

5th course on post-transcriptional gene regulation joint with 3rd course on genomic instability and human disease

April 12 to 20, 2021

Summary

A TRAINING UNIT INTERNATIONAL COURSE
5th course on post-transcriptional gene regulation
joint with
3rd course on genome instability and human disease

April 12-20, 2021
(virtual)

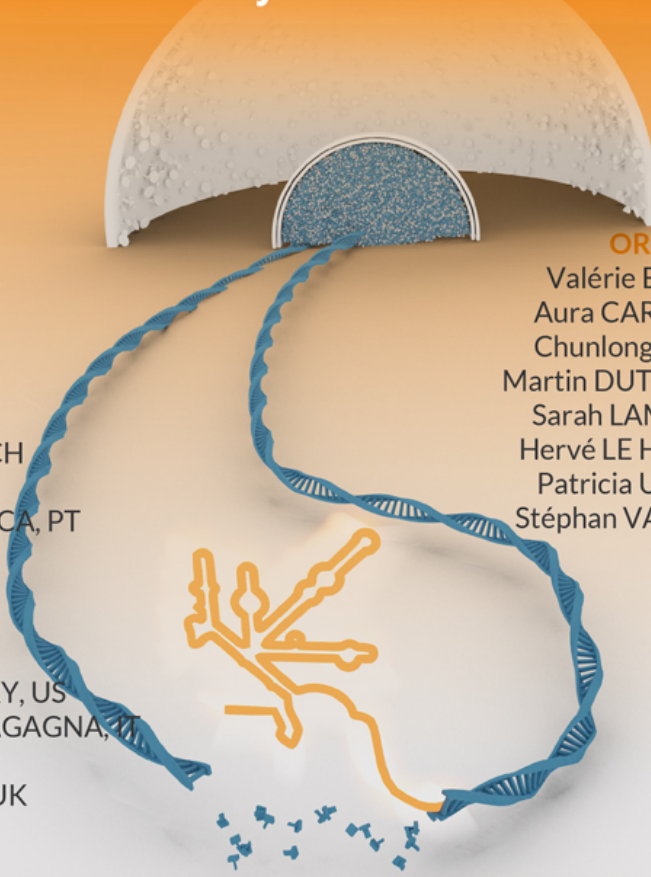
KEYNOTE SPEAKERS
Karlene CIMPRICH, US
Davide RUGGERO, US

SPEAKERS
Matthias ALTMAYER, CH
Florence BESSE, FR
Maria CARMO-FONSECA, PT
Aura CARREIRA, FR
Jeffrey CHAO, CH
Frédéric CHEDIN, US
Chunlong CHEN, FR
Dipanjan CHOWDHURY, US
Fabrizio D'ADDA DI FAGAGNA, IT
Martin DUTERTRE, FR
Monika GULLEROVA, UK
Gaëlle LEGUBE, FR
Hervé LE HIR, FR
Benoit PALANCADE, FR
Lori PASSMORE, UK
Schrage SCHWARTZ, IL
Jesper SVEJSTRUP, UK
Dominique WEIL, FR
Anne WILLIS, UK

ORGANIZERS
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Aura CARREIRA (IC)
Chunlong CHEN (IC)
Martin DUTERTRE (IC)
Sarah LAMBERT (IC)
Hervé LE HIR (IBENS)
Patricia UGUEN (IC)
Stéphan VAGNER (IC)

APPLICATION DEADLINE
February 21, 2021

REGISTER NOW
<https://training.institut-curie.org/courses/joint-courses-on-post-transcriptional-gene-regulation-and-genome-instability>



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Scientific context

This year, from 12th to 20th of April, 2021, the 5th international course on post-transcriptional gene regulation and the 3rd international course on genome instability and human disease set up an innovative course by joining their topics. This special course was in virtual format due to the Covid-19 pandemic. The aim of the course was to bring together the knowledge on the maintenance of genomic stability with the one on post-transcriptional regulation to highlight the increasing links between these biological processes.

21 international speakers (8 from France, 4 from UK, 4 from the USA, 5 from other countries) presented webinars following a common structure: 20 minutes dedicated to present the topic of the speaker's research giving a scientific and historical perspective, 40 minutes presentation of the most recent results of the laboratory, and 30 minutes discussion with the participants. Many speakers shared unpublished data.

