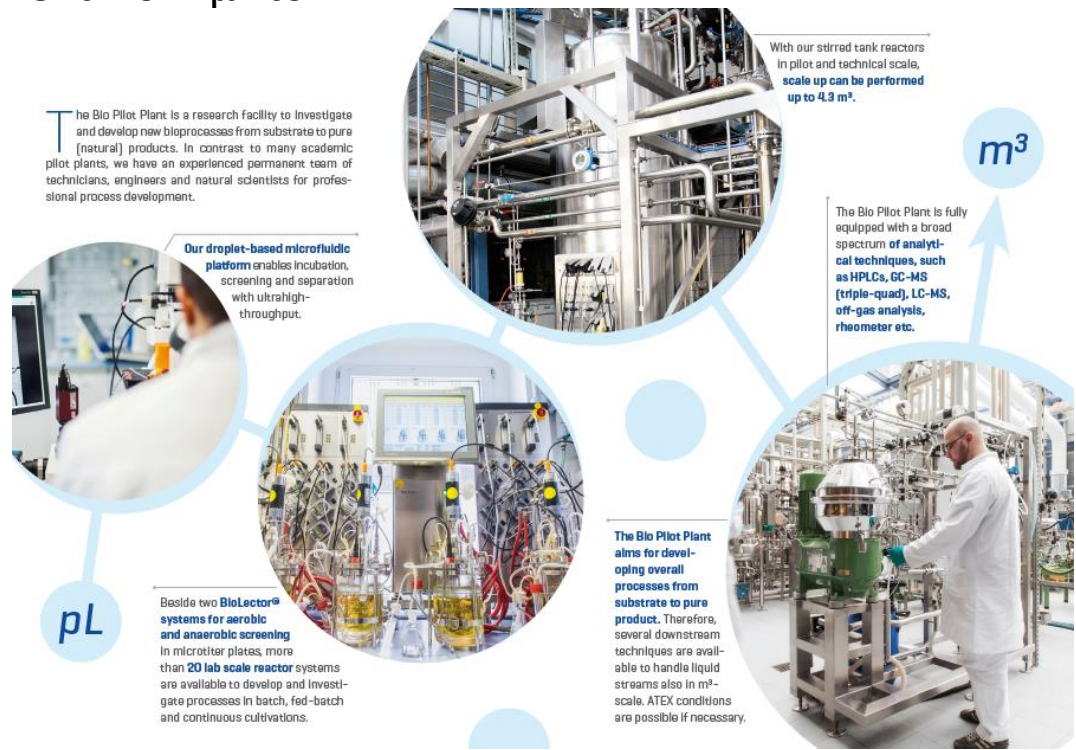


Microbial (and cultural) mixed cultures

February 3, 2021

Lars Regestein

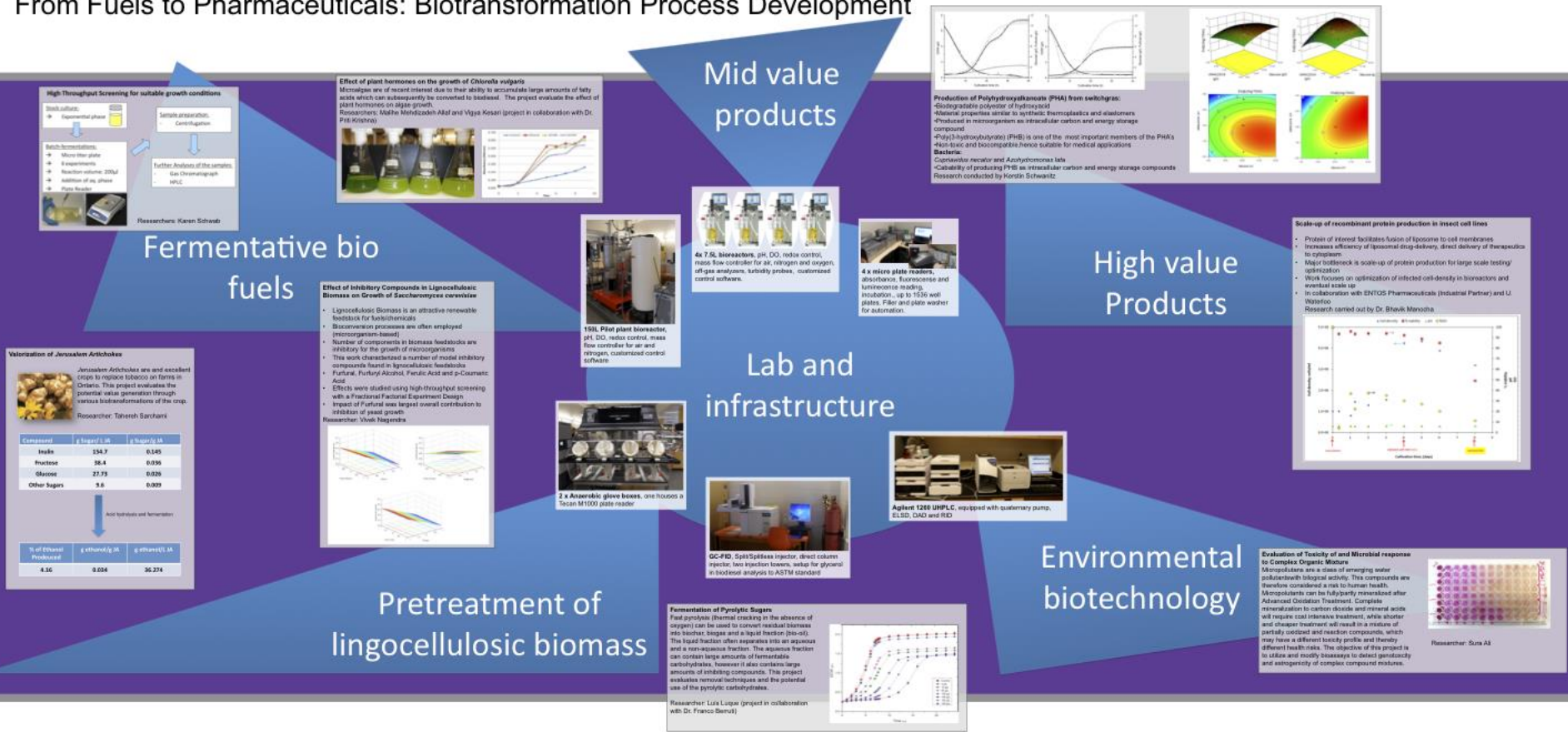
- Principle investigator and head of process development at Leibniz Institute for Natural Product Research and Infection Biology (German)
- Assistant Professor (Oberingenieur) at beginning of collaborative work (RWTH Aachen University)
- Research focus: microbial mixed culture, process intensification, scale-up and overall process development from μL to m^3



Lars Rehmann

- Full Professor in Chemical and Biochemical Engineering at Western University (Canada)
- Assistant Professor at beginning of collaborative work
- Works on all sort of biochemical engineering

From Fuels to Pharmaceuticals: Biotransformation Process Development



Collaboration - What went in?



Lars Regestein



- Actively exchanged research personnel since 2014
- Wrote publications together
- Successfully applied for several grants together



2014

Canada

- Regestein (sabbatical)



2015

Germany

- Rehmann (sabbatical)
- Doer (8 months, thesis chapter)
- Staaden (6 months thesis)



Alexander von Humboldt
Stiftung/Foundation

2016

Canada/ Germany

- Golla and Mann (6 months each in London)
- Sarchami (1 month Aachen)

No specific funds

2017

Germany

- Rehmann (6 weeks)
- Munch (12 months, part of PhD thesis)



Alexander von Humboldt
Stiftung/Foundation

2018

Canada/ Germany

- Rehmann (6 weeks in Aachen)
- Miebach (6 months in London)



Alexander von Humboldt
Stiftung/Foundation

2019

Germany

- Rehmann (6 weeks)



Alexander von Humboldt
Stiftung/Foundation

2020

Canada/ Germany

- Deithers (6 months in London, mainly theoretical work)
- Jani, visit in Aachen canceled

No specific funds

2021

Canada/ Germany

- Aiming to recruit post-doc from Aachen to London
- Maybe schedule Jani visit
- Potentially include Jena



Feodor Lynen
(Humboldt)

Collaboration - What came out?

