

**VALANX**  
**BIOTECH**

Superpowering proteins.




## Technology overview

Non-confidential

# VALANX Biotech - Superpowering proteins

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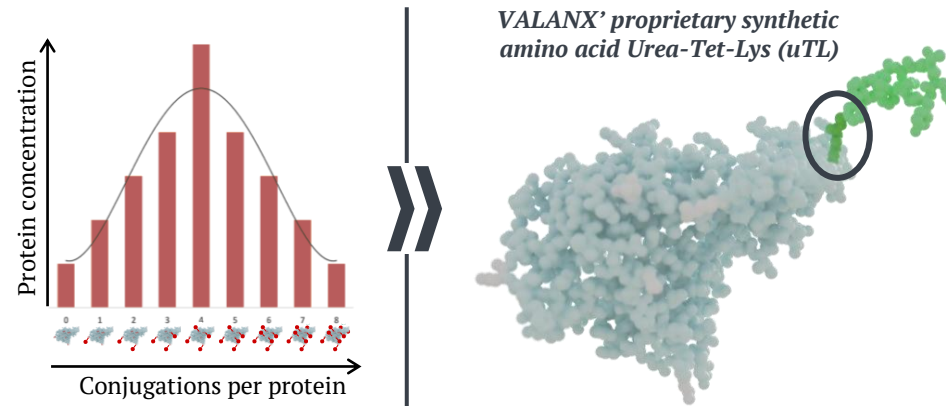
## About us

-  VALANX is a Biotech start-up company **specializing in tailored protein conjugation solutions.**
-  **Our mission** is to make the **struggle of precise, reproducible protein conjugation a thing of the past**, for the **benefit of our partners, customers and patients**
-  We accomplish this by **leveraging our proprietary site-specific protein conjugation platform technology** based on synthetic amino acids

## Executive summary

### The challenge in protein conjugation

- **Unspecific protein conjugation methods** result in **stochastic mixture** of protein species (see chart)
- **Major pain-point and source of failure** in drug development
- **Alternative conjugation methods** lack either **specificity** or are **limited in choosing the site or number of conjugations.**



### The VALANX solution

- We introduce our **synthetic amino acid at a defined site into any protein** creating a **unique and defined chemical reaction site**
- **Complete freedom** to choose the conjugation site
- **Single or multiple defined conjugation sites** at any desired position in the protein possible
- **E. coli or CHO** expression host

# 1 Introduction to our site-specific conjugation platform

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## Key takeaways

- **Site-specific conjugation platform** based on a **synthetic amino acid Urea-Tet-Lys (uTL)**
- **uTL is incorporated at any defined site in any recombinantly expressed protein** during protein translation
- **Incorporation of uTL with complete freedom to choose the position and the number of uTLs** within the proteins
- **uTL contains a tetrazine click-reactive side chain** which can be **conjugated to any conjugation partner**
- **Supports very fast conjugation reactions** (~20 min time to >99%)




## What we can offer:

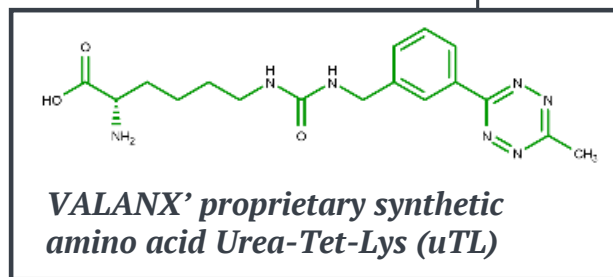
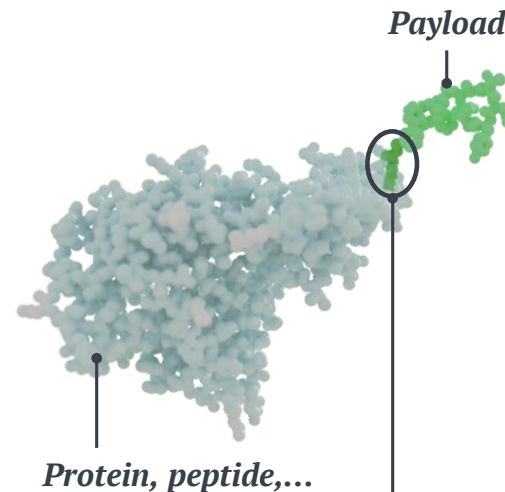
- **Fee-for-service** and/or **co-development** projects
- **Licensing** of the platform

