

# Larry Bodgi, Ph.D.

**Assistant Professor of Radiation Oncology**  
**Radiation Biology- DNA repair**

**Nationalities:** Greek, Lebanese.

**Date of birth:** May 12, 1988

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**Researcher Links:** [https://www.researchgate.net/profile/Larry\\_Bodgi](https://www.researchgate.net/profile/Larry_Bodgi)  
<https://scholar.google.fr/citations?user=Ayca3bwAAAAJ&hl=fr>  
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## Research scores

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Number of peer-reviewed publications: 25

Number of submitted publications: 5

Number of citations (Google Scholar): 584

H-index (Google Scholar): 11

Number of patents: 4

Number of books: 1

## Degrees and Higher Education

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**From 2012 till 2015** Ph.D. in Radiobiology, Université Claude Bernard Lyon 1, Inserm UMR1052 Radiobiology Group, Lyon, France.

**Title: Modélisation de la réponse moléculaire et cellulaire aux radiations ionisantes : impact du transit cyto-nucléaire de la protéine ATM**

Ph.D. in Radiation Physics, Faculty of Sciences, Saint Joseph-University, Beirut, Lebanon (co-supervision with Université Claude Bernard Lyon 1).

**2011** Masters in Detectors Physics - Optical Laser - Physics of Materials and Complex Environments, Faculty of Sciences, Université de Bretagne Occidentale (UBO), Brest, France.

**Title: Physical and Biological Effects of Ionizing Radiations Generated by Different Radiotherapy Modalities : Impact of the Individual Sensitivity**

Masters in Detectors Physics, Faculty of Sciences, Saint-Joseph University (USJ), Beirut, Lebanon.

**2009** BS in General Physics, Faculty of Sciences, Saint Joseph-University (USJ), Beirut, Lebanon.

## Language Skills

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**French:** C2, Native, spoken and written.

**Arabic:** C2, Native, spoken and written.  
**English:** C1, Proficient Level, spoken and written.  
**Greek:** B1, Intermediate Level, spoken and written.

## Current Employment

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**Since 05/2022** Assistant Professor of Radiation Oncology, Department of Radiation Oncology, Faculty of Medicine, American University of Beirut Medical Center.  
Associate to the Department of Anatomy, Cell Biology and Physiological Sciences, Faculty of Medicine, American University of Beirut.

## Previous Professional Experience

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**01/2017 till 03/2022** Research Associate at the Department of Radiation Oncology of the American University of Beirut Medical Center

**Job Description:** Establishing and leading a radiobiology unit (Junior Team Leader).  
**Main Tasks:** Junior team leader. Writing grants and managing budgets. Training and supervising students, post-docs and research assistants. Giving radiobiology lectures to team and radiation oncology residents. Leading and managing different radiobiology projects.

**01/2015 till 12/2016** R&D project manager at NEOLYS DIAGNOSTICS, Lyon, France.

**Job Description:** Developing radiosensitivity predictive assays  
**Main Tasks:** Developing, writing, and submitting patents. Managing collaborations with scientific, commercial and industrial partners. Providing quality control for the developed predictive assays. Training and supervising students and new employees.

## Other Education

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**12/2020** E-workshop: Conducting Systematic Reviews and Meta-Analysis

**12/2020** Diversity Inclusion in the Modern Workplace

**12/2020** Predictive Modeling and Machine Learning with MATLAB course

**11/2020** Data Processing and Feature Engineering with MATLAB course

**10/2020** Exploratory Data Analysis with MATLAB course

## Research Funding and Grants

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- 1- Medical Practice Plan:** Assessing the In Vitro Effect of Ro 90-7501 on the Radiosensitivity of Breast and Bladder Normal and Cancer Cell Lines  
Amount: 30,000 USD                      Duration: 2 years  
Starting Date: October 2022              Role: Principal Investigator

