

## Curriculum vitae Chiara Riganti

### Personal details

Born in Torino, Italy

Nationality: Italian

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### Educations

- **2002:** graduated (110/110 cum laude and honors) in Medicine at University of Torino. Thesis title: “Oxidoreductive metabolism in human lung epithelial cells exposed to asbestos fibers” (supervisor: prof. Dario Ghigo, Dep. of Genetics, Biology and Biochemistry, University of Torino)

- **2006:** post-degree medical Specialization in Clinical Biochemistry (70/70 cum laude and honors) at the School of Medicine, University of Torino. Thesis title: “Molecular basis of the Multidrug-Resistance (MDR) and of its reversion” (supervisor: prof. Amalia Bosia, Dep. of Genetics, Biology and Biochemistry, University of Torino)

### Professional experiences and current position

- **2002-2006:** research fellow at the Department of Genetics, Biology and Biochemistry, laboratory of Biochemistry, and at Center for Experimental Research and Medical Studies, Onco-Hematology Subalpine Centre, University of Torino

- **2006-2009:** tenure-track assistant professor of Biochemistry, Dept. of Genetics, Biology and Biochemistry, University of Torino

- **2009-2016:** tenured assistant professor of Biochemistry, Dept. of Genetics, Biology and Biochemistry, and Dept. of Oncology, University of Torino

- **April 2010:** visiting scientist at Institut Cochin (Laboratoire de Biologie de l'endothelium cerebrale, prof. Pierre-Olivier Couraud), Université Renè Descartes, Paris

- **July-September 2011:** visiting professor at Weizmann Institute of Science (Dept. of Molecular Genetics; prof. Menachem Rubinstein), Rehovot, Israel

- **July-September 2013:** visiting professor at Weizmann Institute of Science (Dept. of Molecular Genetics; prof. Menachem Rubinstein), Rehovot, Israel

- **2016-2021:** associate professor of Biochemistry, Dept. of Oncology, University of Torino

- **2021-present:** full professor of Biochemistry, Dept. of Oncology, University of Torino

### Participation to Directive Boards of Scientific Societies and/or Institutions

- **2023-present:** national secretary of the AICC (Italian Association for Cell Cultures)/ECTS (European Tissue Culture Society)

- **2019-present:** member of the Directive Board of the AICC (Italian Association for Cell Cultures)/ECTS (European Tissue Culture Society)

- **2019-present:** member of the Steering Board of the “Tumor Biochemistry” group, SIB (Italian Society of Biochemistry)

- **2016-present:** Deputy-Director of the “Interdepartmental Center G. Scansetti for the study of asbestos and nanoparticle toxicity”, University of Torino

### Honors

- **2005:** SIB (Italian Society of Biochemistry) Award for young investigators

- **2011:** De Benedetti-Cherasco Foundation Award for the Torino - Weizmann Collaborative Program: Scientific Cooperation and Exchange

- **2011:** AICC/ETCS (Italian Association for Cells Culture/Italian branch of the European Tissue Culture Society) award for senior researchers

- **2012:** 2<sup>nd</sup> rank at “Giovedì Scienza Award Competition” for Science Communication

- **2017:** tied finalist, “Gianni Bonadonna Prize for New Drug Development in Oncology”

- **2017:** Award for “Outstanding Achievements in Oncology”, 22<sup>nd</sup> World Congress on Advances in Oncology, Athens, 5-7 October 2017

### Teaching activity

- **2007-present:** lectures of Biochemistry at School of Medicine, University of Torino; courses:

Nursery, Radiology Technicians, Dietitians, Nutrition, Medicine; post-degree specializations in: Neurology, Genetics

**- Supervisor of:**

4 bachelor students, 25 master students (Molecular Biotechnology, Medical Biotechnology, Nutrition, Medicine)

13 PhD students (PhD School of Molecular Medicine, University of Torino)

4 students of the MD/PhD program in Molecular Medicine, University of Torino

7 students of the program Erasmus Mundus

19 students and researchers of Trialect Global Medical Education program

**Research main topics**

- 1) Molecular and metabolic basis of multidrug resistance (MDR) in cancer cells
- 2) Molecular and metabolic basis of immune-resistance/immune-evasion in cancer cells
- 3) Metabolic dysfunctions of mitochondria and endoplasmic reticulum linking chemoresistance and immune-resistance/immune-escape in cancer cells
- 4) Targeting cholesterol metabolism as a new chemo-immune-sensitizing approach
- 5) Nanomedicine-based approach to reverse chemoresistance and immune-resistance/immune-evasion.