## Proteins that can be conjugated:








- ⊗ Proteins 
- ⊗ Antibodies 
- ⊗ Single chain antibody fragments 
- ⊗ Nanobodies 
- ⊗ Peptides 
- ⊗ Fab fragments 
- ⊗ and more... 

## Legend:

-  Already done
-  Currently in progress
-  PoC pending



## Possible payload for conjugation:

- ⊗ Small-molecules (e.g., antibody-drug-conjugates) 
- ⊗ Polymers (e.g., for half-life extension) 
- ⊗ Peptides (e.g., for targeting) 
- ⊗ Polysaccharides (e.g., conjugate vaccines) 
- ⊗ Lipid nanoparticles (e.g., for mRNA or CRISPR delivery) 
- ⊗ Radionuclides (e.g., antibody-radionuclide-conjugates) 
- ⊗ and more... 

# 2 E. coli expression host ready for deployment

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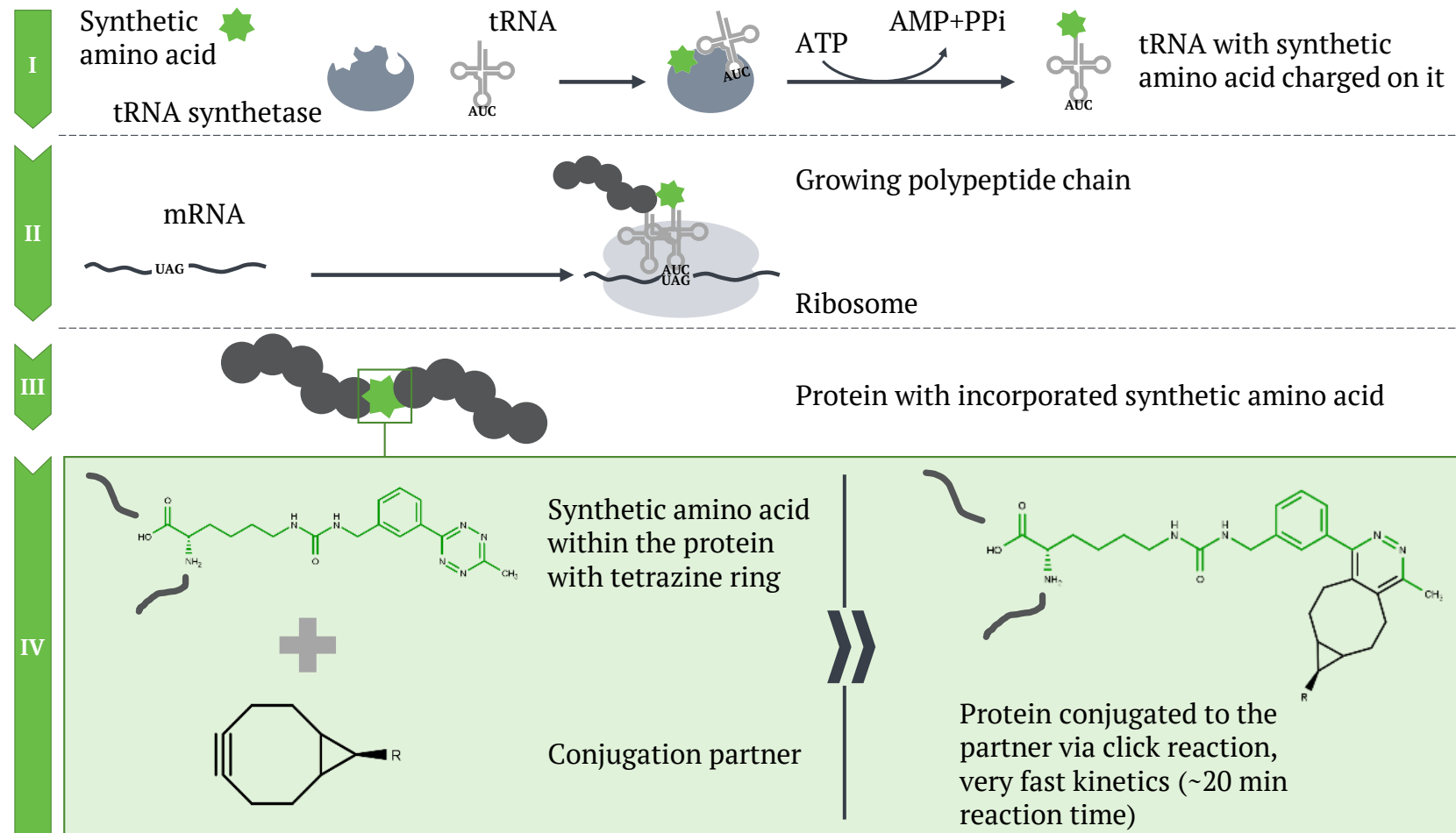
## Key takeaways