- 2- **Medical Practice Plan:** The in-vitro effect of statins and zoledronic acid (ZOPRA) on the radiosensitivity of normal and cancerous commercial cell lines and patient-derived primary breast cells.  
 Amount: 57,000 USD                      Duration: 2 years  
 Starting Date: July 2021                  Role: Co-Investigator
- 3- **Medical Practice Plan:** Targeting the spinal canal in pediatric radiotherapy: Long term implications on radiation-induced DNA mutations and damage repair capability in normal cells using sheep models.  
 Amount: 65,000 USD                      Duration: 2 years  
 Starting Date: March 2019                  Role: Co-Investigator
- 4- **Lebanese National Council for Scientific Research:** Characterization of Normal and Cancer Bladder Cells Response to Radiotherapy.  
 Amount: 30,000 USD                      Duration: 2 years  
 Starting Date: March 2017                  Role: Co-Principal Investigator

### Research supervision and leadership experience

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|---------------------------|---|
| <b>03/2021 to 10/2022</b> | <b>MSc thesis:</b> Radioprotective effect of a combination of statins and bisphosphonates on previously irradiated skin tissues<br><b>Role: Supervisor</b>                              |
| <b>03/2021 to 10/2021</b> | <b>MSc thesis:</b> Long Term Implications of Radiation-Induced DNA Mutations and Damage Repair Capability In Normal Lung Epithelial Cells Using Sheep Models<br><b>Role: Supervisor</b> |
| <b>02/2020 to 10/2020</b> | <b>MSc thesis:</b> Long Term Implications of Radiation-Induced DNA Mutations and Damage Repair Capability In Normal Skin Fibroblast Cells Using Sheep Models<br><b>Role: Supervisor</b> |
| <b>02/2019 to 08/2019</b> | <b>MSc thesis:</b> Effect of a Combination of Zoledronic Acid and Statins on The <i>In Vitro</i> Response of Breast Cancer To Radiation<br><b>Role: Supervisor</b>                      |
| <b>02/2019 to 08/2019</b> | <b>MSc thesis:</b> Radioensitizing Effect of Curcumin on Bladder Cancer Cells<br><b>Role: co-Supervisor</b>   |
| <b>02/2018 to 08/2018</b> | <b>MSc thesis:</b> Effect of Ionizing Radiation With Or Without Adjuvant Chemotherapy on Normal and Cancerous Bladder Cell Lines<br><b>Role: Supervisor</b>                             |
| <b>12/2015 to 05/2016</b> | <b>MSc thesis:</b> Market and Feasibility Study of The Necessity of Radiosensitivity Predictive Assays In Lebanon<br><b>Role: Supervisor</b>  |
| <b>4/2015 to 11/2015</b>  | <b>MSc thesis:</b> Development of An Automated Software For Issuing Radiosensitivity Tests Clinical Reports<br><b>Role: Supervisor</b>  |
| <b>2/2015 to 11/2015</b>  | <b>MSc thesis:</b> Mathematical Modeling of Radio-Induced DNA Repair: Impact of The ATM Nucleo-Shuttling<br><b>Role: co-Supervisor</b>  |

## Teaching Experience

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<b>Since 2021</b>	<b>Radiation and Cancer Biology course</b> , Radiation Oncology department, AUBMC. Role: course director and lecturer
<b>2017-2020</b>	<b>Radiation and Cancer Biology course</b> , Radiation Oncology department, AUBMC. Role: course co-director and lecturer
<b>2018</b>	<b>Radiobiology lectures</b> , Faculty of Medicine, Aarhus University, Aarhus, Denmark. Role: Lecturer
<b>2014</b>	<b>Introduction to Matlab programming</b> , Faculty of Sciences, Saint-Joseph University (USJ), Beirut, Lebanon. Role: Lecturer and course director.
<b>2011-2013</b>	<b>General Physics Tutorials</b> , Faculty of Sciences, Saint-Joseph University (USJ), Beirut, Lebanon. Role: Assistant lecturer.
<b>10/2011 till 12/2011</b>	<b>General Physics Tutorials</b> , Faculty of Pharmacy, Saint-Joseph University (USJ), Beirut, Lebanon. Role: assistant lecturer.

