BIOGRAPHICAL SKETCH

NAME: Paola Alberti

eRA COMMONS USER NAME: P.ALBERTI (eRA Person ID 15288395)

POSITION TITLE: Assistant Professor (Human Anatomy)

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
University of Milano-Bicocca	MD	07/2010	*Medicine and Surgery*
University of Milano-Bicocca	Board certification	06/2016	*Clinical Neurology*
University of Milano-Bicocca	PhD	02/2019	*Preclinical neuroscience*

A. Personal Statement

My personal journey in the field of peripheral neuropathy began in 2009, while I was still an **undergraduate** medical student approaching my final year of training. Since **2010**, I have been an active member of the Peripheral Nerve Society (**PNS**). At that stage in my career, I had the privilege of being mentored by Professor Cavaletti at the University of Milano-Bicocca, joining the **CI-PeriNomS** group dedicated to addressing clinimetric challenges in chemotherapy-induced peripheral neurotoxicity (CIPN). This experience immersed me in a large international network and enabled me to learn from leading experts in the field. As the data manager for the CI-PeriNomS database, I contributed significantly to the analysis and publication of the data, including a top-journal article exploring the dual perspectives of patients and physicians on CIPN severity and impact (Alberti, Annal Oncol 2014; **PMID: 31811874**). My MD thesis focused on Oxaliplatin-induced CIPN (OIPN), for which I personally conducted all clinical and neurophysiological evaluations and developed a risk assessment based on longitudinal monitoring of dorsal sural and sural nerves, later published (Alberti P, SCC 2018; **PMID: 29594485**). After completing my medical training, I entered the Neurology residency program at the University of Milano-Bicocca under Professor Cavaletti's supervision, becoming fully proficient in both neurology and clinical neurophysiology, while continuing my research in CIPN. In 2015, I further refined my neurophysiology skills during a visit to Johns Hopkins University (US) under Professor David Cornblath. Upon earning my board certification in Neurology, my commitment to patient care led me to pursue a PhD in preclinical neuroscience, aiming to understand the molecular mechanisms of axonal damage and develop new treatment strategies. Inspired by the clinical phenotype of OIPN patients and their unique hyperexcitability syndrome, I trained in nerve excitability testing with Professor Hugh Bostock at UCL (UK). I adapted this technique for animal models and demonstrated that modulating hyperexcitability could completely prevent OIPN in animals, paving the way for clinical trials based on robust biological rationale (Alberti, Neuropharmacology 2020; **PMID: 31811874**). During my PhD, I also mastered invasive neurophysiological recordings of the spinal cord at the University of Maryland, US, under Professors Susan Dorsey and Cinthya Renn (2018). Throughout this period, I maintained an active clinical research profile (see Alberti, Neurology 2021; **PMID: 34078718**), becoming an independent Principal Investigator in several studies on CIPN, including ICAVS (**NCT04633655**: a EU/US/South America/Australia CIPN epidemiological study), CIPN COST (**NCT04986891**: CIPN health economics study), and NEUPER study (**NCT05088681**: role of rehabilitation in CIPN). My growing **independence** was supported by grants for both clinical and preclinical projects, as described below, allowing me to **start transitioning from mentee to mentor** and to start recruiting PhD students and postdocs to collaborate with me. My extensive collaboration network and impactful research are reflected in my strong publication record: **over 100 papers since 2010** (**H-index 38 and more than 4,200 citation**, Scopus). My scientific reputation has earned me respect among colleagues and **active roles in several national and international societies** (PNS, Italian PNS, Multinational Association of Supportive Care in Cancer, European Academy of Neurology), being also an invited speaker in more than 30 occasions at both national and international meetings. In the Italian academic environment, research is always paired with teaching: since 2016, I have collaborated with Professor Cavaletti's team to teach human anatomy, and in 2023, I was appointed Assistant Professor in Human Anatomy, fulfilling my dream to combine translational

research, clinical practice, and teaching. **Looking ahead, I am committed to further advancing my work to achieve even better outcomes and ultimately provide curative treatments for CIPN**.

