Summary:

Proteins are the molecules that do interesting things in cells, they are involved in the production of all other molecules and cell structure, and they are involved in a cell's ability to respond to changes in its environment. There are a variety of ways to investigate protein function. Some of these are made possible by advances in molecular biology and these are useful, because they look at the protein in its cellular context. But often it is necessary to purify the protein away from the other thousands of cellular proteins, so that its structure can be examined, or its interactions with other molecules studied more specifically. They are involved in manipulation of DNA and RNA through processes such as DNA replication, DNA recombination, RNA splicing or editing. Beyond this, there are a number of important reasons for purifying proteins, and a brief list of these may serve to emphasize why individuals spend so much time and effort in this pursuit. By purifying a protein it can be clearly established that a particular biological activity (enzymatic activity, signaling capacity, etc.) actually resides in a unique protein. Purified proteins serve as extremely valuable biochemical reagents. Sometimes, the amount of desired protein is so small, and the amount of macromolecular contaminant is so high, that one needs to employ nearly every "trick of the trade" to achieve high purity. So, there are various chromatographic techniques of purification of proteins like affinity chromatography, IEX, HIC, HPLC, gel filtration, column chromatography, batch method etc. which are below discussed in detail.