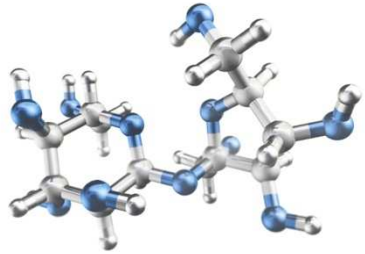
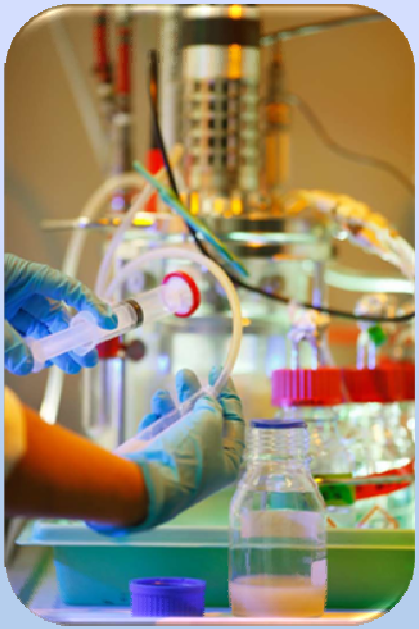
aevotis



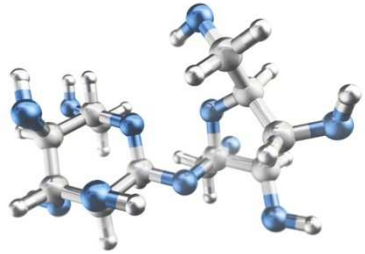
Development of tailor-made carbohydrate-based products by bioconversion



German-Russian Forum Biotechnology 2011

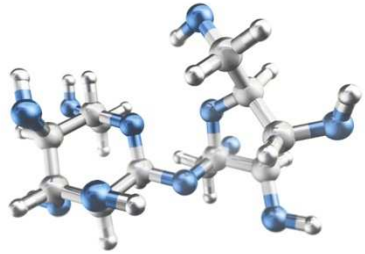
10th of October 2011

Company Overview aevotis GmbH



- Operational since 1st of March 2010, on ~1000 m² lab-/office space
- Founders have each 50% shares and are CEOs
  (Martina Döring & Dr. Volker Landschütze)
- 17 employees - highly qualified, experienced and motivated R&D team
- Solid patent and technology platform exclusively licensed in from Bayer
- Established contacts to potential collaborators in science and industry

Company Overview

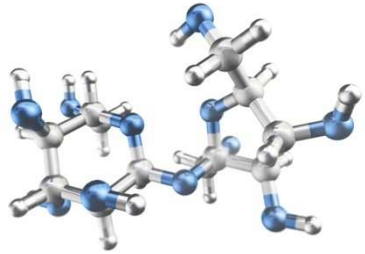


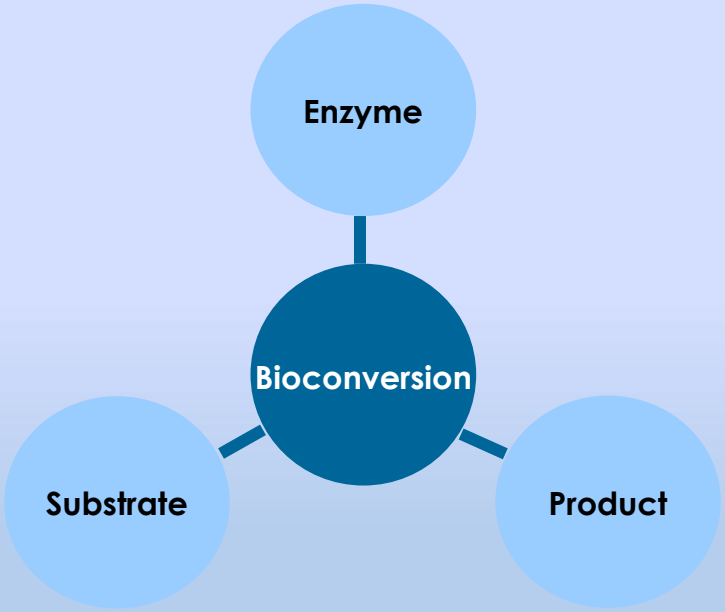
Goal is the development and production of specialty, value added raw materials/ingredients for industrial use:

- **new or optimized enzymes and expression systems,**
- **develop bioconversion processes and**
- **improved down-stream processes as well as**
- **differentiated carbohydrate-based oligomers and polymers for food and non-food uses**

R & D-Services and development of new technologies-
alone and with partners

Core Competencies





Substrate

Select raw material and analyze suitable substrates, purification, availability of substrate

Enzyme

Identification, isolation and characterization of enzymes expression systems, stem development, technology transfer lab /pilot plant/ commercial production

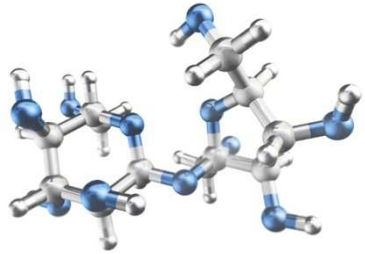
Bioconversion

Process parameters, process development, optimization, technology transfer and scale up

Product

Analytics, characterization, small samples, purification, application testing, use concept

Focus Carbohydrates



4 Parameters determine all Carbohydrates

- Monomers
- Bonding
- Branching
- Substituents

α-D-Glucans
Starch
Dextran
others

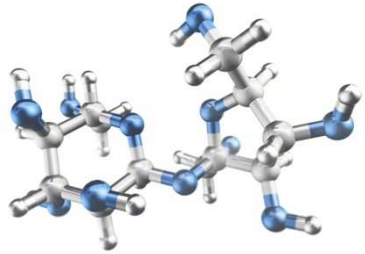
β-D-Glucans
Cellulose
others

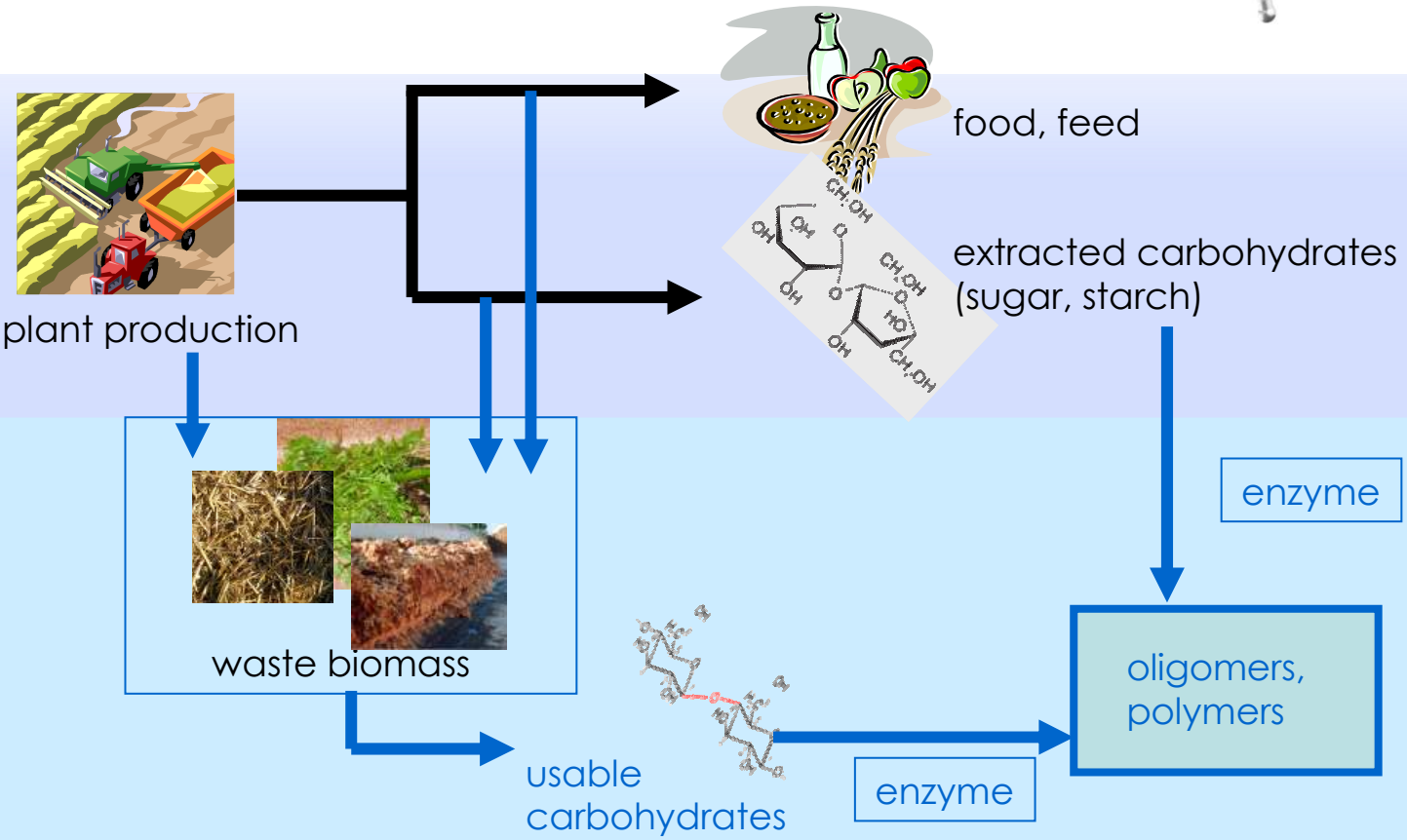
Fructans
Inulin
Levan

Heteropolysaccharides
Xanthan
Others

Other Monomers
Gum arabic
Guar gum

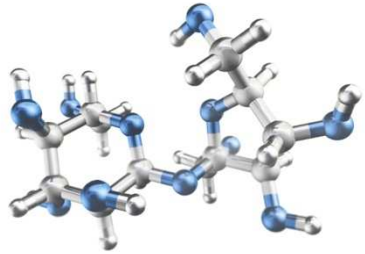
Technology Platform

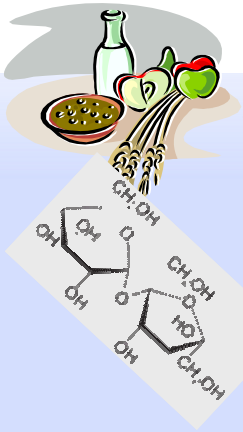




goal is targeted bioconversion of plant raw materials into value-enhanced, unique ingredients/products, their characterization and purification

Extracted Carbohydrates





food, feed

extracted carbohydrates
(sugar, starch)

enzyme

oligomers,
polymers

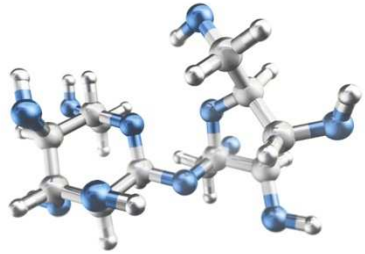
Advantage

- **Pure substrates**
- **Pure products**

Disadvantage

- **Price**

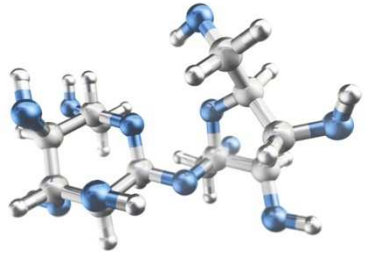
One Enzyme – Two Products



Dev 1

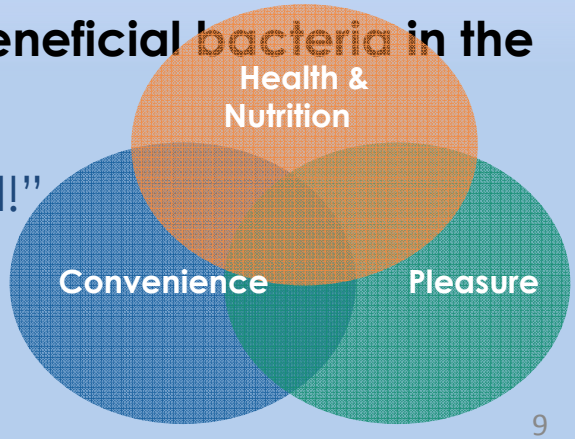
Dev 2

Development Product 1
Oligomer MAOS



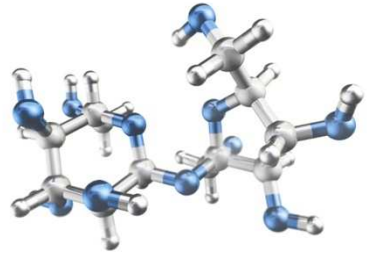
Soluble oligosaccharide with unique pH and processing properties