The 47 participants came from 14 different countries: 20 from France, 13 from the European Union, 6 from UK, and 8 from South or North America. The participants were selected based on their research focus: RNA biology, DNA damage or both, and early career scientists were prioritized. Indeed, this advanced course was particularly suited for PhD students (29 students) or postdocs (11) although there were also master students (4) and other young research scientists (2).

Overall, the course provided a great opportunity for young researchers to (virtually) meet well renowned scientists in these fields, present their own project during virtual poster sessions and flash talks and were given the task to chair a session (introduce the speaker and lead the discussion).

This course was scientifically organized by a committee of 7 scientists coming from Institut Curie (V. Borde, A. Carreira, C. Chen, M. Dutertre, S. Lambert, P. Uguen, S. Vagner,) and 1 from ENS-Paris (H. Le Hir). The committee established the content of the 7 day-course including the choice of speakers, the selection of participants, flash talk prize, and the final schedule. This virtual course was technically managed by the PremC company which was in charge of organizing the web site and all the necessary virtual tools for the event.

Key points and schedule:

The course had three major sections: post-transcriptional gene regulation, mechanisms of genome stability maintenance in response to DNA damage and replication stress and finally, the interplay between those mechanisms and their respective link to human disease.

The first 3 days were focused on post-transcriptional gene regulation in which many steps leading to a mature RNA were illustrated. These included splicing, polyadenylation, modification, stability, localization or, translation of mRNA. The latter being the topic of one of the two keynote speakers, D. Ruggero (Univ. of California, San Francisco, US). His laboratory focuses on how the regulation of translation is able to modify tumor progression; in his talk, Dr. Ruggero highlighted the implication of the metabolic status of cells in tumorigenesis.

In the following 4 days the course focused on genome stability maintenance in response to DNA damage and replication stress. Several cases were presented to show how genome instability underlies human disease. In this context, the second keynote speaker, K. Cimprich (Univ. of Stanford, Stanford, US), presented the biology of RNA:DNA hybrids, how they form and what is their function, their possible consequences in the cell, and how they can contribute to the immunity response.



D. Ruggero, keynote speaker



K. Cimprich, keynote speaker

The third topic, which is in fact the connection between the first two subjects, was illustrated all along the course and by many of the speakers. For example, several speakers illustrated how conflicts between transcription and replication can promote genomic instability and the mechanisms to prevent or resolve them.

Poster prizes:

All the participants had the opportunity to present their work in a flash talk format which was recorded and available on the web site throughout the course. This was convenient, since people could familiarize with their research topic outside the time of the meeting. In addition to the flash talks, the participants presented their work in virtual poster rooms organized in 1.5 hour parallel sessions along the 7-day course. The virtual poster session was perfect to foster discussions between the presenter and other participants but also with the organizers.

At the end of the course, the scientific committee awarded the two best flash talks to Taran KHANAM (postdoc, Rouse lab, University of Dundee, UK) on the topic: CDKL5 kinase is a DNA damage sensor in the actively transcribed regions of the nucleus; and Cathy SAAB (PhD student, Livera lab, CEA Fontenay-aux-Roses, France) on the topic: Role of MLH1, a DNA repair protein, and its partners in maintenance of genome stability during mitotic and meiotic cycles. In addition, all the participants voted for the best two posters. They rewarded Jenny SINGH (postdoc, Carreira lab, Institut Curie, Orsay, France) on the topic: Zinc finger protein ZNF384 is an adaptor of KU to DNA during classical non-homologous end-joining; and Stephanie Elizabeth VARGAS ABONCE (postdoc, Prochiantz lab, Collège de France, Paris, France) on the topic: ENGRAILED 1 involvement in spinal motor neuron physiology and survival. The prizes consisted in a 400€ voucher to participate in a scientific meeting.



The 4 poster winners after they received their prize.

