



SAHLGRENKA AKADEMIN

Institutionen för kliniska vetenskaper

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Announcement - scholarship at undergraduate/advanced level

The Department of Surgery, the Institute of Clinical Sciences, hereby announces a vacant scholarship at undergraduate/advanced level in Investigating the role of ATF4 and BACH1 in NRF2-Driven Metastasis in Non-Small Cell Lung Cancer

Preliminary training plan

Background

Metastasis is the leading cause of mortality in non-small cell lung cancer (NSCLC), and there are currently no effective therapies that specifically target this process. Activation of the KEAP1/NRF2 pathway promotes metabolic reprogramming and supports tumor growth and dissemination, in part by stabilizing the pro-metastatic transcription factor BACH1. In parallel, ATF4, a key regulator of the integrated stress response, is frequently upregulated in tumors and supports adaptation to oxidative, metabolic, and hypoxic stress. Together, ATF4 and BACH1 form complementary transcriptional programs that enable cancer cells to survive stress and drive metastatic progression.

Purpose

This training offers an immersive experience in cancer research, focusing on the roles of ATF4 and BACH1 in NRF2-driven metastasis in NSCLC while developing the student's experimental, analytical, and translational research skills. It also aims to evaluate whether targeting ATF4-mediated stress adaptation and BACH1-driven metastatic programs is a viable therapeutic strategy.

Method

The student will undertake supervised, hypothesis-driven training combining molecular biology, functional assays, computational approaches, and exposure to *in vivo* models to study ATF4 and BACH1 in NSCLC metastasis. Core techniques will include cell culture, migration and invasion assays, CRISPR/Cas9-mediated gene modulation, and gene/protein expression analysis (RT-qPCR, Western blot), alongside assessment of stress-response pathways and *in silico* drug screening for candidate inhibitors. The student will also assist with *in vivo* metastasis models in compliance with ethical guidelines and perform data analysis and interpretation.

Work Plan

The project is structured over 6 months.

Months 1-2 focus on literature review, foundational training in experimental techniques, and establishing relevant cellular models.

Months 3-4 involve gene modulation and functional characterization of ATF4 and BACH1 in NRF2-driven metastasis, including molecular and cellular assays to investigate their biological roles.

Months 5-6 emphasize mechanistic and translational studies, including stress-response pathway analysis, drug testing and integration of findings. The final phase will also include data analysis, report writing, and preparation for potential scientific dissemination or contribution to a manuscript.

Learning outcome

By the end of the program, the student will gain a strong understanding of ATF4 and BACH1 in NRF2-driven metastasis, along with hands-on experience in molecular and cellular techniques, stress-response biology, and translational research approaches. The student will also develop skills in experimental design, data analysis, and scientific communication, preparing them for future research career.

If you require any further information, please contact Volkan Sayin, volkan.sayin@wlab.gu.se, supervisor.

Period:

6 months scholarship with starting date as agreed.

Financing

2 payments of 45,000 SEK. A total of 90, 000 SEK for the whole period.

If you require any further information, please contact Volkan Sayin, volkan.sayin@wlab.gu.se supervisor

Application

To apply please fill out the form “Scholarship application” and send it to Volkan Sayin, volkan.sayin@wlab.gu.se, supervisor.

To be eligible for a scholarship you must be a registered student at undergraduate or advanced level at the University of Gothenburg, other Swedish university or an international university.

Please attach a copy of your registration certificate with your application. The certificate must demonstrate that you are a registered student throughout the scholarship period.

Closing date is 2026-06-15.