



## IAEA/RCA Regional Training Course on Theragnostics and Dementias

### PROSPECTUS

**Project Number & Title:** RAS6083 - Improving Patient Care and Enhancing Government Parties Capacity in Nuclear Medicine programmes in RCA Region (RCA)

**Place (City, Country):** Osaka, Japan

**Dates:** 4 – 8 December 2017

**Deadline for Nominations:** **2 October 2017**

**Organizers:** The International Atomic Energy Agency (IAEA) in collaboration with the Government of Japan through the Osaka University Graduate School of Medicine

**Language:** The language of instruction will be **English**

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**Purpose:** The objective of this course is to train nuclear medicine physicians with consolidated experience in basic Nuclear Medicine and intends its' application in, the treatment of Neuroendocrine Tumours, GI and Liver Cancer, Thyroid conditions, prostate cancer and paediatric oncologic conditions using integration of diagnostic and therapeutic nuclear medicine techniques in the individualized management of disease (theragnostics).

Implicit in the theragnostic paradigm is the assumption that diagnostic test results can precisely determine whether an individual is likely to benefit from a specific treatment. This assumption underpins the recent focus on companion diagnostics as an integral part of drug development

The scientific programme consists of the different general and hybrid imaging modalities employed in the diagnosis, staging and management of relevant oncologic conditions with further discussion on relevant treatment options employing nuclear medicine techniques in appropriate oncologic conditions.

Participants will acquire skills and competences through this course which will enable them to enhance this practice to improve the quality of life of cancer patients and patients with relevant conditions. Concept in this RTC will include appropriate selection of patients followed by individualized therapy approach based on a multidisciplinary clinical approach. The lectures will provide basic and advanced theoretical knowledge in the improvement of the diagnosis and treatment of cancers in adult and paediatrics.

Aspects of brain imaging will be also discussed including intensive review sessions on image interpretations, protocol applications and processing using neuroimaging standard processing tools (Neurostat, others) for dementias.

**Expected Output(s):**

The expected outputs include:

- (1) Improved clinical practice in terms of appropriate application of theragnostics and brain imaging (neurology) using SPECT/CT and PET/CT nuclear medicine techniques.
- (2) Updated protocols on theragnostics and brain imaging using nuclear medicine techniques, focusing on dose optimization and appropriateness criteria, including radiopharmaceutical and imaging modality choice, highlighting IAEA and international guidelines.

**Scope and Nature:**

The training course covers the fundamental principles and application of molecular imaging (SPECT/CT and PET/CT) for the accurate diagnosis in Non-communicable diseases (cancer, mainly) and therapeutic Nuclear Medicine. Aspects of brain imaging using Nuclear Medicine Techniques will also be covered. The lectures will provide basic and advanced theoretical knowledge in the improvement of the diagnosis and treatment of cancers, including NETs using theragnostics. Dementia imaging and image processing will also be covered.

The experts will discuss the clinical utility and relative value with emphasis on the protocols to be used in the above conditions. This will be one of the core learning points of this training course.

Format: Lectures and Interactive discussion sessions covering approaches in

therapeutic nuclear medicine from streamlined and emerging approaches. These lectures should provide theoretical grounding in the improvement of therapeutic Nuclear medicine Services to achieve the following:

- a) Comprehensive knowledge of Epidemiology, Causes, risk factors, clinical manifestations/symptoms of some types of cancers including Neuro Endocrine Tumors.
- b) The role of nuclear medicine in diagnosis and treatment of relevant oncologic conditions.
- c) Review the different established and emerging imaging and therapeutic nuclear medicine protocols and nuclear techniques in the evaluation and management of cancer.
- d) Establishing protocols for preparation and quality control of various therapeutic radiopharmaceuticals and radiation safety.
- e) Updated skills in processing images using neuroimaging standards in dementias, knowledge for processing tools such as Neurostat. Improved clinical practice in terms of appropriate application of standard and newer brain imaging (neurology) radionuclide imaging technology using SPECT/CT and PET/CT.

