

# Research projects MSc Chemistry & LST

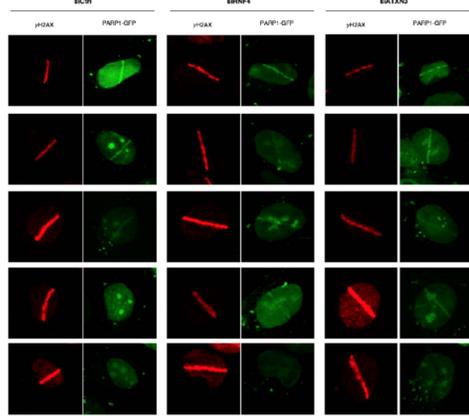
Recent projects at companies, other universities and abroad

## Karolinska Institute, Stockholm

### Ataxin-3 and its relation with PARylation in DNA damage

Department of Cell and Molecular Biology

**Figure: PARP1 accumulation upon DNA damage is not affected by depletion of RNF4 or ataxin-3.** U2OS cells PARP1<sup>-/-</sup> were transiently transfected with GFP-PARP1 and knocked down for the indicated proteins (ctrl, RNF4 and ataxin-3). Cells were micro-irradiated, fixed and immunolabeled for gH2AX (red).



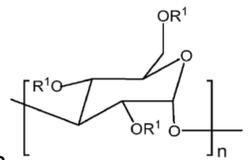
## DuPont, Leiden

### Barrier properties of modified glucans on paper substrates

Biomaterials department



**Figure: illustration of Cobb test for water or oil absorption (TAPPI T441)** Cobb equipment including a Cobb tester to the left and a 10 kg roller on the right, with representative high and low coating weight samples post oil Cobb test of WSCG coated testliner paper.

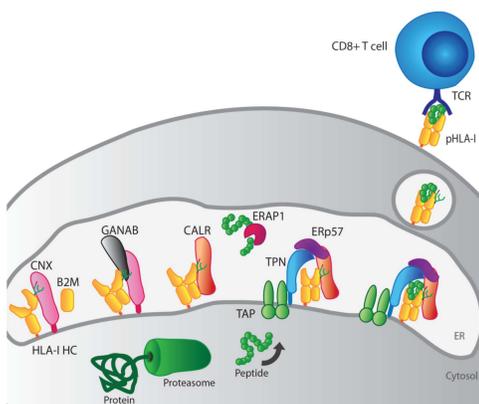


Substituted  $\alpha$ -1,3-glucan

## Sanquin, Amsterdam

### Generation and Validation of a toolset to study the HLA-I antigen-presentation pathway

Department of Immunopathology



**Figure: Schematic overview of the HLA-I antigen presentation pathway.** Downregulation of, absence of or mutations in key proteins of the peptide-loading machinery will affect the HLA-I peptide presentation to CD8+ T cells and might induce immune escape.

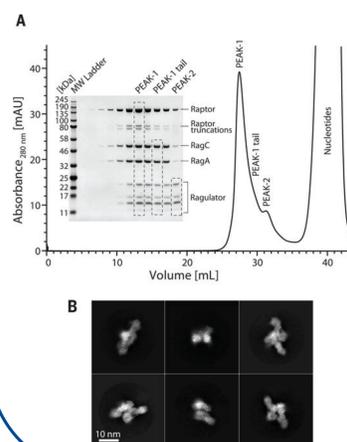


## MIT, Boston, USA

### Towards the structure of SLC38A9 and its cross-talk with mTORC1 machinery

part of [Rogala et al., Science 366(6464)]

Sabatini Lab, Whitehead Institute



**Figure: Purification, assembly, and structure determination of the Raptor-Rag-Ragulator supercomplex.**

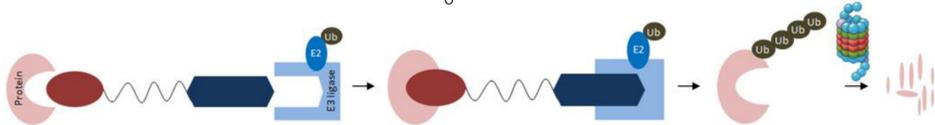
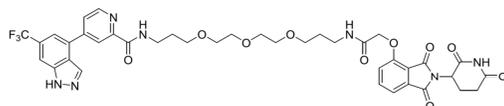
(A) Gel filtration profile and corresponding SDS-polyacrylamide gel electrophoresis of the reconstituted Raptor-Rag-Ragulator supercomplex as visualized with Coomassie Blue staining. The fully assembled complex (peak 1) partially overlaps with two subcomplexes: Rag-Ragulator (peak 1 tail) and Ragulator (peak 2). (B) Representative two-dimensional class averages of the Raptor-Rag-Ragulator supercomplex.



## Imperial college, London

### Design and synthesis of MetAP2-targeted PROTACs

Department of Chemistry



**Figure: Proteolysis targeting chimeras (PROTACs) simultaneously bind a target protein and an E3-ubiquitin ligase hence causing ubiquitination and degradation of the target protein by the proteasome.** (a) Structure of PROTAC-1 with a CF<sub>3</sub>-group at position 6. (b) Schematic diagram PROTAC function, showing binding of the target protein, formation of the ternary complex, polyubiquitination and proteolysis.

## Rules

Prior permission of the Board of Examiners is required for all external research projects (except for allowed institutes for LST students). Only external minor research projects of 20-40 EC are considered.

The Board of Examiners evaluates the proposed external project on scientific level, feasibility and suitability for the programme.

An internal supervisor at the LIC monitors the project and organises the final evaluation. See masters.lic.leidenuniv -> research project for more information.

## and many others...