**Main projects as PI**

**International grants as PI:**

**2022-2023:**

Project title: PANDORA – A Pan-European Educational Platform on Multidrug Resistant Tumours and Personalised Cancer Treatment

Source: EU Framework Programme Horizon 2020-Cost Innovator Grant IG17104

**2018-2021:**

Project title: STRATAGEM - New diagnostic and therapeutic tools against multidrug resistant tumours

Source: EU Framework Programme Horizon 2020-Cost Action CA17104

**2013:**

Project title: New strategies against multidrug resistance in primary and metastatic bone tumors”

Source: Università Franco-Italiane, Program Galileo 2012-2013

**2011:**

Project title: The response to endoplasmic reticulum stress: a new marker of chemo- and immuno-resistance in human tumors.

Source: Torino - Weizmann Collaborative Program: Scientific Cooperation and Exchange

**National Grants as PI:**

**2024-2028:**

Titolo: How ncRNAs control (immuno)metabolism in lung cancer: new biomarkers of chemoimmune-resistance, new druggable targets

Source: AIRC (Italian Association for Cancer Research; IG29250 - “Investigator Grant 2023” program)

**2024-2026:**

Title: Inducing BRCAness in pancreatic cancer by modulating a glycolytic branch

Source: MUR – Ministero dell’Università e della Ricerca – Bando PRIN 2022

**2019-2023:**

Project title: Tipping the balance between ABCB1/ABCC1 and ABCA1: a new approach to reverse chemo-immuno-resistance in solid tumors

Source: AIRC (Italian Association for Cancer Research; IG21408- “Investigator Grant 2018” program)

**2022-2023:**

Project title: Real-time monitoring of drug response in non-small cell lung cancer patient avatars

Source: San Paolo Foundation, Torino, Italy

**2021-2023:**

Project title: A biological passport to rationalize the use of the immunotherapy in oncological patients in Piemonte

Source: CRT Foundation (Cassa di Risparmio di Torino Foundation; Call for Research 2021; RF=2021-0556)

**2018-2020:**

Project title: A preclinical platform to optimize the efficacy of immuno-therapy in women with non-small cell lung cancer

Source: CRT Foundation (Cassa di Risparmio di Torino Foundation; Call for Research 2018, code: 2018-0568)

**2017-2019:**

Project title: Building a pre-clinical platform for the diagnosis and treatment of pleural malignant mesothelioma in Piemonte

Source: CRT Foundation (Cassa di Risparmio di Torino Foundation; Call for Research 2016, code: 2016-2443)  
**2015-2018:**

Project title: Dissecting the endoplasmic reticulum-mitochondria network to reverse chemo-immunoresistance of cancer cells

Source: AIRC (Italian Association for Cancer Research; IG15232- “Investigator Grant 2014” program)  
**2013-2016:**

Project title: Optimization of the oncological therapy: new drugs against Multidrug Resistance

Source: “Italian Ministry of University and Scientific Research – Program Future in Research for young investigators” (FIRB 2012)

**2011-2014:**

Project title: A new pharmacological strategy to contemporarily reverse chemo- and immuno-resistance in human tumors

Source: AIRC (Italian Association for Cancer Research; MFAG11475- “My First AIRC Grant” program)

**2009-2011:**

1) Project title: A novel “Trojan horse” approach to increase chemotherapy efficacy in brain tumors

Source: “Neuroscience Program 2008-2010”, San Paolo Foundation, Torino, Italy

2) Project title: Reversion of chemo-immunoresistance in human solid tumors by zoledronic acid (Zometa)

Source: “Health Project 2009”, Regione Piemonte, Italy

### **Bibliometry (2002-present)** ([www.scopus.com](http://www.scopus.com))

- **263** papers on indexed-journals subjected to peer-review (first author: **37**; last author: **66**; co-corresponding author: **16**;

H-index: **53**

- **24** conference proceedings

- **1** book chapter

- **1** book edition

- **5** patents (2 national + 3 international patents)

### ***10 best publications as last or first author***

1) Anobile DP, Salaroglio IC, Tabbò F, La Vecchia S, Akman M, Napoli F, Bungaro M, Benso F, Aldieri E, Bironzo P, Kopecka J, Passiglia F, Righi L, Novello S, Scagliotti GV, **Riganti C**. Autocrine 17- $\beta$ -Estradiol/Estrogen Receptor- $\alpha$  Loop Determines the Response to Immune Checkpoint Inhibitors in Non-Small Cell Lung Cancer. *Clin Cancer Res* 2023;29(19):3958-3973.