**Background Information:**

With the expansion of life span and consequent demographical shift in the Region, concerns in public health have moved from nutritional and infectious diseases to non-communicable (cancer, dementias) and stable diseases that usually affect older population, such as cancer and cardiovascular diseases (e.g., coronary artery diseases, heart failures). Globally, in 2012 the most common cancers diagnosed were those of the lung (1.8 million cases, 13.0% of the total), breast (1.7 million, 11.9%), and large bowel (1.4 million, 9.7%). The most common causes of cancer death were cancers of the lung (1.6 million, 19.4% of the total), liver (0.8 million, 9.1%), and stomach (0.7 million, 8.8%). As a consequence of growing and aging populations, developing countries are disproportionately affected by the increasing numbers of cancers. More than 60% of the world's total cases occur in Africa, Asia, and Central and South America, and these regions account for about 70% of the world's cancer deaths, a situation that is made worse by the lack of early detection and access to treatment. As a result, many people in low- and middle-income countries die younger from CVDs and other non-communicable diseases, often in their most productive years. The poorest people in low- and middle-income countries are affected most.

Radionuclide technologies enable us to identify functional and molecular changes in the living body, which precede morphological and structural changes. It also provides effective treatment methods for various malignant diseases. Radionuclide imaging makes it possible to detect unhealthy conditions earlier, monitor their progressions, and evaluate their responses to therapeutic measures. Recent progress of state-of-the-art imaging

technologies make possible to recognize specific biological processes at molecular levels non-invasively, serially, and quantitatively for health and disease matters. Cyclotron/SPECT/PET technologies have been widely used for the diagnosis and evaluation of cancerous and neurodegenerative conditions. They play significant roles in early detection and diagnosis, treatment planning, and monitoring of therapeutic responses of these diseases

The overall objective of this RCA project is improving patient care by enhancing the awareness of nuclear medicine procedures through expert networking in RCA region to improve human health especially in non-communicable diseases. This activity provides education and training of nuclear medicine in the Region.

**Participation:** The training course is open to 20-25 participants from Government Parties participating in the project RAS/6/083. Each Government Parties may submit up to two nominations.

**Participants' Qualifications:** The nominees should be qualified Nuclear Medicine physicians, with background in therapeutic nuclear medicine applications and brain imaging. As the course will be conducted in English, participants should have sufficient proficiency to follow lectures and express themselves in this language without difficulty.

**Nomination Procedure:** Nominations should be submitted to the IAEA online through the Technical Cooperation Department's InTouch+ system (<https://intouchplus.iaea.org/>). Only if this is not possible, nominations may be submitted on the Nomination Form for Training Course available on the IAEA website: <http://www.iaea.org/technicalcooperation/How-to-take-part/train-course/index.html>. Completed forms should be endorsed by relevant national authorities and sent to the Programme Management Officer for this project, Mr Sin Van Hoang (IAEA Official Fax: +43-1-26007 or E-Mail [Official.Mail@iaea.org](mailto:Official.Mail@iaea.org)), through the official channels, i.e. the designated National RCA Representative Office or National Liaison Office for IAEA matters, not later than **2 October 2017**.

Nominations received after this date or which have not been routed through the established official channels cannot be considered.

**Security in the Field:** It is recommended that meeting participants complete the courses Basic Security in the Field: Safety, Health and Welfare (BSITF) and Advanced Security in the Field (ASITF), prior to traveling to locations where UN security phases are in effect. The aim of these courses is to educate participants on how best avoid or minimize potential dangers and threats, and to show what individuals can do if they find themselves in insecure situations.

The courses are available on the following UN websites that can be accessed using Microsoft Internet Explorer:

- BSITF: <http://dss.un.org/BSITF/>
- ASITF: <http://dss.un.org/ASITF/>

If you have difficulty using the websites, a CD-ROM can be obtained from your IAEA National Liaison Officer or from IAEA.

Once the candidate has completed the courses and passed the accompanying exams, certificates will be generated automatically and must be printed for submission to the IAEA (either as an e-mail attachment or by fax). Copies of the certificate should be kept by the candidate for his / her records, as they are valid for a period of three years.

A printed copy of the certificate should be attached to the nominations.

**Administrative  
and Financial  
Arrangements:**

Nominating Governments will be informed in due course of the names of the candidates who have been selected and will, at that time, be given full details of the procedures to be followed with regard to administrative and financial matters.

Selected participants from countries eligible to receive technical assistance will be provided with a round trip economy class air ticket from their home countries to **Osaka, Japan**, and a stipend sufficient to cover the cost of their accommodation, food, and minor incidentals. Shipment of accumulated training course materials to the participants' home countries is not the responsibility of the IAEA.

The organizers of the training course do not accept liability for the payment of any cost or compensation that may arise from damage to or loss of personal property, or from illness, injury, disability or death of a participant while he/she is travelling to and from or attending the training course, and it is clearly understood that each Government, in nominating participants, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.