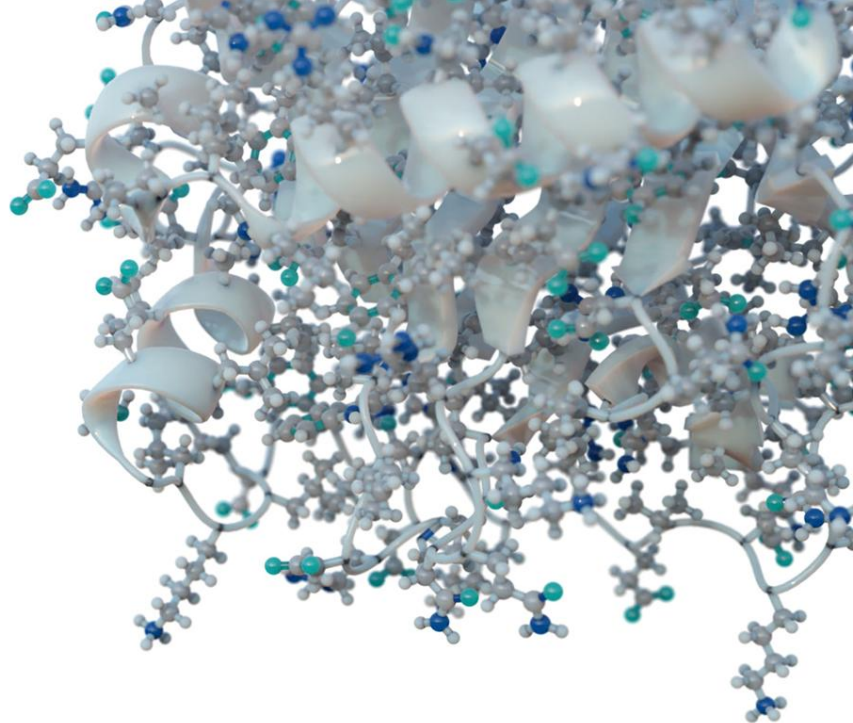
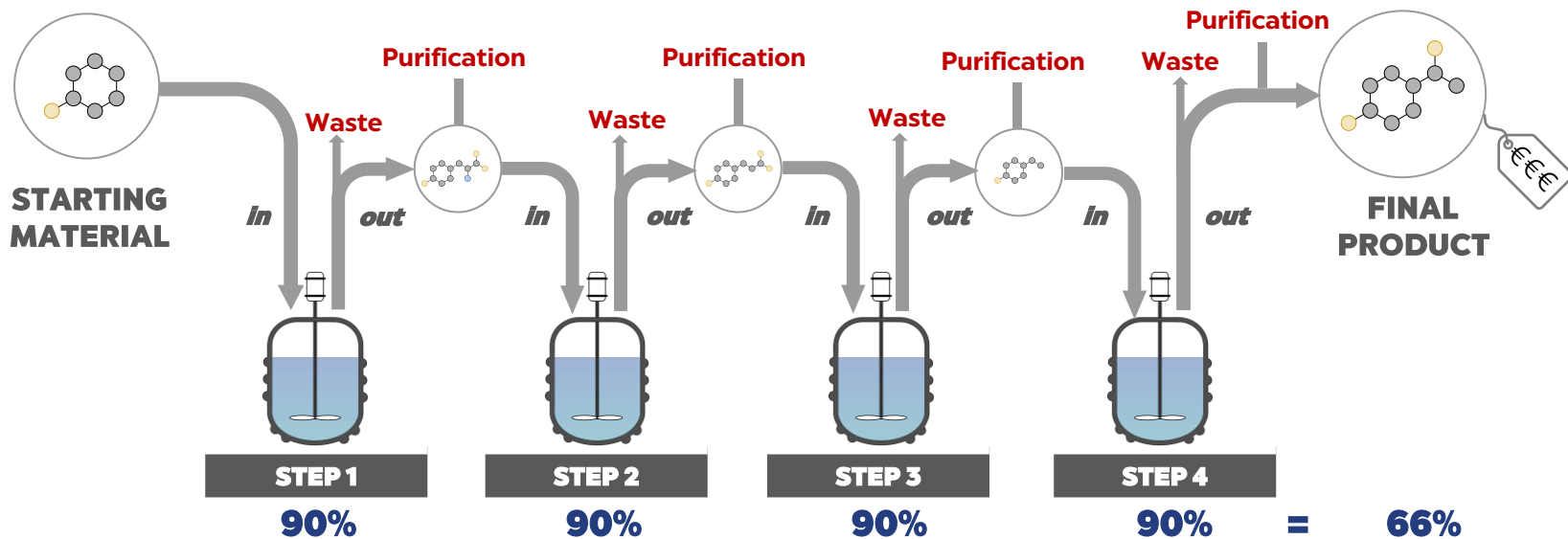