B. Positions, Scientific Appointments, and Honors

Positions

April 2023 - ongoing: *Assistant Professor* (Human Anatomy) at University of Milano-Bicocca and *Consultant Neurologist* at Fondazione IRCCS San Gerardo dei Tintori, Monza, Italy

March 2019 – March 2023: *postdoctoral research fellow* at University of Milano-Bicocca, Monza Italy

Scientific appointments

- Roles in the **Peripheral Nerve Society** (PNS)
  - 2020–2025: PNS Communication and Website Committee (two terms)
  - 2021–2024: Vice-Chair, PNS Junior Committee and representative to the Traumatic Toxic Neuropathy Consortium (TTNC) Board
  - 2022–2024: Member, PNS Education Committee
  - 2022–2024: Member, PNS Grants Committee
  - 2022–Present: Member, PNS Scientific Program Committee
  - 2024–Present: Chair, Junior Committee
  - 2025: Member, Program Liaison for the Traumatic Toxic Neuropathy Consortium's (TTNC) Program at the PNS Annual Meeting
- Roles in the **Italian association for the study of peripheral nervous system** (ASNP): part of the board since 2023 (renewed in 2025 for a second term up to 2028).
- Roles in the **Multinational association for supportive care in cancer** (MASCC)
  - 2020 - 2023: co-chair of the CIPN subgroup part of the neurological complications study group
  - 2023 – 2028: chair of the neurological complications study group (recently reappointed for a 2nd 3 year term)
- Role in the **European Academy of Neurology** (EAN): 2021 – 2022 and 2024- current: Institutional panel member of the Scientific Panel Neuroscience/translational neurology di European Academy of Neurology (EAN)
- Since 2022: member of the editorial board member of the Journal of Peripheral Nervous System
- Principal Investigator in
  - Clinical studies
    - Interrnational Chemotherapy-Induced Neurotoxicity (CIPN) Assessment And Validation Study (ICAVS) as PI of the coordinating center - **NCT04633655**
    - Synergic Control of Posture in Peripheral Neuropathies' Patients (NEUPER) - **NCT05088681**
    - Chemotherapy-Induced Neurotoxicity: why should we care? (CIPN COST) study funded by Bicocca Starting Grant (see below) - **NCT04986891**
  - Preclinical study: Sodium-calcium exchanger (NCX): pivotal elements leading to axonal damage in peripheral nerves? (IonNerve) Project funded by Cariplo Foundation (see below)

Awards

- Awarded a prize for the **best oral communication** delivered by a Young Investigator at the 2025 meeting of the Italian Society of Human Anatomy (Ravenna, Italy) for the talk: Alberti P (2025). Unravelling axonal damage mechanisms in peripheral nerves: the role of sodium-calcium (NCX) exchanger.
- Enlisted among the **Top 2% Scientist**s by Stanford/Elsevier for since year 2021 to year 2025.
- Enlisted among 100 scientists for the **Recti Eques** – Paladini Italiani della Salute – award (2024), for the scientific publications as lead author in CIPN field.
- Enlisted among the '***CMTA-STAR 40 under 40***' in 2023 for the impact on the field as testified by the paper: Cavaletti G, Forsey K, Alberti P. Toxic medications in Charcot-Marie-Tooth patients: A systematic review. J Peripher Nerv Syst. 2023 May 30.
- Awarded **Premio Giovani Talenti 2021** (first place, Accademia dei Lincei/University of Milano Bicocca)
- Awarded **Premio Giovani Talenti 2020** (second place, Accademia dei Lincei/University of Milano Bicocca)
- Awarded **AIPN prize** 2018 for the best oral presentation at the ASNP meeting 2018 (Rome, Italy) for the contribution: "Oxaliplatin Induced Peripheral Neurotoxicity: a rat model that reproduces acute and chronic phenomena"

- Awarded *second place* at **Falling Wall Labs 2017** among all Italian participants with the project "Breaking the wall of Chemotherapy Induced Peripheral Neurotox"