2) Salaroglio IC, Belisario DC, Akman M, La Vecchia S, Godel M, Anobile DP, Ortone G, Digiovanni S, Fontana S, Costamagna C, Rubinstein M, Kopecka J, **Riganti C**. Mitochondrial ROS drive resistance to chemotherapy and immune-killing in hypoxic non-small cell lung cancer. *J Exp Clin Cancer Res* 2022, 41:243

3) Kopecka J, Salaroglio IC, Perez-Ruiz E, Sarmiento-Ribeiro AB, Saponara S, De Las Rivas J, **Riganti C**. Hypoxia as a driver of resistance to immunotherapy. *Drug Resist Updat* 2021, 18: 100787

4) Salaroglio IC, Kopecka J, Napoli F, Pradotto M, Maletta F, Costardi L, Gagliasso M, Milosevic V, Ananthanarayanan P, Bironzo P, Tabbò F, Cartia CF, Passone E, Comunanza V, Ardisson F, Ruffini E, Bussolino F, Righi L, Novello S, Di Maio M, Papotti M, Scagliotti GV, **Riganti C**. Potential diagnostic and prognostic role of micro-environment in malignant pleural mesothelioma. *J Thor Oncol* 2019, 14(8):1458-1471

5) Alexa-Stratulat T, Pešić M, Čipak Gašparović A, Trougakos IP, **Riganti C**: What sustains the multidrug resistance phenotype beyond ABC efflux transporters? Looking beyond the tip of the iceberg. *Drug Resist Updat* 2019, 46:100643

6) Castella B, Kopecka J, Sciancalepore P, Mandili G, Foglietta M, Mitro N, Caruso D, Novelli F, **Riganti C\***, Massaia M\*. Mechanisms of phosphoantigen release and V $\gamma$ 9V $\delta$ 2 T-cell activation by dendritic cells. *Nat Commun* 2017, 8:15663 \* co-last author

7) Salaroglio IC, Panada E, Moiso E, Buondonno I, Provero P, Rubinstein M, Kopecka J, **Riganti C**. PERK induces resistance to cell death elicited by endoplasmic reticulum stress and chemotherapy. *Mol Cancer* 16:e91, 2017

8) **Riganti C**, Kopecka J, Panada E, Barak S, Rubinstein M. The Role of C/EBP- $\beta$  LIP in Multidrug Resistance. *J Natl Cancer Inst* 2015, 107(5): djv046

9) Gelsomino G, Corsetto PA, Campia I, Montorfano G, Kopecka J, Castella B, Gazzano E, Ghigo D, Rizzo AM, **Riganti C**. Omega 3 fatty acids chemosensitize multidrug resistant colon cancer cells by down-regulating cholesterol synthesis and altering detergent resistant membranes composition. *Mol Cancer* 2013; 12 (1):e137

10) **Riganti C**, Salaroglio IC, Caldera V, Campia I, Kopecka J, Mellai M, Annovazzi L, Bosia A, Ghigo D, Schiffer D. Temozolomide down-regulates P-glycoprotein expression in glioblastoma stem cells by interfering with the Wnt3a/GSK3/ $\beta$ -catenin pathway. *Neuro-Oncol* 2013; 15(11):1502-17

### 15 more relevant publications in the last 5 years (2019-2024)

1) Mistretta M, Fiorito V, Allocco AL, Ammirata G, Hsu MY, Digiovanni S, Belicchi M, Napoli L, Ripolone M, Trombetta E, Mauri P, Farini A, Meregalli M, Villa C, Porporato PE, Miniscalco B, Crich SG, **Riganti C**, Torrente Y, Tolosano E. Flvcr1a deficiency promotes heme-based energy metabolism dysfunction in skeletal muscle. *Cell Rep.* 2024;43(3):113854

2) Polónia B, Xavier CPR, Kopecka J, **Riganti C**, Vasconcelos MH. The role of Extracellular Vesicles in glycolytic and lipid metabolic reprogramming of cancer cells: Consequences for drug resistance. *Cytokine Growth Factor Rev.* 2023; 73:150-62

3) Anobile DP, Salaroglio IC, Tabbò F, La Vecchia S, Akman M, Napoli F, Bungaro M, Benso F, Aldieri E, Bironzo P, Kopecka J, Passiglia F, Righi L, Novello S, Scagliotti GV, **Riganti C**. Autocrine 17- $\beta$ -Estradiol/Estrogen Receptor- $\alpha$  Loop Determines the Response to Immune Checkpoint Inhibitors in Non-Small Cell Lung Cancer. *Clin Cancer Res.* 2023; 29(19):3958-73

4) Salaroglio IC, Belisario DC, Akman M, La Vecchia S, Godel M, Anobile DP, Ortone G, Digiovanni S, Fontana S, Costamagna C, Rubinstein M, Kopecka J, **Riganti C**. Mitochondrial ROS drive resistance to chemotherapy and immune-killing in hypoxic non-small cell lung cancer. *J Exp Clin Cancer Res* 2022, 41:243