**WE MAKE CHEMICAL MANUFACTURING
GREENER AND MORE EFFICIENT**

Technology

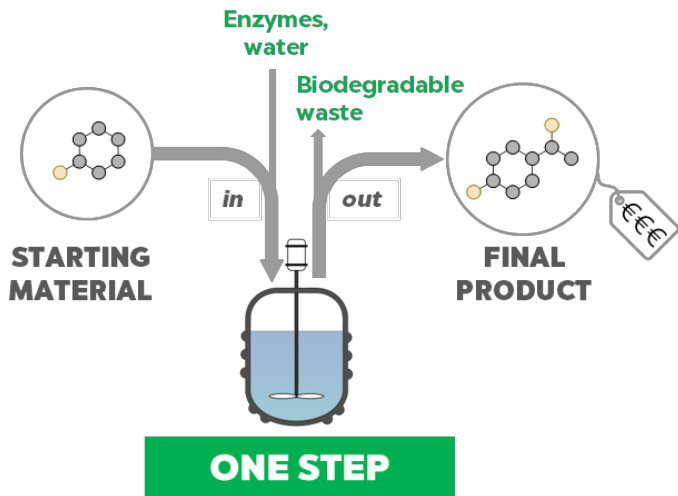
CONVENTIONAL CHEMICAL SYNTHESIS REQUIRES SEQUENTIAL STEPS



Stepwise production leads to **product loss** and lots of **waste**.
Every step increases the **purification costs** and lead to **higher costs**.

Technology

ENZYAN'S TECHNOLOGY ENABLES REACTIONS TO OCCUR IN A SINGLE STEP



FEWER OPERATING STEPS

Saves **time**, **material** and **costs**, and increases **product yield**.



MINIMAL USE OF HAZARDOUS REAGENTS

Improves safety and causes **less problematic waste**.

Value Proposition

CLEANER, FASTER, MORE EFFICIENT

	Chemical synthesis	Biocatalytic cascade
Process steps (example)	4	1
Yield per step	90%	90%
Product loss	34%	10%
Purification/transfer costs¹ (€/kg product)	400	100
Waste disposal costs² (€/kg product)	910	180

