

Building an ecosystem for advanced therapeutic modalities

Els Henckaerts

**Laboratory of Viral Cell
Biology & Therapeutics**

KU Leuven

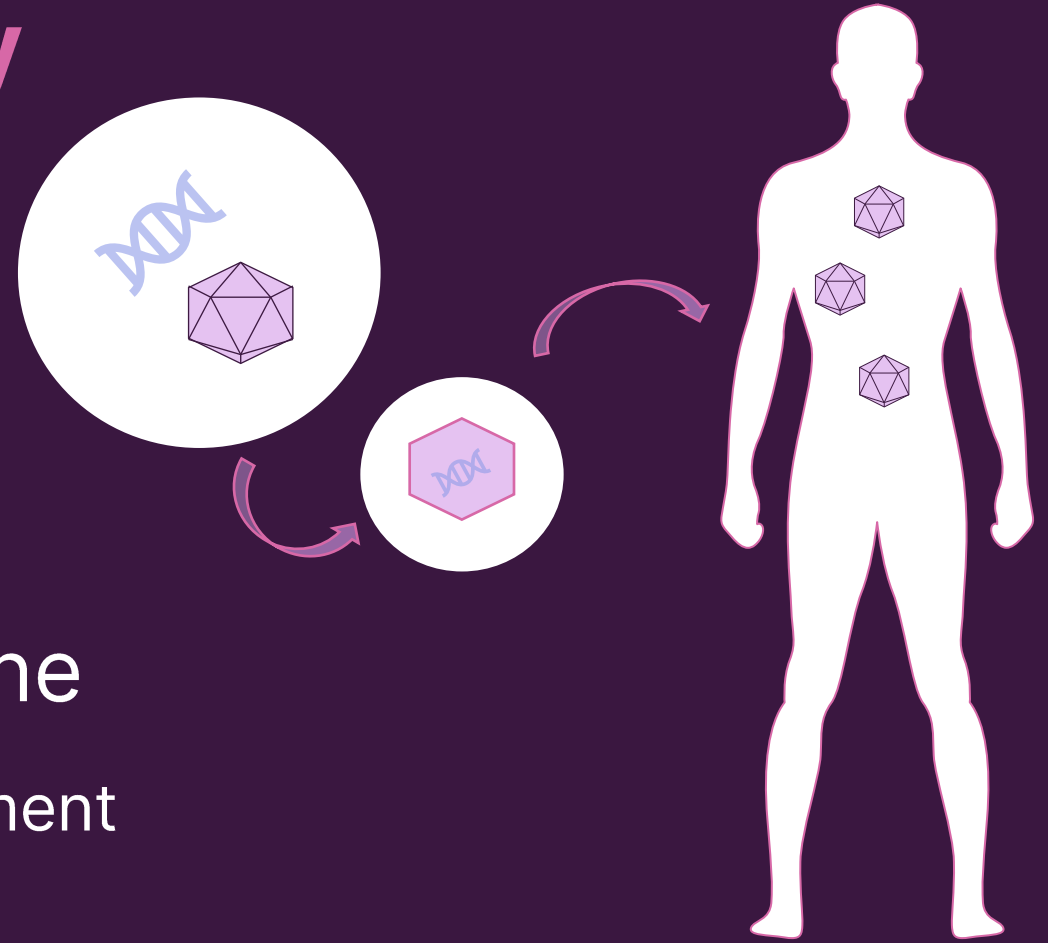


Focus on viral gene therapy

AAV gene therapy

At the forefront modern medicine

- Disease modification and curative treatment
- Single administration



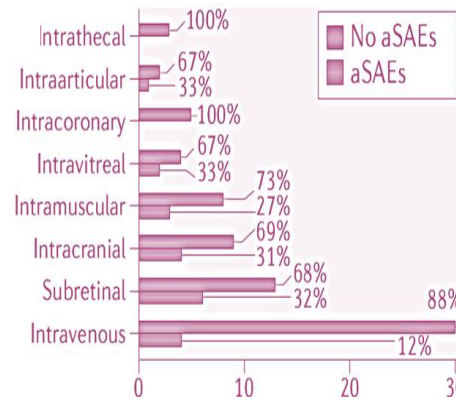
AAV gene therapy: Current Landscape

- 149 unique clinical trials, 94 completed and 51 reached efficacy end point.
- Approved drug products (Luxturna® and Zolgensma®)
- Zolgensma®: expected to generate global sales of \$2.5 billion by 2025
- Large investments in AAV GT within pharma (Novartis, Pfizer, Roche, etc)
- Market is projected CAGR of 25.71% (2022-2027)

