

# 15IWRDD

15<sup>th</sup> international workshop on radiation damage to DNA

"Centre Paul Langevin", CAES of CNRS, 24 rue Coin 73500 Aussois

May 27<sup>th</sup> – June 1<sup>st</sup> 2018



**Organizing Committee** : Jean-François CONSTANT, Thierry DOUKI, Elise DUMONT, Jean-Luc RAVANAT, Joanna TIMMINS

**Scientific Committee** : Amitava Adhikary (USA) ; Cynthia Burrows (USA) ; Maria Davidkova (CZ) ; Michael Dingfelder (USA) ; George Don Jones (UK) ; Alexandros Georgakilas (GR) ; Antonio Monari (FR) ; Hooshang Nikjoo (SE) ; Kevin Prise (UK) ; Pablo Radicella (FR) ; Evelyne Sage (FR) ; Naoya Shikazono (JP) ; Gisela Taucher-Scholz (DEU) ; Dmitry Zharkov (RS)

## Monday May, 27<sup>th</sup>

**8h30 – 10h15** Chair *JL Ravanat, Amitava Adhikary*

8h30-8h35: **Jean-Luc Ravanat** "Opening"

8h35-9h15: **Amitava Adhikary** "Reactions of Guanine Cation Radical in DNA-models" P12

9h15-9h55: **Mehran Mostafavi** "Can an excess electron in water induce a dissociative electronic attachment to DNA bases?" P13

9h55-10h15: **Aurélien de la Lande** « Ultrafast ionization of guanine upon collisions with charged particles: new insights from first principles simulations" P14

**10h15-10h45: Coffee break**

**10h45 - 12h25** Chair *Jean-François Constant, Cynthia J. Burrows*

10h45 – 11h25: **Cynthia J. Burrows** "DNA Damage Regulates Gene Expression via Base Excision Repair" P15

11h25 – 12h05: **Marc M. Greenberg** "Examining How Radiation Damages DNA By Independently Generating Individual Reactive Intermediates" P16

12h05 – 12h25: **Hakim Belmouaddine** "Femtosecond Laser-Induced Low Density Plasma mediated DNA damage in Aerated Aqueous Solutions" P17

**12h30 – 14h00 Lunch Break**

**14h00 - 16h00** Chair *Thierry Douki, Antonio Monari*

14h00 – 14h40: **Dimitra Markovitsi** "Radical Generation in DNA by Direct Absorption of Low-Energy UV Radiation" P18

14h40-15h20: **Sheera Adar** "High throughput sequencing uncovers patterns of UV damage formation and repair in the human genome" P19

15h20 – 15h40: **Lara Martinez-Fernandez** "UV-induced DNA-base dimerization mechanisms studied by quantum chemistry" P20

15h40 – 16h00: **Florian Heimbach** "DNA circuitry as a radiosensitive detector for the quantification of radiation damage" P21

**16h00-16h30 Coffee break**

**16h30 – 18h00** Chair *Elise Dumont, Michael Dingfelder*

16h30: 17h10: **Carmen Villagrasa** "Mechanistic simulation of radioinduced DNA early damage with Geant4-DNA" P22

17h10 – 17h50: **Michael Dingfelder** "Radiation Transport in nano-sized structures" P23

17h50 – 18h10: **Katharine Moore Tibbetts** "Ultrafast hydrogen atom migration and vibrational coherence in phosphate radical cations" P24

**19h00 – 20h00 Dinner**

**20h00 – 21h30** Posters session

## Tuesday May, 28<sup>th</sup>

**8h15 – 10h15** Chair *Georges George 'Don' Jones, Jean-Pierre Pouget*

8h15-9h55: **Hiroshi Ide** "Direct Observation of Damage Clustering in Irradiated DNA" P25

8h55-9h35: **George 'Don' Jones** "Comet Assay Measures of Cancer Cell Damage Sensitivity In Vitro and In Vivo" P26

9h35-9H55: **Madeleine Le Coz** « Brn2 protects melanocytes against ionizing radiation P27

9h55 – 10h15: **Yanfang Dong** "Unified Mechanism for the Generation of Isolated and Clustered DNA Damages by a Single Low Energy (5–10 eV) Electron" P28

### 10h15-10h45 Coffee break

**10h45 - 12h25** Chair *Elise Dumont, Gisela Taucher-Scholz*

10h45 – 11h25: **Jan Schuemann** "Estimating radiation damage to DNA with track structure simulation" P29

11h25 – 12h05: **Heidi Nettelbeck** "Estimating radiation damage to DNA with track structure simulation" P30

12h05 – 12h25: **Samia Chaouni** "Side effects of scattered versus scanned proton beams on normal tissues in total body irradiated mice: preliminary results" P31

### 12h30 – 14h00 Lunch Break

**14h00 - 16h00** Chair *Jean-Pierre Pouget, Evelyne Sage*

14h00 – 14h40: **Carmel Mothersill** "Non DNA-Targeted Effects; The Role of Biophotons and Mitochondria" P32

