

# What Kind of Cooperation does the HHU Expect from Japanese Universities?

## *The View from the Faculty of Science and Mathematics*

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Vice-President of Research and Transfer  
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CEPLAS

Cluster of Excellence on Plant Sciences  
*"From Complex Traits towards Synthetic Modules"*  
Düsseldorf - Cologne



BioSC

Bioeconomy Science Centre  
Aachen - Bonn - Düsseldorf - Jülich



CRC 1208

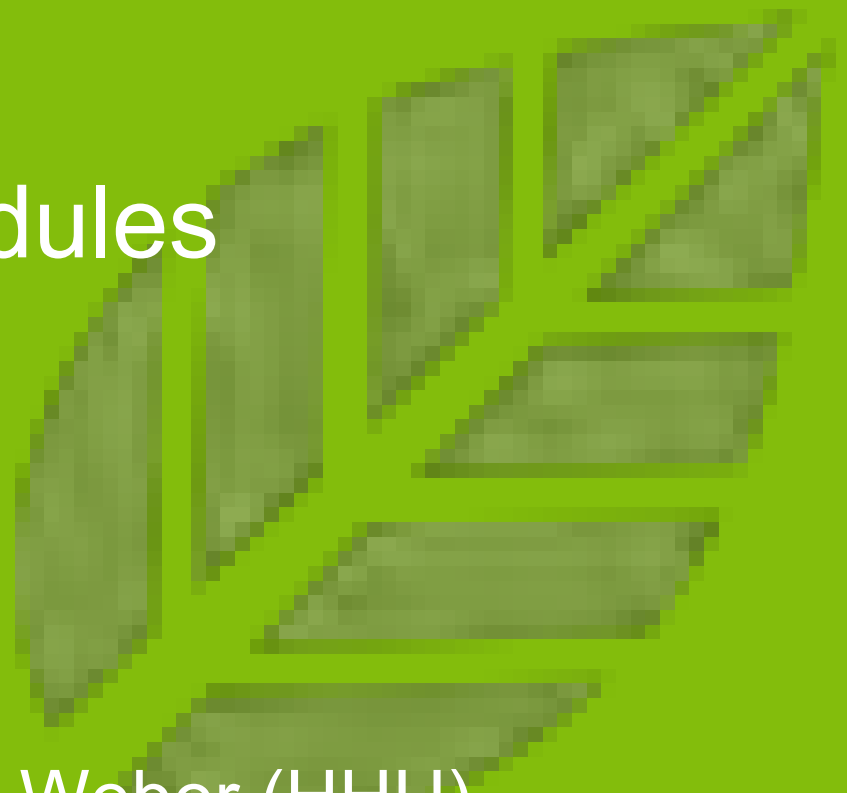
Collaborative Research Centre 1208  
*"Identity and Dynamics of Membrane Systems"*  
Düsseldorf



# CEPLAS

Cluster of Excellence on Plant Sciences

## From Complex Traits towards Synthetic Modules



Coordinator: Prof. Dr. Andreas Weber (HHU)



