



RESEARCH TOPIC MEM6

Monitoring disease recurrence in patients with pleural mesothelioma: a tumor-agnostic approach

Curriculum MEM standard

Research Area

Onco

Laboratory name

Laboratory of Cancer Pharmacology/Translational Genomic Unit

Research Supervisor

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Abstract

Pleural mesothelioma (PM) is a malignant disease with a very poor prognosis. Its circumferential and axial growth patterns make the evaluation of therapy response through computed tomography (CT) challenging. The aim of this project is to identify molecular features that can aid clinicians in the assessment of treatment response.

From a retrospective cohort of PM patients enrolled in a clinical trial, blood samples have been collected at diagnosis (naïve to treatment) and after surgery or treatment at different timepoints. Clinical data and CT scan images are provided. The candidate will process and sequence plasma samples through shallow Whole Genome Sequencing (sWGS) for the evaluation of the tumor fraction and regions of copy number alterations. The candidate will analyze molecular data and integrate them with clinical records to identify features associated with therapy response and timing of cancer recurrence.

Main technical approaches

The applicant should have:

1. the ability to prepare genomic libraries from both liquid and solid tumor biopsies.
2. soft skills to interact with clinicians and pathologists.
3. interest in translational research.

Scientific references

1. Mannarino L, Mirimao F, Panini N, Paracchini L, Marchini S, Beltrame L, Amodio R, Grosso F, Libener R, De Simone I, Ceresoli GL, Zucali PA, Lupi M, D'Incalci M. Tumor treating fields affect mesothelioma cell proliferation by exerting histotype-dependent cell cycle checkpoint activations and transcriptional modulations. *Cell Death Dis.* 2022 Jul 15;13(7):612.



2. Mannarino L, Paracchini L, Pezzuto F, Olteanu GE, Moracci L, Vedovelli L, De Simone I, Bosetti C, Lupi M, Amodeo R, Inglesi A, Callari M, Penpa S, Libener R, Delfanti S, De Angelis A, Muzio A, Zucali PA, Allavena P, Ceresoli GL, Marchini S, Calabrese F, D'Incalci M, Grosso F. Epithelioid Pleural Mesothelioma Is Characterized by Tertiary Lymphoid Structures in Long Survivors: Results from the MATCH Study. *Int J Mol Sci.* 2022 May 21;23(10):5786.

3. Hiltbrunner S, Mannarino L, Kirschner MB, Opitz I, Rigutto A, Laure A, Lia M, Nozza P, Maconi A, Marchini S, D'Incalci M, Curioni-Fontecedro A, Grosso F. Tumor Immune Microenvironment and Genetic Alterations in Mesothelioma. *Front Oncol.* 2021 Jun 23;11:660039.

4. Paracchini L, Beltrame L, Grassi T, Inglesi A, Fruscio R, Landoni F, Ippolito D, Delle Marchette M, Paderno M, Adorni M, Jaconi M, Romualdi C, D'Incalci M, Siravegna G, Marchini S. Genome-wide Copy-number Alterations in Circulating Tumor DNA as a Novel Biomarker for Patients with High-grade Serous Ovarian Cancer. *Clin Cancer Res.* 2021 May 1;27(9):2549-2559.

Type of contract

PhD scholarship of € 21.000 gross per year awarded by Humanitas University. This sum is exempt from IRPEF income tax according to the provisions of art. 4 of Law no. 476 of 13th August 1984, and is subject to social security contributions according to the provisions of art. 2, section 26 and subsequent sections, of Law no. 335 of 8th August 1995 and subsequent modifications.

Borsa di dottorato pari a € 21.000 annui lordi erogata da Humanitas University. Importo non soggetto a tassazione IRPEF a norma dell'art. 4 della L. 13 agosto 1984 n. 476 e soggetto, in materia previdenziale, alle norme di cui all'art. 2, commi 26 e segg., della L. 8 agosto 1995, n. 335 e successive modificazioni.