

# ALESSIO BALZERANO

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## PROFILE

Cellular and molecular biologist and postdoctoral researcher with strong expertise in oncology, molecular genetics, and advanced cell-based assays. Skilled in protein assays, DNA and RNA manipulation, mammalian cell culture, immunofluorescence and confocal microscopy. Experienced in translational research, scientific writing, and collaboration with multidisciplinary teams.

## KEY SKILLS

- **Laboratory techniques:** human and murine cell culture, DNA/RNA/protein extraction, Western blot, qRT-PCR, PCR, molecular cloning, ChIP, mutagenesis, biotin-based proximity labelling, co-immunoprecipitation, Proximity Ligation Assay, immunofluorescence, confocal microscopy, U-exMicroscopy, H&E staining and immunochemistry, transfection, viral transduction, cell viability/apoptosis assays, mice manipulation.
- **Data analysis & software:** GraphPad Prism, ImageJ/Fiji, ZEN blue 3.5, SnapGene, Microsoft Office Suite, R (basic knowledge).
- **Soft skills:** Attention to detail, teamwork, problem solving, critical thinking, leadership, project organization, scientific communication.
- **Languages:** Italian (native), English (B2 level).

## WORK EXPERIENCE

### **Post-doctoral fellowship at University of Rome “La Sapienza”** (*Jan 2023-date*)

Lab of Molecular Oncology, Department of Molecular Medicine, Rome, 00161, Italy

Research activity: study of non-canonical roles of the DNA damage protein NBS1; identification of a new role of NBS1 in the control of the primary ciliogenesis, Sonic Hedgehog signaling (SHH) and SHH-medulloblastoma.

### **Fellowship at University of Rome “La Sapienza”, “Istituto Pasteur - Fondazione Cenci Bolognetti”** (*Oct 2022-Dec 2022*)

Research activity: exploring role of the protein NBS1 at the centrosome and BB by biochemical enrichment and immunofluorescence analysis.

### **Fixed-term collaboration contract at University of Tuscia** (*Jun 2022-Sep 2022*)

Department of Biological and Ecological Sciences, Viterbo, 01100, Italy

Research activity: study the role of CSA protein at the centrosome and in the regulation of Cyclin B1.

### **Post-doctoral fellowship at University of Tuscia** (*Jun 2019-May 2022*)

Unit of Molecular Genetics of Aging, Department of Biological and Ecological Sciences, Viterbo, 01100, Italy

Research activity: definition of the molecular mechanisms by through CSA protein promotes the activation of the PI3K-Akt pathway in breast cancer. Study of the dynamic localization of Akt and CSA proteins during the cell cycle and in response to specific mitogenic signals.

## OTHER PROFESSIONAL ACTIVITIES

- Oral presentation – “A novel regulatory role of NBS1 at the primary cilium impinges on cerebellar development and medulloblastoma insurgence”. BraYn 2024, Verona, Italy
- Oral and poster presentation – “The DDR protein NBS1 is involved in the Sonic Hedgehog signaling and medulloblastoma onset through an unpredicted role at the primary cilium”. SIC 2024, Milan, Italy
- Poster presentation – “DNA damage does affect neither the localization of NBS1 at the centrosome/basal body nor the primary ciliogenesis”. EMBO 2023, Istanbul, Turkey
- Translated several chapters of the book “Genetics: from genes to genomes, 7th edition” (June 2021 – September 2021) of Michael L. Goldberg, Janice Fischer, Leroy Hood, Leland Hartwell. Italian edition edited by Prof. Giorgio Pranterà
- Conducted lectures of “Genetics of aging” (2019 – 2022)  
University of Tuscia, Department of Biological and Ecological Sciences, Viterbo, 01100, Italy
- Appointed expert in Genetics (2021)
- Poster presentation – “CSA regulates the activation of Akt through its K63-linked ubiquitination”. AGI 2021, online

## AWARDS & GRANTS

- “Avvio alla Ricerca 2024”, University of Rome “La Sapienza”  
Title: Dissecting the role of NBS1 at the centrosome/basal body and its involvement in cancer initiation and progression
- “Avvio alla Ricerca 2023”, University of Rome “La Sapienza”  
Title: Characterization of the interactome of Nijmegen breakage syndrome (NBS1) protein at the Basal Body of Primary Cilia to dissect its role in SHH-medulloblastoma

## EDUCATION

### PhD at University of Tuscia (Nov 2015-May 2019)

Unit of Molecular Genetics of Aging, Department of Biological and Ecological Sciences, Viterbo, 01100, Italy  
Thesis title: The role of CSA and CSB proteins in protective cell signaling pathways.