# A Joint Plant Science Center

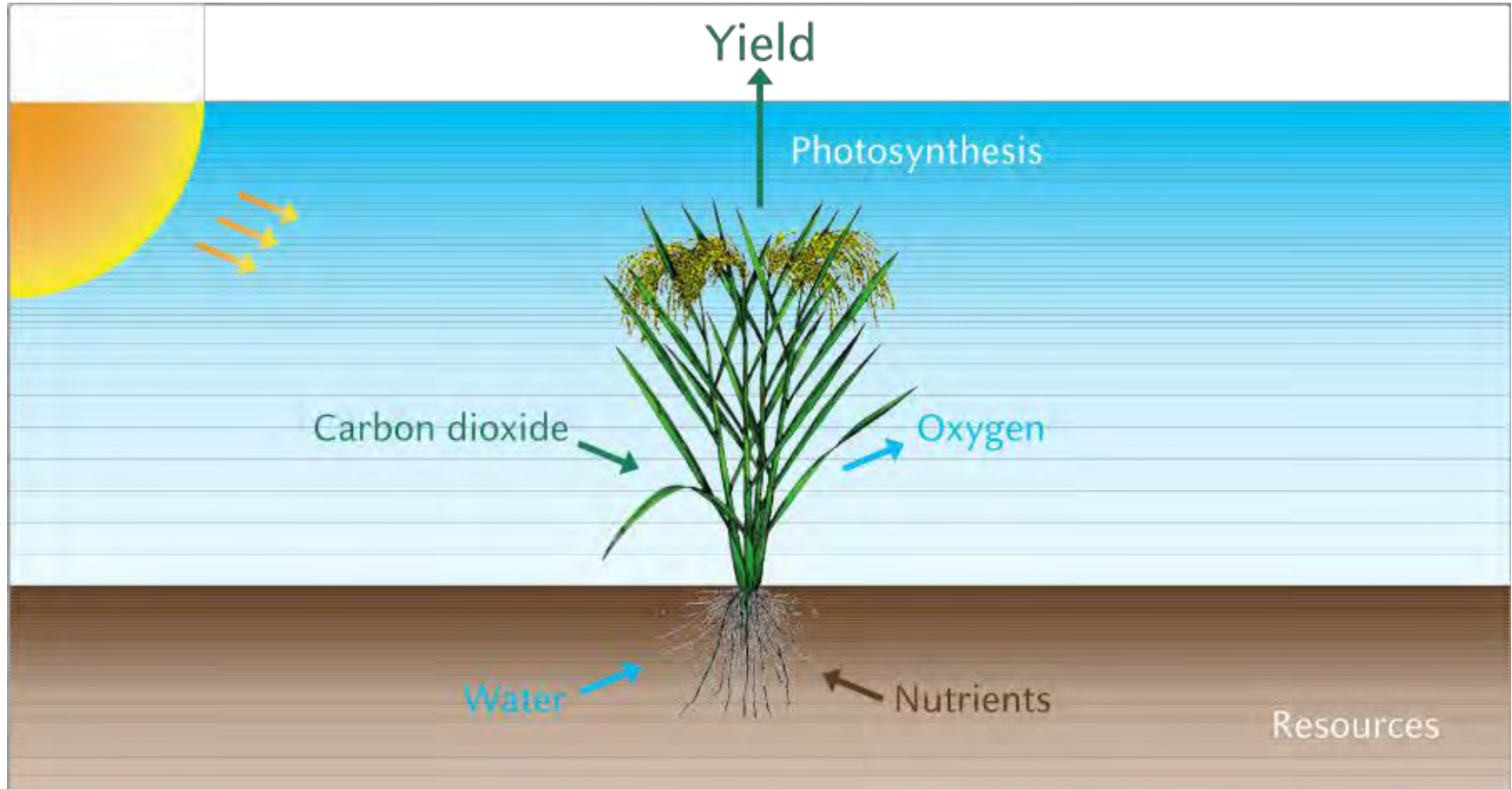






# The Grand Theme

Increase in Yield Potential ...



... but in a sustainable manner!



