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कैंसर उपचार, अनुसंधान एवं शिक्षा का प्रगत केंद्र
ADVANCED CENTRE FOR TREATMENT RESEARCH & EDUCATION IN CANCER
ACTREC
• CANCER RESEARCH INSTITUTE
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A Grant-in-Aid Institution of the Department of Atomic Energy, Govt. of India

13th September, 2021

To Whom It May Concern:

I am writing this letter to support the application of Ms. Nazia Chaudhary that is being submitted for the Sun Pharma Science Foundation Science Awards. She joined my laboratory in September of 2015 as a PhD student. The aim of Nazia's thesis project is to understand the mechanisms by which the loss of the desmosomal plaque protein, plakophilin3 (PKP3), leads to tumor progression and resistance to chemo and radio therapy. Previous work in the laboratory had demonstrated that PKP3 loss leads to tumor progression, metastasis and an increase in radio-resistance in vivo. Nazia has extended these findings and demonstrated that the increase in radio and chemo resistance is due to the increased expression of Lipocalin2 (LCN2) upon PKP3 loss. Her work which has recently been published in the International Journal of Cancer has shown that increased LCN2 expression is observed in colon cancer samples as compared to normal controls. LCN2 expression leads to resistance to 5 fluorouracil, a first line treatment in colon cancer, in vitro and in vivo and this is due to the ability of LCN2 to inhibit a novel cell death pathway known as ferroptosis. Ferroptosis is an iron dependent cell death pathway that is characterized by an increase in reactive iron species and lipid peroxides. LCN2 inhibits ferroptosis by decreasing the levels of reactive iron species inside cells and by promoting the reduction of lipid peroxides by stimulating the expression of xCT and GPX4 which are required for the clearance of lipid peroxides. The relationship between elevated LCN2 levels and xCT levels is also observed in colon tumor samples. Finally, in collaboration with the Mazumdar Shaw Medical Foundation and Beyond Antibody, Nazia demonstrated that the inhibition of LCN2 function could lead to cells being re-sensitized to therapy and a reduction in tumor progression. Thus, her work has identified a potential marker to determine whether tumors will be therapy resistant and has identified a potential lead molecule that could serve as the basis for a therapeutic for therapy resistant disease.

Nazia is an intelligent, highly motivated and hard-working student. I was greatly impressed with her experimental technique, her ability to analyze and solve experimental problems and her dedication to work. Nazia works incredibly hard and has accomplished a great deal in the short time she has been here. She has never shirked from doing the difficult experiments required to move the project forward and is not easily dissuaded when experiments do not work. She has taken the initiative to read the literature and to try and design experiments based on what has been previously published. In addition to her project she has already taken on the challenge of training other students and interns and has shown leadership skills that are rare in students at this early stage in their careers.

If you have any questions please get in touch with me at the email address below.

Sincerely,

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