### Traineeship at University of Cambridge, UK (May 2015-Sep 2015)

Department of Haematology, Blood Donor Centre

### Master Degree in Cellular and Molecular Biology (110/110 with honours) (Feb 2015)

Unit of Molecular Genetics of Aging, Department of Biological and Ecological Sciences, Viterbo, 01100, Italy  
Thesis title: Overexpression of CSB protein protects to HeLa cells from Endoplasmic Reticulum stress

## PUBLICATIONS

- Bordone R., Ivy D. M., D'Amico R., Barba M., Gaggianesi M., Di Pastena F., Cesaro B., Bufalieri F., **Balzerano A.**, De Smaele E., Giannini G. Di Marcotullio L., Fatica A., Stassi G., Di Magno L., Coni S. and Canettieri G. 2024. “MYC upstream region orchestrates resistance to PI3K inhibitors in cancer cells through FOXO3a-mediated autophagic adaptation.” *Oncogene*, 43(46), 3349-3365. <https://doi.org/10.1038/s41388-024-03170-6>
- Paccosi E., Artemi G., Filippi S., **Balzerano A.**, Costanzo F., Laghezza-Masci V., Proietti S. and Proietti-De-Santis L. 2023. “Cockayne syndrome group A protein localizes at centrosomes during mitosis and regulates Cyclin B1 ubiquitination.” *European Journal of Cell Biology*, 151325. <https://doi.org/10.1016/j.ejcb.2023.151325>
- Paccosi E., **Balzerano A.** and Proietti-De-Santis L. 2023. “Interfering with the Ubiquitin-Mediated Regulation of Akt as a Strategy for Cancer Treatment.” *International Journal of Molecular Sciences*, 24(3), 2809. <https://doi.org/10.3390/ijms24032809> (**#first author**)
- **Balzerano A.**, Gevi F., Nisi S., Rinalducci S., Lasagni M. and Arisi I.\* 2022. “Gene expression profiling as a new real-time assay in human biomonitoring of waste-to-energy plants workers.” *Biological Trace Element Research*, 1-9 <https://doi.org/10.1007/s12011-022-03482-2> (**\*co-corresponding author**)
- Filippi S., Paccosi E., **Balzerano A.**, Ferretti M., Poli G., Taborri J., Brancorsini S. and Proietti-De-Santis L. 2022. “CSA antisense targeting enhances anticancer drug sensitivity in breast cancer cells, including the Triple-Negative Subtype.” *Cancers*. 14.7 (1687). <https://doi.org/10.3390/cancers14071687>
- Paccosi E., Costantino M., **Balzerano A.**, Filippi S., Brancorsini S. and Proietti-De-Santis L. 2021. “Neuroblastoma cells depend on csb for faithful execution of cytokinesis and survival.” *International Journal of Molecular Sciences*. 22, 10070. <https://doi.org/10.3390/ijms221810070>
- **Balzerano A.**, Paccosi E., and Proietti-De-Santis L. 2021. “Evolutionary Mechanisms of Cancer Suggest Rational Therapeutic Approaches.” *Cytogenetic and Genome Research*. 1–10. Advance online publication. <https://doi.org/10.1159/000516530>
- Paccosi E., Costanzo F., Costantino M., **Balzerano A.**, Monteonofrio L., Soddu S., Prantera G., Brancorsini S., Egly J. M., and Proietti-De-Santis L. 2020. “CSA and CSB known as DNA repair factors, as part of a Ubiquitin-Proteasome degradation complex regulate cell division.” *Proceedings of the National Academy of Sciences*. 117, 30498–30508. <https://doi.org/10.1073/pnas.2006543117>
- Proietti-De-Santis L., **Balzerano A.**, and Prantera G. 2018. “CSB: An Emerging Actionable Target for Cancer Therapy.” *Trends in Cancer*, 4(3), 172–175. <https://doi.org/10.1016/j.trecan.2018.01.005>
- Caputo M., **Balzerano A.**, Arisi I., D'Onofrio M., Brandi R., Bongiorno S., Brancorsini S., Frontini M., and Proietti-De-Santis L. 2017. “CSB Ablation Induced Apoptosis Is Mediated by Increased Endoplasmic Reticulum Stress Response.” *PLoS ONE*, 12(3). <https://doi.org/10.1371/journal.pone.0172399>