



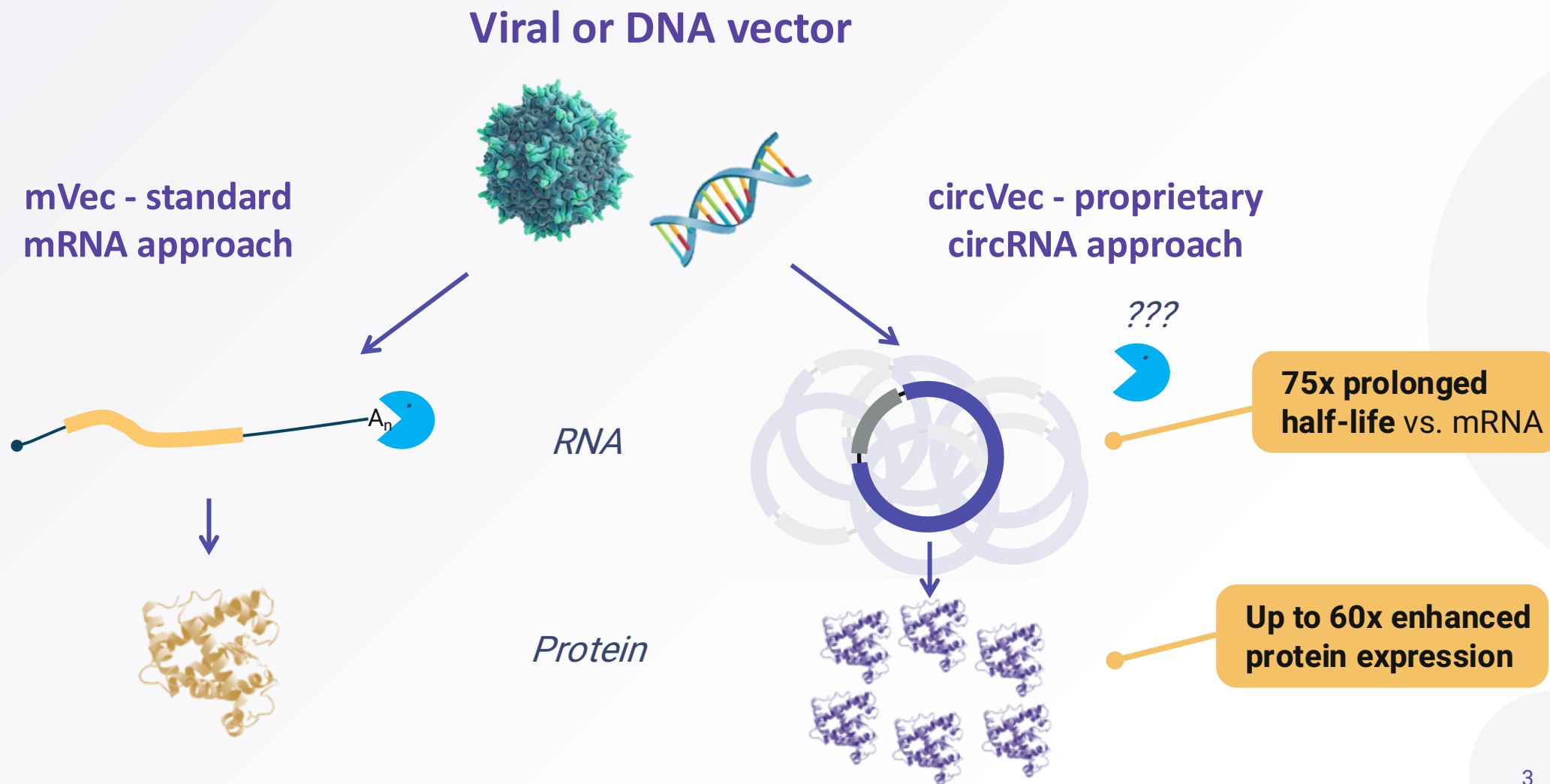
CircVec: A DNA Vector Platform Harnessing Intracellular Circular RNA Biogenesis for Next-Generation T-Cell Therapies

