Department of Biochemistry
Indian Institute of Science
Bangalore - 560 012, India

Tel. : 91-80-2293 2540 / 23601492
: 080-2334 2223 (Res.)
email : geepee@alumni.iisc.ac.in

Professor G. Padmanaban
NASI Platinum Jubilee Senior Scientist (Former)
Former Director, IISc
Chancellor, CUTN

Nomination of Dr Arun Nagaraj for the Sun Pharma Award

I have great pleasure in nominating Dr Arun Nagaraj, Scientist E, Malaria Parasite Biology, Institute of Life Sciences (ILS), Bhubaneswar, for Sun Pharma Science Foundation Research Award in the area of Pharmaceutical Sciences for new Drug Discovery and Development. This is based on his seminal finding that heme synthesis in blood stages is essential for parasite virulence and disease pathogenesis, and it can serve as a new target for preventing mortality due to cerebral and severe malaria. He has established that Griseofulvin (FDA-approved antifungal drug) can be repurposed to prevent and treat cerebral and severe malaria using mouse model. Griseofulvin inhibits Ferrochelatase, the last enzyme of malaria parasite heme synthesis. He has published these results in Nature Communications (2022) and filed Indian patent and PCT. He has taken these findings forward to pre-clinical trial with Prado Pvt Ltd., (CRO) thrugh financial support by BIRAC. This will be followed by clinical trials by IPCA Pvt Ltd. There is an unmet need of an adjunct therapy to prevent malaria mortality, and IPCA has shown significant interest to carry out clinical trials and manufacture ACT-Griseofulvin combination. Arun is also part of the team that has established the antimalarial activity of curcumin (from turmeric). This has now entered Phase IIa clinical trial, to be carried out by NIMR and ILS in two hospitals (Chattisgarh and Rourkela).

Arun was at IISc, Bangalore with my group, when he completely deciphered the *de novo* heme pathway of malaria parasite, although it gets huge amount of heme from hemoglobin in the blood stages. That was when he showed that parasite makes heme to sustain development in the mosquito, published in the top journal, PLoS Pathogens (2013). He established his own research group at ILS, since 2016. Yet again, Arun has demonstrated a new drug target, Glutamine synthetase, to treat P.falciparum and combat artemisinin resistance. This is based on his seminal finding on the unique

evolution of parasite enzyme and its requirement to support asparagine-rich *P.falciparum* proteome (Nature Communication, 2023). Earlier, he also showed Plasmodium asparagine requirement as a target for transmission (Nature Communication, 2015). It is my conviction that there may not be a young scientist in India, who has published three papers in Nature Communications based on research entirely done in India. He has several other papers in top journals. He has also taken at least two of the molecules, Griseofulvin and curcumin to clinical trials. Arun has an excellent career and is a brilliant scientist with emphasis on basic research and translation, and richly deserves this prestigious Award.

Prof. G. PADMANABAN
NASI Honorary Scientist
Department of Biochemistry
Indian Institute of Science
BANGALORE - 560 012, INDIA
Tel.: +91-80-22932540 / 23601492
Res.: +91-80- 23342223

G Padmanaban
Aug 3, 2023
Cell: 9900144650