Financial budget and survey results:

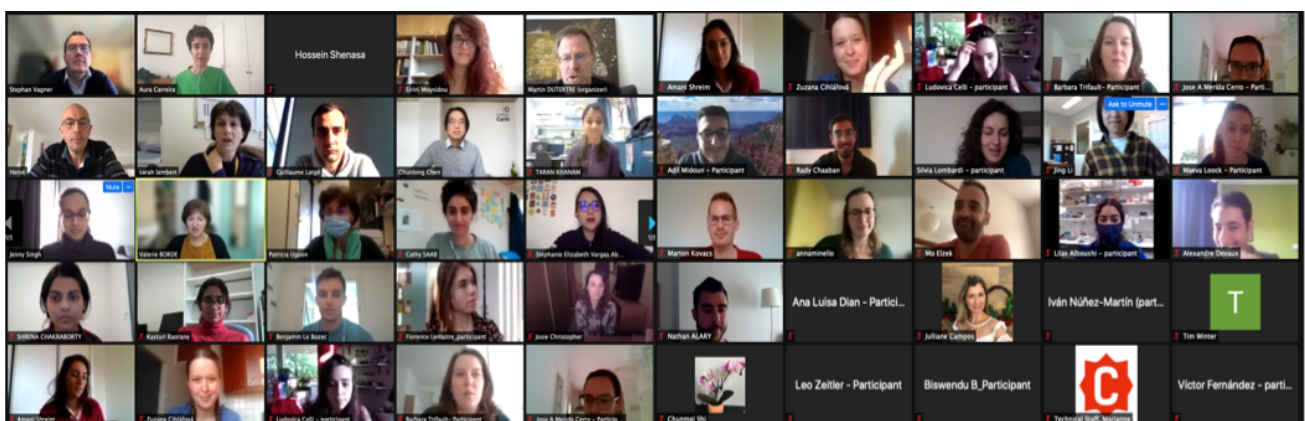
The budget to support the course was mainly provided by the Training Unit of Institut Curie. ENS-Paris also financially participated in the course. The Société Française du Cancer (SFC) was an important sponsor of this event, which was presented at the beginning of the course by the former president of the SFC, Dr. Marie Dutreix.

At the end of the course, we asked the participants to answer to a survey. The feedback from the 36 that filled out the survey indicate that this course was a real success. Indeed, 100% were globally satisfied with the course (67% highly satisfied). Moreover, 100% were satisfied with the talks (83% highly satisfied). The high scientific level was really appreciated by the participants and they were pleased to learn about research that is connected to their own project, and to have the opportunity to present their work, interact with leading scientists, and chair sessions.

Conclusion:

We think this advanced course on post-transcriptional Gene regulation and genome stability maintenance was successful in part because of its unique framework connecting these two mechanisms. The strong motivation of the participants and the outstanding speakers was also key to this success.

The next genome instability and human disease course is scheduled in February 2022 and the next post-transcriptional gene regulation will be organized in 2023 at Institut Curie.



Picture of all participants and organizers at the end of the course.

Written by P. Uguen, S. Lambert, M. Dutertre, A. Carreira, S. Vagner

Annexe : Schedule

5th course on Post-Transcriptional Gene Regulation / 3rd course on Genome Instability and Human Disease

April 12-20, 2021

A Training Unit International Course



(Paris Area)

Monday, April 12		
13:00 13:30	Course organizers	Presentation of the course and of sponsor (Société Française du Cancer)
13:30 14:30	Maria CARMO-FONSECA Institute of Molecular Medicine, Lisbon, PT	From co-transcriptional splicing to genome instability
14:30 15:00	Discussion with M. Carmo-Fonseca-chairs: Abderrahmane, Albouhli	
15:00 16:00	POSTER SESSION 1	
16:00 17:00	Hervé LE HIR IBENS, Paris, FR	The multiple facets of the Exon Junction Complex
17:00 17:30	Discussion with H. Le Hir	
17:30 18:30	Martin DUTERTRE Institut Curie, Orsay, FR	Regulation of intronic polyadenylation by DNA-damaging agents
18:30 19:00	Discussion with M. Dutertre-chairs: LI, Lombardi	

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(Paris Area)

Tuesday, April 13		
13:00 14:00	Jesper SVOJSTRUP Francis Crick Institute, London, UK / University of Copenhagen, Denmark	The transcription response to stress and DNA damage
14:00 14:30	Discussion with J. Svejstrup-chairs: Brothers, Chakraborty, Trifault	
14:30 16:00	POSTER SESSION 2	
16:00 17:00	Jeffrey CHAO FMI, Basel, CH	Imaging the life and death of mRNAs in single cells
17:00 17:30	Discussion with J. Chao-chairs: Chaaban, Celli	
17:30 18:30	Davide RUGGERO - KEYNOTE UCSF, San Francisco, US	Translating the cancer genome one codon at a time and its therapeutic implications
18:30 19:00	Discussion with D. Ruggero-chairs: Christopher, Chikarova, Shi	