Dr Thomas Hansen, CTO
ESGCT, 2026

Disclaimer

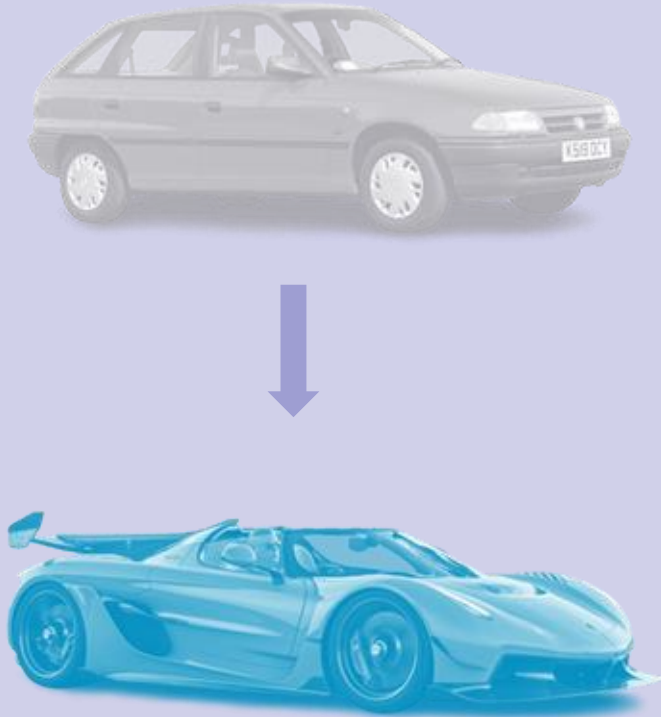
Conflict of Interest & Employment Disclosure

The speaker is a full-time employee and corporate executive at Circio and holds material equity, including stock options and shares, in the company. The scientific research, data, and viewpoints presented during this session are intrinsically linked to the speaker's role within the organization.



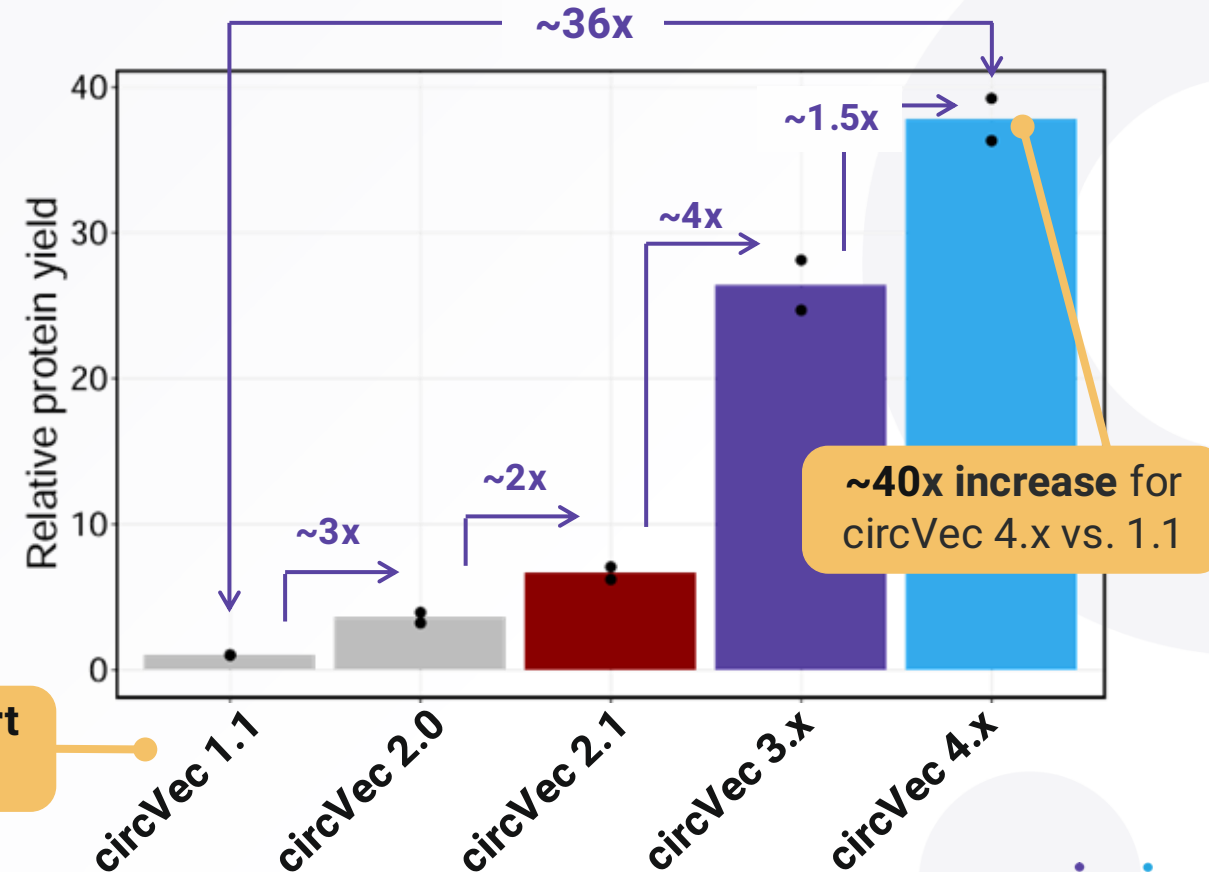
Optimizing circular RNA-based gene expression: circVec construct design and evolution from Gen 1 → 4