# Research Areas and Goals

## **Perennialism**

*Better resource  
use efficiency*



## **C4 Photosynthesis**

*Higher rates  
of photosynthesis*

## **Plants & Microflora**

*Improved use of resources  
& defense capabilities*

## **Metabolic Interactions**

*Chemical diversity:  
novel genes for a green chemistry*



# Our Collaborators

A strong emphasis on interaction with industry



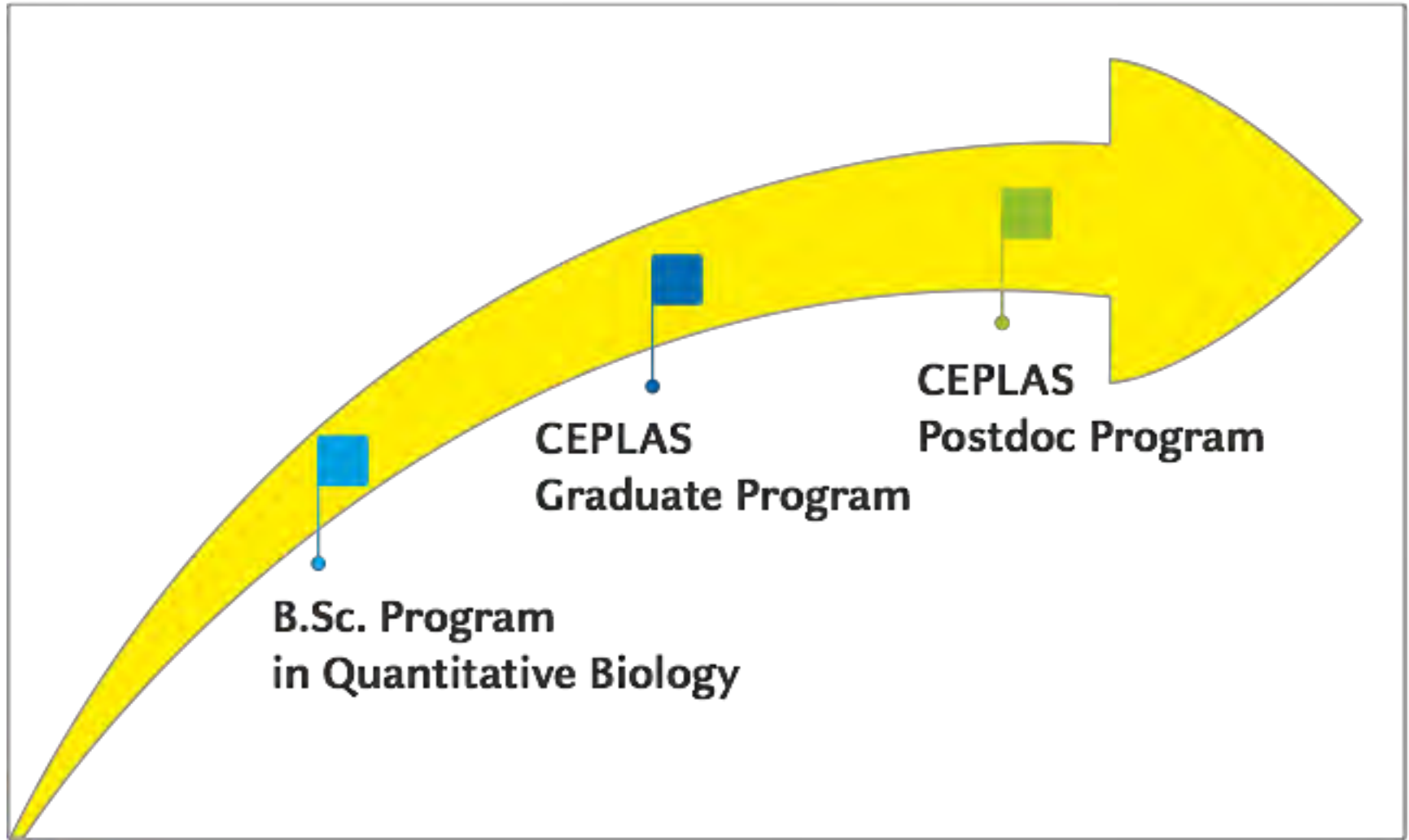
THE UNIVERSITY OF  
WESTERN AUSTRALIA  
*Achieving International Excellence*