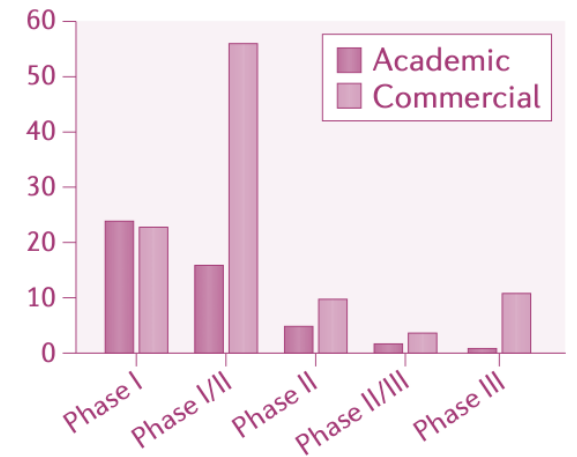


AAV gene therapy's track record

Succes of clinical trials



Growing # of clinical trials



Kuzmin et al. Nature Reviews Drug Discovery, 2021

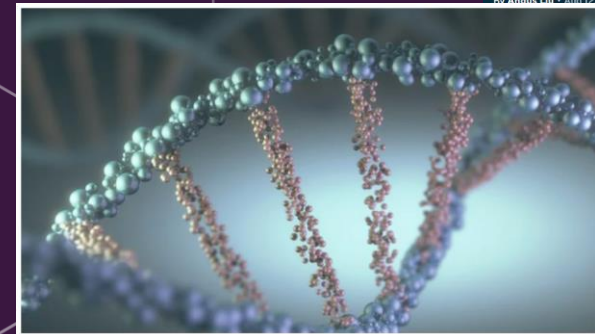
Maturing field with many players

Academic inventors - Biotech - Industrial manufacturing - Service providers - Pharma



AAV gene therapy: Challenges

- **High doses** of vector required causing:
 - substantial off-target toxicity
 - serious adverse events
 - death in some clinical trials
- Robust, scalable and cost-effective **manufacturing difficult** to achieve



Another Astellas gene therapy hits a safety hurdle



Phil Taylor

June 27, 2022

The safety of Astellas' gene therapy portfolio has been thrust into the spotlight once again, after the FDA placed a clinical hold on a trial of its Pompe disease candidate AT845.

2 deaths after Novartis' Zolgensma put gene therapy's liver safety in the spotlight once again