The circVec evolution

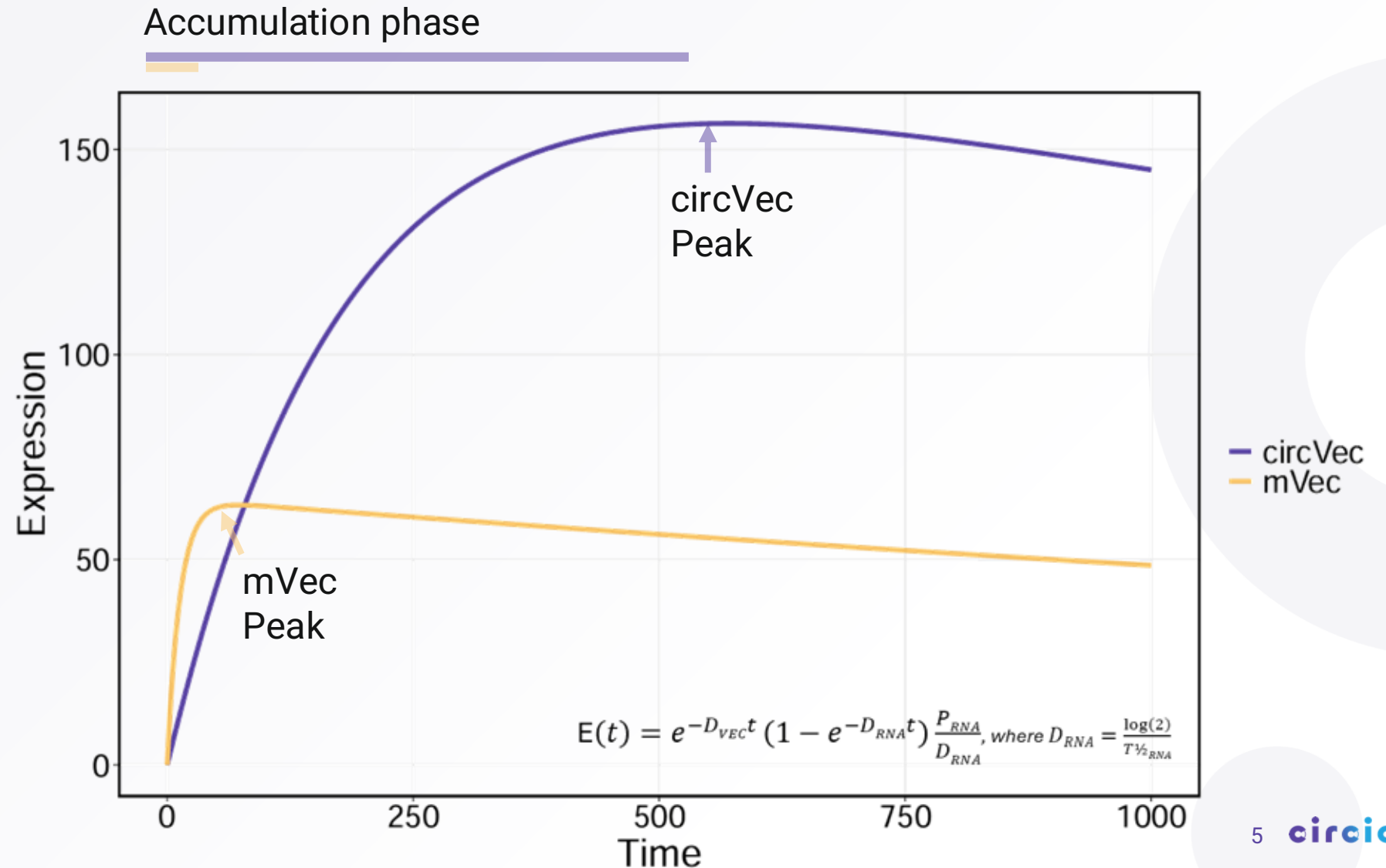
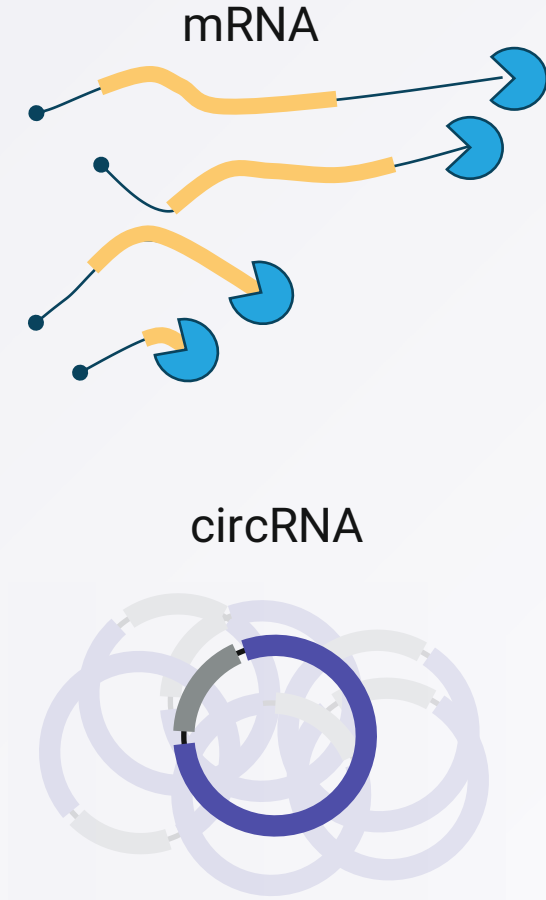


State-of-the art
in literature

circVec protein quantification, Western blot

