The beauty of electrochemistry at liquid-liquid interfaces is that it enables the detection of ions or ionisable species by ion-transfer reactions. As a result, problems associated with the detection of analytes by oxidation/reduction reactions at solid electrodes can be surmounted. Proteins are extremely important analytical targets because of their roles in regulating biological processes and the fact that diseases often result in changes in protein behaviour. Such altered protein behaviour means that these biomacromolecules may be indicators of that disease, so-called biomarkers. Not all proteins are redox-active and even redox-active proteins cannot always be easily detected by oxidation or reduction at a metal or carbon electrode. For this reason, the electrochemical behaviour and detection of proteins via ion-transfer reactions at the interface between two immiscible electrolyte solutions (ITIES) has been of growing interest. This presentation will discuss the main idea that electrochemistry at liquid-liquid interfaces enables the detection of ions via non-redox reactions, which may be applied to detection of proteins. Recent progress towards achievement of nanomolar detection of proteins as well as formation and characteristics of nanoscale liquid-liquid interfaces will be presented.