14h40-15h20: **Jean-Pierre Pouget** "Direct and bystander effects of targeted radionuclide therapy" P33

15h20 – 15h40: **Vincent Lemelin** "Cross sections for nanodosimetry: absolute cross sections for vibrational and electronic excitation induced by 1-18 eV electron scattering from condensed dimethyl phosphate" P34

15h40 – 16h00: **Nicolas Tang** "Influence of chromatin compaction on early radiation-induced DNA damage" P35

### 16h00-16h30 Coffee break

**16h30 – 18h00** Chair *Naoya Shikazono, Jean-François Constant*

16h30 - 17h10: **Naoya Shikazono** "Measurement and mutagenic potential of clustered DNA lesions" P36

17h10 – 17h50: **Joanna Timmins** "Genome maintenance & dynamics in the radiation resistant bacterium *Deinococcus radiodurans*" P37

17h50 – 18h10: **Junran Zhang** "RNF126 promotes a novel G2 arrest via interaction with 14-3-3 $\sigma$ " P38

### 19h00 – 20h00 Dinner

**20h00 – 21h30** Posters session

## Wednesday May,29<sup>th</sup>

**8h15 – 10h15** Chair *Pablo Radicella, Joanna Timmins*

8h15-9h55: **Grigory L. Dianov** “Regulation of base excision repair in response to DNA damage” P39

8h55-9h35: **Bernd Epe** “OGG1: a DNA repair glycosylase relevant for both genomic stability and transcription regulation” P40

9h35-9H55: **Wei-Ting Lu** “Drosha drives the formation of DNA:RNA hybrids around DNA break sites to facilitate DNA damage repair” (**Cancelled**) P41

9h55 – 10h15: **Lei Li** “Fanconi anemia and Complex DNA lesions” P42

**10h15-10h45 Coffee break**

**10h45 - 12h25** Chair *Dmitry Zarkov, Jean-François Constant*

10h45 – 11h25: **Neil M. Kad** “Using single molecule imaging to investigate the molecular processes of nucleotide excision DNA repair” P43

11h25 – 12h05: **Dmitry Zharkov** “8-Oxoguanine: How enzymes find a soft spot in DNA” P44

12h05 – 12h25: **Laurence Blanchard** “Conservation and diversity of DNA repair genes and their regulation in radiation-resistant *Deinococcus* bacteria” P45

**12h30 – 14h00 Lunch Break**

**14h00 – 19h00** Free afternoon.

**19h00 – 20h00 Dinner**

**20h00 – 21h30** Posters session

## Thursday May, 30<sup>th</sup>

**8h15 – 10h15** Chair *Gisela Taucher-Scholz, Naoya Shikazono*

8h15 - 9h55: **Claire Rodriguez-Lafrasse** “Why carbon ions better cure radioresistant cancers: specificities of the molecular response” P46

8h55 - 9h35: **Gisela Taucher-Scholz** “Ubiquitination-dependent regulation of DNA end resection at clustered lesions in G1 cells” P47

9h35 - 9h55: **Junjie Chen** “Functional proteomic analysis of DNA damage response and tumorigenesis” P48

9h55 – 10h15: **Justyna Miszczyk** “Determination of cell death modes induced by therapeutic proton irradiation in human peripheral blood lymphocytes” P49

**10h15 - 10h45: Coffee break**

**10h45 - 12h25:** Chair *Evelyne Sage, Thierry Douki*

10h45 – 11h25: **Thierry Douki** “The contribution of UVA to the for formation of pyrimidine dimers in DNA” P50

11h25 – 12h05: **Antonio Monari** “Find the enemy hiding in the darkness: DNA repair efficiency rationalized by molecular simulation” P51

12h05 – 12h25: **Craig J. Neal** “In vivo administration of engineered cerium nanoparticles potentiates cell survival following incidental radiation exposure: mitigation of ROS and double strand breakage” P52

**12h30 – 14h00 Lunch Break**

**14h00 : 16h00** Chair, *Pablo J Radicella, Marie Davidkova*

14h00 – 14h40: **J. Pablo Radicella** “Cohesin and Mediator are required for the initiation of Base Excision repair in the nucleus” P53

14h40-15h20: **Jason L Parsons** “Complex DNA Damage induced by high-LET protons triggers a specific cellular DNA damage response” P54

15h20 – 15h40: **Anna Michaelidesová** “Response of neural stem cells to ionizing radiation” P55

15h40 – 16h00: **Fayyad Nour** “Deciphering the role of XPC in DNA Base Excision Repair pathway (BER) and the oxidative stress” P56

**16h00-16h30: Coffee break**

**16h30 – 18h00** Chair *Jean-Luc Ravanat, Amita Adhikary*

16h30 - 17h10: **Colin G. Wu** “Repair of G-quadruplexes orchestrated by human FANCI and REV1” P57

17h10 – 17h50: **Jean-Luc Ravanat** “Photosensitized Formation Of DNA Lesions” P58

17h50 – 18h10: **Reimitz D** “Organometallic compounds in the context of DNA strand break induction during irradiation” P59

**19h00 – 20h00 Gala dinner**