Grants

- **Travel grants** as Young Presenting Author for these meetings: ASNP meeting 2013 (Verona, Italy), PNS meeting 2013 (Saint Malò, France), ASNP meeting 2014 (Sorrento, Italy), EFNS 2014 (Istanbul, Turkey), PNS meeting 2015 (Quebec City, Canada), SIN 2016 (Venezia, Italy), SIN 2017 (Napoli, Italy), ASNP 2018 (Rome, Italy), ASNP 2019 (Padua, Italy), PNS 2024 (Montreal, Canada).
- Awarded **Bicocca starting grant** (2020) as PI for the conduction of a 12 months research project focused on socio-economic burden related to (personal grant: **55,000** euros). The project, given the positive results, was funded a second year (adjunctive budget: **60,000** euros).
- Awarded as **Young Principal Investigator** (2022) a personal grant by **Cariplo Foundation** for the project "Sodium-calcium exchanger (NCX): pivotal elements leading to axonal damage in peripheral nerves?". Budget: **249,980** euros.
- Awarded the grant "Support for Soft Skills Training 2023" by the **International Brain Organisation** (IBRO) to organise a winter school on grant writing. Budget: **9,000** euros.
- Awarded as scientific head a grant (2024) by the **Lake Como School for advanced studies** to organise the summer school "Starting Grant proposal: from idea to practice – II edition". Budget: **10,000** euros.
- Awarded as scientific head a grant (2025) by the **Lake Como School for advanced studies** to organise the summer school "Peripheral Nervous System: Anatomical Basis for US and MRI Use in Clinical Practice. Budget**: 10,000** euros.
- Local PI for University of Milano-Bicocca of the collaborative grant that was funded in 2025 under the **ERASMUS + KA220** action for the METIS project. Total project budget: **400,000** euros.

C. Contributions to Science

- **Unravelling clinimetric issues in CIPN field**

As part of the CI-PeriNomS group I contributed to cope with the unmet need of defining robust outcome measures in CIPN field. In particular, I authored in a relevant position two major papers of top level journals. The first one (**Alberti P, et al**. *Physician-assessed and patient-reported outcome measures in chemotherapy-induced sensory peripheral neurotoxicity: two sides of the same coin*. **Ann Oncol 2014**;25(1):257-64) defined clearly that patients' and physicians' perception (and, therefore, assessment) of CIPN is not matching, highlighting the need to combine both patient-reported and physician-reported outcome measures (PRO and CRO respectively) to accurately assess CIPN. In the second one (**Alberti P, et al**. *Prospective Evaluation of Health Care Provider and Patient Assessments in Chemotherapy-Induced Peripheral Neurotoxicity*. **Neurology 2021**;97(7):e660-e672) as a results of a second large multicenter international trial, we were able to deliver a missing piece of information: the minimal clinically important difference in both PRO and CRO, filling the gap in clinical trial designing.

- **Delivering a risk stratification algorithm to predict OIPN development**

As a result of my MD and residency thesis I was able to deliver one of the first algorithms to assess risk of OIPN development based on the neurophysiological testing of both sural and dorsal sural nerve before and at mid-treatment: applying a simple model based on a z-score the single patient can be assigned to a risk class, predictive of the OIPN severity at the end of treatment (**Alberti P**, et al. *Risk stratification of oxaliplatin induced peripheral neurotoxicity applying electrophysiological testing of dorsal sural nerve*. Support Care Cancer 2018;26(9):3143-3151).

- **Adapting neurophysiological techniques translating clinical expertise to bench side (rodent models of peripheral neuropathy)**

Exploiting my well-rounded background as a clinical neurophysiologist I was able to shape protocols to efficiently reproduce a whole neurophysiological assessment in rodent models ranging from nerve conduction studies, EMG and nerve excitability testing, authoring several papers as a lead author (PMID: 33499072, 34391792, 31811874, 38009865, 41239998, 36675203). By bringing my bed-side expertise, I contributed in refining the bench side approach to ensure that results can be promptly translated into a clinical trial. The robustness of the proposed protocols was enriched by matching neuropathological assessments (nerve, dorsal root ganglia and skin specimen morphological and morphometrical analysis).

