



प्रो. दुलाल पाण्डा

एकटोम्बुनुरान, एकरनर, एकरएवले, एकरएवले  
निदेशक

Prof. Dulal Panda

FTWAS, FNA, FASc, FNASc  
Director

राष्ट्रीय औषधीय शिक्षा एवं अनुसंधान संस्थान

NATIONAL INSTITUTE OF PHARMACEUTICAL  
EDUCATION AND RESEARCH (NIPER)

(औषध विभाग, रसायन एवं उर्वरक मंत्रालय, भारत सरकार)

(Deptt. of Pharmaceuticals, Ministry of Chemicals & Fertilizers, Govt. of India)

सेक्टर 67, एस.एस. नगर (मोहाली) - 160 062, पंजाब, भारत

Sector 67, S.A.S. Nagar (Mohali) - 160 062 Punjab, India

Dated: 28.08.2023

To whom it may concern

It is my great pleasure to write this letter in support of Dr. Anamika Bose's nomination for Sun Pharma Science Foundation Research Award under the category "Medical Science-Basic Research".

Recently, she has shown how PD1-therapy resistant exhausted-CD8<sup>+</sup>Tcells promote liver-metastasis by generating cancer stem cells, as well as suggests two predictive biomarkers viz, NRP1 and LAMP3 for selection of non-responder vs. responder patient undergoing PD1 therapy (Chakraborty et al, *Cancer Res*, 2023). This study significantly adds new dimension for Immune-checkpoint-inhibitortherapy, particularly with anti-PD1, considering its wide acceptability, robust therapeutic potential vs high cost and partial toxicity, especially in Indian perspective.

Dr. Bose has been investigating tumor-associated non-hematopoietic-stromal cells in regulating immune response and her research has shown (a) how tumor-microenvironment transformed an "immunologically inert" pericytes into active immune-suppressor cells to support tumor growth (Bose et al, *J Immunol*, 2013) (b) and how mesenchymal-stem-cellsblock priming of native T-cells by targeting cystathionase in DC (Ghosh et al, *Int J Cancer*, 2016). (c) Few International groups have argued for a selective RGS5 upregulation in tumor to endorse tumor-eradication based on RGS5's pro-apoptotic signature. However, extensive research of Dr. Bose's group has shown that tumor micro-environmental TGF $\beta$ -smad signaling axis switches RGS5-associated pro-apoptotic to anti-apoptotic signaling, supporting survival of RGS5<sup>high</sup> tumor-pericytes to sustain vascular-abnormalities, poor drug/immune cell infiltration and tumor-growth (Dasgupta et al, *Cell Death Diff*, 2021). (d) They also showed disruption of RGS5-TGF $\beta$ /Smad interaction can support vascular-normalization (Dasgupta et al, *FASEB J*, 2022). Her study with non-hematopoietic-stromal cells gives a completely new perspective to cancer-vascular biology-research.

Her ongoing research with (f) influence of type-1-diabetes on cancer suggested fine regulation of T1DM-Cancer associated intra-T-cell IGF1-IGF1R signaling on tumor-restriction (g) influence of prolong statin treatment shows differential tumor-growth regulation in female vs male tumor hosts.

Dr. Bose has remained actively engaged with functional characterization of a novel neem-derived molecule Neem-Leaf-Glycoprotein (NLGP) to understand its antitumor functions. This study would have far reaching consequences on NLGP's clinical translation.

I strongly recommend Dr. Bose's candidature for this award.

(Prof. Dulal Panda)  
Director