

2022 SciLifeLab Summer Internship
Paul Hudson, on behalf of the MTLs steering committee

Assessment of applications

I. Grades (40% weight)

Grades from any SciLifeLab Masters courses you have completed

II. Motivation for the selected project (60% weight) [Max 1 page, font 11 Arial]

The summer internship aims to be “student-centric,” and matches students with projects that are suitable for developing skills.

One aspect of suitability is the student’s enthusiasm and interest. This aspect stems from experiences, both in and outside academics. How do your past experiences (such as previous projects) point you to this project as an avenue for further development?

A second aspect of suitability is how much the student benefits. Benefit will be a balance between the *potential* for development (e.g. student can learn new skill in a field that is unfamiliar), and the *likelihood* for development (e.g. a student with experience in the project’s area, or in a project with good supervision, can learn more quickly).

Your motivation letter should address these aspects. One way to gauge suitability is to contact the project’s supervisor or lab PI for a (brief) discussion.

Why select two projects?

Ideally, selected applicants will be given their first choice. If it happens that two exceptional applicants list the same project as first choice, the second choice will be given to one of the students. So it is best to motivate the second project choice in the letter as well, either in separate paragraph or blended together.

Info for applicants

The internship is expected to be **2 months** full time. However, starting and ending dates will be decided by the intern and the advisor on individual basis. Compensation for the internship will be **36.000 SEK (pre-tax)**. Selected interns will have salary paid by KTH, regardless of assigned laboratory. Selected applicants will later be asked to submit information through the KTH online recruiting system Varbi.

Example motivation letters

Project selection: First preference	6. Next generation sequencing-based panel [...]
Project selection: Second preference	16. The influence of common single cell microfluidics techniques on [...] examined by RNA-Seq
Motivation	<p>My ultimate goals with the choice of this master and my engineering background is to improve the quantification in biology to become more precise and accurate science, willing to solve complex medical-disease problems. Second, learn to use bioinformatics tools to handle big data generated from sequencing and omics technologies that could enable the right interpretation of genetic conditions and disorders. Third, translate research into precision personalized medicine, being particularly focused on cancer and thus move from lab bench and computer to bedside.</p> <p>Once in Stockholm, I got deeply interested in the use of NGS from tumor samples, like liquid biopsies. The first project (6) of my choice matches perfectly well with the training I am looking for according to the pipeline I have in mind during my education and career. In addition, the opportunity to continue this project by making the master thesis is a big plus-point that I would like to take into account.</p> <p>Besides the first choice, the second project (16) joins past experience with microfluidic devices for cell mechanics imaging with my present education interest of transcriptomics techniques to understand comparative gene expression, resulting an amazing project to get involved with.</p>

Project selection: First preference

8. Site-specific incorporation of unnatural amino acids in mESC

Project selection: Second preference

7. New ChI-Seq protocol using targeted chromatin cleavage-capture

Motivation

I am interested in the internship on site-specific incorporation of UAA in mESC because of several reasons. Firstly, I like the approach very much; since I think *in vitro* studies with UAA can become a revolution for protein studies. In addition, I am craving to work with stem cells, DNA (cloning, ligation, etc.) and other basic laboratory techniques since I have never done it and I am really interested in learning as much as I can because research is the direction I see my career going to. Finally, I think this could be a great opportunity for me as well, to get introduced into CRISPR-Cas9 since it is becoming the base of gene editing and will keep gaining relevance in the future.

My lab experience is reduced because I only worked for one year in a diagnostic company, but I can offer a lot of motivation, hard work and a great willing to learn. This internship would make a big difference in my career and personal development as a researcher.

Project selection: First preference

2. Experimental biophysics

Project selection: Second preference

12. Genome-wide mapping of liver cancer-specific regulatory RNAs

Motivation

My hopes with doing an internship this summer would be to develop as a scientist, learn new techniques and become more comfortable with bioinformatical tools. It would also be very interesting to get a better insight into the research at KI and SciLifeLab as both are places I would gladly continue on to work at after my degree. The research at the Kutter lab concerning liver cancer and ncRNA seems interesting and also utilizes sequencing, which is a technique I would like to learn more about. Furthermore, I like that the project encompasses the whole process from tissue culturing to bioinformatical analysis of sequencing data. I have experience from my bachelor in various molecular techniques, but the project includes many techniques that I have not had the opportunity to try yet. The project at the Lindahl lab interests me very much due interesting combination of experimental techniques and bioinformatics and its importance is also clear due to the central role of ion channels in biology. I also got a very good impression of the group and topic from the course and therefore I think it could be very fun to do the project in the group.

Project selection: First preference	15. Deep Neural Networks for mass spectrometry-based proteomics
Project selection: Second preference	3. Computational Biophysics
Motivation	<p>During the last year of my studies, I have realised that computation plays a much larger and much more essential role in biological research that I had assumed. It is my desire to thoroughly explore the scope of bioinformatics and computational biology. I envision my skill-set as a biological research analogue of a full stack developer. Therefore I intend to acquire competencies in techniques that I feel can be linked and make me relevant to a wide variety of roles in the modern research landscape. Such techniques would include big data analysis, prediction modeling, simulations etc.</p> <p>Coming from a job as a data analyst/consultant I have had experience with machine learning algorithms and am keenly aware of their importance. Given the vast volume of data generated during research, techniques like neural networks are remarkably efficient at digging out patterns that are not recoverable otherwise. To me the ability to program data analysis pipelines that incorporate these techniques is part of a basic skill-set that a researcher must have.</p> <p>Furthermore, I feel that practical know-how and the ability to solve problems faced in the wet lab are important. This requires creating real world applications, like the projects in this fellowship.</p>