- **Providing a robust preclinical rational of the role of axonal hyperexcitability in axonal damage development**

Exploiting the nerve excitability testing protocol I was able to demonstrated (PMID 31811874) that by modulating axonal hyperexcitability via chronic topiramate administration, OIPN was completely prevented in a robust and well-characterised OIPN models. Stemming from this, I was able to demonstrated (PMID: 36077454) that the potential link between hyperexcitability and chronic axonal damage lies in the **reverse mode** activation of the sodium-calcium exchanger in neurons. The published data were exploited as background for the Cariplo Foundation Grant I obtained and I am currently coordinating: data are being soon submitted corroborating even further our hypothesis.

- **Addressing the socio-economic impact of CIPN**

Under the Bicocca Starting Grant I received as PI, I was able to partner with an expert in health economics, Dr. Elena Lucchese, and have access to all administrative data of the regional health care system from 2000 to 2024 of all citizens of Lumbardy region (a large area in the North of Italy). We were able to indirectly measure the socio-economic impact of CIPN and we are delivering to Lumbardy region policy maker a report giving guidance to the implementation of specific strategies to cope with this not limited impact.

D. Relevant publications

Complete **PubMed** publication list: https://www.ncbi.nlm.nih.gov/myncbi/1z3K2q7fEG617Y/bibliography/public/

Researcher ID: AAH-3905-2019 - **ORCID ID**: 0000-0001-6106-6183 -**Scopus** ID: 7103068082

: corresponding author

1. Pozzi E, Serra MP, Boi M, Canta A, Chiorazzi A, Capelli C, Invernizzi C, Ballarini E, Rodriguez-Menendez V, Kraus MF, Quartu M, Cavaletti Guido, **Alberti P***. Molecular characterisation of Oxaliplatin-induced Peripheral Neurotoxicity: the complex spectrum of painful manifestations. J Peripher Nerv Syst. 2025 Dec;30(4):e70078.
2. Di Girolamo S, Terribile G, **Alberti P***, Cavaletti G. Sodium channel modulation as a therapeutic strategy for chemotherapy-induced peripheral neurotoxicity. Expert Opin Investig Drugs. 2025 Nov 5. Epub ahead of print.
3. Pozzi E, Terribile G, Cherchi L, Di Girolamo S, Sancini G, **Alberti P***. Ion Channel and Transporter Involvement in Chemotherapy-Induced Peripheral Neurotoxicity. IJMS. 2024 Jun 11; 25(12): 6552.
4. Chiorazzi A, Canta A, Carozzi VA, Meregalli C, Pozzi E, Ballarini E, Rodriguez-Menendez V, Marmiroli P, Cavaletti G, **Alberti P***. Morphofunctional characterisation of axonal damage in different rat models of chemotherapy-induced peripheral neurotoxicity: The role of nerve excitability testing. J Peripher Nerv Syst. 2024 Mar;29(1):47-57.
5. **Alberti P**, Argyriou AA, Bruna J, Damaj MI, Faithfull S, Harding A, Hoke A, Knoerl R, Kolb N, Li T, Park SB, Staff NP, Tamburin S, Thomas S, Smith EL. Considerations for establishing and maintaining international research collaboration: the example of chemotherapy-induced peripheral neurotoxicity (CIPN)-a white paper. Support Care Cancer. 2024 Jan 20;32(2):117.
6. Park SB, Cetinkaya-Fisgin A, Argyriou AA, Höke A, Cavaletti G, **Alberti P**. Axonal degeneration in chemotherapy-induced peripheral neurotoxicity: clinical and experimental evidence. J Neurol Neurosurg Psychiatry. 2023 Nov;94(11):962-972.
7. Lopez-Garzon M, Canta A, Chiorazzi A, **Alberti P***. Gait analysis in chemotherapy-induced peripheral neurotoxicity rodent models. Brain Res Bull. 2023 Oct 15;203:110769.
8. Cavaletti G, Forsey K, **Alberti P**. Toxic medications in Charcot-Marie-Tooth patients: A systematic review. J Peripher Nerv Syst. 2023 May 30. Epub ahead of print.
9. Pozzi E, Monza L, Ballarini E, Bossi M, Rodriguez-Menendez V, Canta A, Chiorazzi A, Carozzi V.A., Crippa L, Marmiroli P, Cavaletti G, **Alberti P***. Morpho-Functional Characterisation of the Rat Ventral Caudal Nerve in a Model of Axonal Peripheral Neuropathy. Int J Mol Sci. 2023 Jan 14; 24:1687.
10. **Alberti P**, Salvalaggio A, Argyriou AA, Bruna, J, Visentin A, Cavaletti G, Briani C. Neurological Complications of Conventional and Novel Anticancer Treatments. Cancers. 2022 Dec 10;14, 6088.
11. Ballarini E, Malacrida A, Rodriguez-Menendez V, Pozzi E, Canta A, Chiorazzi A, Monza L, Semperboni S, Meregalli C, Carozzi VA, Hashemi M, Nicolini G, Scuteri A, Housley SN, Cavaletti G, **Alberti P***. Sodium-Calcium Exchanger 2: A Pivotal Role in Oxaliplatin Induced Peripheral Neurotoxicity and Axonal Damage? Int J Mol Sci. 2022 Sep 2;23(17):10063.
12. **Alberti P***, Semperboni S, Cavaletti G, Scuteri A. Neurons: The Interplay between Cytoskeleton, Ion Channels/Transporters and Mitochondria. Cells. 2022 Aug 11;11(16):2499.