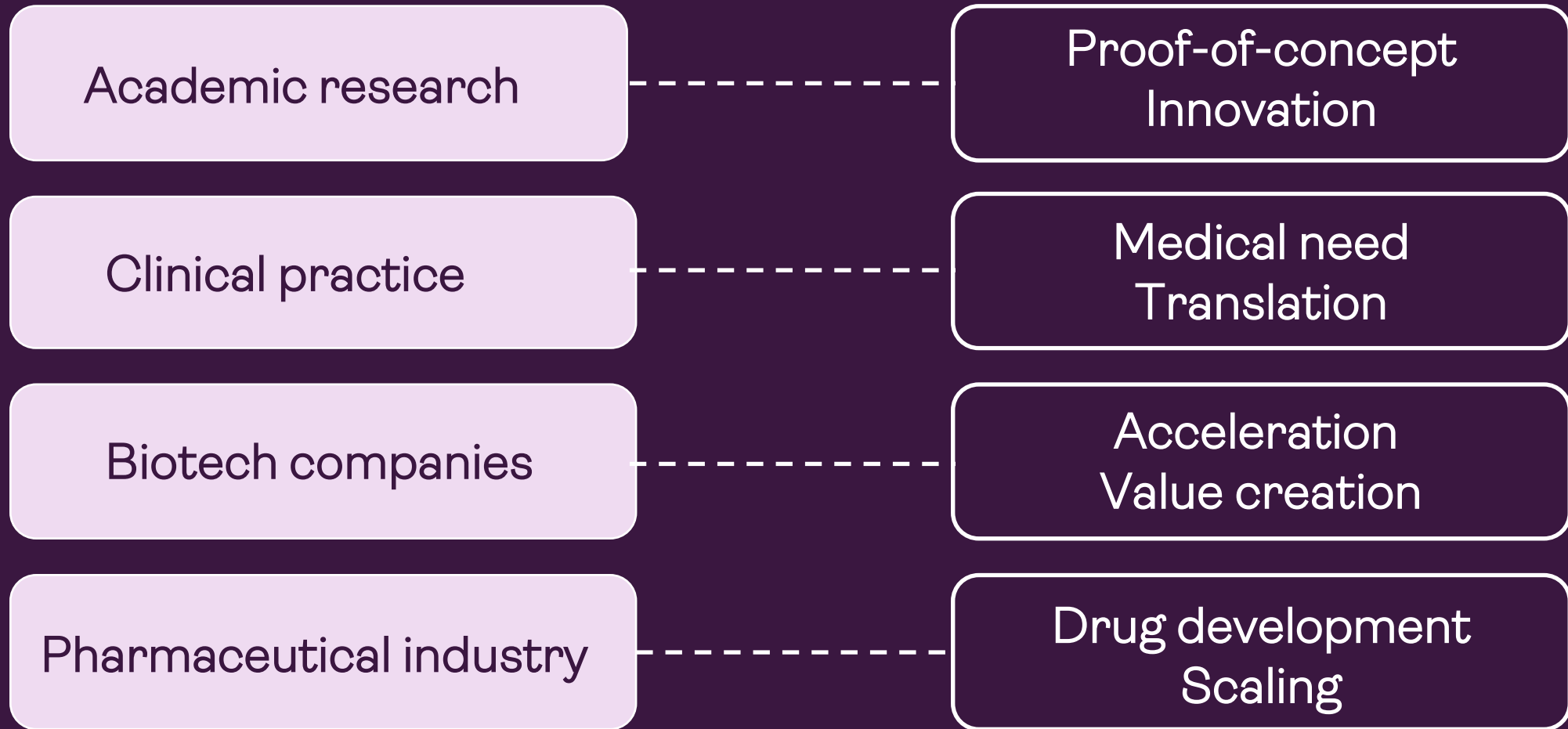
By Annus Lin • Aug 12, 2022 11:22am

Novartis Zolgensma (onasemnogene apheresis) gene therapy

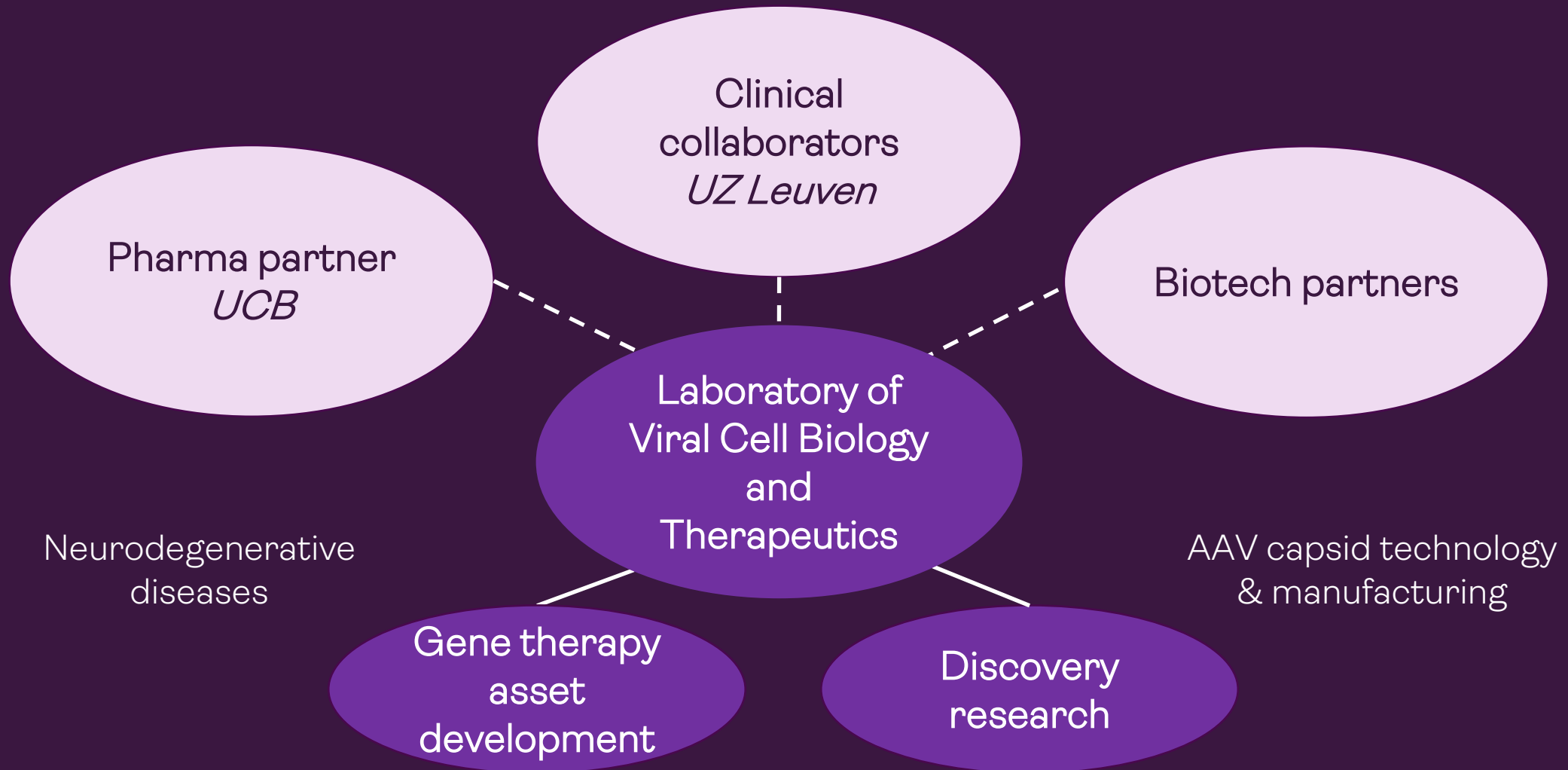


Stan died of acute liver failure about five to six weeks after receiving Zolgensma, Novartis said.

Our vision: smart gene therapy development requires an integrated approach involving academic & clinical partners, biotech and pharma



Our strategy: KU Leuven is building an ecosystem that supports end-to-end AAV gene therapy development



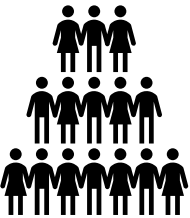
Building towards a Gene Therapy Center of Excellence

Recovery and Resilience Facility

€9.1 million



Infrastructure & equipment (CAPEX)
≥50% of total



Team

7 FTEs (4y)

Project cost

- GT product development
- Process development
- Discovery research



"Gene Therapy
Center of Excellence"

