A Brief Report on Alumni Interaction Series – Lecture 6

(Bridging the gap - Connecting to the World)

Name of the presenter:
Dr Satish K Chitneni
Associate Professor of Radiology
Director, Translational PET/CT molecular imaging Ctr
DUKE University, USA

Date: 23.10.2021

Title of the presentation:
Radiopharmaceuticals: What are they and how are they relevant to healthcare?

Program Organized by:
Dept. of Pharmacy Practice & Pharmacy Education Unit
JSS College of Pharmacy, Ooty JSS College of Pharmacy, Ooty

As a part of the Alumni interactions 2021, sixth in the series was held on 24.03.2022 by one of the proud Alumnus of Department of Pharmacy Practice, Dr Satish K Chitneni, Associate Professor of Radiology, Duke University, USA.

Dr Satish Chitneni, had completed his Master of Pharmacy (Pharmacy Practice) from Dept. of Pharmacy Practice, JSS College of Pharmacy, Ooty in the academic year 2000-2002 and had experience as clinical trial coordinator in India and obtained his PhD from Katholieke Universiteit, Leuven, Belgium. After his PhD, he got is Post-Doctoral Fellowship at Duke University, USA and presently working as Associate Professor in Radiology and Director, Translational PET/CT Molecular Imaging Center, Duke University, USA.

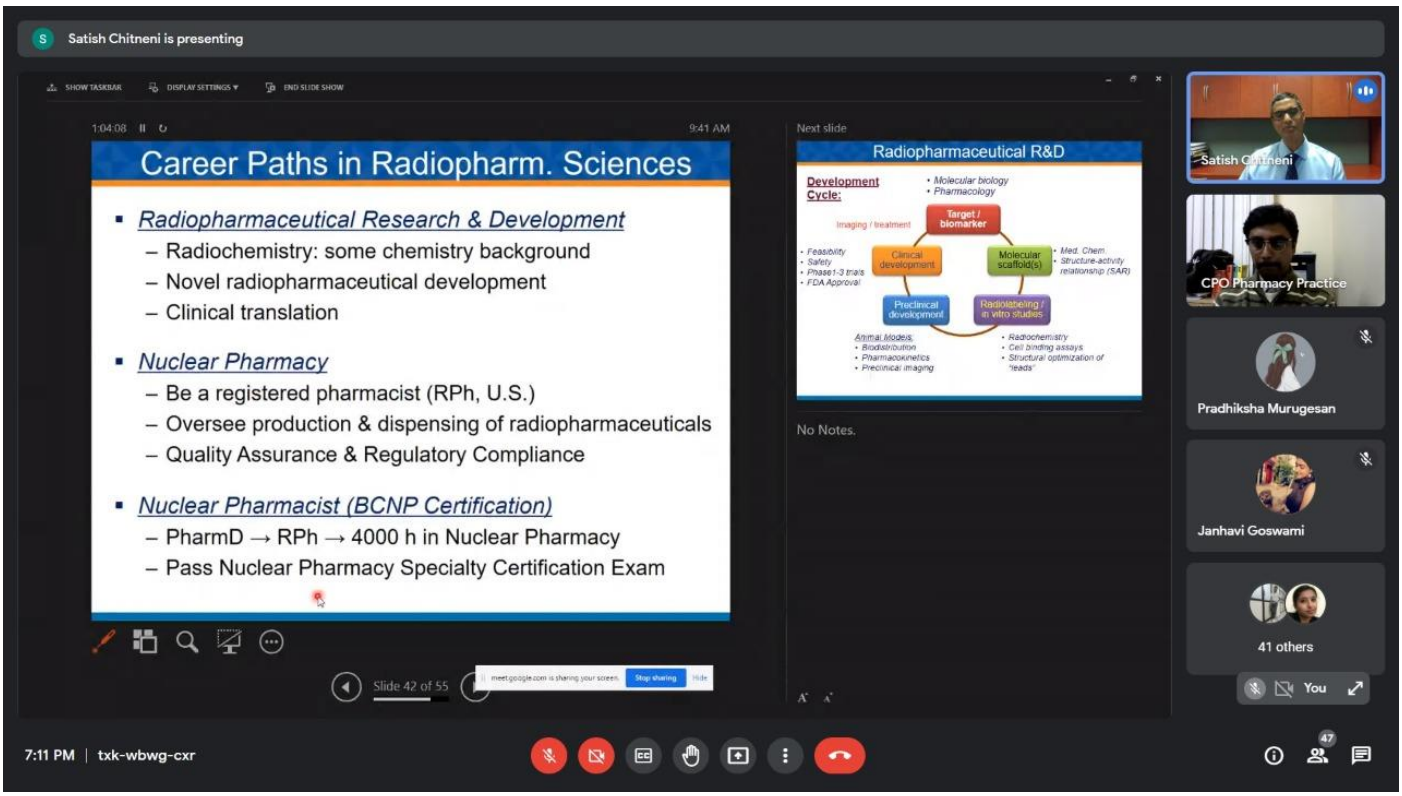
Dr Satish started his presentation with classic definition of the term radiopharmaceuticals are "a class of pharmaceuticals consisting of radioactive elements and used for diagnosis or treatment of diseases". The science of incorporating a suitable radionuclide into a pharmaceutical or other biologically active molecule. The resulting radiopharmaceuticals are used for diagnosis and/or treatment of diseases.

Nuclear medicine is a specialized area of radiology that uses very small amounts of radioactive materials, or radiopharmaceuticals, to examine organ function and structure. A radioactive tracer, radiotracer, or radioactive label, is a chemical compound in which one or more atoms have been replaced by a radionuclide so by virtue of its radioactive decay it can be used to explore the mechanism of chemical reactions by tracing the path that the radioisotope follows from reactants to products.

Therapeutic Radionuclides: Radionuclides that decay by emitting beta or alpha particles. Cause significant damage as they traverse through the tissue, e.g., cancer. Induce DNA strand breaks (single, double), oxidize water molecules – free radicals. A number of radionuclides, such as iodine-131 (131I), phosphorous-32 (32P), strontium-90 (90Sr), and yttrium-90 (90Y), have been used successfully for the treatment of many benign and malignant disorders. Recently, the rapid growth of this branch of nuclear medicine has been stimulated by the introduction of a number of new radionuclides and radiopharmaceuticals for the treatment of metastatic bone pain and neuroendocrine and other malignant or non-malignant tumours.

After the introduction of the basics, he also added the details about the nuclear imaging using SPECT / CT and the use of SPECT radionuclides over the use of PET/ CT. Further he narrated about the conventional imaging techniques.

Radiopharmaceutical production: More than 100 radiopharmaceuticals have been developed, using radioisotopes that were either produced by nuclear research reactors or cyclotrons. The production of radiopharmaceuticals involves the handling of large quantities of radioactive substances and chemical processing. Further, he added the various therapeutic radionutraceuticals used in the treatment of various cancer, bone pain etc.



After the presentation, question and answer session was organized. Further, he added his experience of establishing his team in radio nuclear safety during treatment, he shared. A total of 89 participants were present in the session.

Dr. S. Ponnusankar thanked the speaker for spending his valuable time with our staff and students.

S Ponnusankar