13. Monza L, Fumagalli G, Chiorazzi A, **Alberti P***. Translating morphology from bench side to bed side via neurophysiology: 8-min protocol for peripheral neuropathy research. J Neurosci Methods. 2021 Nov 1;363:109323.
14. **Alberti P,** Bernasconi DP, Cornblath DR, Merkies ISJ, Park SB, Velasco R, Bruna J, Psimaras D, Koeppen S, Pace A, Dorsey SG, Argyriou AA, Kalofonos HP, Briani C, Schenone A, Faber CG, Mazzeo A, Grisold W, Valsecchi M, Cavaletti G; CI-PeriNomS group. Prospective Evaluation of Health Care Provider and Patient Assessments in Chemotherapy-Induced Peripheral Neurotoxicity. Neurology. 2021 Aug 17;97(7):e660-e672.
15. Monza L, Fumagalli G, Chiorazzi A, **Alberti P***. Addressing the Need of a Translational Approach in Peripheral Neuropathy Research: Morphology Meets Function. Brain Sci. 2021 Jan 22;11(2):139.
16. Pero ME, Meregalli C, Qu X, Shin GJ, Kumar A, Shorey M, Rolls MM, Tanji K, Brannagan TH, **Alberti P**, Fumagalli G, Monza L, Grueber WB, Cavaletti G, Bartolini F. Pathogenic role of delta 2 tubulin in bortezomib-induced peripheral neuropathy. Proc Natl Acad Sci U S A. 2021 Jan 26;118(4):e2012685118.
17. **Alberti P***. A review of novel biomarkers and imaging techniques for assessing the severity of chemotherapy-induced peripheral neuropathy. Expert Opin Drug Metab Toxicol. 2020 Dec;16(12):1147-1158.
18. Huang KM, Leblanc AF, Uddin ME, Kim JY, Chen M, Eisenmann ED, Gibson AA, Li Y, Hong KW, DiGiacomo D, Xia SH, **Alberti P**, Chiorazzi A, Housley SN, Cope TC, Sprowl JA, Wang J, Loprinzi CL, Noonan A, Lustberg MB, Cavaletti G, Pabla N, Hu S, Sparreboom A. Neuronal uptake transporters contribute to oxaliplatin neurotoxicity in mice. J Clin Invest. 2020 Sep 1;130(9):4601-4606.
19. **Alberti P***, Beretta S, Piatti M, Karantzoulis A, Piatti ML, Santoro P, Viganò M, Giovannelli G, Pirro F, Montisano DA, Appollonio I, Ferrarese C. Guillain-Barré syndrome related to COVID-19 infection. Neurol Neuroimmunol Neuroinflamm. 2020 Apr 29;7(4):e741.
20. **Alberti P***, Canta A, Chiorazzi A, Fumagalli G, Meregalli C, Monza L, Pozzi E, Ballarini E, Rodriguez-Menendez V, Oggioni N, Sancini G, Marmiroli P, Cavaletti G. Topiramate prevents oxaliplatin-related axonal hyperexcitability and oxaliplatin induced peripheral neurotoxicity. Neuropharmacology. 2020 Mar 1;164:107905.
