Division of Radiopharmaceutical Chemistry
Department of Biophysical Sciences

Outline

Our research projects are directed toward the development of molecular imaging agents, radiopharmaceuticals for functional diagnosis and radionuclide therapy. The present active research includes labeling nucleosides, peptides and heteroaromatics. The use of these radiotracers constructs molecular imaging PET or SPECT targeting tumor angiogenic enzyme, somatostatin-receptor, and cell cycle regulative enzyme. Our research interests are shown below.

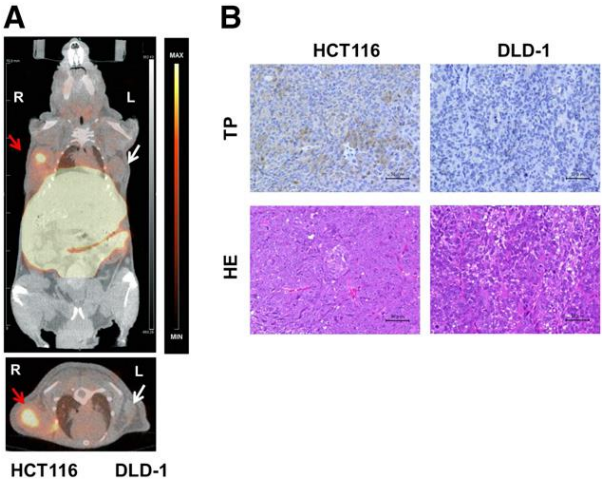
Faculty members

Associate professor; Hirotake Kitaura, Ph.D.

Main research in progress

Development of molecular probes for the in vivo analysis of biological function and the application in clinical diagnosis and therapy

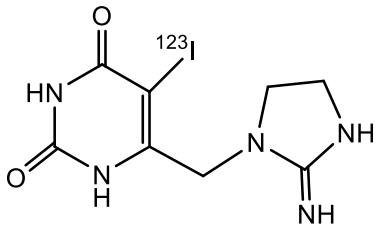
1) Radiopharmaceuticals for diagnosis of tumors
2) Radiopharmaceuticals for predicting the efficacy of anticancer agents
3) Radiolabeled peptides having efficiency and safety for diagnosis and radionuclide therapy of neuroendocrine tumors
4) Elucidation and imaging of molecular mechanisms of carcinogenesis



^{123}I-IIMU imaging of mice inoculated with tumor cells

A: Coronal (top) and transverse (bottom) images of ^{123}I-IIMU SPECT/CT

B, immunohistochemistry for thymidine phosphorylase and hematoxylin and eosin



Structure of ^{123}I-IIMU

Current publications

* N. Oshima, et al., Redesign of negatively charged ^{111}In-DTPA-octreotide derivatives to reduce renal radioavtivity, *Nucl. Med. Biol.*, **48**, 16-25 (2017).
* N. Kobashi, et al., The thymidine phosphorylase imaging agent ^{123}I-IIMU predicts the efficacy of capecitabine, *J. Nucl. Med.*, **57**, 276-281 (2016).
* S. Zhao et al., Relationship between biodistribution of a novel thymidine phosphorylase (TP) imaging probe and TP expression levels in normal mice, *Ann. Nucl. Med.*, **29**, 582-587 (2015).
* N. Oshima, et al., Design, synthesis, and biological evaluation of negatively charged ^{111}In-DTPA-octreotide derivatives, *Bioorg. Med. Chem.*, **22**, 1377-1382 (2014).

Contact e-mail address

kitaura@hoku-iryo-u.ac.jp