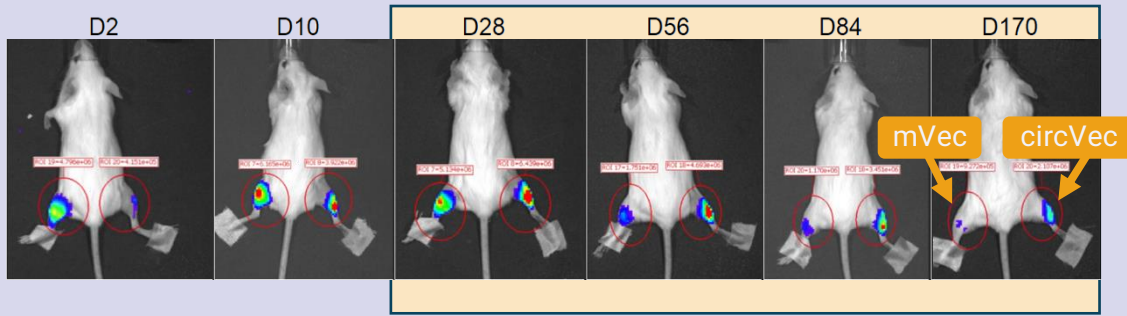


Bioinformatic simulation demonstrating circRNA accumulation over time - driving increased expression

