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## Bacteriophage display of peptides for functional degradomics and other applications

The literature of functional degradomics is full of applications of different proteomes helping in the degradation of peptide molecules for their application in medicine, genomics and many other technologies. We have used this technique for digestion of various peptides in order to identify the proteases involved and document their proteolytic activity by confirming the degradation site by techniques such as MS. The objective was to identify the specific site for degradation of the peptides with respect to the other amino acids present in the vicinity. This specific act is able to define and classify proteases into various different classes. Also, determining the specific catalytic site and the adjoining amino acids, helps in visualizing the various proteolytic substrate molecules on which our proteases can work for digesting some macromolecules or working on a micro-molecular process. We have identified many such substrates in case of implantation serine proteases I and II, kallikrein 5/6 and classical trypsin and thrombin. The mechanism of building a phage display library for this purpose is being presented here. The objective is to use this library for the identification of many different strains of *Cannabis* (cultivated to produce various types). The hypothesis for this research was formed because of the presence of many different types of cannabinoid receptors in the different cell types in humans. By differentiating strains based on their binding to different peptide substrates bound to the phage display library, we can easily differentiate between the different types of cannabis that can also be used to-the-pointing medicinal purposes.

### Biography

Navneet Sharma has been working in the academic fields of Biochemistry and Molecular Biology for more than a decade after working in a pharmaceutical company for almost another 10 years. Prior to that, he had done his Ph.D. in Molecular Biology & Biochemistry at Indian Institute of Integrative Medicine (Council of Scientific and Industrial Research). Presently, he has been working as an Adjunct Assistant Professor in the Department of Biochemistry & Molecular Biology at the Faculty of Medicine, University of Calgary (AB) Canada. The main emphasis of his recent research work is in the field of biochemistry and the role of serine proteases and protease inhibitors in the critical processes of hatching and implantation during pregnancy. Many different approaches have been developed to determine the substrate specificity of these proteases. Bacteriophage display is one of them and has been utilized a lot in the case of these proteases. His research experience during his doctorate studies was in the fields of production of secondary metabolites by microbes, characterizing the biochemical agents involved including different enzymes & co-factors, biochemical analysis and molecular biology of these microbes. He has also worked in the pharmaceutical sector in the areas of research & development, manufacturing, process development, project management, quality assurance and regulatory affairs after his Ph.D. Presently, he also runs a consulting firm named M/S Thera-Biotech (www.thera-biotech.com) that helps various organizations in Canada for regulatory submissions with Health Canada as well as Food and Drug Administration (FDA) of US. Besides work, he has been volunteering with various organizations especially related to Health like Heart & Stroke Foundation of Canada and Science like Sanofi BioGenius Challenge Canada (SBCC) regularly for more than a decade.

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