Chemistry of Contrast Media

Biologicals

Cystine knot peptides for cancer multimodality imaging

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Learning Objectives:

- Cystine knot peptide
- Multimodality imaging
- Multimodality imaging probe design
- Cancer imaging

Cystine knot peptides (knottins, ~3-4 kDa) represent a new type of protein scaffold and have been explored as robust platforms for developing agents for cancer molecular imaging and therapy. Knottins are featured with multiple disulfide bonds, high stability in vitro and in vivo, potential low immunogenicity, rapid clearance from normal organs, etc. Yeast surface display technology has been used to screen a variety of knottins binders for different tumor biomarkers such as integrin alphavbeta3 and alphavbeta6. The highly selective binders have then been used to construct multimodality imaging probes for cancer detection. All these works demonstrate that knottins are a promising new class of cancer targeting agents. In this presentation, the recent research progress on using knottins for targeted cancer imaging and therapy will be reviewed.