- **Ideally suited for use in carbonated beverages, functional dairy drinks and functional drinks**
- **Transparent, clean taste**
- **Slowly digestible and controlled energy release**
- **Prebiotic – promotes beneficial bacteria in the digestive tract.**



"No compromises: Modern consumers want it all!"

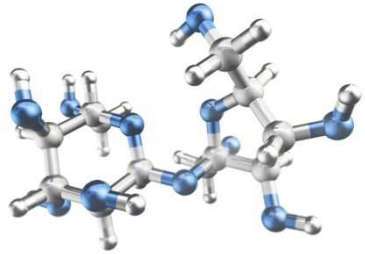
Development Product 2
Polymer Alternan



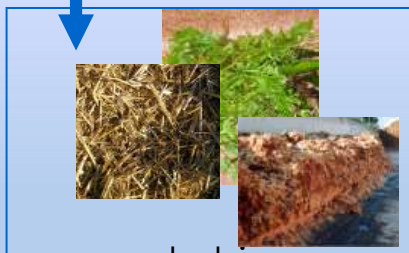
Soluble polysaccharide with outstanding texturizing properties

- **Ideally suited for the use in low fat dressings, as shortening replacer and bulking agent**
- **Not digestible, colorless, odorless and tasteless**
- **Long shelf life in almost all food matrices**
- **Application potential beyond food**
- **Chemical modifications possible**

Side- and waste streams



plant production



waste biomass

usable carbohydrates

enzyme

oligomers, polymers

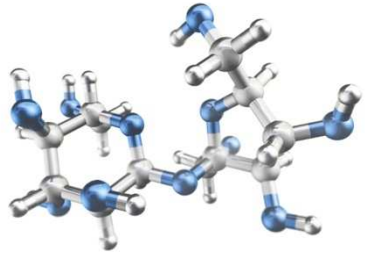
Advantage

- **Price**

Disadvantage

- **Complex Mixtures**
- **Quality**

Project LIGNOS



In collaboration with Fraunhofer Institute for Applied Polymer Research and University Potsdam,

***aevotis*, as industry partner, is running a 3-year project.**

Goal is to investigate the potential to use lignocelluloses from renewable resources and agricultural waste. New or improved enzymes to be used in respective bioconversions and in the end novel polymers for industrial uses will be developed.

***aevotis* will work on :**

Expression & detection of enzymes

Enzyme activity and characterization

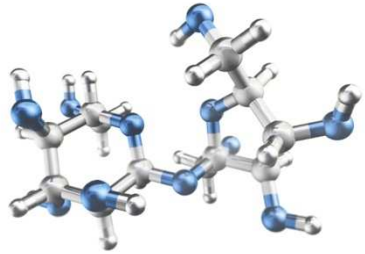
Bioconversion

Screening of products from bioconversion

Purification

12

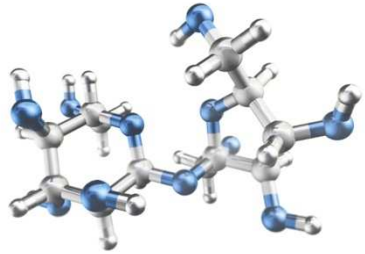
Summary



- Bioconversion is a key technology for a sustainable product development
- Bioconversion offers the possibility to use side- and waste streams for value creation or to create very pure and innovative products

- Ingredients can be developed, which have both, functionality and health benefits and
- Which offer industry competitive advantage, if they are patent protected, innovative and science-based.

- Early interactions and strategic partnerships with key players will increase the chance of success.



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Die in dieser Präsentation genannten Vorhaben – MAOS, Alternan und LIGNOS – werden mit Mitteln des Ministeriums für Wirtschaft und Europaangelegenheiten des Landes Brandenburg und der EU gefördert.

Die Verantwortung für den Inhalt liegt beim Autor.