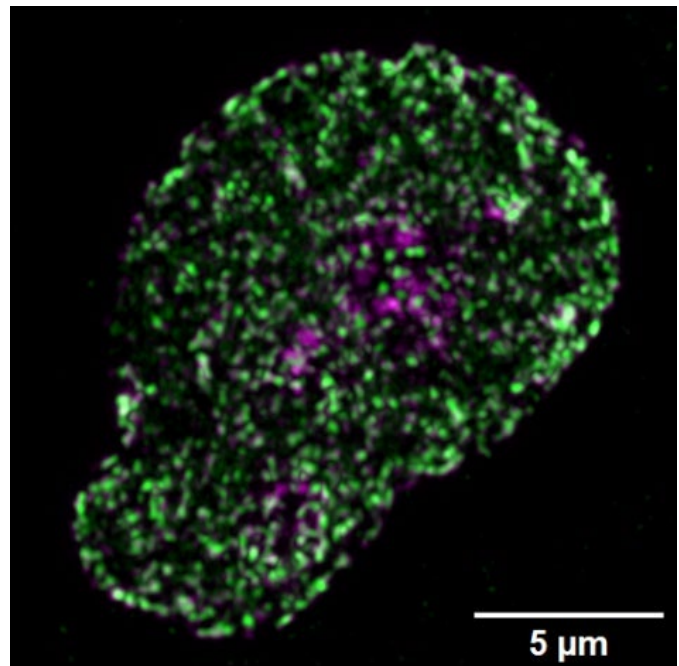


Slade lab

Master's position in molecular cell biology: DNA replication factories in human cells

DNA replication is a highly dynamic process that needs to be tightly coordinated. The DNA sliding clamp PCNA acts as a scaffold for the recruitment of DNA replication and DNA repair factors. PCNA forms characteristic foci in S-phase cells marking replication factories. Replication factories may act as biomolecular condensates to maintain adequate concentrations of replication factors.

PCNA recruits PARG to replication factories, which degrades poly(ADP-ribose) (PAR) and is required for recovery from prolonged replication stress. PARG inhibitors are clinically relevant for synthetic lethality approaches in cancer patients that are deficient in homologous recombination.



About the position and the research project

We found that PARG strongly associates with PCNA through a PCNA-interacting protein motif (PIP-box) within its disordered regulatory region. This interaction triggers condensate formation of PARG and PCNA in vitro and regulates their clustering within replication foci in cells.

Replication factories in human HEK293 cells. PCNA in green and newly replicated DNA in magenta.

The main goal of this MSc project is to analyze replication factories by high-resolution microscopy and uncover how the interaction of PARG with PCNA contributes to the regulation of DNA replication and replication stress response.

In this project you will gain expertise in the following techniques: cell culture, immunofluorescence, confocal microscopy, Airy scan high-resolution imaging, image analysis.

The MSc thesis will be carried out in the Slade group at Max Perutz Labs. The start date is preferably June 2024 for the duration of 10-12 months. The student will receive a stipend of about €450 per month.

Application and contact

Please send your CV, grade transcript and motivation letter to dea.slade@meduniwien.ac.at.

About the Max Perutz Labs

The Max Perutz Labs are a research institute established by the University of Vienna and the Medical University of Vienna to provide an environment for excellent, internationally recognized research and education in the field of Molecular Biology. Dedicated to a mechanistic understanding of fundamental biomedical processes, scientists at the Max Perutz Labs aim to link breakthroughs in basic research to advances in human health. The Max Perutz Labs are located at the [Vienna BioCenter](#), one of Europe's hotspots for Life Sciences, and host 44 research groups, involving around 400 scientists and staff from more than 50 nations.

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