

Asian School of Nuclear Medicine Osaka Campus

**Osaka University
Graduate School of Medicine**





Osaka University Hospital

Osaka University Graduate School of Medicine



Introduction of the Hospital

The Osaka University Hospital is a core medical facility for its region. In addition to providing top-quality, reliable care as an "advanced treatment hospital", it makes contributions to the practice and development of leading-edge therapy and the training of medical personnel. In education, we intend to stress the cultivation of diverse personnel including intensely caring doctors, profoundly knowledgeable and top-level specialists, and researchers capable of pioneering leading treatments for presentation to the whole world

Introduction of the Department

We perform diagnostic nuclear medicine using radioactive tracers. Nuclear medicine is a method in which a radioactive tracer is administered and its in-vivo kinetics are externally measured over time to evaluate the patient's pathological condition. Images are taken using a gamma camera, Single Photon Emission Tomography (SPECT), or Positron Emission Tomography (PET), etc. Diagnostic nuclear medicine is useful in diagnosing a wide variety of diseases including malignant tumors, and cardiac, cerebral, respiratory, digestive organ, kidney & ureter-related, endocrine-related, and bone & joint-related diseases. It enables pathological conditions and functionality of the affected organs to be correctly diagnosed.



ASNM Osaka Campus

Osaka University Graduate School of Medicine

The ASNM Osaka Campus is inviting young physicians, technologists, chemists, and nurses from ARCCNM countries to experience NM practise and to learn NM with us. The length of the training period depends on the participants, some may have short training, and others may continue for 3 months at maximum. Followings are more detailed information.

Equipment

- Clinical department: three PET/CTs, two SPECT/CTs, two SPECTs, and Hot-lab with cyclotron operated by GMP standard.
- Preclinical department: small animal PET/CT, small animal PET/MR, mid-sized animal PET, small animal MRI (1.5T), Hot-lab with cyclotron operated by reliability standard based on Pharmaceutical Affairs Law.



Clinical Practice Scope

- Diagnosis in Oncology (^{18}F -FDG-PET, bone-scan, ^{68}Ga scintigraphy, etc)
- Diagnosis in Neurology (^{15}O -PET, Brain perfusion SPECT, DAT-Scan, etc)
- Diagnosis in Cardiology ($^{13}\text{NH}_3$ PET, perfusion SPECT, BMIPP, MIBG, etc)
- Management of radiation exposure in pediatric nuclear medicine
- ^{131}I therapy for thyroid disease.
- ^{89}Sr therapy for metastatic bone pain.

Research and Development

- Micro-dose PET Examination
- ^{18}F -FBPA PET for Boron Neutron Capture Therapy
- ^{11}C -Methionine PET for oncology
- ^{11}C -Acetate Brain PET
- ^{11}C -PBR-28 PET (TSPO PET)

Education/Training Courses of ASNM Osaka Campus

- 1) Nuclear Medicine Physician Course
- 2) Nuclear Medicine Technologist Course
- 3) Radiopharmaceutical Chemist Course
- 4) Nuclear Medicine Nurse Course
- 5) PhD Course



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NM Physician Course main topics of lecture practice/training

1	radionuclides	radiation safety, labeling with generator, labeling with ^{18}F , ^{11}C
2	Imaging instrument	phantom study with SPECT and PET, understanding of noise and noise correction
3	scanning procedure	FDG PET/CT, brain PET with ^{15}O , dynamic whole body imaging
4	data analysis	compartment analysis, quantitative measurement, statistic parametric analysis
5	summary of basic NM	visit 400MeV cyclotron, solid target system, and production of ^{99}Mo
6	FDG PET/CT Oncology	procedure, application, selection of research topics (one project from many ongoing projects)
7	FDG/PET/CT Oncology	reporting of FDG PET/CT in oncology
8	FDG PET/CT Oncology non-oncology	inflammation, autoimmune diseases, cardiac diseases, epilepsy, pediatric diseases
9	amino acid (methionine) imaging	brain tumor, Parkinson's disease, psychiatric diseases image interpretation
10	Amyloid imaging	synthesis of amyloid probe, clinical practice, and image interpretation
11	pharmacokinetic Imaging	good-manufacturing practice based facilities (education and training)
12	Emergency in NM examination	how to treat emergency, unexpected accidents in NM practice

Participants are requested to complete “Education and Training Course” for radionuclide handling according to the radiation Safety Control Office of Osaka University Hospital and Faculty of Medicine.