- Chassis strain with **genome integrated incorporation system**
- **Unprecedented high efficiency of uTL incorporation** at a single or multiple sites into any protein
- **Fermentation process tested** – successfully fermented synthetic protein

## What VALANX can offer:

- **Fully developed high efficiency site-specific conjugation platform in E. coli**
- **Freely choose site and number of conjugation sites**
- **Feasibility demonstrated with two chemical conjugation options**, based on uTL or azide-containing synthetic amino acids (details on slide 6)
- E. coli platform ready for **co-development and out-licensing**

## The approach at a glance



# 3 CHO expression host available for R&D grade conjugates

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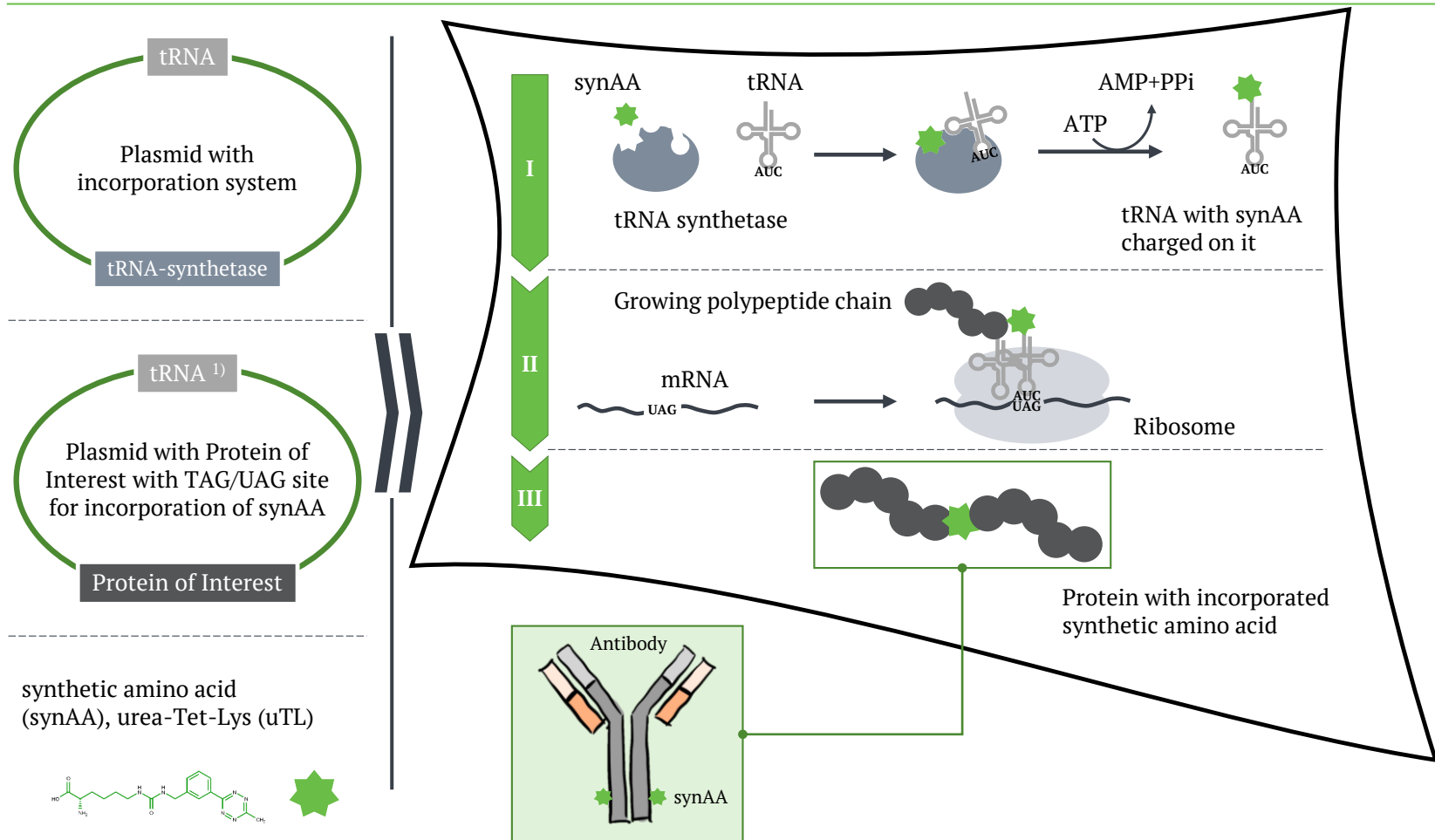
## Key takeaways

- **Incorporation system** transferred to CHO cells
- Successfully expressed **synthetic model protein and antibody** (trastuzumab)
- Successfully **conjugated model payload** to synthetic trastuzumab
- **Freely choose conjugation sites** in your antibody / protein-of-interest

## What we can offer:

- **Transient expression platform** of site-specific conjugation in CHO
- Research grade **conjugation ready antibody/protein-of-interest**

