



GRK2062

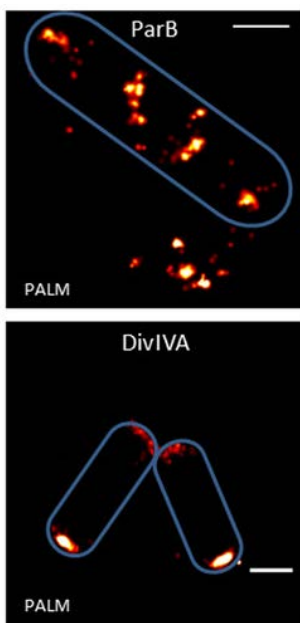


WHAT'S GOING ON

in the Research Training Group Molecular Principles of Synthetic Biology

NEWSLETTER
#1 2017

FOCUS ON RESEARCH



[Prof. Dr. Kirsten Jung](#)

Introduction of the newly established Transregio CRC 174:

“Spatiotemporal Dynamics of Bacterial Cells”

The primary objective of TRR 174 is to elucidate the subcellular organization of bacteria and investigate the mechanisms that underlie the dynamic patterning of proteins in the intracellular space. Contrary to a long-held view, bacteria are highly organised units whose function is guaranteed by the precise positioning of biomolecules inside them. TRR 174 will consider many different aspects of cellular organisation, such as the spatiotemporal regulation of cell division, growth and morphogenesis, the organisation and segregation of chromosomal DNA and the dynamics of the formation of (membrane) protein complexes. In this way, TRR 174 aims to identify the molecular systems responsible for controlling these cellular processes and better understand the spatiotemporal dynamics of bacterial cells. “Recent advances in microscopy and biological imaging have provided us with new tools that can reveal with unprecedented resolution the distribution of molecular components in single cells, and monitor how these patterns change over time,” deputy coordinator Professor Kirsten Jung explains. A better understanding of the internal dynamics of bacterial cells is a prerequisite for the development of novel antibiotics and the construction of bacterial designer strains for biotechnological applications.

Figure 1. Images showing capability of localization microscopy (PALM)

Above: *C. glutamicum* cells expressing *ParB-mNeonGreen* from the endogenous *parB* locus.

Below: *C. glutamicum* cells expressing *DivIVA-mNeonGreen* from the endogenous *divIVA* locus.

Quantitative imaging can be performed when fluorophore characteristics are known from *in vitro* analysis.

Scale bars: 1 μm .

Pictures: Marc Bramkamp

NEW MEMBERS

PhD-students

Elisabeth Hoyer, M.Sc.



Biology, started her PhD study in June 2016. Supervised by Kirsten Jung she is focusing on “Spatiotemporal dynamics of the membrane-integrated pH-sensor CadC”.

EVENTS



Joint Retreat 2017 - ICMSE Pre-conference

Date: August 26-27, 2017

Location: Uni Basel, Switzerland

The meeting promises prosperous discussions with [renowned speakers](#) and researchers with hands-on experience in their respective domains. But stay tuned for the fun part: We are thrilled to announce the Science Slam on Saturday evening in the beautiful atrium of Basel's University, offering a fantastic summer atmosphere.

Registration will open in February, we'll keep you informed. Thereafter every GRK2062 junior researcher will be asked to register for the pre- and main-conference ([ICMSE 2017](#)). Registration process will include booking of accommodation. GRK2062 will organize your travel to Basel on August 25, 2017 in the afternoon and back to Munich in the morning of August 30, 2017.

The pre-conference is jointly organised by fellows of the [NCCR Molecular Systems Engineering](#), as well as [FMS Research Center](#) and students of our Research Training Group GRK2062 “Molecular Principles of Synthetic Biology”.

iGEM 2017: Lab of Fritz Simmel will host this year's iGEM team

After the great success of the joint Munich iGEM team in 2016 Fritz Simmel has taken on responsibility for this year's iGEM team. Of course GRK2062 will again support the team.

[More information](#)

Upcoming Transferable Skills Courses

For women only: **Führungswerkstatt**, [Dr. Brigitte Winkler](#)
The course consists of two parts. Part 1 will run on April 28th, 2017, part 2 on October 10th, 2017 at LMU biocenter. Please note: the course is held in German, but contributions in English are welcome.



JOURNAL CLUB

Science Nov 18 2016: Vol. 354, Issue 6314, pp. 900-904

Report

A synthetic pathway for the fixation of carbon dioxide in vitro

Thomas Schwander, Lennart Schada von Borzyskowski,
Simon Burgener, Niña Socorro Cortina, Tobias J. Erb

Abstract

Carbon dioxide (CO₂) is an important carbon feedstock for a future green economy. This requires the development of efficient strategies for its conversion into multicarbon compounds. We describe a synthetic cycle for the continuous fixation of CO₂ in vitro. The crotonyl-coenzyme A (CoA)/ethylmalonyl-CoA/hydroxybutyryl-CoA (CETCH) cycle is a reaction network of 17 enzymes that converts CO₂ into organic molecules at a rate of 5 nanomoles of CO₂ per minute per milligram of protein. The CETCH cycle was drafted by metabolic retrosynthesis, established with enzymes originating from nine different organisms of all three domains of life, and optimized in several rounds by enzyme engineering and metabolic proofreading. The CETCH cycle adds a seventh, synthetic alternative to the six naturally evolved CO₂ fixation pathways, thereby opening the way for in vitro and in vivo applications.

Full text: <http://dx.doi.org/10.1126/science.aah5237>

MISCELLANEOUS



*Impression from the first
LSGN meeting in October
2016*

Life Science Graduate Network - LSGN

We are proud to announce that after the first very successful networking event, LSGN decided to repeat the experience. This time, the event will include an initial informal poster session, where 1 or 2 volunteers from each graduate school will present a poster. The poster session is made in order to give practical examples to other PhD students about projects that are done in each graduate school. You don't have to prepare a brand new poster for this event, just bring the latest one to present your research to other PhD students. Would

you like to present a poster on your research and exchange ideas with other PhD students? Please email to chiara.gandini@bio.lmu.de

The event will take place on **February 23rd, 2017** in the foyer at LMU Biozentrum in Martinsried (Großhaderner Str. 2) between 18:00-23:00. Beverages, snacks and live music will help fine-tuning the atmosphere. **Don't miss this!**

GRK2062

MOLECULAR PRINCIPLES OF SYNTHETIC BIOLOGY

funded by the
DFG

LMU

TUM
TECHNISCHE
UNIVERSITÄT
MÜNCHEN

max planck institute
of biochemistry



Publisher

GRK 2062 Molecular Principles of Synthetic Biology
Ludwig-Maximilians-Universität München
LMU Biocenter
Großhaderner Str. 2-4
82152 Martinsried
Germany

Unsubscribe

[Cancel the newsletter](#)

Browser version

[Read the newsletter in your browser](#)

Editor

Dr. Beate Hafner

Contact

E-Mail: grk2062@bio.lmu.de

Phone: +49 89 2180-74714

Web: <http://www.grk2062.lmu.de>