Opportunity 2014078

QM107: A Peptide Therapy for Neovascular Eye Diseases

An alternative to VEGF therapy

QM107 is a novel anti-angiogenic therapeutic, which targets an endogenous signalling pathway on blood vessels that acts to stop angiogenesis. QM107 has demonstrated efficacy in models of wet Age related Macular Degeneration (AMD), diabetic retinopathy and cancer models.

Background

Angiogenesis plays a pivotal role in a wide range of diseases and is particularly prominent for its role in some neovascular ocular diseases, including wet AMD, as well as in other disease settings such as cancer. Anti-angiogenic therapies have shown clinical response during studies in macular degeneration, either alone or in combination with existing first-line therapies, however there remains a large proportion of non-responders.

The Problem

There are a number of serious side effects commonly associated with the use of anti-angiogenic compounds, for example, haemorrhage, hypertension, lymphopenia and diarrhoea. In the case of VEGF targeting therapies, there is also a significantly large number of patient non-responders (15-45%). In addition, current therapies result in a loss of efficacy after prolonged use and are expensive treatments. Thus, there remains a need for alternative therapies and methods for treating diseases associated with angiogenesis. Macular degeneration diseases are the leading cause of blindness in the over 50s, the global macular degeneration treatment market size was valued at USD 7.45 Billion in 2020 and is projected to reach USD 11.98 Billion by 2028, growing at a CAGR of 6.01% from 2021 to 2028.

Invention: Benefits & Application

Syndecans are a family of transmembrane receptors that have been extensively investigated in-house for their key role in promoting angiogenesis and for their potential as promising therapeutic targets. A small peptide region (QM107) has been derived from syndecan-2 and has been found to activate powerful anti-angiogenic pathways in various ocular disease models, while having no effect on cell proliferation. QM107 targets an endogenous signalling pathway on blood vessels, which acts to stop angiogenesis. This is a completely different mechanism to existing therapies.

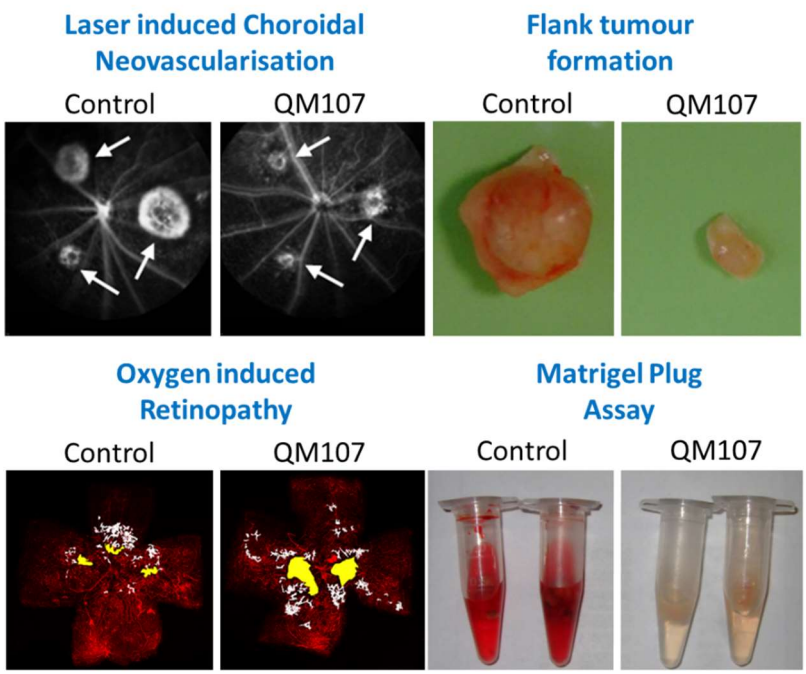
Patents

A patent claiming the use of QM107 for treating diseases related to angiogenesis has been filed (WO2016/063042).

Contact:
Monika Hamilton PhD CLP
Senior Commercialisation Manager
monika.hamilton@qmul.ac.uk

Project Development

QM107 has been tested for its effects on:



- **Choroidal Neovascularization Mouse Model**: This model recapitulates wet AMD and shows >40% reduction in lesion area (arrow heads).

- **Oxygen-Induced Retinopathy Mouse Model**: This model recapitulates diabetic retinopathy and shows >30% reduction in neo-angiogenesis (yellow areas).

- **Tumour Flank Model**: 70% reduction in tumour size. Highlights potential in cancer indications.

- **Matrigel Plug Assay**: 50% reduction in blood perfusion into Matrigel plugs.

Lead Inventor

Dr James Whiteford
Reader in Extracellular Matrix Biology, Director of Graduate Studies

Inventors Profile:
https://www.qmul.ac.uk/whri/people/academic-staff/items/whitefordjames.html

Publications

De Rossi, G & Whiteford J.R. "Syndecans in angiogenesis and endothelial cell biology" Biochem Soc Trans. 42 (2014):1643-46.

Gopinathan, G., Milagre, C., Pearce O.M.T., Reynolds L.E, Hodivala-Dilke, K., Leinster, A.D., Zhong, H., Hollingsworth R.E., Thompson, R., Whiteford, J.R. & Balkwill, F. "Interleukin-6 stimulates defective angiogenesis." Cancer Res. 75 (2015) :3098-107.

De Rossi, G., Evans, A.R., Kay, E., Woodfin, A., McKay, T.R., Nourshargh, S. & Whiteford J.R. "Shed syndecan-2 inhibits angiogenesis." J Cell Sci. 127 (2014): 4788-99.

Contact:
Monika Hamilton PhD CLP
Senior Commercialisation Manager
monika.hamilton@qmul.ac.uk