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(Paris Area)

Wednesday, April 14		
13:00 14:00	Dominique WEIL IBPS, Paris, FR	The GC content of mRNAs shapes their storage in human P-bodies and their decay
14:00 14:30	Discussion with D. Weil-chairs: de Melo Campos, Devaux	
14:30 15:30	Matthias ALTMEYER University of Zurich, CH	Dealing with DNA lesions across cell cycle boundaries
15:30 16:00	Discussion with M. Altmeier-chairs: Dian, Elizek	
16:00 17:30	POSTER SESSION 3	
17:30 18:30	Menika GULLEROVA University of Oxford, UK	Nascent RNA silencing: novel gene expression regulation pathway
18:30 19:00	Discussion with M. Gullerova-chairs: Fernandez, Findlay	

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(Paris Area)

Thursday, April 15		
13:00 14:00	Fabrizio D'ADDA DI FAGAGNA IFOM, Milan, FR	Non coding RNA synthesis at DNA lesions
14:00 14:30	Discussion with F. d'Adda di Fagagna-chairs: Hickson, Kajo, Vargas Abonce	
14:30 16:00	POSTER SESSION 4	

16:00	Aura CARREIRA Institut Curie, Orsay, FR	BRCA2 promotes DDX5-mediated DNA-RNA hybrid resolution at DNA double-strand breaks to facilitate their repair
17:00	Discussion with A. Carreira-chairs: Khanam, Palao	
17:30	Frédéric CHÉDIN UC Davis, US	Understanding co-transcriptional R-loop formation and its link to genome instability
18:30	Discussion with F. Chédin-chairs: Kwon, Latgé	

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(Paris 5ème)

Friday, April 16		
13:00	Gaëlle LEGUBE CBI, Toulouse, FR	Chromatin and chromosome dynamics at DNA double Strand Breaks
14:00	Discussion with G. Legube-chairs: Lemaitre, Blawan	
14:30	Shraga SCHWARTZ Weizmann Institute of Science, Rehovot, IL	Cracking the epitranscriptome
15:30	Discussion with S. Schwartz-chairs: Boissière	
16:00	POSTER SESSION 5	
17:30	Anne WILLIS University of Cambridge, UK	Post-transcriptional of gene expression control following toxic injury and in disease
18:30	Discussion with A. Willis-chairs: Losck, Lurger, Winter	

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(Paris 5ème)

Monday, April 19		
13:00	Lori PASSMORE LMB, Cambridge, UK	Mechanistic insights into the cleavage and polyadenylation machinery
14:00	Discussion with L. Passmore-chairs: Merida Cerro, Mijouin	
14:30	Florence BESSE ISV, Nice, FR	Subcellular targeting of mRNAs
15:30	Discussion with F. Besse-chairs: Minello, Moysidou	
16:00	POSTER SESSION 6	
17:30	Karlene CIMPRICH - KEYNOTE Stanford University, US	How about RNA meets DNA: dangerous liaisons in the genome
18:30	Discussion with K. Cimprich-chairs: Bofil de Ros, Nebot-Brañ, Nunez-Martin	

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(Paris 5ème)

Tuesday, April 20		
13:00	Benoît PALANCADE Institut Jacques Monod, Paris, FR	The impact of genome organization on transcription-dependent genetic instability
14:00	Discussion with B. Palancade-chairs: Kovacs, Qasim	
14:30	Chunlong CHEN Institut Curie, Paris, FR	The impact of transcription-mediated replication stress on genome instability and human disease
15:30	Discussion with C. Chen-chairs: Raerana, Saab	
16:00	POSTER SESSION 7	
17:00	Dipanjan CHOWDHURY Harvard Institutes of Medicine, Boston, US	Deciphering end resection at a DNA double strand break
18:00	Discussion with D. Chowdhury-chairs: Salvador, Shenasa, Singh	
18:30	Debriefing of the course	

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