# Promotion of Early Career Researchers

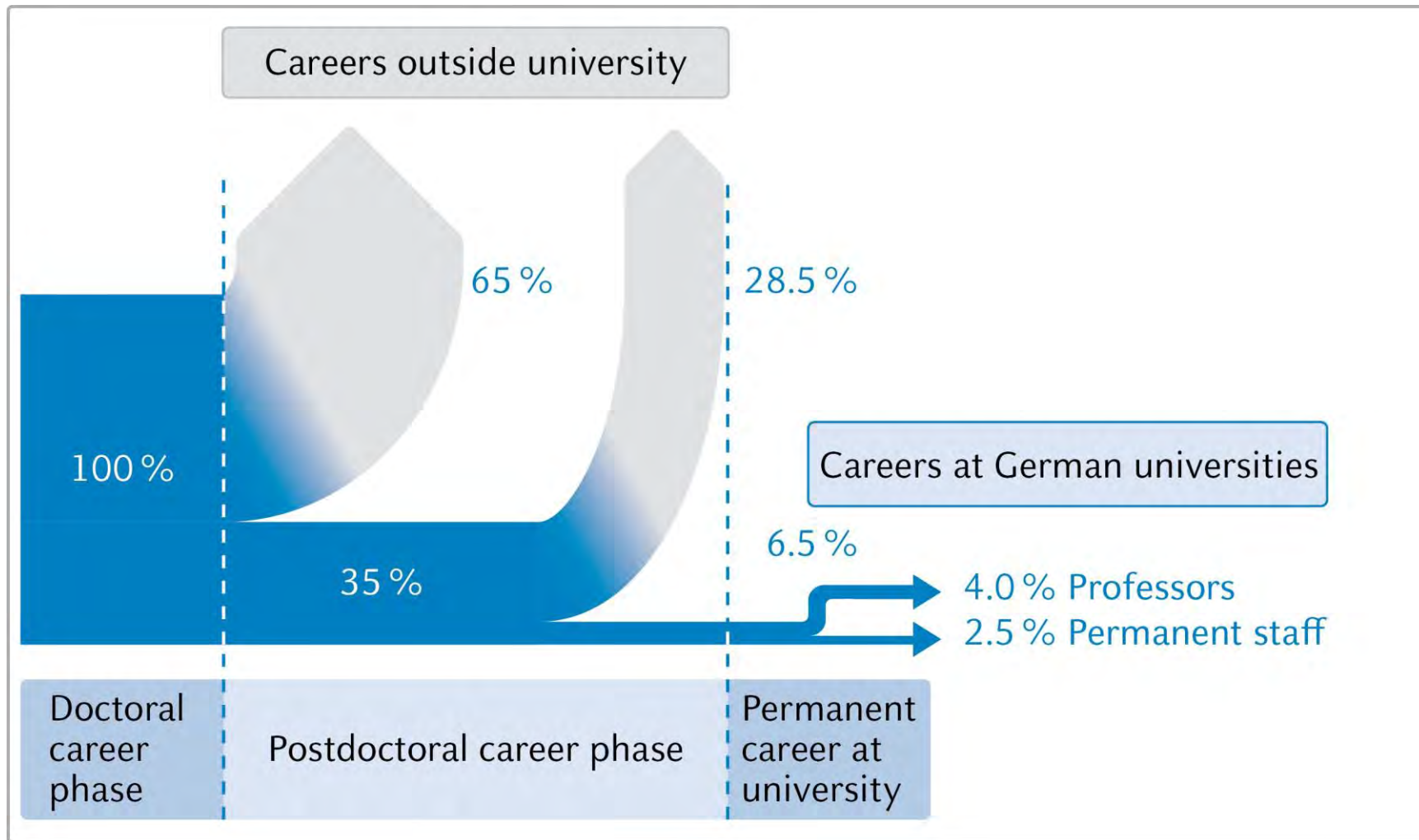
Integrated training concept at all levels





# The CEPLAS Postdoc Program

## Why is it important?



# Centre of Synthetic Life Sciences

Funded by German Government and a private sponsor



# Research and Cooperation for a Sustainable Bioeconomy



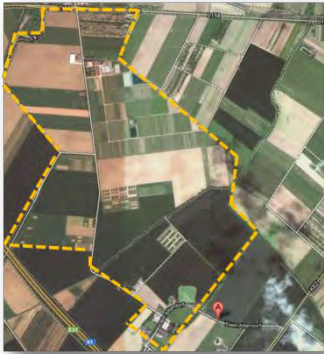
- Established 2010
- 64 Core Groups, > 1400 staff
- Integration of key disciplines for the provision of biomass, bio-based products and processes, (socio)economy
- Research & education
- Funded by MIWF since 2013 (5.8 Mio. €/year, for at least 10 years)



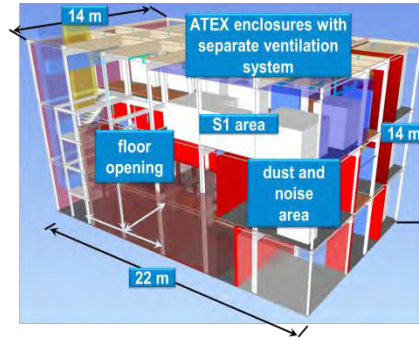
# Research Activities and Goals



# Cooperation in Infrastructures



Agricultural  
experimental sites  
(Campus Kleinaltendorf)



Bioraffinery  
(NPG<sup>2</sup>)