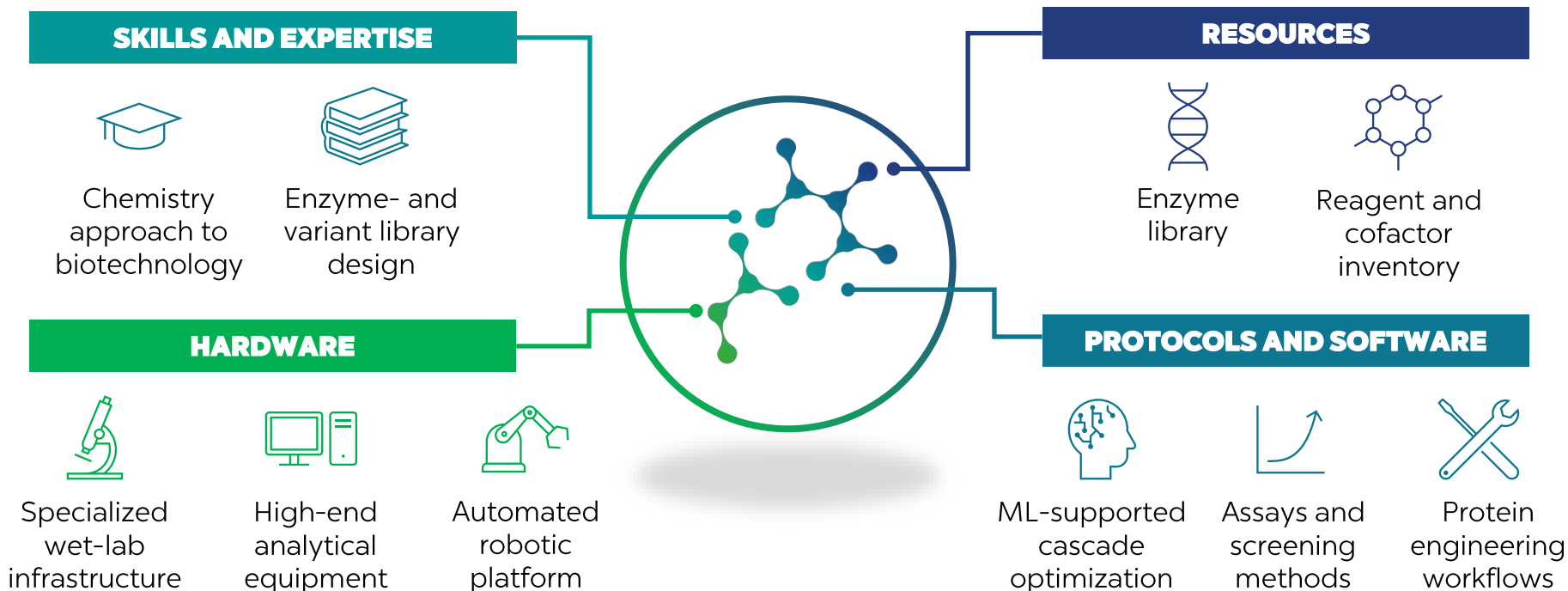
1) Industry-relevant transfer costs are in the range of 50–100 €/kg product; here an average of € 100/kg is used.

2) Disposal of waste from a typical chemical reaction costs around €180/kg product (APIs).

