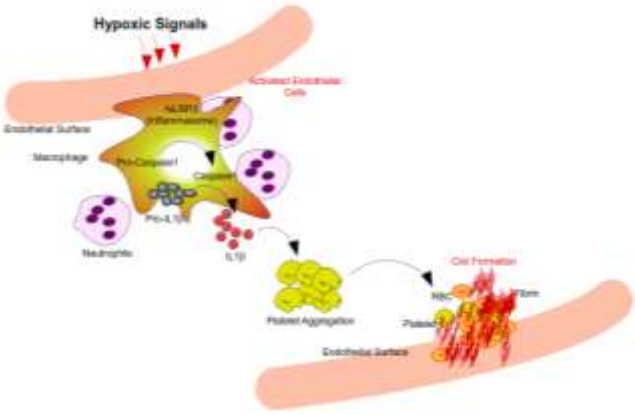
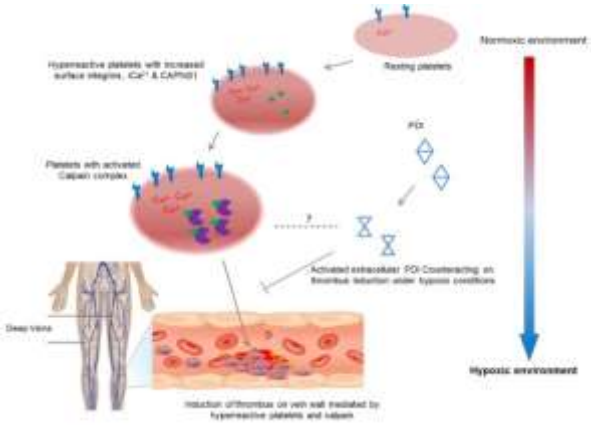
The main area of my labs research includes Cardiovascular Biology, Functional Genomics, Molecular Medicine and Translational Biology. The research team is actively involved in a wide spectrum of research ranging from human/clinical, *in vivo* animal models, cell culture based *in vitro* models, genomics and proteomics studies. One of our recent finding has been published in May 2, 2017 issue of PNAS (http://www.pnas.org/content/114/18/4763). The study revealed that thrombosis at high altitude is centrally regulated by a complex network of coagulatory and inflammatory processes, critically linked through HIF-1α. We implicated a causal role for NLRP3-inflammasome and IL-1β in hypoxia-induced venous thrombosis. We further showed a direct association between NLRP3 and HIF-1α during these conditions.



This is part of our group's effort to elucidate the pathophysiology of increased thrombotic episodes in soldiers stationed at extreme altitudes including Siachen Galciers. For last eight year my team at DRDO has been actively involved in clinical, basic and translational research on high altitude/hypoxia and its association with blood clotting. Our earlier work published in journal "Blood" (http://www.bloodjournal.org/content/123/8/1250) with as editorial commentary (http://www.bloodjournal.org/content/123/8/ 1123) has revealed the cause for formation of blood clots on ascension to mountains.



This was for the first time ever our reports have found out the cause of venous thrombosis (DVT, CVT, PVT etc) in lowlanders staying at high altitudes. Nonetheless, the work has significantly contributed in proposing a novel protein 'Calpian' as biomarkers that will help in early diagnosis of thrombosis and provide timely treatment (http://timesofindia.indiatimes.com/india/DRDO-lab-detects-reason-behind thrombosis/ article show/ 40139095.cms).

Our group has indigenously developed a microRNA based antithrombotic therapy that would be useful for community at large. Now we are working on nanoparticle based miRNA-delivery system for targeted intervention.