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Atomic force microscopy as a tool for glycoprotein structure analysis

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Chronic obstructive pulmonary disease (COPD) is the third leading cause of death in world. COPD is a progressive lung condition in composing several lung diseases, chronic bronchitis and emphysema are the most common condition that makes COPD. COPD restricts the airways by building up of a thick layer of mucus on airways and reduces the function of lungs. It causes irreversible damage to lungs and affects the quality of life. Currently there is no cure for COPD and current treatments are concerned about controlling the symptoms. Treatment for COPD is still challenge and increases death rate gradually. It is necessary to find new effective drugs to clear airway blockages and improve the life style of patients. The gel forming mucins are the major polymeric component of mucus. These mucins are glyco-proteins and contain sugar molecules and forms highly diverse in structure and more conserved. By understanding the glyco-biology of mucin proteins can lead to development of suitable drugs. However these mucin proteins are complex in structure and hard to obtain their structure and size. But recent advancement in nanotechnology, Atomic Force Microscopy helps us to analyze their function at nanoscale. The major aim of the study was to develop and begin optimization of AFM, as a nanotechnology, to visualize the potential global structural changes to mucins during an inflammatory response. By understanding their structure helps to find target structure which will help to therapeutics and development of antibodies and drugs for the deadliest disease.

Biography

Manoj Madheswaran has completed his Master's degree in Nano-science to Nanotechnology from Swansea University and about to start his PhD research soon. His research interests include nano-medicine, atomic force microscopy, bioinformatics and computational chemistry.

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