Technology

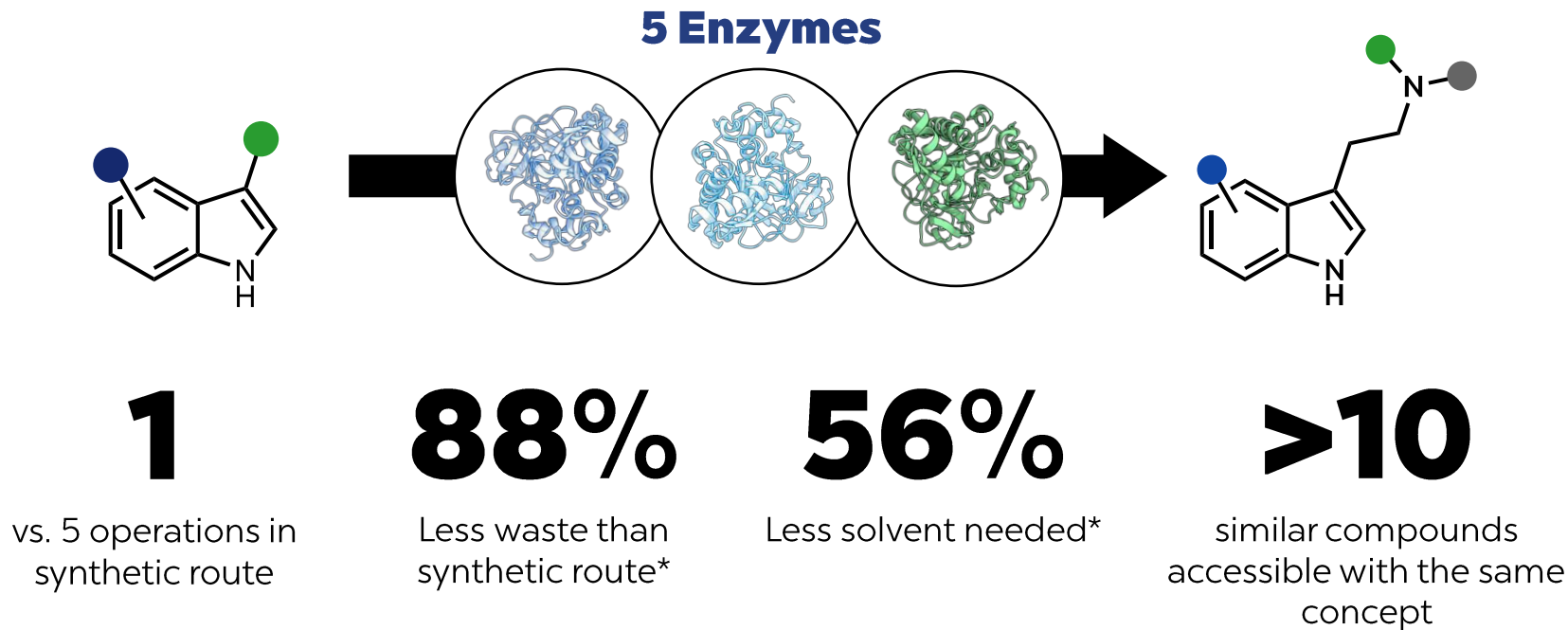


OUR TECHNOLOGY PLATFORM INTEGRATES ENZYME SELECTION, CASCADE DESIGN, AND PROCESS OPTIMIZATION IN ONE SYSTEM.



Example of product development

ENZYAN PATENTED CASCADE FOR TRYPTAMINE COMPOUNDS



How To Get There

ENZYAN'S CASCADE DEVELOPMENT PLATFORM



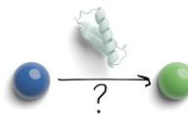
1 month*

Compile an enzyme panel for a **desired transformation**.



1 month*

Develop **screening protocol** for an enzyme panel.



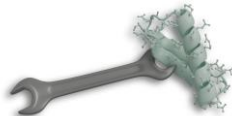
2 months*

Proof of concept for **new to nature reaction**.



4 months*

Proof of concept for **five-enzyme cascade**.



4 months*

Semi-rational engineering of an enzyme to 10-fold improvement.



2 months*

4-fold yield improvement with **ML-driven cascade reaction optimization**.

* Highlights from past projects

Service offer



WE OFFER OUR EXPERTISE FOR BIOCATALYTIC PROCESS DEVELOPMENT



**Early-Stage Ideation
& Conceptualization**



**Enzyme
Discovery**



**Enzyme
engineering**



Upscales

BIOPROCESS



**Biocatalytic
Route
Scouting**



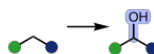
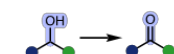
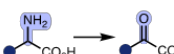
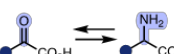
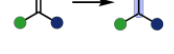
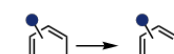
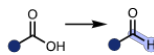
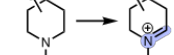
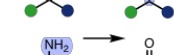
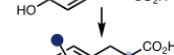
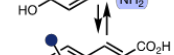
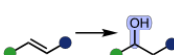
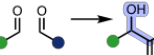
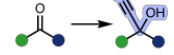
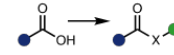
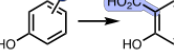
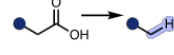
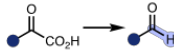
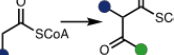
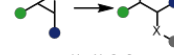
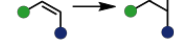
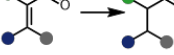
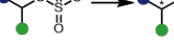
**Biocatalytic
Cascade
Design**



**AI driven optimization
of Biocatalytic
Reactions**

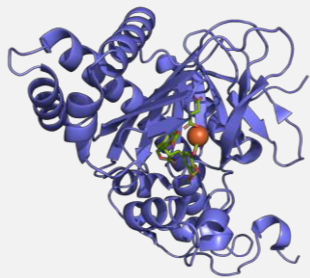
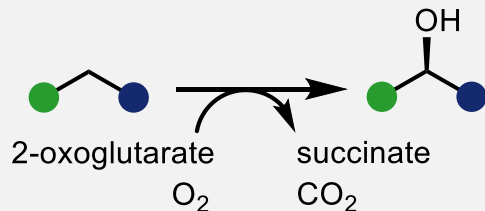
Background

OUR EXPERIENCE = YOUR POSSIBILITIES

 P450s/ Peroxygenases	 α-Oxoglutarate dependent dioxygenases (2OGDs)	 Alcohol oxidases	 Amino acid deaminases	 Amino acid dehydrogenases	 Reductive aminases (RedAm), Imine reductases (IRED)	 Laccases
 Carboxylic acid reductases (CARs)	 Monoamine oxidases (MAOs)	 Transaminases (TA)	 Tyrosine-phenol lyase (TPL)	 Tyrosine- ammonia lyase	 Hydratases	 Aldolases
 Carboglycylases	 Hydroxynitrile lyase (HNL)	 ATP-dependent ligases X = N, O, S	 Phenol (De)carboxylases	 Fatty acid photo- decarboxylases	 Ketoacid decarboxylases	 Thiolases
 Alcohol dehydrogenases	 Halohydrin dehalogenases X = N, O, S	 Epoxidases	 Prenyl- transferases	 Ene-reductases	 Sulfatases	 Kinases / Phosphatases

