

Curriculum Vitae

PERSONAL INFORMATION

Name: Penna Fabio
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• EDUCATION

- 12/2007: PhD in Experimental and Molecular Pathology at the University of Torino, Italy.
- 07/2003: M.Sc. in Biotechnology (University of Torino, Italy), grade 110/110 cum laude.

• APPOINTMENTS

- 02/2022 Associate Professor of General Pathology, Dept. of Clinical and Biological Sciences, University of Torino, Italy.
- 01/2021 Winner of a competitive exam for Associate professorship in General Pathology at the University of Torino.
- 12/2011 – 01/2022 Assistant Professor at the Dept. of Clinical and Biological Sciences, University of Torino, Italy.
- 03/2011 – 06/2012: Post-Doctoral AIRC/Marie Curie fellow at Dept. of Biochemistry and Molecular Biology, University of Barcelona, Spain.
- 03/2008 – 02/2011: Post-Doctoral fellow at Dept. of Experimental Medicine and Oncology, University of Torino, Italy.
- 11/2006 – 10/2007: Scholarship funded by Regione Piemonte.
- 01/2005 – 04/2006: Scholarship funded by Regione Piemonte.
- 01/2004 – 12/2004: Scholarship funded by Compagnia di San Paolo.

• Fellowships, Awards and Conference Invitations.

- 05/2023: Invited Speaker at the International Workshop 'NO-Cancer 2023', Novara, Italy.
- 03/2023: Invited Speaker at the '2023 Advances in Skeletal Muscle Biology In Health and Disease Conference', Gainesville, FL, USA.
- 12/2019: Invited Speaker at the 12th intl. conference on Cachexia, Berlin, Germany.
- 07/2019: Invited Speaker at the 2nd intl. conference Metabolism Meets Function, Torino, Italy.
- 12/2018: Recipient of a five year AIRC grant on cancer cachexia (400 k€).
- 12/2018: Invited Speaker at the 11th intl. conference on Cachexia, Maastricht, The Netherlands.
- 12/2017: Recipient of a three year Cariplo grant on aging sarcopenia (120 k€).
- 12/2017: Invited Speaker at the 10th intl. conference on Cachexia, Rome, Italy.
- 12/2015: Invited Speaker at the 8th intl. conference on Cachexia, Paris, France.
- 10/2015: World Wide Style Project (WWS) of international mobility funded by University of Torino and Fondazione CRT
- 09/2012: Best poster award at the Cancer Cachexia Conference, Boston, USA
- 09/2012: Invited Speaker at the 34th ESPEN (The European Society for Clinical Nutrition and Metabolism) Congress, Barcelona, Spain
- 2008-2011: Recipient of a three year AIRC (Italian Association for Cancer Research) grant (150 k€).

• SUPERVISION OF STUDENTS AND FELLOWS

Supervisor of 41 Bachelor students, 8 Master Students, 4 PhD candidates and 3 post-doctoral fellows at the University of Torino, Italy.

- **TEACHING ACTIVITY**

Since 2019 General Pathology, degree in Medicine and Surgery, University of Torino, Italy.
Since 2017 Immunopathology and Pathophysiology (Teacher of the immunopathology module and course supervisor), Master degree in Cellular and Molecular Biology, University of Torino, Italy.
2016-2017 Immunopathology and Oncology (Teacher of the immunopathology module), Master degree in Cellular and Molecular Biology, University of Torino, Italy.
2012-2016 General and Molecular Pathology (Teacher), Master degree in Cellular and Molecular Biology, University of Torino, Italy.
Since 2012 Laboratory of Cell Biology and Pathology (Teacher and supervisor), Bachelor degree in Biology, University of Torino, Italy.

- **COMMISSIONS OF TRUST**

Member of the **Cancer Cachexia Society Education Committee**

Associate Editor of the scientific journal **Journal of Cachexia, Sarcopenia and Muscle (Rapid communications)** <https://jcsm-rapid-communications.info/index.php/jcsm-rc/about/editorialTeam>

Review Editor in **Frontiers in Oncology - Molecular and Cellular Oncology**.

Evaluator of scientific projects for the following **funding agencies**:

Fonds Wetenschappelijk Onderzoek (FWO, Belgium), Dutch Cancer Society, German Ministry of Education and Research, Generalitat de Catalunya (AGAUR, Spain), Fondation pour la Recherche Medicale (FRM, France), FWF Austrian Science Fund, Fonds de la Recherche Scientifique (FNRS, Belgium), Swiss National Science Foundation (SNF), 'la Caixa' Foundation (Spain).