GT
Discovery
Research

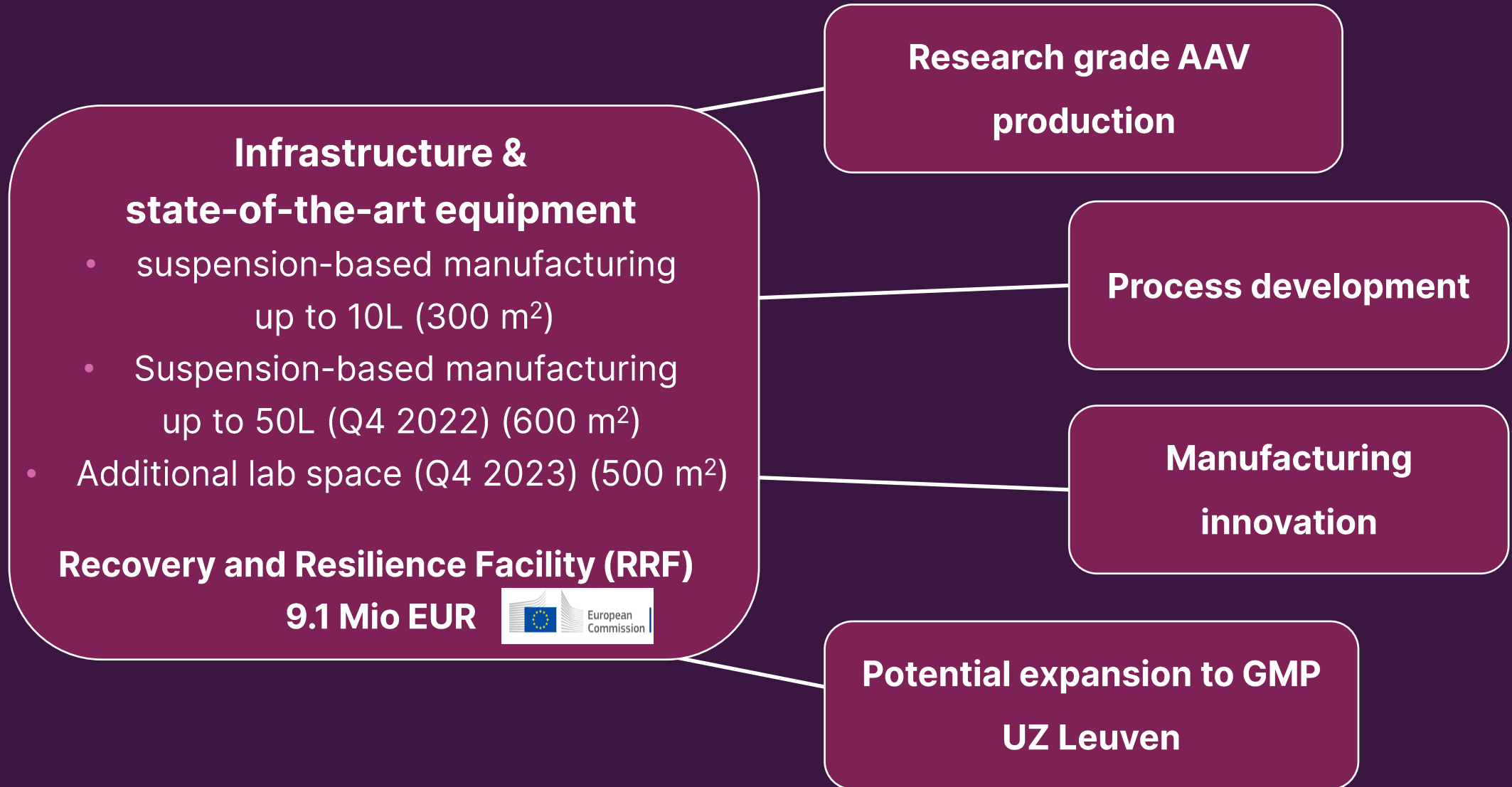
Early
Stage GT
Incubation

Equipment
Technical
expertise

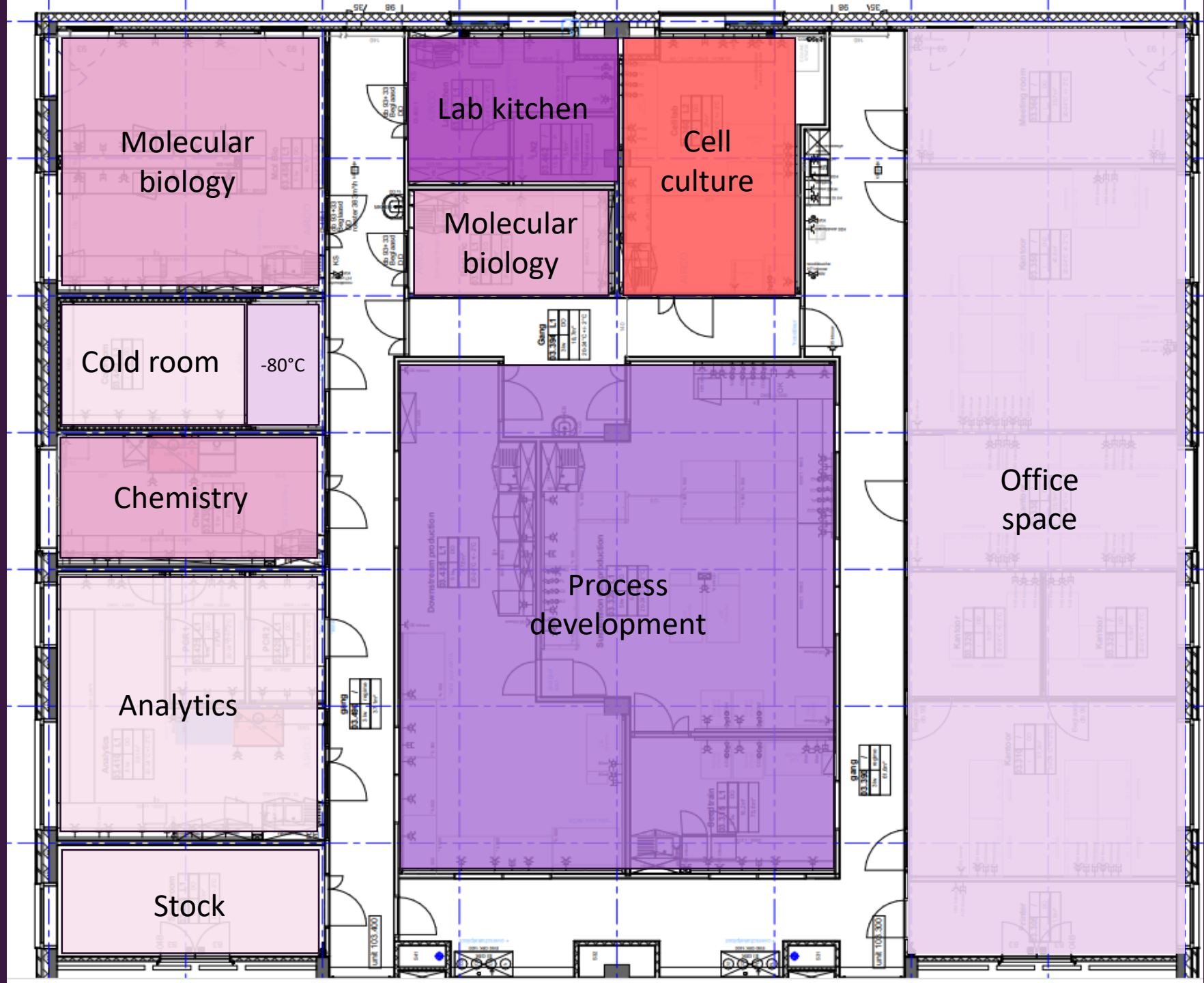
UZ Leuven
partnership

Teaching/
training

Our AAV manufacturing capabilities



Bio-Incubator IV 600m²



Viral Cell Biology Team



Bram Vandewinkel,
PhD student



Caroline Dierickx
PhD student



Marlies Leysen
PhD student



Petrus Van der Auwera
postdoc



Sophie Torrekens
Lab manager



Benjamien Moeyaert
Research manager



Elien Costermans
Lab technician USP



Filip de Vin
Vector engineer



Ingrid Pintens
Finan admin & PA Els



Irina Thiry
Lab manager



Icham Lahbib
Lab technician



Inge Van Hove
Program manager



Joeri Auwerx
Molecular Virologist



Kirsten Welkenhuyzen
Lab technician DSP



Kristel Vuerinckx
Lab technician assay dev



Marwan Benaissa
Lab technician



Veronick Benoy
Research manager



Nathalie Smeets
PhD student



Nathalie Van den Berghe
Analytics Lead



Sofie De Munter
Vector engineer



Sofie Molenberghs
Lab technician in vivo



Teresa Torre Muruzabal
Senior scientist preclinical



Tine Brouns
USP engineer



Samir Neisebeh
Teaching fellow

Therapeutics Team