21. **Alberti P***, Rossi E, Argyriou AA, Kalofonos HP, Briani C, Cacciavillani M, Campagnolo M, Bruna J, Velasco R, Cazzaniga ME, Cortinovis D, Valsecchi MG, Cavaletti G. Risk stratification of oxaliplatin induced peripheral neurotoxicity applying electrophysiological testing of dorsal sural nerve. Support Care Cancer. 2018 Sep;26(9):3143-3151.
22. Wozniak KM, Vornov JJ, Wu Y, Liu Y, Carozzi VA, Rodriguez-Menendez V, Ballarini E, **Alberti P**, Pozzi E, Semperboni S, Cook BM, Littlefield BA, Nomoto K, Condon K, Eckley S, DesJardins C, Wilson L, Jordan MA, Feinstein SC, Cavaletti G, Polydefkis M, Slusher BS. Peripheral Neuropathy Induced by Microtubule-Targeted Chemotherapies: Insights into Acute Injury and Long-term Recovery. Cancer Res. 2018 Feb 1;78(3):817-829.
23. Leblanc AF, Sprowl JA, **Alberti P**, Chiorazzi A, Arnold WD, Gibson AA, Hong KW, Pioso MS, Chen M, Huang KM, Chodisetty V, Costa O, Florea T, de Bruijn P, Mathijssen RH, Reinbolt RE, Lustberg MB, Sucheston-Campbell LE, Cavaletti G, Sparreboom A, Hu S. OATP1B2 deficiency protects against paclitaxel-induced neurotoxicity. J Clin Invest. 2018 Feb 1;128(2):816-825.
24. **Alberti P**, Rossi E, Cornblath DR, Merkies IS, Postma TJ, Frigeni B, Bruna J, Velasco R, Argyriou AA, Kalofonos HP, Psimaras D, Ricard D, Pace A, Galiè E, Briani C, Dalla Torre C, Faber CG, Lalisang RI, Boogerd W, Brandsma D, Koeppen S, Hense J, Storey D, Kerrigan S, Schenone A, Fabbri S, Valsecchi MG, Cavaletti G; CI-PeriNomS Group. Physician-assessed and patient-reported outcome measures in chemotherapy-induced sensory peripheral neurotoxicity: two sides of the same coin. Ann Oncol. 2014 Jan;25(1):257-64.
25. Cavaletti G, Cornblath DR, Merkies ISJ, Postma TJ, Rossi E, Frigeni B, **Alberti P**, Bruna J, Velasco R, Argyriou AA, Kalofonos HP, Psimaras D, Ricard D, Pace A, Galiè E, Briani C, Dalla Torre C, Faber CG, Lalisang RI, Boogerd W, Brandsma D, Koeppen S, Hense J, Storey D, Kerrigan S, Schenone A, Fabbri S, Valsecchi MG; CI-PeriNomS Group. The chemotherapy-induced peripheral neuropathy outcome measures standardization study: from consensus to the first validity and reliability findings. Ann Oncol. 2013 Feb;24(2):454-462.
26. Cavaletti G, **Alberti P**, Marmiroli P. Chemotherapy-induced peripheral neurotoxicity in the era of pharmacogenomics. Lancet Oncol. 2011 Nov;12(12):1151-61.