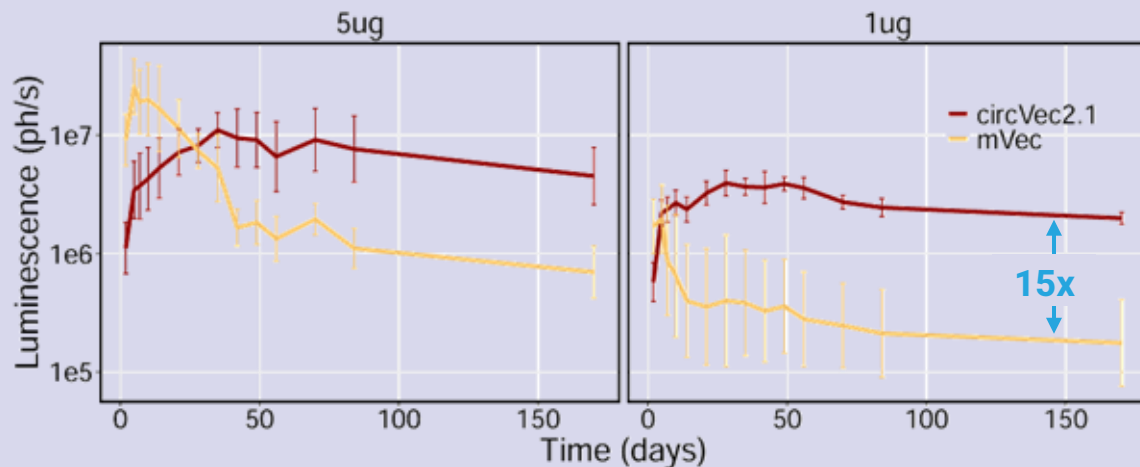


In vivo validation of bioinformatic simulation: 75x prolonged RNA half-life drives enhanced and durable gene expression

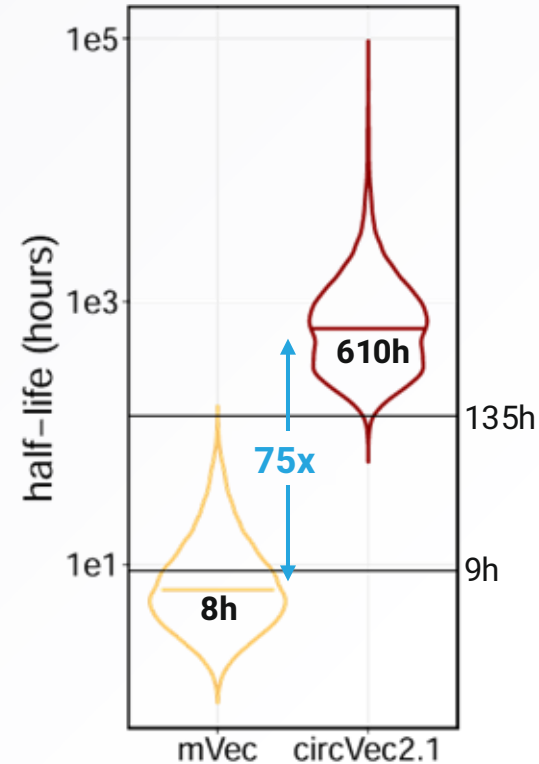
Intramuscular DNA injection, Longitudinal IVIS analysis