## Awards

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<b>08-2018</b>	French government traveling grant
<b>12-2017</b>	Joseph Maizin Young Researcher Award
<b>12-2017</b>	ERASMUS teaching award
<b>03-2013</b>	EIFFEL excellence award.

## International Exchange

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<b>05-2018</b>	Erasmus+: Teaching and training exchange with the Radiobiology Department of Aarhus University, Aarhus, Denmark
<b>08-2018</b>	French Government traveling grant: Teaching and training exchange with the Inserm UMR1052 Unit, Lyon, France

## Other Academic Merits

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Review Board Member:	Technology in Cancer Research and Treatment
Peer review of funding applications:	Al-Quds Academy for Scientific Research
Referee for scientific publications:	Frontiers in Oncology Computer Methods and Programs in Biomedicine European Journal of Integrative Medicine Mammalian Genome

## International Scientific Societies

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Member of the Société Internationale de Radiobiologie de Langue Française (SIRLaF)

Member of the Radiation Research Society (RRS)

Member of the European Society for Radiotherapy & Oncology (ESTRO)

## Peer Reviewed Publication List

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1. Francis M, Ahmad A, **Bodgi L**, Azzam P, Youssef T, Abou Daher A, et al. SMPDL3b modulates radiation-induced DNA damage response in renal podocytes. *The FASEB Journal*. 2022;36(10):e22545.
2. Le Reun E\*; **Bodgi, L\***, Granzotto, A, Sonzogni, L, Ferlazzo, ML, Al-Choboq J, El-Nachef L, Restier-Verlet J, Berthel E, Devic C, Bouchet A, Bourguignon M, Foray N. Quantitative Correlations between Radiosensitivity Biomarkers Show That the ATM Protein Kinase Is Strongly Involved in the Radiotoxicities Observed after Radiotherapy. *International Journal of Molecular Sciences* 2022, 23 (18), 10434.
3. Devic C, **Bodgi L**, Sonzogni L, Pilleul F, Paul D, Carbillet F, Munier M, Foray N. Influence of cellular models and individual factor in the biological response to head CT scan exams, *Eur Radiol Exp* 6(1) (2022) 17.
4. Devic C, **Bodgi L**, Sonzogni L, Pilleul F, Paul D, Carbillet F, Munier M, Foray N. Influence of cellular models and individual factor in the biological response to chest CT scan exams, *Eur Radiol Exp* 6(1) (2022) 14.
5. Ramia P, **Bodgi L**, Mahmoud D, et al. Radiation-Induced Fibrosis in Patients with Head and Neck Cancer: A Review of Pathogenesis and Clinical Outcomes. *Clinical Medicine Insights: Oncology*. January 2022. doi:10.1177/11795549211036898
6. Combemale P, Sonzogni L, Devic C, Bencokova Z, Ferlazzo M., Granzotto A., Bulet SF, Pinson S, Amini-Adle M., Al-Choboq J., **Bodgi L.**, ..... Individual Response to Radiation of Individuals with Neurofibromatosis Type I: Role of the ATM Protein and Influence of Statins and Bisphosphonates. *Molecular neurobiology*. 2021/11/02 2021;doi:10.1007/s12035-021-02615-3
7. Azzi J., Waked A., Al Choboq J., Bou-Gharios J., Geara F., **Bodgi L.**#, and Maalouf M.# (2021, accepted, in press) Radiosensitizing Effect of Curcumin on Human Bladder Cancer Cell Lines: Impact on DNA Repair Mechanisms. *Nutrition and Cancer*. Doi 10.1080/01635581.2021.1985534
8. Viau, M., Sonzogni, L., Ferlazzo, M. L., Berthel, E., Pereira, S., **Bodgi, L.**, . . . Foray, N. (2021). DNA Double-Strand Breaks Induced in Human Cells by Twelve Metallic Species: Quantitative Inter-Comparisons and Influence of the ATM Protein. *Biomolecules*, 11(10), 1462. doi: 10.3390/biom11101462
9. Devic C., **Bodgi L.**, Foray N. (2021, accepted, in press). The radiation-induced ATM nucleoshuttling model as a unified mechanistic explanation for adaptive response, hormesis and hypersensitivity to low dose phenomena. *Int. Journ. of Low Dose Rad.*
10. Maalouf, M., Granzotto, A., Devic, C., **Bodgi, L.**, Ferlazzo, M., Peaucelle, C., . . . Foray, N. (2019). Influence of Linear Energy Transfer on the Nucleo-shuttling of the ATM Protein: A Novel Biological

Interpretation Relevant for Particles and Radiation. *Int J Radiat Oncol Biol Phys*, 103(3), 709-718. doi:10.1016/j.ijrobp.2018.10.011.

