



UNIVERSITÄT GREIFSWALD
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Das **Institut für Biochemie** lädt gemeinsam mit dem Ortsverband
der **Gesellschaft Deutscher Chemiker** zu einem

K o l l o q u i u m d e r G D C h

Großer Hörsaal des Instituts für Biochemie
Felix-Hausdorff-Str. 4, Greifswald

Montag, 24. Juni 2019, 16 Uhr c.t.

Prof. Dr. Tobias Erb

Max Planck Institute for Terrestrial Microbiology, Marburg

spricht zum Thema:

Fixing CO₂-fixation: Designer-Enzymes, synthetic pathways and artificial cells for the conversion of CO₂

Abstract:

RubisCO is the key enzyme of the Calvin-Benson-Bassham (CBB) cycle and the entry point of CO₂ into plant metabolism. However, its low catalytic rate and promiscuity with O₂ that causes photorespiration make carbon fixation through RubisCO a limiting factor in photosynthesis.

In my talk, I will present strategies for the design and engineering of novel CO₂-fixing enzymes and pathways to overcome the limitations of RubisCO and the CBB cycle. An example is the CETCH cycle, which is an *in vitro*-reaction network of 17 enzymes that was established with enzymes originating from nine different organisms and optimized in several rounds by enzyme engineering and metabolic proofreading. Another example is the TaCo pathway, a synthetic pathway that allows for the additional fixation of carbon from glycolate during photorespiration.

I will also present current efforts in our laboratory that aim at coupling these synthetic CO₂-fixation pathways with the photosynthetic machinery and transplanting them into natural and artificial cells.

REFERENCES:

Schwander T, Schada von Borzyskowski L, Burgener S, Cortina NS, Erb TJ (2016) A synthetic pathway for the fixation of carbon dioxide in vitro. *Science* 354:900-4.

Einladender

Prof. Dr. Uwe Bornscheuer

PD Dr. Heike Kahlert

Vorsitzende des Ortsverbandes der GDCh