ONCOLOGY

Small molecule inhibitors of OPA1 GTPase activity with anti-cancer properties

Applicants	Università degli Studi Padova_Fondazione Ricerca Biomedica Avanzata VIMM
Inventors	Luca Scorrano, Franziska Charlotte Quirin, Anna Pellattiero
Priority Date	12/07/2019
Protection	EP3996708A1

What it is needed for?

Cancer is a complex disease resulting from the interplay between the tumor cell and its microenvironment, featuring impaired apoptosis and activation of quiescent blood vessels to induce neovascularization to support metastasis. Two of the yet **unmet needs** in **anticancer therapy** are how to **restore apoptosis** and to **abrogate metastatization**.

We identified **first-in-class OPA1 inhibitors** with anti-cancer properties to overcome drug resistance, e.g., to Venetoclax and VEGF ligands, and thus treat cancer such as acute amyloid leukemia (AML) by **specific induction** of **apoptosis** and **restriction** of cancer **angiogenesis**.

OPA1 is mitochondrial dynamin like GTPase upregulated in several cancers where it prevents apoptosis, and its expression is correlated unfavorable prognosis. It is required for cancer angiogenesis and is responsible for Venetoclax resistance in AML.

Advantages

- A novel target (OPA1) in cancer treatment – never explored before;
- A novel small molecule inhibitor with high specificity towards OPA1;
- Specific targeting of mitochondria to induce cell death;
- New class of drugs to overcome drug resistance.

Applications

- A drug for:
  - Use in combinatorial targeted therapy/chemotherapy to increase apoptosis sensitivity;
  - Eradicate cancer drug resistance depending on OPA1;
  - Curtail cancer angiogenesis especially when cancers become resistant to VEGF inhibitors.
- Research tool to inhibit OPA1 and mitochondrial fusion in vitro.

What we are looking for

Technology is available for licensing and/or co-development

TRL scale

Discovery | **Lead Optimization** | **Preclinical** | **Clinical Phases**

patent@unismart.it