

New approaches for molecular diagnostics

Research area:

Molecular tools

Brief description

Molecular diagnostics will increasingly impact medical practice. Our group develops, applies, and disseminates advanced molecular tools for diagnostic analyses of nucleic acids and proteins in situ and in solution. We welcome students interested in helping us expand the range of molecular analyses possible, or find compelling biomedical applications of these methods.

Aim

Students will help us identify important diagnostic needs and molecules to target, and assist us in establishing assays to meet these needs. The students will also use our unique, powerful molecular tools with suitable patient samples to better understand disease mechanisms or for diagnostics and therapy selection.

Background

Our group follows a strong tradition in Uppsala by developing new methods for use in molecular medicine. Many of our earlier techniques for analysis of nucleic acids and proteins are now available from companies that we have established or who have obtained licenses to our techniques. Methods we develop can offer entirely new insights in disease for instance by measuring unprecedented numbers of proteins in plasma samples, studying protein variation between individual cells, or identifying rare mutant DNA sequences in plasma from tumor patients, to name a few opportunities that are currently in development or that are applied in ongoing investigations.

Project plan

Students are welcome (after evaluation) to join ongoing projects, working side by side with our postdocs and PhD students to develop new molecular technologies. We are also interested in enlisting students that may help us develop ideas about how to apply our techniques to solve important medical problems, with the aim to establish these as diagnostic techniques in clinical routine. These projects will initially involve discussions and theoretical analyses of i) the match of diagnostic needs and techniques currently available or under development, ii) the state of the art for meeting these diagnostic needs, iii) specific molecules to target for the analyses, iv) availability of suitable patient samples and of necessary reagents, etc. The projects will also involve proof of

principle experiments. Successful project may lead on to more extensive investigations beyond the scope of these initial projects.

Contact details

Name: Ulf Landegren

Group: Molecular Tools

Email: ulf.landegren@igp.uu.se. Phone number: 0708 962604