Easy to quantify

- International experience for 8 students
- Strong international network
- Exchanges each year since 2014
- Six joint publications

Hard to quantify

- Impact on ability to recruit HQP
- Impact on HQP career
- Impact on research grants (listing each us as 'collaborators on multiple successful grant applications')

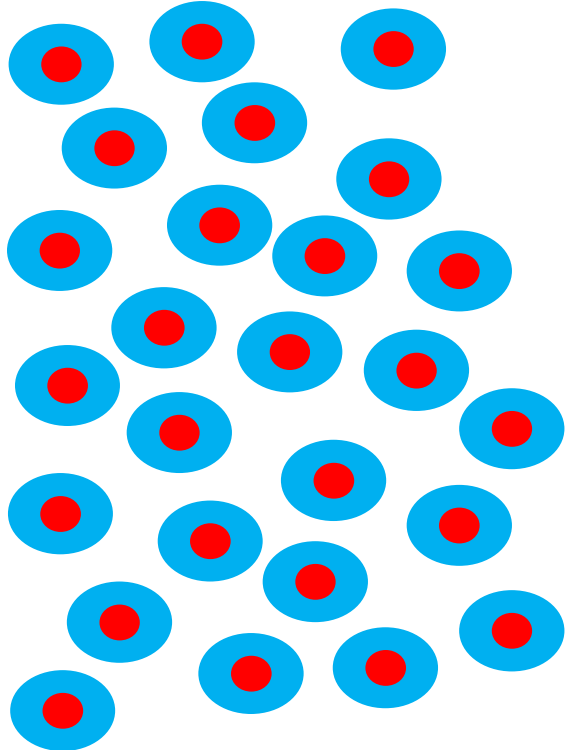
Practical aspects

- Students stayed enrolled at their home universities and paid through home universities
- Students were given 'visiting' status at host universities (avoids tuition fees, etc.)
- Cost of research was carried by host universities
- Cost to the PIs research accounts: Airline tickets and a small top-up to living costs

Challenges – Group Structure

North America

Large number of professors with relatively small groups

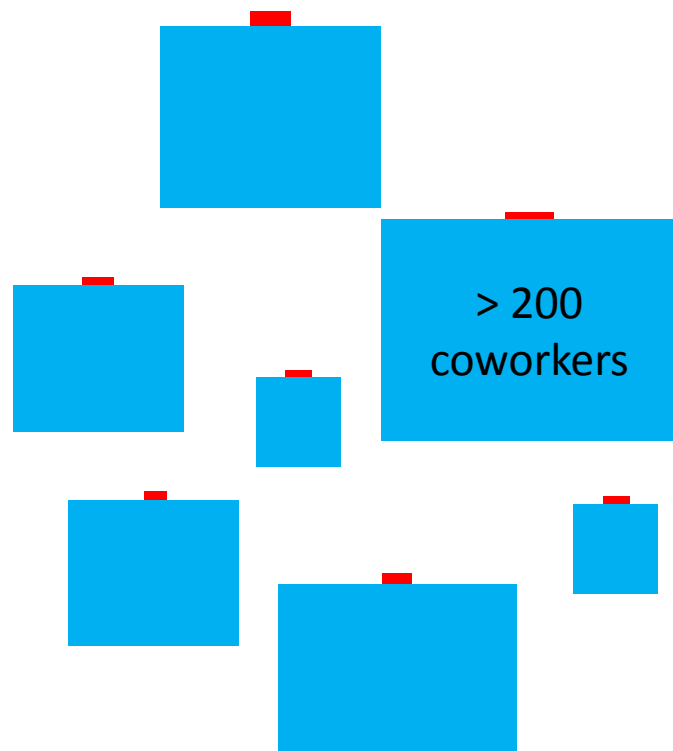


More flexible

Better ratio between students and professors


Germany

Only few professors with large groups




Large resources

Challenges – Group Structure

- Annual budget: 3 million CAN \$ 
- Approx. 80 coworkers
 - 11 non-scientific employees
 - 26 Post-docs and PhD “students”
 - 30 student assistants
 - ??? undergraduate and graduate students

PhD “students” in Germany (Eng):

- ➔ PhD thesis after 4 - 6 years
- ➔ Annual income 75,000 – 86,000 CAN \$
- ➔ Extra (industrial) projects
- ➔ IT, event management, public relations etc.
- ➔ Give seminars, practical courses, support our lectures
- ➔ “Sometimes” experiments for their thesis

- Annual budget: ~200,000 CAN \$ 
- Approx. 12 coworkers
 - 1 Research Engineer
 - 12 Post-docs, PhD and MEng students

PhD students in Canada (Eng):

- ➔ PhD thesis after 4 years
- ➔ Annual income 14,000 CAN \$
- ➔ Take courses
- ➔ Some minor teaching duties

What worked well?

- Connection between the right people
- Flexible small 'program'
- Centered around people who were exchanged
- Not guided by external framework or milestones
- Visiting students were treated as locals and effectively supervised locally (willingness to give up control)
- Duration of visits 6 months or more
- Strong involvement of project leads



Questions?