## The approach at a glance



# 4 Synthetic amino acids enable protein-protein conjugation

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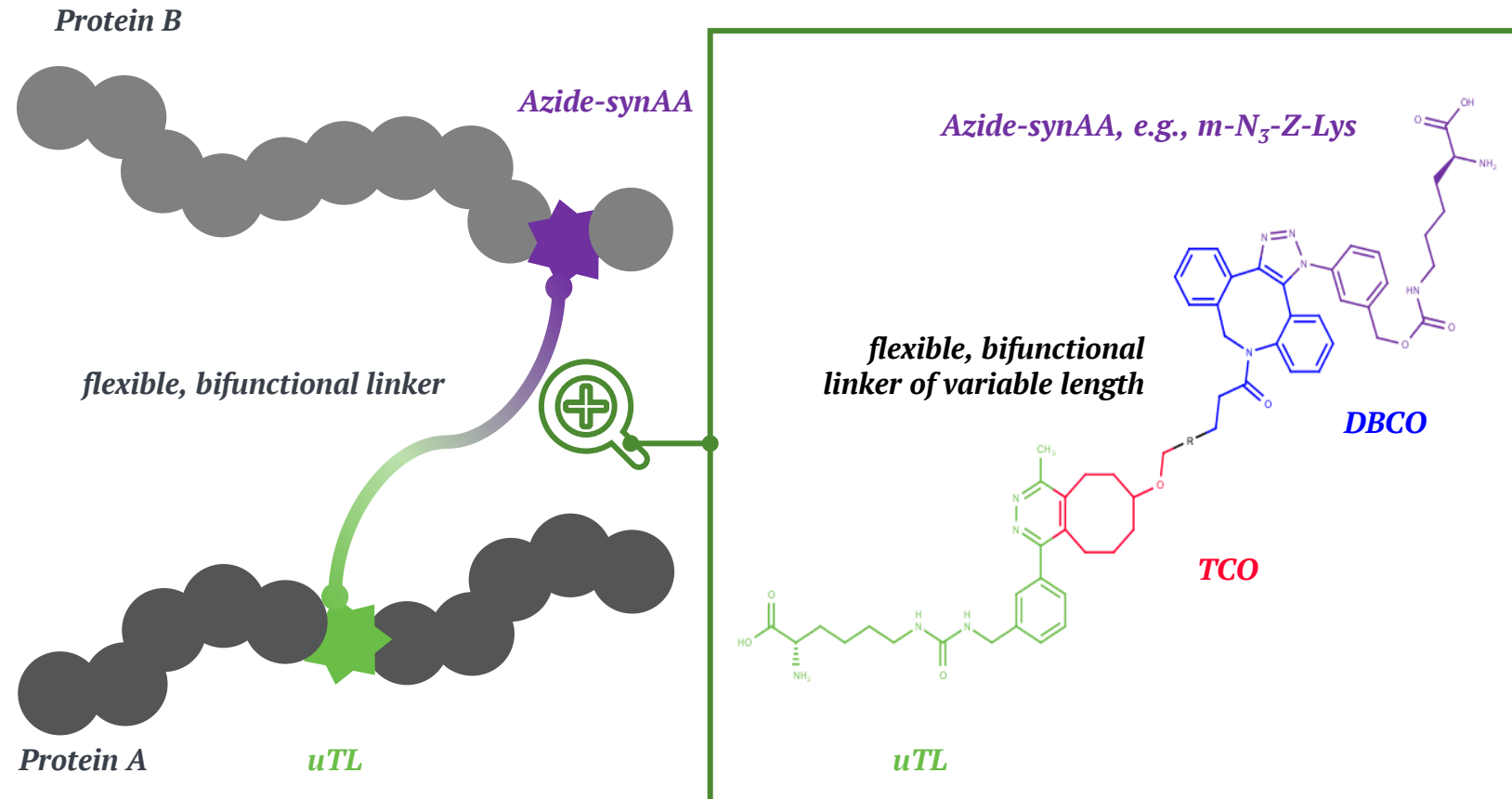
## Key takeaways

- **Protein-protein conjugates** the only way to combine activities of different proteins when a fusion is not an option
- **Azide** containing **synAAs** also highly efficiently **incorporated** with our platform
- **Azide based click-chemistry** complementary to **tetrazine based click chemistry** – connections between azide-containing synAAs and tetrazine containing uTL through **bifunctional linker**

## What we can offer:

- **Two chemical conjugation options**, based on **uTL** or **azide-containing synthetic amino acids**
- **Available in E. coli**, coming soon in CHO cells (see corporate roadmap on slide 9)

## The approach at a glance



# What VALANX can offer

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## E. coli platform

- Fully developed **high efficiency site-specific conjugation platform in E. coli**
- Possibility to **custom tailor number and location of conjugation site(s)**
- **Two chemical conjugation options**, based on uTL or azide containing synthetic amino acids
- E. coli platform **ready for co-development and out-licensing**

## CHO platform

- Transient expression platform of **site-specific conjugation in CHO**
- **Freely choose conjugation sites** in your antibody / protein-of-interest
- **Two chemical conjugation options**, based on uTL or azide containing synthetic amino acids
- **Stable cell line**

Coming soon!

Coming soon!





## How would you like to collaborate?

Your contacts



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