Bioinformatics



Phenotyping



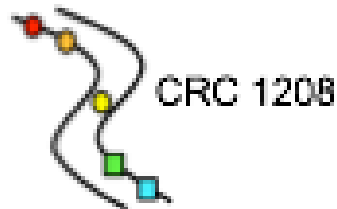
Bioanalytics

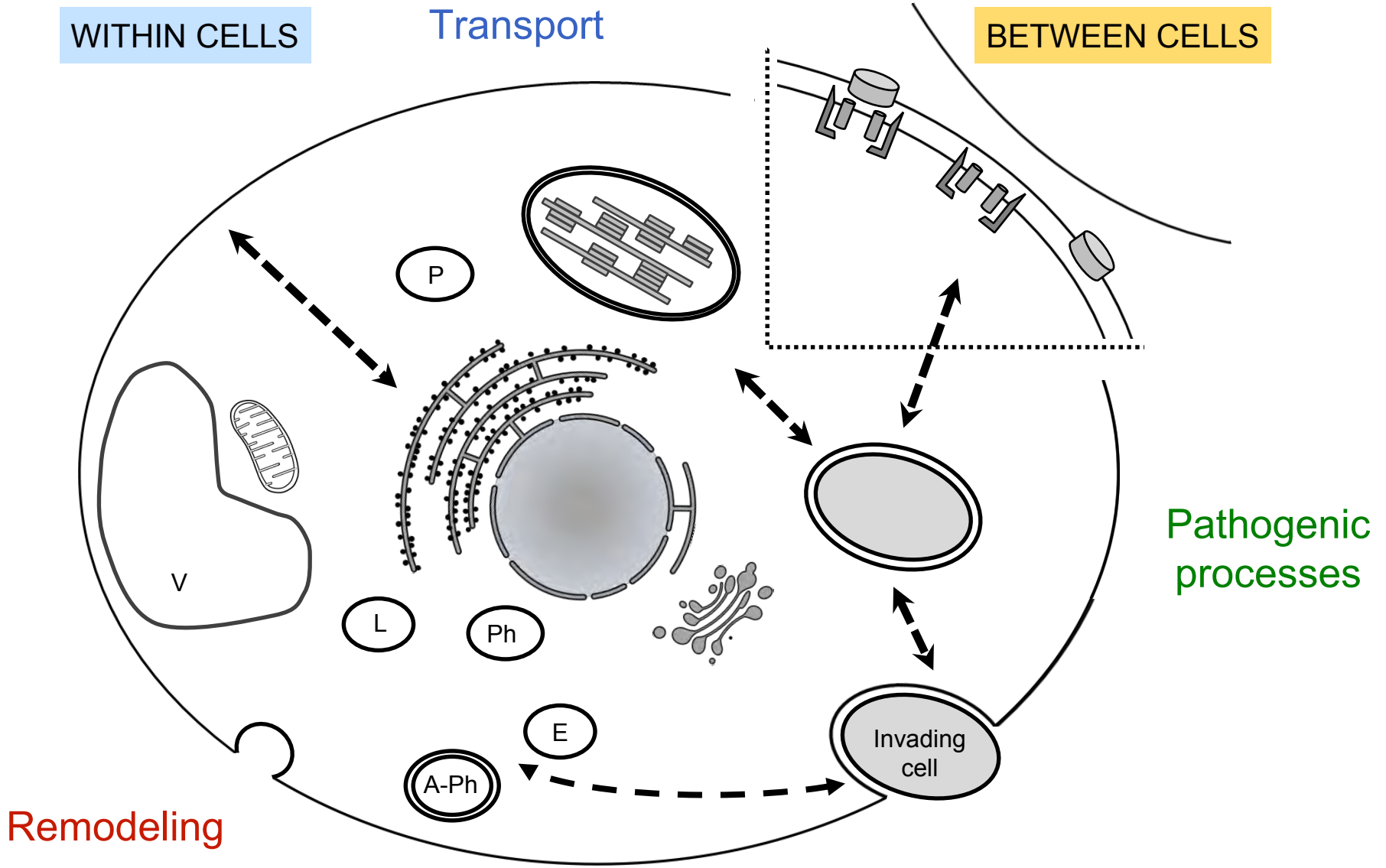
## CRC 1208

# Identity and Dynamics of Membrane Systems

## From Molecules to Cellular Functions

Lutz Schmitt





## Combined Experimental Approaches

### Structural

- X-ray crystallography
- NMR spectroscopy
- Fluorescence spectroscopy

### Biochemical

- Interactomics
- Kinetics
- Systems reconstitution

### Cellular

- Fluorescence labeling
- Live cell imaging
- Component quantification

Identity and Dynamics of Membrane Systems -  
From Molecules to Cellular Functions

- The need for a "Coalition of the Willing" at both sides
- The need for a joint funding scheme
- The selection of a common research topic
- Which type of research cooperation is intended?
  - ❖ A research only cooperation of which size?
  - ❖ A research training group for graduate students?
  - ❖ Joint meetings complemented by summer schools?