

**Second announcement**  
**MELUSYN Workshop**  
**Synchrotron radiation based radiobiology**

June 25 and 26, 2007

Synchrotron SOLEIL, Saint-Aubin, FRANCE

SOLEIL, the new French synchrotron radiation facility, will provide the scientific community with one of the most advanced (brilliant, variably polarized and highly monochromatic) tunable light sources ranging from the infrared to the hard X-rays. The MELUSYN\* workshops, created jointly through a collaborative work between SOLEIL and ECRIN are gathering together actors from the academic research, applied and medical research as well as private companies and clinicians, to take advantage of the high quality scientific and technological environment developed around SOLEIL.

One of the main transverse topics which are developed across MELUSYN is spatio-temporal Radiobiology involving radiation in the UV, VUV, soft and hard X-ray range. This represents an interdisciplinary field of study driven nowadays in strong synergy with the recent progress of complex medical imaging techniques or ionizing radiation therapies and namely cancer therapy. Using the unique properties of synchrotron radiation, as well as the wide panel of investigation techniques like spectroscopy and imaging, eventually operated in time resolved mode or with nanometric beams, SOLEIL is expected to provide new insight into yet unknown aspects of radiobiology.

The scope of the two day workshop is bringing together physicists, chemists, biochemists, biologists, genetics experts as well as physicians with a common interest in using synchrotron radiation and related techniques to explore various aspects of modern radiobiology and radiation therapy. Deeply understanding the basic mechanisms of radiation damage *in vitro* and on living cells, starting from the early radical and molecular processes to mutagenic DNA lesions, cell signaling, genomic instability, apoptosis, radio sensitivity, Bystander effect etc. should have in the near future many practical consequences like the customization of radiation therapy or radioprotection protocols for instance.

The workshop will be organized at the SOLEIL site around four thematic sessions. The workshop time schedule and detailed scientific program are given here below.

\*Medicine and synchrotron light

**Scientific committee:**

J. Cadet (CEA Grenoble)  
N. Foray (INSERM, ESRF Grenoble)  
Y. Gauduel (LOA, INSERM, Ecole Polytechnique-ENSTA)  
C. Houée-Lévin (LCP, Université Paris-Sud)  
S. Lacombe (LCAM, Université Paris-Sud)  
D. Markovitsi (LFP, CNRS-CEA Saclay)  
M. Martin (CEA Evry)  
C. Miron (SOLEIL)  
L. Sabatier (CEA Fontenay aux Roses)  
M. Spothem-Maurizot (CBM, CNRS Orléans)

**Chairmen:**

Y. Gauduel (INSERM)  
C. Miron (SOLEIL)

**Local organizing committee:**

J. Doucet (SOLEIL)  
S. Koguc (SOLEIL)  
C. Miron (SOLEIL)  
V. Sivan (ECRIN)  
D. Von Euw (ECRIN)

**The registration fee is 80 € (free for students) including coffee breaks and meals.**

**Information (including registration and housing):**

Web SOLEIL: <http://www.synchrotron-soleil.fr/portal/page/portal/Soleil/ToutesActualites>  
Web ECRIN: <http://www.ecrin.asso.fr/>

**Contact:** [melusyn07@synchrotron-soleil.fr](mailto:melusyn07@synchrotron-soleil.fr)

## MELUSYN Workshop Synchrotron Radiation Based Radiobiology

**June 25-26, 2007**

*Synchrotron SOLEIL – 91190 Saint-Aubin (France)*

### Time schedule

Monday – June 25 <sup>th</sup>		Tuesday – June 26 <sup>th</sup>	
		8 :30	<b>Session 3</b>  Primary steps of signaling
		<i>10:30-10:50 Coffee break</i>	
		12:10	
13:00	Welcome		Lunch
13:30	<b>Introductory session</b>	13:30	<b>Session 4</b>  Differentiation and radio sensitivity
14:30	<b>Session 2</b>		
<i>15:50-16:10 Coffee break</i>	Molecular lesions and collective processes	<i>15:30-15:50 Coffee break</i>	
17:30	<b>Visit of SOLEIL</b>	17:00	<b>Round table</b> Prospective synthesis
	Discussions around beamline posters		
19:30	Dinner at SOLEIL	18:00	<i>End of the workshop</i>

