TITLE

Tackling Pancreatic cancer growth promoting cancer stem cell differentiation

DESCRIPTION

Pancreatic cancer is a lethal disease, with one of the worst prognoses among solid tumors. Recent studies support that pancreatic metastasis is invariably associated with homeostasis alteration of endogenous pancreatic stem cells defined pancreatic Cancer Stem Cells (pCSCs). The pCSCs are characterized by the ability to initiate and fuel tumor growth. Current oncological therapies are mainly able to inhibit high proliferative cancer cells, while showing no effects on quiescent pCSCs that are responsible for cancer relapse, and hence, for tumor aggressiveness. In the light of this, inducing pCSCs differentiation could provide an alternative way to inhibit cancer growth.
Our project is based on the hypothesis that a valuable approach to induce pCSCs differentiation is to treat them with molecules able to enhance signaling pathways associated to pancreatic Stem Cells differentiation during normal pancreas organogenesis. In particular, we aim to identify chemical compounds capable to hamper growth and metastatic phenotype of pancreatic tumors by inducing pCSCs differentiation. First year, will be focused on pCSs isolation from pancreatic mouse model, and genetically modification using innovative CRISPR/Cas9 methodology. Furthermore, during the second year we expect to unveil promising chemotherapeutic assay aimed to prime pCSCs *in vitro* differentiation through liquid handling robotics (automated systems) preparation for high throughput screening, and High-content screening (HCS) technologies. For most encouraging pro-differentiation drugs, on the third year we plan to assess effects on tumor development *in vivo*, by injecting pCSCs treated cells into nude mice and analyze their fate.

Completion of the proposed studies will provide a directed strategy for novel therapeutics to specifically target the cancer cellular population responsible for the recurrence of pancreatic tumors.

SELECTION CRITERIA

Eligibility Criteria

- Academic degree: Applicants shall have a master degree in **Biology and related fields such as Molecular Biology, Immunology, Cell Biology etc** , corresponding to the second level of studies.

- Mobility rule: There will be no nationality restrictions. Applicants can be from any Country. However, according to the mobility rule, at the time of the application deadline researchers should not have resided or carried out their main activity (work, studies, etc.) in Italy for more than 12 months in the 3 years immediately prior to the reference date. Compulsory national service and/or short stays such as holidays will not be taken into account.

- Research experience: Applicants shall, at the time of the application deadline, be in the first four years (full-time equivalent research experience) of their research careers and not yet awarded a doctoral degree.

Full-Time Equivalent (FTE) Research Experience will be determined from the date when a researcher obtained the degree which would formally entitle her/him to embark on a doctorate, either in the country in which the degree was obtained or in Italy, irrespective of whether or not a doctorate is or was ever envisaged.

Evaluation Criteria

Step 1 -Evaluation of documentation provided by the candidate: a) Academic record and training b) Research activities c) CV/motivation letter; d) Level of English; e) Reference letters.

Step 2 - Interview: a) Scientific knowledge in the field of interest; b) Research experience in the field of interest c), Motivation; d) English proficiency.

Supervisor
Dr. Geppino Falco

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