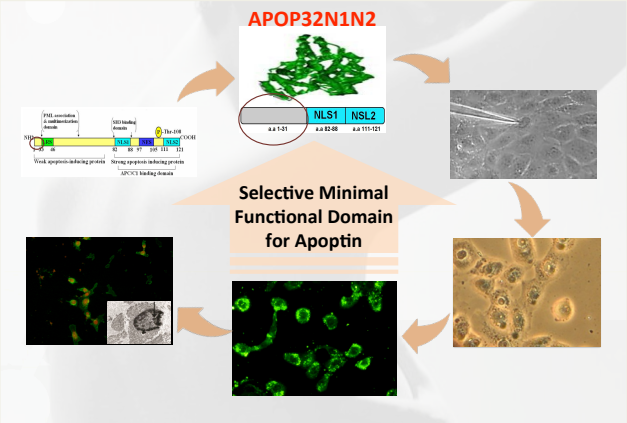
TRUNCAP :

TRUNCATED AND SELECTIVE CHICKEN ANEMIA VIRUS-VP3 THERAPEUTIC PROTEIN TARGETING HUMAN BREAST CANCER

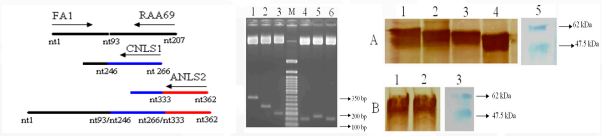
(PI2010003113)

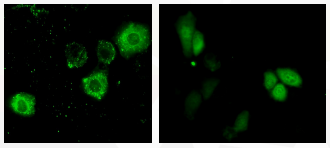
INTRODUCTION

A small recombinant Apoptin (50 a.a) was developed from wildtype apoptin protein by segmental deletion at the N' terminal and linking it with nuclear localization sites (NLS1 and NLS2). The critical stretch spanning amino acid 1-31 at the upstream of a known hydrophobic leucine-rich stretch (LRS) was strongly proven as one of the prerequisite regions in Apoptin for cancer targeting. APOP32N1N2 protein **successfully translocated** itself from the cell cytoplasm to the nucleus of breast cancer cells, MCF-7 and **retained targeted apoptosis induction** on cancer cells but not in normal cells. Identification of this selective domain provides a platform for developing small targets to facilitating carrier-mediated-transport across cellular membrane, simultaneously promoting protein delivery for selective and effective breast cancer therapy.

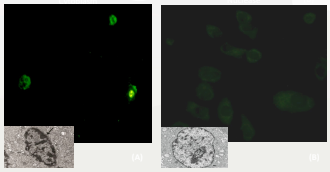


APOP32N1N2 SELECTIVELY DESTROYING BREAST CANCER CELLS (MCF7)





Indirect immunofluorescence staining of MCF7 cells indicating translocation of APOP32N1N2 from cytoplasm (A) to cell nuclease (B)



Apoptosis of MCF7 cells — Normal Chang cells

APOP32N1N2 apoptosing MCF7 cells (A) but not non-cancerous Chang cells (B)

BENEFITS

- Highly specific
- Activation for gene expression is not required
- Less potential to cause side effects
- Less likely to elicit immune responses
- Small size, suitable for non-invasive delivery routes
- Applicable for other cancer therapies

POTENTIAL CUSTOMERS

Over **5000 women** are diagnosed with breast cancer annually in Malaysia. Over **one million** new cases of breast cancer are diagnosed yearly around the world. Each year globally, over **14 million** people learnt that they have cancer!!!

COST

- Cheaper
- Faster to generate
- No wastage of dosing
- Cost effective

THE NEEDS

Improvement in protein and peptide drug delivery

8 million people die from cancer worldwide: **many of these deaths can be prevented.**

Current Practices

Future Applications

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