

# 物質化学フロンティア研究領域セミナー

## 講演題目:

**From malaria research to identification of clinical candidate for Parkinson treatment: A ray of hope for the incurable disease**

**講演者: Professor Diwan Singh Rawat**

**Vice Chancellor**

**Kumaun University, Nainital, Uttarakhand**

**日 時: 令和 5 年 12 月 14 日(木)15:00~16:30**

**場 所: 知識科学講義棟2階 中講義室**

## 講演要旨:

In order to address the issue of drug resistance and improve the ADME properties of a drug molecule concept of molecular hybridization was put forward wherein two or more distinct pharmacophores are covalently linked into a single molecule. This approach may lead to a molecule with improved efficacy and may solve the problem of drug resistance and reduce the undesired side effects. The development of such molecular frameworks with synthetic selectivity and economic viability is still a challenging task for the pharmaceutical industry. Drugs developed through this approach can be used for the cure of infectious diseases where treatment is limited to few drugs and the known drugs have limitations such as toxicity, pharmacokinetics, pharmacodynamic and drug resistance. The benefit of using molecular hybrid is to activate different or same targets by a single molecule, and increase the therapeutic efficacy and to improve the bioavailability. Molecular hybridization approach has resulted many drug candidates with improved activity profile and some of these compounds are in clinical trials. We have utilized this concept in designing antimalarial molecules and many molecules with aminiquinoline and pyrimidine pharmacophore showed low nano molar activity. Later a massive multi-institutional collaboration was started and over 700 new molecules were studied for Nurr1 activation, a potential target for Parkinson disease model and identified 15 hits out of which 3 compounds have cleared pre-clinical trials and technology has been transferred to NURRON pharmaceuticals for further development. These molecules activate the Nurr1 enzyme which is essential for the survival of the dopamine neurons, stops the aggregation of  $\alpha$ -synuclein protein in the brain, and promotes autophagy. Systematic studies demonstrated that these compounds can cure the Parkinson induced mice model at 5 mg/kg body weight without any toxicity.

## 講演者略歴:

Professor Diwan S Rawat, is a Senior Professor Chemistry and Vice Chancellor (President) of Kumaun University, Nainital. Prof Rawat obtained his masters from Kumaun University, Nainital in 1993 and was honored with the merit certificate for securing first position in the University. He did his Ph.D. in Medicinal Chemistry from Central Drug Research Institute, Lucknow in 1998 and carried out postdoctoral work during 1999-2002 at Indiana University and Purdue University, USA. He was an Assistant Professor (2002-2003) of Medicinal Chemistry at National Institute of Pharmaceutical Education and Research (NIPER), Mohali and joined Delhi University in 2003, was promoted to Full Professor in 2010.

**参加申込・予約は不要です。直接会場にお越しください。**

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