Enzyme's panels

ACCESS OUR IN-HOUSE PANELS:



2-ODDs

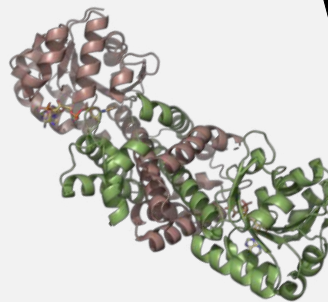
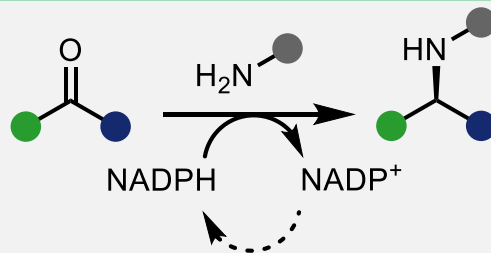
>150

selected enzymes

Fe/2-oxoglutarate dependent enzymes

Stereo- and enantio-selective hydroxylations

Free of third-party IP



IREDs

>140

selected enzymes

Imine reductases

Synthesis of chiral amines

Free of third-party IP

Team

COMBINED TECHNOLOGICAL AND ENTREPRENEURIAL EXPERTISE



**MATTIA
LAZZAROTTO**

CEO, Chemist
Co-Founder



**STEFAN
PAYER**

CSO, Chemist
Co-Founder



**MATHIAS
PICKL-FARNBERGER**

COO, Chemist
Co-Founder



**STEFAN
STEINBERGER**

CCO, Entrepreneur
Co-Founder



**WOLFGANG
KROUTIL**

Scientific Advisor, Chemist
Co-Founder



**STEFAN
SIMIC**

