INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Programme of Study	:	Ph.D.

Thesis Title: CLONING, EXPRESSION & PURIFICATION OF EPIDERMAL GROWTH FACTOR RECEPTOR FOR APTAMER SELECTION FOR CERTAIN BIOASSAYS

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SHORT ABSTRACT

The present study demonstrates the selection and characterization of DNA aptamers specific to the extra cellular domain (ECD) of Epidermal Growth Factor Receptor (EGFR) protein**.** In this pursuit, the ECD of EGFR was cloned, expressed and purified and a panel of DNA aptamers binding specifically to EGFR protein was selected by Systematic Evolution of Ligands by EXponential enrichment (SELEX). Then the candidate aptamers were sequenced and their potential secondary structure was predicted by mfold software. The binding affinities of the selected aptamers were determined by Flow cytometry and ELISA. The application of selected aptamers in various bioassays were explored. For example the selected aptamers were used as a bioimaging probe for the detection of EGFR overexpression in cancer cell lines and as a detection probe in membrane based assay like Dot blot assay. *In vitro* cell culture model was employed to ascertain the anti-cytotoxicity and anti-migratory effect of the selected aptamers. Further the aptamer with best recognition ability was used for the development of microtiter based assay for the detection of EGFR protein.