11. **Bodgi, L.**, Bahmad, H. F., Araji, T., Al Choboq, J., Bou-Gharios, J., Cheaito, K., . . . Abou-Kheir, W. (2019). Assessing Radiosensitivity of Bladder Cancer in vitro: A 2D vs. 3D Approach. *Frontiers in Oncology*, 9(153). doi:10.3389/fonc.2019.00153
12. Pereira, S.\*, **Bodgi L.** \*, M. Duclos, A. Canet, M. L. Ferlazzo, C. Devic, A. Granzotto, S. Deneuve, G. Vogin and N. Foray (2018). In Reply to Azria et al. *International Journal of Radiation Oncology\*Biology\*Physics* 101(2): 491-492.
13. Vogin, G., T. Bastogne, **Bodgi L.**, J. Gillet-Daubin, A. Canet, S. Pereira and N. Foray (2018). The Phosphorylated ATM Immunofluorescence Assay: A High-performance Radiosensitivity Assay to Predict Postradiation Therapy Overreactions. *International Journal of Radiation Oncology\*Biology\*Physics* 101(3): 690-693.
14. Pereira, S.\*, **Bodgi, L.\***, Duclos, M., Ferlazzo, M., Devic, C., Canet, A., . . . Foray, N. (2018). Fast and Binary Assay for Predicting Radiosensitivity Based on the Theory of ATM Nucleo-Shuttling: Development, Validation, and Performance. *Int J Radiat Oncol Biol Phys*, 100(2), 353-360. doi:10.1016/j.ijrobp.2017.10.029
15. Ferlazzo, M. L., Bach-Tobdji, M. K. E., Djerad, A., Sonzogni, L., Devic, C., Granzotto, A., **Bodgi, L.** . . . Foray, N. (2017). Radiobiological characterization of tuberous sclerosis: A delay in the nucleo-shuttling of ATM may be responsible for radiosensitivity. *Mol Neurobiol*. 2017 Aug 7. doi: 10.1007/s12035-017-0648-6.
16. El Chediak A, Shamseddine A, **Bodgi L**, Obeid JP, Geara F, Zeidan YH. (2017) Optimizing tumor immune response through combination of radiation and immunotherapy. *Med Oncol*. 2017 Aug 21;34(9):165. doi: 10.1007/s12032-017-1025-z. Review
17. **Bodgi, L.**, Canet, A., Granzotto, A., Britel, M., Puisieux, A., Bourguignon, M., & Foray, N. (2016). The enigma of the biological interpretation of the linear-quadratic model finally resolved? A summary for non-mathematicians (In French). *Cancer Radiother*, 20(4), 314-321. doi:10.1016/j.canrad.2016.02.014
18. **Bodgi, L.**, Canet, A., Pujo-Menjouet, L., Lesne, A., Victor, J. M., & Foray, N. (2016). Mathematical models of radiation action on living cells: From the target theory to the modern approaches. A historical and critical review. *J Theor Biol*, 394, 93-101. doi:10.1016/j.jtbi.2016.01.018
19. **Bodgi, L.**, & Foray, N. (2016). The nucleo-shuttling of the ATM protein as a basis for a novel theory of radiation response: resolution of the linear-quadratic model. *Int J Radiat Biol*. 2016;92(3):117-31. doi: 10.3109/09553002.2016.1135260.
20. Devic, C.\*, **Bodgi, L.\***, Granzotto, A., Ferlazzo, M. L., Sonzogni, L., Bourguignon, M., & Foray, N. (2016). The hypersensitivity to low-dose phenomenon: one radiobiology enigma resolved? (in French) *Médecine Nucléaire*, 40(3), 254-257. doi:https://doi.org/10.1016/j.mednuc.2016.02.010
21. Granzotto, A., Benadjaoud, M. A., Vogin, G., Devic, C., Ferlazzo, M. L., **Bodgi, L.**, . . . Foray, N. (2016). Influence of Nucleoshuttling of the ATM Protein in the Healthy Tissues Response to Radiation Therapy: Toward a Molecular Classification of Human Radiosensitivity. *Int J Radiat Oncol Biol Phys*, 94(3), 450-460. doi:10.1016/j.ijrobp.2015.11.01
22. Viau, M., Perez, A. F., **Bodgi, L.**, Devic, C., Granzotto, A., Ferlazzo, M. L., . . . Foray, N. (2016). Repeated radiation dose effect and DNA repair: Importance of the individual factor and the time interval between the doses(In French). *Cancer Radiother*. doi:10.1016/j.canrad.2015.05.03