5) Abd-ellatef GEF, Gazzano E, El-Desoky AH, Hamed AR, Kopecka J, Belisario DC, Costamagna C, Marie MAS, Fahmy SR, Abdel-Hamid A-HZ, **Riganti C**. Glabratephrin reverses doxorubicin resistance in triple negative breast cancer cells in vivo by inhibiting P-glycoprotein. *Pharmacol Res* 2022, 175:105975

6) Salaroglio IC, Belisario DC, Bironzo P, Ananthanarayanan P, Ricci L, Digiovanni S, Fontana S, Napoli F, Sandri A, Falcomatà C, Libener R, Comunanza V, Grosso F, Gazzano E, Leo F, Taulli R, Bussolino F, Righi L, Papotti MG, Novello S, Scagliotti GVS, **Riganti C\***, Kopecka J\*. SKP2 drives the sensitivity to neddylation inhibitors and cisplatin in malignant pleural mesothelioma. *J Exp Clin Cancer Res* 2022, 41:75 \* co-last authors

7) Kopecka J, Salaroglio IC, Perez-Ruiz E, Sarmiento-Ribeiro AB, Saponara S, De Las Rivas J, **Riganti C**. Hypoxia as a driver of resistance to immunotherapy. *Drug Resist Updat* 2021, 18: 100787

8) Villa C, Umbach A, Legato M, **Riganti C**, Jones R, Martini B, Boido M, Medana C, Facchinetti I, Barni D, Pinto M, Arguello T, Belicchi M, Fagiolari G, Liaci C, Moggio M, Ruffo R, Moraes CT, Monguzzi A, Merlo GR, Torrente T. Treatment with ROS detoxifying gold clusters alleviates the progressive functional decline in a mouse model of Friedreich's Ataxia. *Sci Transl Med* 2021, 13(607):eabe1633

9) Xu X, Tassone B, Ostano P, Katarkar A, Proust T, Joseph J-M, **Riganti C**, Chiorino G, Kutalik Z, Lefort K, Dotto GP. Different self-renewal and oncogenic potential of keratinocytes from Black versus White populations linked to OXPHOS and hydroxysteroid dehydrogenase HSD17B7 gene activity. *EMBO Mol Med* 2021, 13(7):e14133

10) Kopecka J, Trouillas P, Čipak Gašparović A, Gazzano E, Assaraf YG, **Riganti C**. Phospholipids and cholesterol: inducers of cancer multidrug resistance and therapeutic targets. *Drug Resist Updat* 2020, 49:100670

11) Salaroglio IC, Kopecka J, Napoli F, Pradotto M, Maletta F, Costardi L, Gagliasso M, Milosevic V, Ananthanarayanan P, Bironzo P, Tabbò F, Cartia CF, Passone E, Comunanza V, Ardisson F, Ruffini E, Bussolino F, Righi L, Novello S, Di Maio M, Papotti M, Scagliotti GV, **Riganti C**. Potential diagnostic and prognostic role of micro-environment in malignant pleural mesothelioma. *J Thor Oncol* 2019, 14(8):1458-71

12) Alexa-Stratulat T, Pešić M, Čipak Gašparović A, Trougakos IP, **Riganti C**. What sustains the multidrug resistance phenotype beyond ABC efflux transporters? Looking beyond the tip of the iceberg. *Drug Resist Updat* 2019, 46:100643

13) Villanova T, Gesmundo I, Audrito V, Vitale N, Silvagno F, Musuraca C, Righi L, Libener R, **Riganti C**, Bironzo P, Deaglio S, Papotti M, Cai R, Sha W, Ghigo E, Schally AV, Granata R. Antagonists of growth hormone-releasing hormone (GHRH) inhibit the growth of human malignant pleural mesothelioma. *Proc Natl Acad Sci USA* 2019, 116:2226-2231.

14) Bergaggio E, **Riganti C**, Garaffo G, Vitale N, Mereu E, Bandini C, Pellegrino E, Pullano V, Omede' PM, Todoerti K, Cascione L, Audrito V, Riccio A, Rossi A, Bertoni F, Deaglio S, Neri A, Palumbo A, Piva R. IDH2 inhibition enhances proteasome inhibitor responsiveness in hematological malignancies. *Blood* 2019; 133:156167

15) Buondonno I, Gazzano E, Tavanti E, Chegaev K, Kopecka J, Fanelli M, Rolando B, Fruttero R, Gasco A, Hattinger C, Serra M, **Riganti C**. Endoplasmic reticulum-targeting doxorubicin: a new tool effective against doxorubicin-resistant osteosarcoma. *Cell Mol Life Sci* 2019, 76:609-25

Torino, 27/03/2024

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