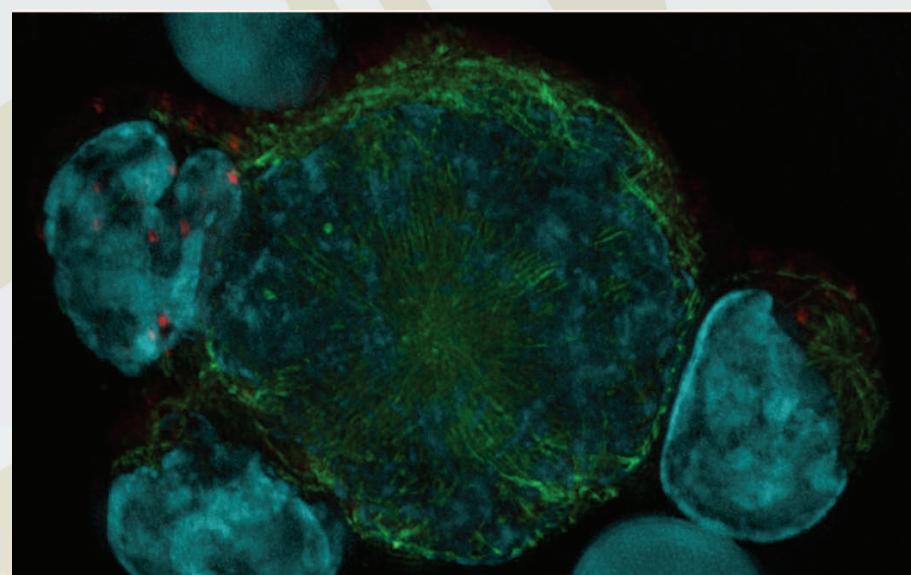
	Tuesday June 23	Wednesday June 24	Thursday June 25	Friday June 26
Group A	Protrusion 9:00-17:00 + Incucyte 17:00-18:00	Chemotaxis 9:00-17:00	Synapse 9:00-16:00 + Analysis Synapse 16:00-18:00	Operetta Intro 09:00 Chemotax 10:00 Killing 14:00 Wrap-up 16:00-18:00
Group B	Synapse 9:00-18:00	Protrusion 9:00-16:00 + Incucyte 16:00-18:00	Chemotaxis 10:00-16:00 IUVO setting + Analysis Synapse 16:00-18:00	Operetta
Group C	Chemotaxis 9:00-17:00	Synapse 9:00-16:00 + Incucyte 16:00-18:00	Protrusion 10:00-16:00 + Analysis Synapse 16:00-18:00	Operetta

Groups are composed of 4 students

“Protrusion”: visualize the morphology and the protrusions of migrating lymphocytes



“Chemotaxis”: Show how lymphocytes follow chemokine gradients, perform a "cell race"



“Synapse”: analyze the polarization of molecules at the synapse formed between cytotoxic T lymphocytes and antigen-presenting target cells

02/07/2015

Article from Lucas Rocha

Pictures from Gutemberg Brito

IOC communication service



LymphoRioMove

an international workshop combining scientific seminars to lab experiments on the theme of lymphocyte motility.

Studying the behavior of lymphocytes, key cells of the immune system, is essential to understand how the body fights against infections and tumors. Given this importance, the Instituto Oswaldo Cruz (IOC / Fiocruz) held between the 22th and 26th of June 2015, "LymphoRioMove" an international course on lymphocyte motility sponsored by the Laboratory for Research on the Thymus and the Graduate Program in Cellular and Molecular Biology. The event brought together about 70 participants, including researchers and graduate students.

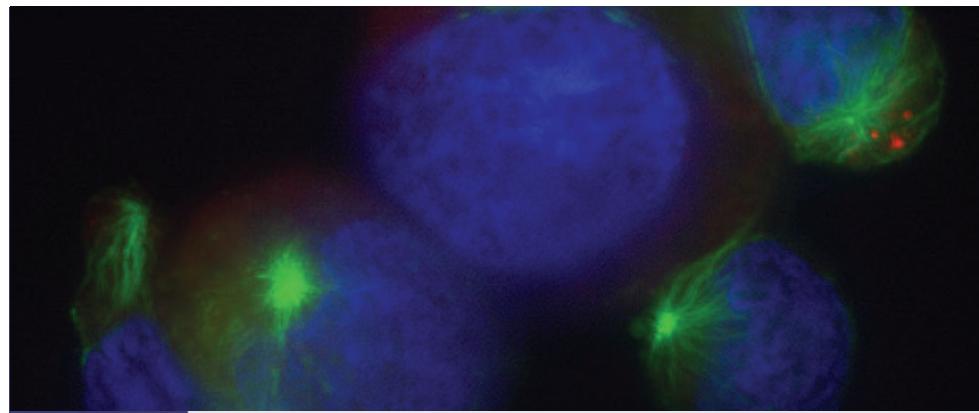
A day of seminars, taught by renowned researchers in the field, marked the first day of the workshop.

