OVERVIEW

• Highly efficient, consistent and site-specific Peptide-tag for radiolabelling various recombinant proteins – antibodies, scFv, peptides.

• High efficiency in labelling means less protein and no purification post-labelling is needed for application (>95% purity).

• Labelling equally efficient for two purposes – imaging with Technetium (99mTc) or therapy with Rhenium (188Re).

• Stability of radiolabelled antibody exceeds 4 hrs in human serum test.

• In vivo imaging data show good labelling abilities in an in vivo tumour model.

THE OPPORTUNITY

Our newly developed Peptide-tag shows superior radionuclide binding properties to existing tags and can be used to label all recombinant proteins – antibodies, scFv and peptides.

This technology enables imaging and therapy with the same candidate protein (e.g. antibody labelled with 99mTc for imaging and with 188Re for therapy). Due to the high efficiency this technology enables rapid labelling and less protein to achieve the required labelling, which decreases costs. Concurrent site-directed labelling of protein also reduces the risk of spurious toxicological issues, and satisfies the need of highly pure and homogeneously labelled drugs (95% radiochemical purity without purification step) (Figure 1).

This novel Peptide-tag technology is up to 8-fold better in labelling recombinant proteins with radionuclides, than conventional protein tags (Figure 2). The Peptide-tag is also highly stable when using labelled recombinant antibodies in serum stability assays. Data from preliminary imaging studies show good Peptide-tag stability in vivo. Imaging with a peptide-tagged, 99mTc labelled antibody against a prostate tumour showed good tumour staining over a period of time (1.5 hrs).

LICENSING OPPORTUNITY

We are interested in licensing this Peptide-tag technology to a commercial partner. The licensable patent applications are held by CRT and King’s College.

LICENSING DETAILS

The peptide-tag was developed by Prof. Phil Blower and colleagues at King’s College London and partially CRUK funded.

INVENTORS

Prof. Philip Blower, Dr. Greg Mullen, Jennifer Williams, Rafael Torres Martines de Rosales and Richard Tavare; Division of Imaging Sciences & Biomedical Engineering (King’s College London; Comprehensive Cancer Imaging Centre).

INTELLECTUAL PROPERTY

King’s College patent (US 2012/0251446; applications pending in the US and Europe) CRT patent (PCT/GB2013/052191)

Read more overleaf
NOVEL TECHNOLOGY FOR RADIOLABELLING. UTILITY IN IMAGING, BIODISTRIBUTION AND THERAPY

Figure 1: Metallic radionuclide is attached to a recombinant protein via the novel peptide tag [1]. Technology can be applied to all recombinant proteins and used for several applications.

REFERENCES

2. Patent application (PCT/GB2013/052191)
3. Patent application (US 2012/0251446)

PERFORMANCE OF THE NOVEL PEPTIDE-TAG IS MARKEDLY IMPROVED OVER OTHER TAGS

Figure 2. Different sequences and their [Tc(CO)3]+ binding efficiencies were compared. 99mTc-labelling efficiency of novel Peptide-tag (green) shows markedly superior nuclide binding to tags previously used for 99mTc-labelling [2].

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