

Report on Immunoinformatics Webinar on 12th March, 2021

Webinar on ‘Immunology and Informatics’ formed third day of Bioinformatics Webinar and workshop on “From Biology to Omics” and was conducted on 12th March, 2021. Total of 110 participants were online. Most of them appreciated topic selection and information covered in their feedback form.

Dr Jyoti Kode gave first talk and she covered basics of immune response, innate immunity, adaptive immunity, antigen-mediated T/ B lymphocyte response and how informatics can help at every step adds value in understanding this information, develop therapeutics. This talk was followed by Dr Naren Joshi. He covered basics aspects of the subject and reviewed various areas that can be studied addressed using immunoinformatics based approaches. In addition to its application to emerging problems, the talk also included an example of application of a model based approach facilitated by immunoinformatics for better understanding of the basic immunological processes that also yielded clinically relevant information. Dr Meenakshi Singh in her talk covered role of HLA immunogenetics in improving clinical outcome of stem cell transplant patients. Immunogenetic informatics resources include data sources include patient, disease registries, bone marrow donor registries and scientific literature. The lecture emphasized on methods, tools and requisites for searching HLA matched donors from bone marrow registries. The lecture also described simple interaction such as binding of a single peptide to a MHC molecule or complex systemic data such as the description of complex immune responses like design and vaccine responses within a population. Several Immunoinformatics tools have been developed. These user friendly online tools enable the analysis of antibody and T cell receptor sequences (IMGT/V –Quest) , IMGT/Junction analysis graphical representation of 3 D structures and the contact analysis in antigen receptor and MHC 3D structures (IMGT/Structural Query).

This talk was followed by talk by Dr Sudhirdas Parayaga. He described algorithm for mapping T and B cell epitopes. How immunogenic epitopes are context and size dependent and how we can drive immune recognition by changing the adjacent domains. How we can bypass size limitations by making multiple antigenic epitopes. He said now antibodies are available for single molecular domains such as for phospho or phenolic structures and even single amino acid substitutions in proteins. He also discussed how molecular mimicry is contributing to incidence of allergy.

Dr Nirmal Kumar and Mr. Naythan Dcunha helped enthusiastically in coordinating sessions and conducting event smoothly.

Meeting ended with Vote of thanks delivered by Dr Jyoti Kode at 1.30pm.