## Scientific Program

**Monday – June 25<sup>th</sup>, 2007**

**13:00 - 13:30** *Welcome and coffee*

### Introductory session

**13:30 - 13:45** Jean DOUCET (SOLEIL) - Jean-Pierre GEX (ECRIN)

13:45 - 14:00 Denis RAOUX - Directeur général de SOLEIL

**14:00 - 14:30** Yann A. GAUDUEL (INSERM, LOA-CNRS UMR 7639, Ecole Polytechnique – ENSTA)  
New challenges for spatio-temporal radiation biology

### Session 2

#### Molecular lesions and collectives processes

*Chair : D. Markovitsi – E. Sage*

**14:30 - 15:10** Katsumi KOBAYASHI (Tsukuba, Japan)  
Spectroscopy of biological samples. From absorption to biological effects.

15:10 - 15:50 Alain TOUATI (IMPMC, Université Paris 6, Paris 7)  
Radiobiological effects in cell. The role of DNA core ionisation, as probed by ultrasoft X-rays

15:50 - 16:10 *Coffee break*

16:10 - 16:50 Dimitra MARKOVITSI (Lab. Francis Perrin, CNRS URA 2453, CEA Saclay)  
UV induced DNA damage studied by time-resolved spectroscopy

**16:50 - 17:30** Christophe NICOLAS (SOLEIL)  
Soft X-ray synchrotron radiation studies of isolated biomolecules: towards a realistic “bottom-up” description of radiation damage on DNA

**17:30 - 19:00** **Visit of SOLEIL** – Discussion around beamline posters

**19H30** *Dinner at SOLEIL*

**Tuesday – June 26<sup>th</sup>, 2007**

### Session 3

#### Primary steps of signaling

*Chair: C. Houée Lévin – L. Sabatier*

**8:30 - 9:10** Chantal HOUÉE LEVIN (Lab. Chimie Physique, CNRS UMR 8000, Université Paris Sud)  
From free radicals to signal induction

9:10 - 9:50 Jean CADET (CEA Grenoble)  
Molecular effects of ionizing radiation on cellular DNA

9:50 - 10:30 Georg BAUER (University of Freiburg, Germany)  
Low dose radiation and intercellular induction of apoptosis: potential impact on the control of oncogenesis

- 10:30 - 10:50 *Coffee break*
- 10:50 - 11:30 François PARIS (INSERM U 601, Nantes)  
Ionizing radiation induces p38-mediated endothelial cell death through ceramide generation and membrane remodeling
- 11:30 - **12:10** Chrysostomos CHATGILIALOGLU (ISOF-CNR, Bologna, Italy)  
Trans fatty acids and radical stress

**12:30 – 13:30** *Lunch at SOLEIL*

#### Session 4 **Differentiation and radio sensitivity**

*Chair: M. Martin – F. Moati – J.M. Constans*

- 13:30** - 14:10 Elizabeth SCHULTKE (College of Medicine, Saskatoon, Canada)  
Microbeam radiation therapy - a therapeutic concept for the treatment of malignant brain tumors
- 14:10 - 14:40 Michèle MARTIN (Lab. de Génomique Fonctionnelle, CEA Evry)  
Sensing radiosensitivity of human epidermal stem cells
- 14:40 - 15:10 Laure SABATIER (Lab. Radiobiologie et Oncologie, CEA Fontenay aux Roses)  
Damage transmission in the progeny of irradiated human cells
- 15:10 - 15:40 Sandrine LACOMBE (LCAM, Université Paris Sud)  
Low energy NEXAFS spectroscopy: new tool for studying the radical chemistry induced by radiosensitizers
- 15:40 - 16:00 *Coffee break*
- 16:00 - 16:30 Nicolas FORAY (INSERM, ESRF, Grenoble)  
Recent advances in anti-cancer strategies using synchrotron X-rays
- 16:30 - **17:00** Jean-Marc CONSTANS (CHU Caen)  
About spectroscopic measures variability in the evaluation of the therapeutic answer of glial tumours

#### **Round table Prospective synthesis**

*Chair: C. Miron, Y. Gauduel*

- 17:00 -18:00** Anne FLURY-HERARD (CEA) - Jean BOURHIS (IGR, Villejuif) - Alberto BRAVIN (ESRF, Grenoble) - Jacques BALOSSO (CHU Grenoble) - Hafid BELHADJ-TAHAR (Groupe Santé Recherche, Toulouse)
- 18 :00 End of the workshop