Details of the Project sanctioned under the Human Resource Development scheme of Department of Health Research

1. **Project Title:** Interactome analysis of HIV-1 subtype C accessory proteins.
2. **Category of fellowship:** Category B
3. **PI (Name & Address):** Dr. V. G. Ramachandran

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4. **Qualifications:** Ph.D.
5. **Mentor or Co.PI (Name & Address):** Dr. Akhil C Banerjea

   Virology Lab II

   National Institute of Immunology,

   Aruna Asaf Ali Marg, New Delhi-110067
6. **Duration of the project:** 3 years
7. **Broad area of Research:** Life Sciences

   7.1 Sub Area: Proteomics
8. **Summary of the Project:** (Give in about 300 words)

Despite the widespread use of Anti-retroviral therapy, the pandemic of HIV (Human Immunodeficiency Virus) is spreading all over the world. There are nine subtypes of HIV-1. The pathogenesis of these subtypes is different due to the variation in their sequences. Most of the studies focus on the analysis of subtype B because of the easy availability of reagents. Subtype C is responsible for more than 56 percent of the infections all over the world and more than 98 percent of infections in Indian subcontinent. Various research groups are studying natural variations occurring in HIV-1 accessory proteins in Indian population which may affect their pathogenesis. Sequence diversity between HIV-1 subtypes raise the possibility that a vaccine candidate developed from one subtype may not be equally effective against other subtypes. So, the aim of the present study is to find out the host cellular proteins which interact with the proteins of HIV-1 subtype C. The role of interacting partners of HIV-1 subtype C proteins will also be studied by investigating the effect of knockdown of these proteins on HIV-1 replication.

9. Objectives of the Proposal:

i. Interactome analysis of HIV-1 subtype C proteins by Mass Spectrometry.
ii. Validation of the interaction of cellular proteins with HIV-1 proteins by Co-immunoprecipitation.
iii. Study the effect of knockdown of interacting partners of HIV-1 subtype C proteins on HIV-1 replication.

10. Innovations in the project:

Various research groups are studying natural variations occurring in HIV-1 accessory proteins in Indian population. They have reported that genetic variations in HIV-1 proteins affect their functions. There are various amino acid changes between different HIV-1 subtypes which may affect their pathogenesis and subtype C is most rapidly expanding all over the world, especially in India. Most of the studies focus on the analysis of subtype B because of the easy availability of reagents. So, we plan to study the interacting partners of HIV-1 subtype C proteins and check their effect on HIV-1 infection.

11. Significance of the outcome of the project:

The interactome analysis of HIV-1 subtype C proteins will help in better understanding the pathogenesis of virus and its interaction with the host.

12. Relevance in Public Health:

This can furnish the knowledge to develop the anti-viral targets which will be effective against non-subtype B of HIV-1.

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Signature of the Fellow /Faculty