23. Ferlazzo, M. L., Sonzogni, L., Granzotto, A., **Bodgi, L.**, Lartin, O., Devic, C., . . . Foray, N. (2014). Mutations of the Huntington's Disease Protein Impact on the ATM-Dependent Signaling and Repair Pathways of the Radiation-Induced DNA Double-Strand Breaks: Corrective Effect of Statins and Bisphosphonates. *Mol Neurobiol*, 49, 1200-1211. doi:10.1007/s12035-013-8591-7
24. **Bodgi L.** and Foray N. On the coherence between mathematical models of DSB repair and physiological reality (2014). *Mutat Res Genet Toxicol Environ Mutagen*, 761, 48-49. doi:10.1016/j.mrgentox.2014.01.003
25. **Bodgi, L.**, Granzotto, A., Devic, C., Vogin, G., Lesne, A., Bottollier-Depois, J. F., . . . Foray, N. (2013). A single formula to describe radiation-induced protein relocalization: towards a mathematical definition of individual radiosensitivity. *J Theor Biol*, 333, 135-145. doi:10.1016/j.jtbi.2013.05.020

*\*equal contribution*

*#co-corresponding authors*

### Submitted publication list

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1. **Bodgi L.\***, Bou-Gharios J.\*, Azzi J, Eid T., Geara F., Abou-Kheir W.# and Ayoub Z.# (submitted) ZOledronate and PRAvastatin (ZOPRA) in the Treatment of Breast Cancer: Assessing the Effect on Radiosensitivity In Vitro
2. **Bodgi L.\***, Al Choboq J.\*, Araji T.\*, Bou-Gharios J., Azzi J.,Bahmad H.F., Eid T., Geara F., Zeidan Y.H.#, and Abou-Kheir W.# (submitted). Radiation Treatment Timing and Dose Delivery: Effects on Bladder Cancer Stem Cells In Vitro
3. **Bodgi L.\***, Bou-Gharios J.\*, Al Choboq J., Araji T., Azzi J.,Bahmad H.F., Eid T., Geara F., Abou-Kheir W.# and Zeidan Y.H.#,\ (submitted). Radio- and Chemo-Induced DNA Double-Strand Breaks Repair Kinetics: Effect on Bladder Cancer Cell Lines.

*\*equal contribution*

*#co-corresponding authors*

### Patents

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<b>WO2017098190A1</b>	Rapid Predictive Method for Characterizing the Radiosensitivity of a Patient to Irradiation with Ionizing Radiation. 2017
<b>WO2017029449</b>	Predictive Method for Characterizing the Sensitivity of a Tumour in Response to a DNA-breaking Treatment, 2017.
<b>WO2017029450A1</b>	Individual Method Predictive of the DNA-breaking Genotoxic Effects of Chemical or Biochemical Agents, 2017.
<b>WO2017029451A1</b>	Method for Predicting and Evaluating the Excess of Dose Due to Iodinated Contrast Products Injected During Radiodiagnostic Examinations, 2017

## Book

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**Bodgi, L.,** & Foray, N. (2016). Effets biologiques des radiations ionisantes : Une théorie basée sur le transit cyto-nucléaire de la protéine ATM. Editions Universitaires Européennes.