"We discussed the importance of motility events for the protective activity of the immune system, especially against cancer and infection" said Vinicius Cotta-de-Almeida, from the Laboratory for Research on the Thymus at IOC and co-organizer of the event with Loïc Dupré, from the Center for Physiopathology of Toulouse Purpan at the University of Toulouse, France.

"We also presented the dynamic interactions of lymphocytes, both in vitro and in vivo. Knowing the actions of lymphocytes in the pursuit and response to antigens is critical to the development and improvement of strategies to combat different types of infections and cancer", added the researcher.



The journey of seminars included the participation of renowned foreign institutions researchers. The opening lecture 'Strategies and motility decisions in lymphocyte populations', given by Loïc Dupré, highlighted the different dynamic behaviors of migration in vitro before these cells sense the presence of antigens in the body. 'The structure and function of immunological synapses of T lymphocytes', 'The exchange of dynamic information during lymphocyte migration through the endothelial barrier' and 'The multivectorial traffic during the development of mature T cells' were other hot topics discussed during the day.



Graduate students of the IOC and other institutions - like the University of São Paulo, the Federal University of Alagoas and Bahia Fiocruz - participated in the workshops, conducted between the 23th and 26th of June. Allied to theoretical classes, 11 students set up experiments in the Institute laboratories and the Confocal Microscopy Platform of IOC.

Divided into small groups, the students studied techniques and analytical tools to explore lymphocyte motility events. These experiments included: cell polarization experiments, analysis of protusion activity, which allows to observe the extent of the membranes of these cells during their movement, and the formation of the immunological synapse, an event in which lymphocytes interact with target cells. The course was also conducted with the experiment called chemotaxis: using chemical gradients, soluble molecules that allow motility, the attraction of lymphocytes to specific local immune response has been reproduced. The experiments were accompanied by computer analysis of imaging. The technique allowed the students to investigate the cell motility strategies recorded by video microscopy.



"We organized a course of pretty high complexity and were glad that all experiments were successful. With a very positive balance, students were able to visualize exactly what we wanted to show: motility events in practice", stressed Vinicius.

Set up in the Laboratory for Research on the Thymus and the Confocal Microscopy Platform of IOC, practical activities were coordinated by Loïc Dupré and taught by Vinicius Cotta-de-Almeida, Ingo Riederer, Marcelo Pelajo Machado, IOC researchers; Pedro Paulo Manso, technologist of the Institute; Zilton Vasconcelos, researcher at the Fernandes Figueira Institute; Javier Rey-Barroso, from the University of Toulouse. The event had the support of specialized companies in the area, such as Ibidi, Essen / Analytics and PerkinElmer.

"The knowledge acquired during the course says a lot about the biology of lymphocytes. It shows not only the importance of the movement of these cells to the protective mechanisms in place in the body, but also highlights situations where lymphocytes are deregulated and will initiate autoimmune disease", concluded Vinicius.

**LymphoRioMove 2015,
The workshop successfully promoted science education and international
cooperation**

Scientific excellence on the topic of lymphocyte migration
from fundamental concepts to disease-oriented questions

Broad international representation of invited scientists
Brazil, France, Switzerland, USA, Germany

Interaction of PhD students with renowned scientists
internships have been planned

Basis for future collaborations between workshop participants and
design of strategies for co-funding

Transfer of knowledge through hands-on experience

- . Sharing of original experimental protocols and analytical tools from different laboratories
- . Access to up-to-date high-content imaging devices and high-resolution microscopy
- . Fostering scientific curiosity and team work



Raising interest for novel technologies

- . Partnership with private companies (Ibidi, PerkinElmer, Essen, Zeiss)
- . Experiment runs with recently developed automated devices

Feed-back from the participating students

“Seminars were great and the guest speakers were very didactic” – Juliana Barreto de Albuquerque

“Seminars were very useful to exemplify scientific questions that could be addressed by the experiments taught in the practical course” – Arnon Jurberg

“It would be interesting to open the course to the international scientific community as a winter course” – Monica Losada Barragan

“The course overreached my expectations. I have learned about many techniques I can apply in my own PhD project” – Jaqueline Goes

Looking forward to LymphoRioMove 2016

Promoting international exchange of students

Expanding the scientific scope of the workshop



" Multiscale exploration of leukocyte motility: from nanoscopy to whole-body approaches "

Dates: 22-30 September 2016

2 days of seminars, taught by renowned scientists in the field of leukocyte migration

Interspersed by short presentations of the selected students

5 days of experimental workshop (4 parallel hands-on sessions + 1 day of analysis/debriefing)

8 international student pairs

- Super-resolution microscopy of migratory cells
- In vitro cell motility behaviours
- 2-photon imaging of tissues
- Whole-body imaging

Organizing committee:

- Vinicius Cotta-de-Almeida
- Loïc Dupré
- Karl Balabanian
- Zilton Vasconcelos
- Wilson Savino
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- Marcelo Pelajo-Machado
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