FEDERAL RESEARCH CENTER
«**FUNDUMENTALS OF BIOTECNOLOGY**»
RUSSIAN ACADEMY OF SCIENCES

EXAMPLES OF GERMAN-RUSSIAN PARTNERING IN LIFE SCIENCE

Prof. Arkady P. Sinitsyn

Einladung zum “German-Russian Life Science Talk” der Deutschen Botschaft und des DWIH am 21 Februar 2018
Мероприятие посольства Германии и DWIH «Германо-Российское сотрудничество в области наук о жизни»
21 февраля 2018

Russian-German partnering in Life Science

Enzymes for lignocellulosic feedstock degradation, production of sugars (C6, C5) and value added products (2010-2012), BMBF-MON

INBI – BioPos (Prof. Birgit Kamm) – ATB (Dr. Joachim Venus)

- **INBI –** lignocellulose pretreatment, development of a new strains producer of active cellulases, production pf C5 and C6 sugars
- **BioPos –** production of new platform chemicals, production of organic acids
- **ATB** – lactic acid organism' selection, optimization of cultivation, scaling up in the Pilot plant, downstream

Development of optimized enzyme cocktail for lignocellulose degradation (2012-2013), BMBF-FASIE

TRIS / INBI – Justus-Liebig University (Giessen, Prof. Holger Zorn)

- **TRIS / INBI –** development of a new strains producers of enzymes for lignocellulose degradation, production of C5 and C6 sugars
- **Justus-Liebig University and INBI** – optimization of the composition of enzymatic cocktail for lignocellulose degradation (cellulases, esterases)

Russian - German partnering in Life Science

New hosts for heterologous expression of bacterial exo-enzymes in highly productive strains for application in industrial biotechnology (2014-2016), BMBF-MON

FRC of Biotechnology – TUM (Prof. Wolfgang Leibl, Dr. Wolfgang Schwarz)

- **FRC -** expression of the target bacterial cellulases from *Clostridia* in fungal expression systems - *Penicillium* and/or *Aspergillus*
- **TUM** – selection of target genes of bacterial cellulases; evaluation of bacterial enzymes, expressed in fungal system for lignocellulose degradation

Novel eukaryotic expression systems for food enzymes (2014-2016), BMBF-FASIE

TRIS / FRC of Botechnology – ARTES / Justus-Liebig University (Giessen, Prof. Holger Zorn)

- **TRIS / FRC** – development of expression system, production of proteases
- **ARTES / Justus-Liebig University** – finding and cloning of target gene(s) of prolyl specific endoprotease(s) for food industry

Russian - German partnering in Life Science

Tailored enzymes for efficient cellulose biodegradation (2017-2019), BMBF-MON

FRC of Biotechnology – Institute of Biotechnology, RWTH Aachen University (Prof. Dr. Ulrich Schwaneberg)

- **FRC -** expression of target stabilized cellulases in *Penicillium* expression system
- **RWTH** - improvement cellulases in thermal resistance and against high salinity by direct evolution

INBI & FRC of Biotechnology / Germany – 5 projects (2010-currently), four of them are targeted to renewable lignocellulosic biomass bioconversion (Biorefinery), one – to food & feed industry

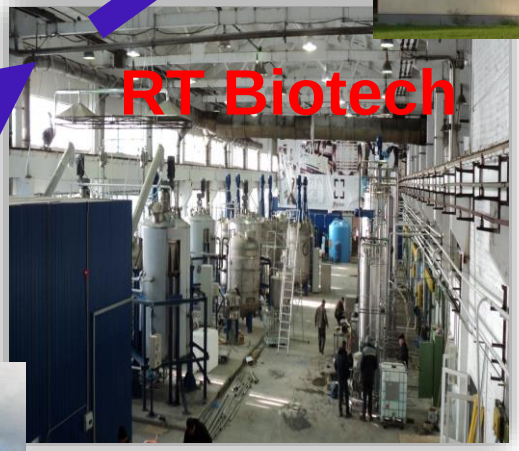
Cooperation, scaling up, commercialization

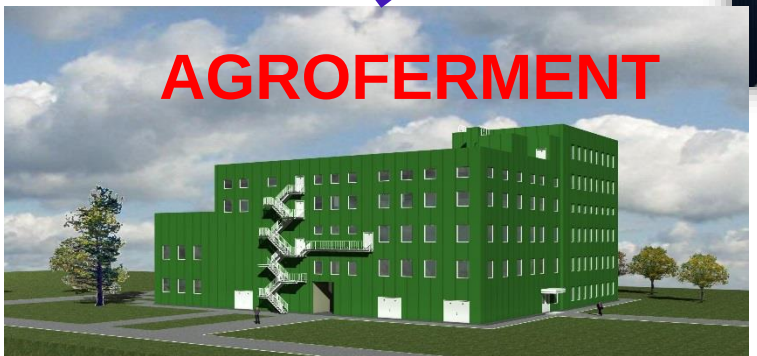
Enzymes for food and feed industry

New platform chemicals

C6, C5 sugars

Enzymes for biorefinery





Contributors:
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FRC,TRIS, Agroferment