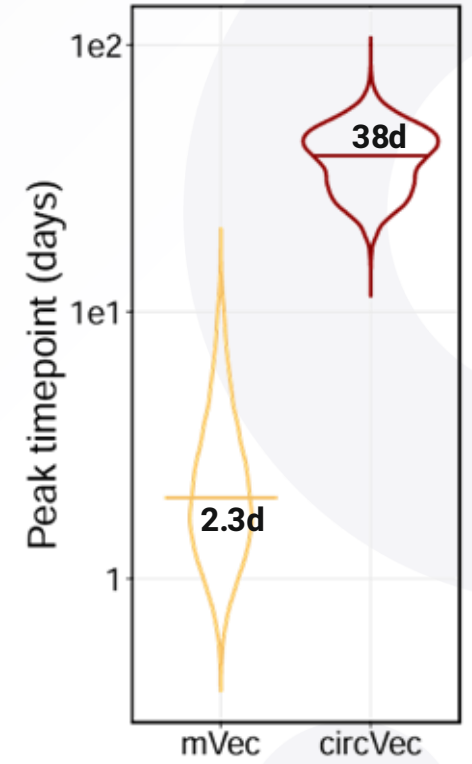
Absolute luminescence, IVIS quantification over time



Inferred RNA half-life, MCMC¹

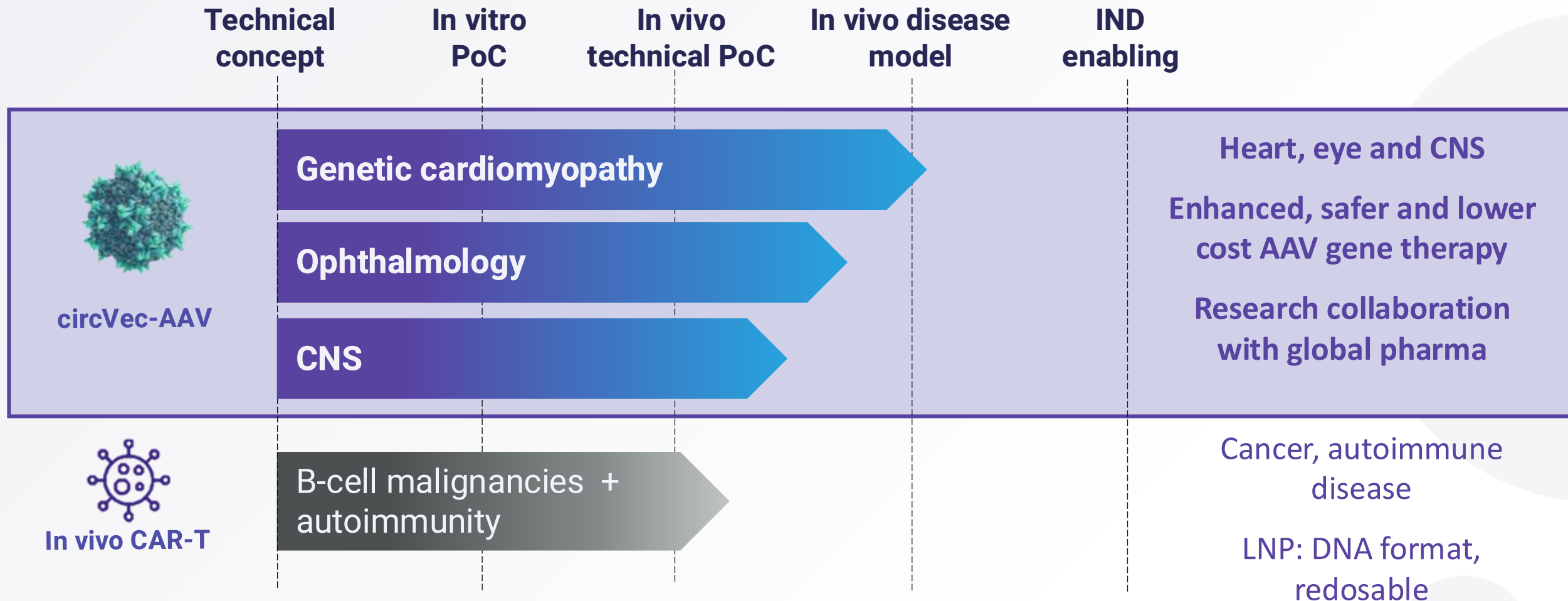


Inferred peak expression, MCMC¹



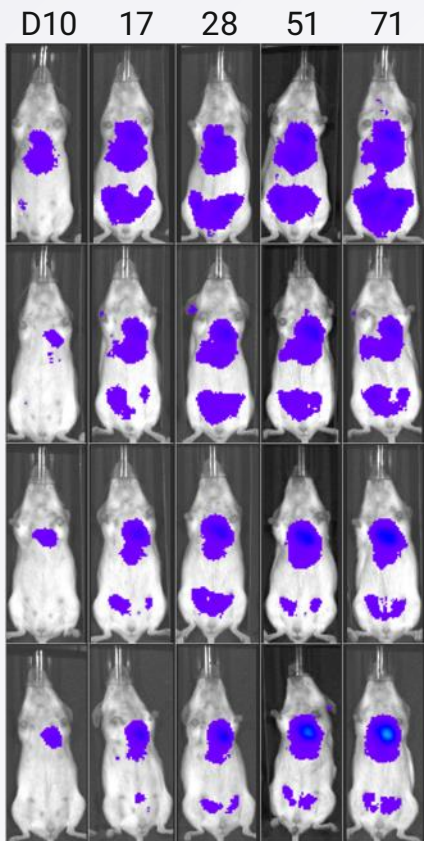
¹Markov Chain Monte Carlo

