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

1. **Project Title**: Deciphering the molecular mechanisms underlying ANGPTL2 dysregulation in Pathogenesis of Cervical Cancer metastasis.

2. **Category of fellowship:** Programme specifically for Women with break in career

3. **PI (Name & Address):** Dr. S. D. Annapurna
Department of Genetics
Osmania University
Hyderabad - 500 007
Telangana

4. **Qualifications:** **Ph.D in Human Genetics**

5. **Mentor (Name & Address):** **Dr. Smita C. Pawar**
Assistant Professor &
Chairperson, Board of Studies,
Department Of Genetics
Osmania University
Hyderabad-07

6. **Duration of the project:** 36 months

7. **Broad area of Research:** Genomics

7.1 **Sub Area:** Cancer genetics

8. **Summary of the Project:** (Give in about 300 words)

There is an urgent need for more effective treatments in recurrent/advanced cervical cancer at present; the main focus of interest is tumour angiogenesis. The biological and clinical behaviour underlying CIN2-

CIN3 progression is still uncertain, since only an unpredictable part of them will progress to invasive cancer when untreated. Hence a therapeutic strategy capable of interrupting the progression to malignancy and understanding the key points involved in the malignant transformation and progression of cervical cancer is need of the hour.

Tumour metastasis is the most common cause of death in cancer patients. ANGPTL2 expression is found to significantly increase with the progression of cancer and excess ANGPTL2 signalling leads to chronic inflammation and pathological tissue remodelling, the so-called breakdown in tissue homeostasis. Dysregulation of its expression is a contributing factor to the development and progression of disease. Circulating ANGPTL2 levels may serve as a prognostic and predictive biomarker that indicates whether tissue homeostasis is in a physiological or pathological state. Suppression of excess ANGPTL2 signalling could represent novel and effective therapeutic strategies against Cervical Cancer metastasis. Since no studies on ANGPTL2 protein till date have been reported in Cervical Cancer, this is the first study attempting to understand the role of ANGPTL2 protein in progression and pathogenesis of Cervical Cancer .

9. Objectives of the Proposal:

Elucidating the mechanism by which ANGPTL2 affect the signal transduction pathway and identification of its role in modulation of inflammation, immune regulation by using *In Vitro* approaches. To measure its expression *in different stages of cancer* and correlate their expression with HPV positivity, viral load and Gene polymorphism.

10. Innovations in the project: (Give in about 100 words)

Angiogenesis is crucial process in cancer propagation. Angiopoietin like proteins (ANGPTLs) are interesting targets, for reasons it being poorly studied in cancer angiogenesis. As there are reports available on over expression of ANGPTL2 in variety of epithelial tumors, breast cancer, HCC, pancreatic cancer in comparison to corresponding normal tissue, but reports on ANGPTL2 protein expression in cervical lesions are not reported till date This is the first study attempting to understand the expression and   role of ANGPTL2 protein in progression and pathogenesis of cervical Cancer and the output from the study would shed light on early diagnosis and intervention therapeutic strategies for treatment of cervical cancer.

11. Significance of the outcome of the project: (Give in about 150 words)

1. Elucidation of the mechanism by which ANGPTL2 affect the signal transduction pathway and identification of its role in modulation of inflammation, immune regulation will help in understanding the mechanism for inflammation related carcinogenesis and thus can function as a useful diagnostic and prognostic biomarker.

2. Therapy directed towards the control of carcinogenesis in its early stages shall ultimately provide a higher quality of life for people than waiting to treat end-stage disease. Investigation on ANGPTL2 expression and its effect on pathogenesis would direct us in identifying novel therapeutic strategies for cervical cancer at early stage.

12. Relevance in Public Health:

The incidence of cervical cancer is more between the age group of 45-60 years and a considerable proportion of women report in the later stages of the

disease. Hence the study on ANGPTL2 levels acts as a tumor marker, which is key in the proposed project and will facilitate in controlling the disease at its early stages rather than the treatment at their later stages.

Signature of the Fellow /Faculty