Senior Scientist



**BIANCA
HILWEG**

Scientist



**CLARA
WEBER**

Scientist

UNI GRAZ SPIN-OFF

> 300 PUBLICATIONS

> 15K CITATIONS



Work with us now to make

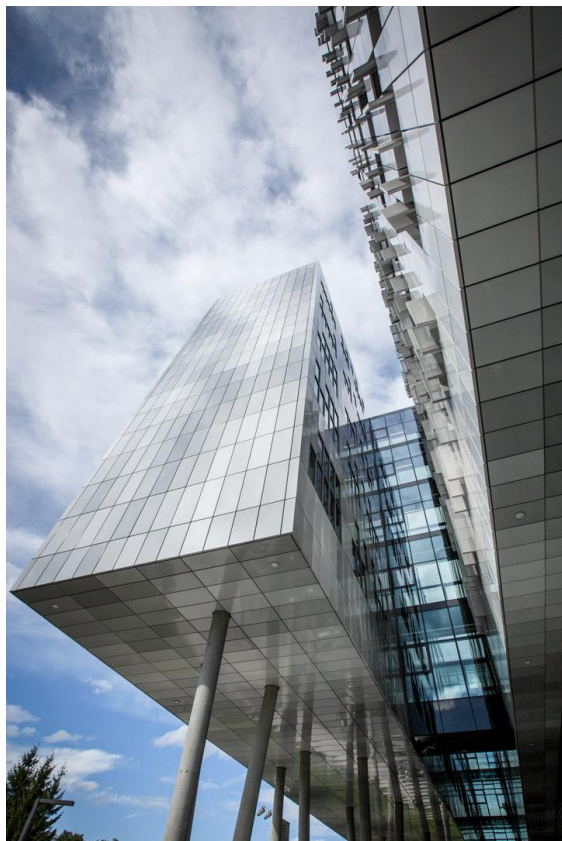
**CHEMICAL
PRODUCTION
GREENER!**

Mattia Lazzarotto

+43 670 505 6989

mattia.lazzarotto@enzyan.com

OUR FACILITIES



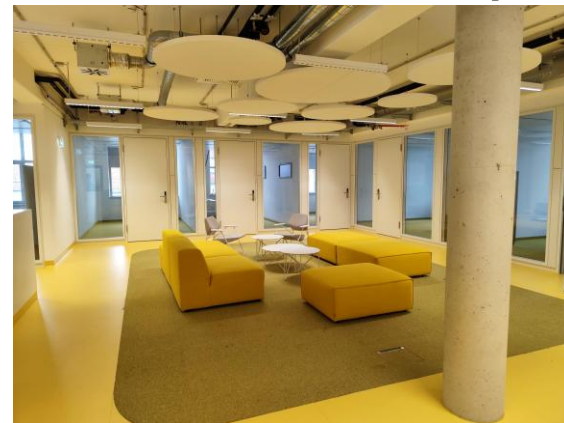
ZWT

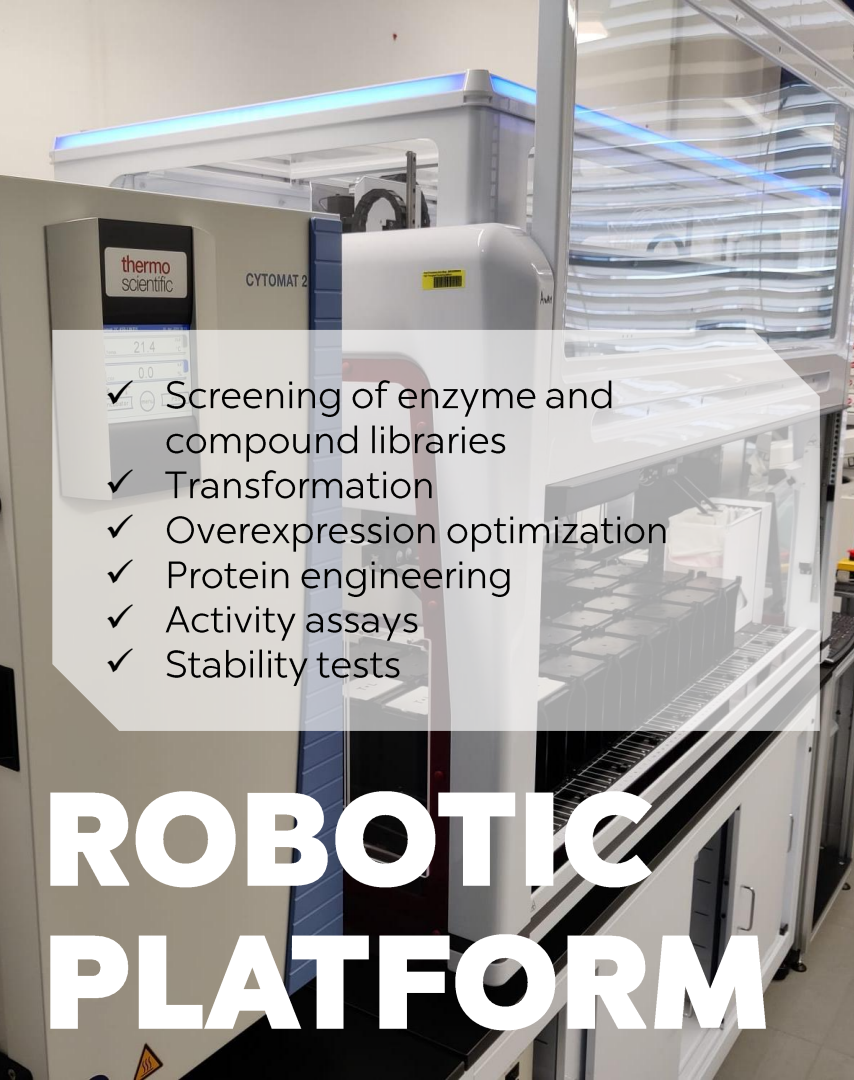
Center for Knowledge
and Technology Transfer
in Medicine Ltd.

<https://en.zwt-graz.at/>



Stiftingtalstrasse 14, 8010 Graz,
Austria





- ✓ Screening of enzyme and compound libraries
- ✓ Transformation
- ✓ Overexpression optimization
- ✓ Protein engineering
- ✓ Activity assays
- ✓ Stability tests

ROBOTIC PLATFORM

