Novel treatment modality for NSCLC in SK-MES-1 cell line targeting the NF-kB pathway

Lonalisa Okwera[1]*, Sofiya Kritsula[1]*, Ben Samudio[2], Lee J. Byrne[1] and Cornelia M. Wilson[1]

[1]School of Psychology and Life Sciences, Canterbury Christ Church University, Canterbury, Kent, United Kingdom

[2]Atomwise, San Francisco, California 94103, USA.

Non small lung cancer cells (NSCLC) is considered one of the leading causes of death within the UK and is the most common type of lung cancer, accounting for 84% of all lung cancer diagnoses. Non small lung cancer cells tend to grow at slower rate and is less aggressive than small cells lung cancer (SCLC). NSCLC is usually undetectable in its initial stages of growth.

The nuclear factor kappa beta (NF-kB) is the inflammatory pathway responsible for many cell behaviours such as communication, growth and apoptosis. It has been suggested that this pathway is dysregulated and releases p65 and p50 complexes. This is achieved through phosphorylation into the nucleus to trigger specific cytokines causing the increase of tumour progression in lung cancer which promotes a rapid and uncontrolled proliferation of these cancerous cells. Sortilin (SORT1) is a neurotrophin receptor that has a role in cellular communication of exosomes between cells, in NSCLC, gene expression is dysregulated in cancer when the NF-kB pathway is activated. Therefore, this study investigated whether blocking the NF-kB pathway through a novel compound developed using AI and machine learning would potentially act as a molecular glue for the prevention of activation of inflammatory pathway. The conclusion of the study determined that the novel compound was confirmed to have potentially anti-cancer properties against the NF-kB pathway.