Reviewer for the following **scientific journals**:

British Journal of Cancer, European Journal of Cancer, Journal of Cellular and Molecular Medicine, Journal of Cachexia Sarcopenia and Muscle, Applied Physiology Nutrition and Metabolism, Cancer Research, Journal of Endocrinology, BMC Cancer, Journal of Applied Physiology, Archives of Industrial Hygiene and Toxicology, The International Journal of Biochemistry & Cell Biology, Journal of Cellular Physiology, Journal of Pharmacy and Pharmacology, Muscle & Nerve, PLoS ONE, Expert Opinion on Therapeutic Patents, Lipids in Health and Disease, BBA molecular basis of disease, Peptides, Expert Opinion On Pharmacotherapy, Journal of Supportive Care in Cancer, Oncotarget, Oxidative Medicine and Cellular Longevity, Life Sciences, Journal of Diabetes Research, Biomolecules, Cancers, Communications Biology, Molecular Biology Reports, Nutrients, Scientific Reports, Journal of Cancer Metastasis and Treatment, Frontiers in Oncology/Physiology, International Journal of Molecular Sciences, Journal of Visualized Experiments, Acta Physiologica, International Journal of Medical Sciences, Analytical Biochemistry, Journal of Clinical Medicine, Sports Medicine and Health Science, Oncogene, FASEB Journal, Seminars in Cancer Biology, Cell Reports.

- **MEMBERSHIPS**

- Board of the Cancer Cachexia Society, Educational/Communications Committee (since August 2020).
- Member of the European Network of Multidisciplinary Research and Translation of Autophagy knowledge (TRANSAUTOPHAGY; http://www.cost.eu/COST_Actions/ca/CA15138; 2015-2019)
- Member of the Italian Society of Pathology and Translational Medicine (SIPMET), the Inter-University Institute of Myology (IIM) and the Society on Cachexia and Wasting Disorders (SCWD).

- **MAJOR COLLABORATIONS**

Italy: Alessandro Fanzani (University of Brescia), Maurilio Sampaolesi (Sapienza University and

KU Leuven, Belgium), Maurizio Muscaritoli (University of Roma), Marco Sandri (University of Padova).

International: Josep Argilés (University of Barcelona, Spain), Antonio Zorzano (IRB, Barcelona, Spain), Valter Longo (USC, Los Angeles, USA), Andrea Bonetto (Indiana University, School of Medicine, Indianapolis, USA), Juha Hulmi (University of Jyväskylä, Finland).

• SCIENTIFIC INTERESTS AND PERSONAL STATEMENT

My scientific path started with the characterization of anabolic and catabolic circulating factors that associate with muscle wasting in several animal models of cancer cachexia. The reduction of IGF-1 and the raise of myostatin were found to be a common signature induced by tumor growth. Nevertheless, pharmacological or genetic modulation of the signaling pathways regulated by IGF-1 or myostatin in the attempt to restore the physiologic condition and to counteract the muscle depletion proved ineffective. The observation that targeting anabolic and catabolic modulators is worthless during cancer cachexia led us to investigate the importance of muscle regeneration in the onset of atrophy. Our results provided the first evidence that tumor growth impairs the myogenic potential and that ERK inhibition rescues the myogenic capacity and partially prevents muscle depletion. In parallel, my research of specific muscle alterations resulted in a fertile collaboration with Dr. J. Argilés (Spain), where as visiting scientist I described the specific effects of tumor growth on muscle mitochondria and the ability of training exercise to revert such alterations in order to move the scientific focus from muscle mass to muscle quality and function. On the same line, our recent observation that muscle wasting results from the activation of autophagic degradation with a concomitant accumulation of protein aggregates points to the concurrence of both muscle quantity and quality alterations in cancer cachexia.

• PUBLICATION INDEXES AND SELECTED PUBLICATIONS

76 papers published in peer-reviewed international journals. H-index: 35 Total citations: 8454 (Scopus, May 2023)

5 SELECTED PAPERS:

1. NAD⁺ repletion with niacin counteracts cancer cachexia. Beltrà M, Pöllänen N, Fornelli C, Tonttila K, Hsu MY, Zampieri S, Moletta L, Corrà S, Porporato PE, Kivelä R, Viscomi C, Sandri M, Hulmi JJ, Sartori R, Pirinen E, **Penna F**. Nat Commun. 2023 Apr 3;14(1):1849.
2. Targeting Mitochondria by SS-31 Ameliorates the Whole Body Energy Status in Cancer- and Chemotherapy-Induced Cachexia. Ballarò R, Lopalco P, Audrito V, Beltrà M, Pin F, Angelini R, Costelli P, Corcelli A, Bonetto A, Szeto HH, O'Connell TM, **Penna F**. Cancers (Basel). 2021 Feb 18;13(4):850.
3. Autophagy Exacerbates Muscle Wasting in Cancer Cachexia and Impairs Mitochondrial Function. **Penna F**, Ballarò R, Martinez-Cristobal P, Sala D, Sebastian D, Busquets S, Muscaritoli M, Argilés JM, Costelli P, Zorzano A. J Mol Biol. 2019 Jul 12;431(15):2674-2686.
4. Moderate exercise in mice improves cancer plus chemotherapy-induced muscle wasting and mitochondrial alterations. Ballarò R, Beltrà M, De Lucia S, Pin F, Ranjbar K, Hulmi JJ, Costelli P, **Penna F**. FASEB J. 2019 Apr;33(4):5482-5494.
5. Autophagic Degradation Contributes to Muscle Wasting in Cancer Cachexia. **Penna F**, Costamagna D, Pin F, Camperi A, Fanzani A, Chiarpotto EM, Cavallini G, Bonelli G, Baccino FM, Costelli P. Am J Pathol. 2013;182(4):1367-78.