NM Technologist Course main topics of lecture practice/training

1	radiation safety and monitoring system	measurement of dosimetry (human, environment, water, air, wastes)
2	Evaluation of scanner performance	Performance of the PET/CT scanner is tested by means of phantom.
3	Validation of best performance	Best performance is tested by phantom.
4	Maintenance of scanner	check point for every day, every month, and every year. Trouble shooting before consulting vendor.
5	Data reconstruction	changing reconstruction parameters in each patient, ad the effects
6	Data storage, Hospital data base	retrieving and archiving in intra-hospital network.
7	Image fusion	fusion with MR, fusion with images from other hospital
8	Dynamic data analysis	basis of compartment analysis, statistic parametric analysis, pmod, SPM, etc
9	Basic clinical imaging FDG PET/CT oncology	representative FDG PET/CT images in oncology
10	Basic clinical imaging PET/CT non-oncology	cardiology, neurology, pediatric, etc
11	Basic clinical imaging SPECT	lung disease, GI examination, bone, nephrology, etc.
12	Emergency in NM examination	how to treat emergency, unexpected accidents in NM practice

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Osaka University Graduate School of Medicine

Chemist Course main topics of lecture practice/training

1	cyclotron	structure of cyclotron, ion source, target boxes, beam energy, beam current
2	labeling system I. FDG	F ion labeling system for FDG
3	labeling system II. ^{11}C compounds	^{11}C methionine, ^{11}C acetate, ^{11}C choline, practice of productions
4	Labeling system III. ^{15}O , ^{13}N	gas chromatography,
5	Solid target irradiation	^{124}I production, ^{99}Mo production in 400Mev cyclotron
6	Purification of solid target products	Methyl-ethyl-ketone method for purification and reuse of solid target
7	High-pressure-liquid chromatography and UV	purification of synthesized products
8	non-bacterial procedure	education and practice of non-bacterial procedure
9	Endotoxin test, impurity test, 3 lots- examination	safety validation of synthesized products before administering patients.
10	Safety validation of in-house products	how to maintain the environment of hot laboratory, air contamination, water, contamination, handling of wastes
11	specific activity	radiochemical purity, radio-isotopic purity, radiopharmaceutical purity, autolysis,
12	GMP-based facilities for PET probe	validation of measurement devices, recording of procedure, monitoring the environment, etc.

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NM Nurse Course main topics of lecture practice/training

1	Overview of nuclear medicine practice/ethics	guideline of NM practice/pediatric NM practice/
2	Measurement of radioactivity	monitoring radioactivity (room, air water, human), dosimetry of examiner, practitioner
3	Imaging modalities	SPECT, PET, whole body counter, gamma camera,
4	Radiopharmaceuticals	^{99}Mo - $^{99\text{m}}\text{Tc}$ generator, PET tracers (FDG)
5	Radiation safety control	radiation exposure and dosimetry of nurses
6	Overview of radionuclide therapy	radionuclides, patient isolation, outpatient treatment, public radiation exposure
7	SPECT examination	SPECT and SPECT/CT imaging for cardiology, neurology, and oncology
8	PET examination	PET/CT imaging
9	interview before NM examination	Patient information before examination
10	explanation of NM examination	explanation of purpose, procedure, and radiation exposure
11	treatment for side effects and accidents	allergic reaction, vagal nerve stimulation, patient movement,
12	emergency medicine/emergency action	preparation for emergency, oxygen, suction, medicine, emergency call, intensive care unit

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ASNM Osaka Campus

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Teaching staff of ASNM Osaka Campus

Internal Lecturer

Clinical

Jun Hatazawa (FANMB)	Eku Shimosegawa	Mitsuaki Tatsumi
Hiroki Kato	Kayako Isohashi	Tadashi Watabe (FANMB)
Shin-ichiro Watanabe	Ikuko Mochida	Keiko Matsunaga
Takahiro Morita		

NM Technology

Koichi Fujino	Kuniyuki Hidaka	Takashi Kamiya
Genki Horitsugi		

Radiopharmaceutical chemist

Yasukazu Kanai	Sadahiro Naka	
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Nuclear Physics/Cyclotron

Kozi Nakai	Naruto Takahashi	Hayato Ikeda
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External Lecturer

Nagara Tamaki	Hokkaido University	Cardiology
Seigo Kinuya	Kanazawa University	Radionuclide therapy
Osamu Inoue	Hanwa Intelligent Medical Center	Radiopharmaceutical Science
Seiichi Yamamoto	Nagoya University	Instrument
Masanori Ichise	ex Columbia University	Data analysis
Yasuyuki Kimura	National Institute of Radiological Sciences	Data analysis

Housing Information

1) Suita International Student Dormitory, Osaka University

<http://www.osaka-u.ac.jp/en/international/inbound/support/residence.html>

2) Kasugaoka House, Osaka University

http://www.osaka-u.ac.jp/en/academics/facilities/BandB/kasugaoka_house

3) Guest House of the Research Center for Nuclear Physics, Osaka University

<https://55099zzwd.coop.osaka-u.ac.jp/kakubutsu/>



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How to contact?

The applicants will visit the website of ASNM in <http://arccnm.org> in the Homepage below.
The ASNM Osaka Campus regional Office is an alternative contact site.

ARCCNM/AOFNMB Secretariat

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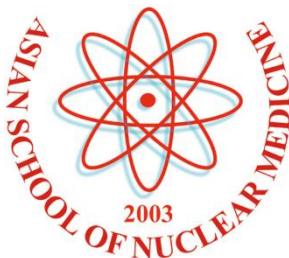
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How to reach?



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