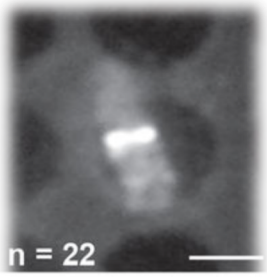
# SEMINAR

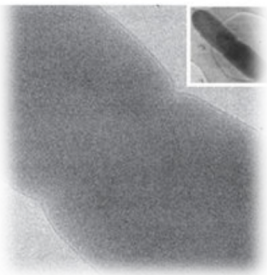
host: zach.hensel@itqb.unl.pt (please contact if you want to meet the speaker)

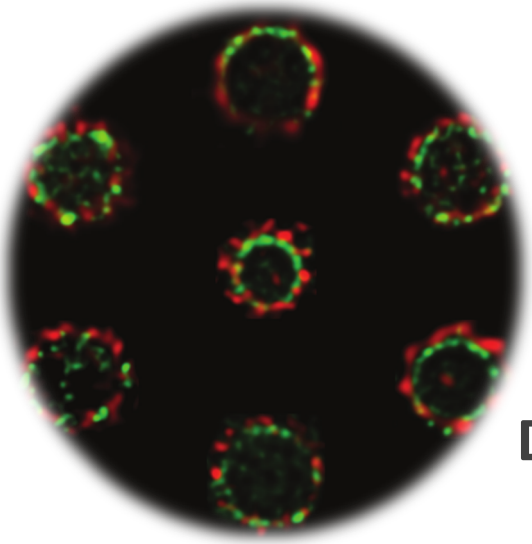
INSTITUTO DE TECNOLOGIA QUÍMICA E BIOLÓGICA ANTÓNIO XAVIER | WWW.ITQB.UNL.PT

# Cell division in *E. coli*

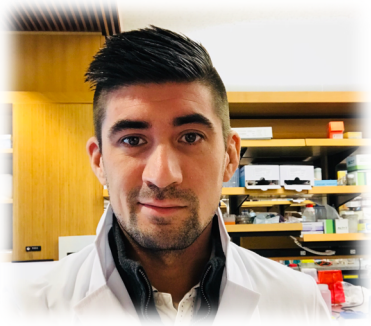
## You might have heard about the Z-ring, but have you ever met his cousin, the Z-square?





**Friday May 18**
**11:00–12:00**
**ITQB Auditorium**



**Dr. Bill Söderström**

**Okinawa Institute of Science and Technology**

**Abstract**

The *E. coli* division machinery, the divisome, is a large, dynamic protein assembly that spans all compartments of the cell. It assembles at midcell, constricts the membranes and finally disassembles after each round of division.

In this talk, I will give three snap shots from my research where I use super-resolution fluorescence microscopy and correlative cryo-fluorescence and cryo-electron microscopy (cryo-CLEM) to follow different stages of the division process.

1. FtsZ is a key player in bacterial cell division, functioning as a recruitment base for other cell division proteins. But does it generate a force great enough to deform membranes *in vivo*? Our cryo-CLEM data suggests that it does not.

2. Imaging cells using dual color SIM and STED at a later stage during membrane constriction revealed a relatively large radial separation between subsets of proteins associated with the divisome. For example, an FtsN ring was clearly visible outside an FtsZ ring, indicating that the divisome may be made up of different modules rather than one super-complex. Our data suggest that the cell division machinery in *E. coli*, rather than being compressed to the leading edge of the invagination, is radially elongated at septum during constriction and that during the late(r) stages of division only a subset of division proteins are required to finish the job.

3. Lastly, I will, as indicated in the title, present recent data on the robustness of "Z-ring" assembly and dynamics in cells sculptured as squares, hearts and stars.