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Abstract

Viral Vectors: The Courier Fellows of Cell and Gene Therapies.

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Abstract:

In the last one decade, gene & cell therapy field has taken a fast pace with multiple clinical trials happening across the globe and moreover there are success stories around approvals given by authorities like FDA and EMA. The gene therapy and gene modified cell therapies at this juncture largely depend on the delivery of the genetic cargo through viral vectors. While products like Glybera, Luxturna and Zolgensma are based on Adeno Associated Vectors, on the other hand Kymriah, Yescarta and Tecartus are based on patient derived T-cells which are genetically modified using lentivector or retroviral vectors. The talk primarily aims to provide a brief overview of vector technologies, evolution of new vectors and insight on their production.

Biography:

He obtained his Ph. D from the ACTREC, Mumbai (2014) in Applied Virology. His Ph.D. thesis was on the Lentiviral Vector Mediate Long Term Expression of Therapeutic Proteins. He completed his doctoral work in the labs of Dr. Robin Mukhopadhyaya and Dr. Rajiv Kalraiya. His doctoral studies mainly focused on developing the novel LV platform using the inhouse HIV-1 derived vector system and its application for cell engineering and tumor targeting in pre- clinical models. From 2014 to 2015, he was a post-doctoral fellow in the laboratory of Dr. Amit Dutt in the same institute working on functional genomics aspects spanning novel miRNA discovery and novel mutations in cancer causing genes and associated pathways. Thereafter, he joined Gene Therapy Division at Intas Pharmaceuticals, Ahmedabad. He worked on early stage product development of AAV mediated gene therapy for diseases such hemophilia, neuronal and eye disorders. He successfully developed the pilot scale manufacturing platforms using suspension cell lines in upstream and chromatography in downstream process.

He also contributed for assay development. He served as Research Scientist from 2015 to 2017 and as Senior Research Scientist from 2017 to 2019. He also developed early stage designs and assays for CAR-T research. In 2018 to 2019, he completed Diploma in International Business Management from Ahmedabad Management Association in affiliation with California State University. In 2019, he joined Immuneel Therapeutics as Head of Vector & CAR-T Manufacturing. His work encompasses the process development and GMP grade manufacturing of autologous CAR-T cells for clinical trials. The disease areas mainly include the leukemias and lymphomas. He has 7 peer reviewed publications in the field of gene therapy and functional genomics.

Publication of speakers:

1. Upadhyay, Pawan & Gardi, Nilesh & Dhamne, Hemant & Sonawane, Kavitha & D'Cruz, Anil & Nair, Sudhir & Dutt, Amit. (2015). Abstract 5161: Discovery of a matrix metalloproteinase MMP10 as a clinically relevant biomarker to predict lymph node metastasis in tongue squamous cell carcinoma. Cancer Research. 75. 10.1158/1538-7445.AM2015-5161.

2. Dhamne, Hemant & Chande, Ajit & Mukhopadhyaya, Robin. (2013). Lentiviral vector platform for improved erythropoietin expression concomitant with shRNA mediated host cell elastase down regulation. Plasmid. 71. 10.1016/j.plasmid.2013.11.001.

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