



## Unleashing Xylan's Potential with Enzymes for a Scope of Consumer Products

### key aim of the project

EnXylaScope is to widen the scope and industrial potential of xylan debranching enzymes by developing enzymes with high catalytic activity and wide operation conditions, thereby demonstrating their ability to make

**xylan a platform polymer** for applications in a variety of consumer products.

EnXylaScope will

1

Discover and characterise **4 novel xylan debranching enzymes** by using multi-omics and high-throughput screening (HTPS) methods.

2

Establish **efficient and viable production systems** for the selected enzymes.

3

Establish a **process flow diagram including all process nodes, input, and output streams** of the xylan conversion process using enzymes.

4

Introduce **enzymatically modified xylan** in consumer products by using product specific enzyme cocktails.

5

Pilot the production of 4 enzymes and **application testing of consumer products**.

6

Assess **regulatory compliance and market acceptance** of the consumer products.

The project outcomes will set the basis for the following exploitable results:



Four novel xylan-debranching enzymes to be used for xylan treatment.



Three enzymatically modified xylan types



A decision-making platform to guide and facilitate the enzyme cocktail design.



An efficient industrial process to produce selected enzymes and enzymatically modified xyans.

This sentence needs modification: The potential of the novel enzymes to modify xyans for use in consumer products will be demonstrated by producing **6 xylan-based products** for three sectors.

Cosmetics

Personal Care

Nutraceuticals

Moisture Cream / Lotion . Emollient . Hand Sanitiser . Body wash  
Nutraceutical Binder and Prebiotic . Anti-inflammatory and Anti-Microbial Supplement

## EnXylaScope leads the path towards more sustainable products

Xylan is a highly-abundant lignocellulose polymer that, with appropriate modifications, has outstanding physical and chemical properties which **make it suitable for incorporation in an array of consumer products, replacing less-sustainable product components thereby allowing greener market options for the consumer.** Enzymes are by far the most sustainable and selective option for xylan modification,

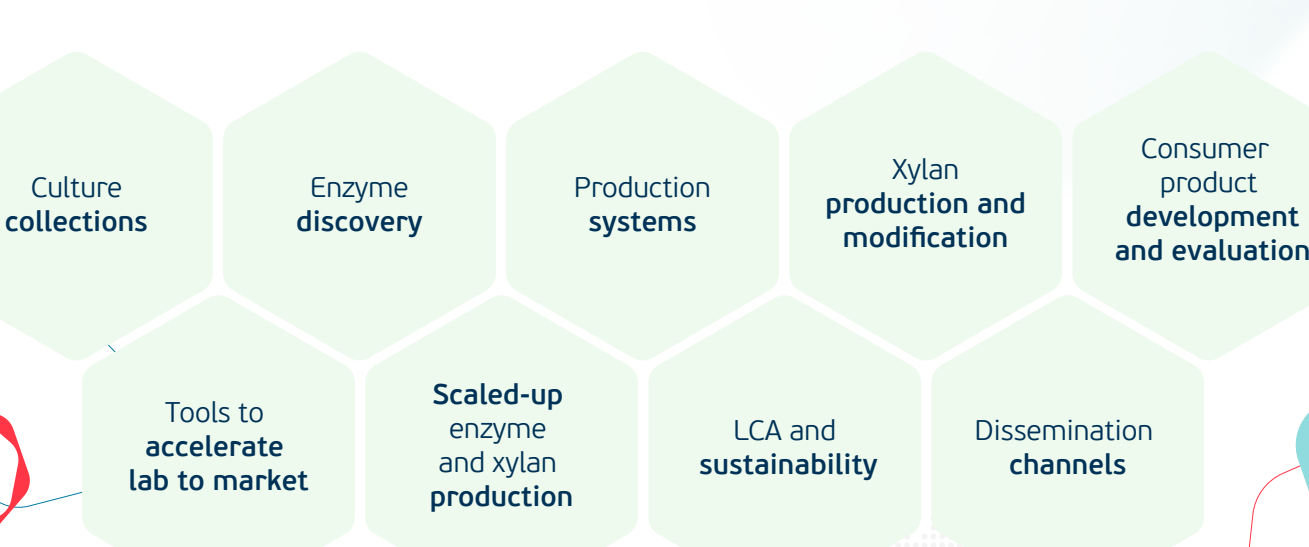
through the removal of the polymer's side chains (debranching). This leads to a xylan polymer with unique functional properties (such as reduced water solubility and enhanced viscosity) and is suitable for direct incorporation in consumer products (e.g. everyday skin care) or for further modifications to confer the functional properties for more demanding applications (e.g. speciality skin care, personal care etc).

The streamlined research program and strategically-designed experimental methodology of EnXylaScope, **incorporating several key innovations to reduce the complexity of enzyme discovery, production, and application**, will result in xylan being demonstrated as a unique polymer that can respond to the fast-growing greener consumer products industry.



### The organisations behind EnXylaScope

EnXylaScope consists of 5 SMEs, 4 research institutes, 2 large industrial partners and 2 universities. The experienced project partners cover the entire value-chain:



### Partner organisations of the EnXylaScope Project



more information at:

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Follow the EnXylaScope Project:



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