## International conferences

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- 6/2022 Fakhreddine H., Fawaz J., Yehya J., Challita R., **Bodgi L#** and Abou-Kheir1 W.# Radiosensitizing Prostate Cancer Cells: A Possible Role For Zoledronic Acid And Pravastatin (ZOPRA). EACR 2022 Congress - Innovative Cancer Science: Translating Biology to Medicine Seville, Spain..
- 6/2022 Fawaz J., Fakhreddine H., Yehya J., Challita R., **Bodgi L#** and Abou-Kheir1 W.# Assessing the radio protecting effects of ZOPRA on normal human prostate epithelial cells and human fibroblast cells.EACR 2022 Congress - Innovative Cancer Science: Translating Biology to Medicine Seville, Spain.
- 08/2019 **L. Bodgi**, J. Bou Gharios, J. Al Choboq J.,H.F. Bahmad, T. Araji, T. Eid, F. Geara, W. Abou Kheir and Y.H. Zeidan. Flash presentation and poster. Radio- and Chemo-Induced DNA Double Strand Breaks Repair Kinetics: Effect on Bladder Cancer Cell Lines. International Conference on Radiation Research 2019, Manchester, United Kingdom.
- 07/2018 H.F. Bahmad \*, **L. Bodgi** \*, K. Cheaito, T. Araji, J. Choboq, Y. Zeidan, T. Eid, F.Geara# and Wassim Abou-Kheir. Poster: Investigating the Response of Normal and Cancer Bladder Cells to Radiotherapy. 2018 EACR 25th Biennial Congress of the European Association for Cancer Research, Amsterdam, Netherlands
- 12/2017 **L. Bodgi\***, H. Bahmad\*, K. Cheaito, T. Araji, T. Eid, Y. Zeidan, F. Geara#, and W. Abou-Kheir#. Oral presentation: Caractérisation de la réponse aux radiations ionisantes de cellules saines et cancéreuses de la vessie; #Corresponding Authors. 13ème Colloque International de Radiobiologie Fondamentale et Appliquée (CIRFA), Lyon, France
- 05/2017 G. Vogin, **L. Bodgi**, A. Canet, S. Pereira, J. Gillet-Daubin, N. Foray. Oral Presentation: High performance radiosensitivity assay to predict post radiation overreactions Radiotherapy and Oncology 123, S110-S111. OC-0221:Vienna, Austria
- 11/2015 **L. Bodgi**, N. Foray. Oral Presentation : Le transit cyto-nucléaire de la protéine d'ATM à la base d'une nouvelle théorie de la réponse aux radiations : résolution du modèle linéaire-quadratique. 13ème Colloque International de Radiobiologie Fondamentale et Appliquée (CIRFA), Obernai, France
- 08/2013 **L. Bodgi** and N. Foray. Oral presentation : Le transit cyto-nucleaire radio-induit d'ATM, vers une classification moléculaire de la radiosensibilité. 11ème Colloque International de Radiobiologie Fondamentale et Appliquée (CIRFA), La Grande Motte, France
- 11/2013 **L. Bodgi** and N. Foray. Oral presentation: The radiation induced nucléo-shuttling of ATM : Towards a molecular classification of radiosensitivity, Towards a general model of radiation action. AT and radiation workshop, Clermont Ferrand, France
- 06/2012 A Granzotto, C. Devic, **L. Bodgi**, M. Ferlazzo, G. Vogin and N. Foray. Poster : The radiation induced nucleo-shuttling of ATM : at the basis of radiosensitivity and cancer proneness?A-T Clinical Research Conference 2012 . Cambridge, United Kingdoms

09/2011 **L. Bodgi** and N. Foray. Oral presentation :” Impact de la réparation des cassures double-brin de l'ADN dans la réponse à différentes modalités de radiothérapie: comparaison Cyberknife/tomothérapie”  
10ème Colloque International de Radiobiologie Fondamentale et Appliquée (CIRFA), Biarritz, France.

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