Circio is deploying the circVec platform for development of next generation gene and cell therapies

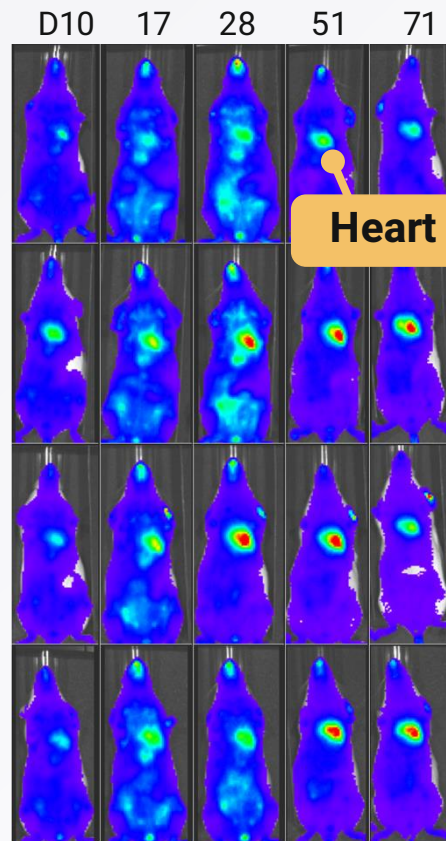


40-fold enhanced expression in heart for circVec-AAV vs. conventional mRNA-based AAV

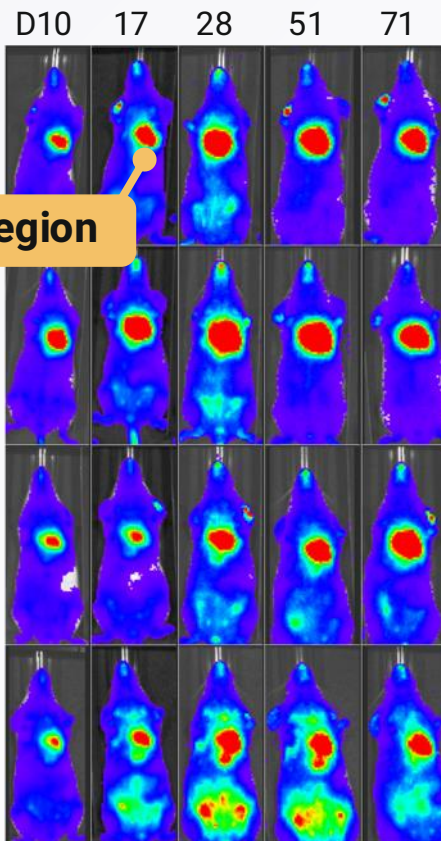
AAV-mVec



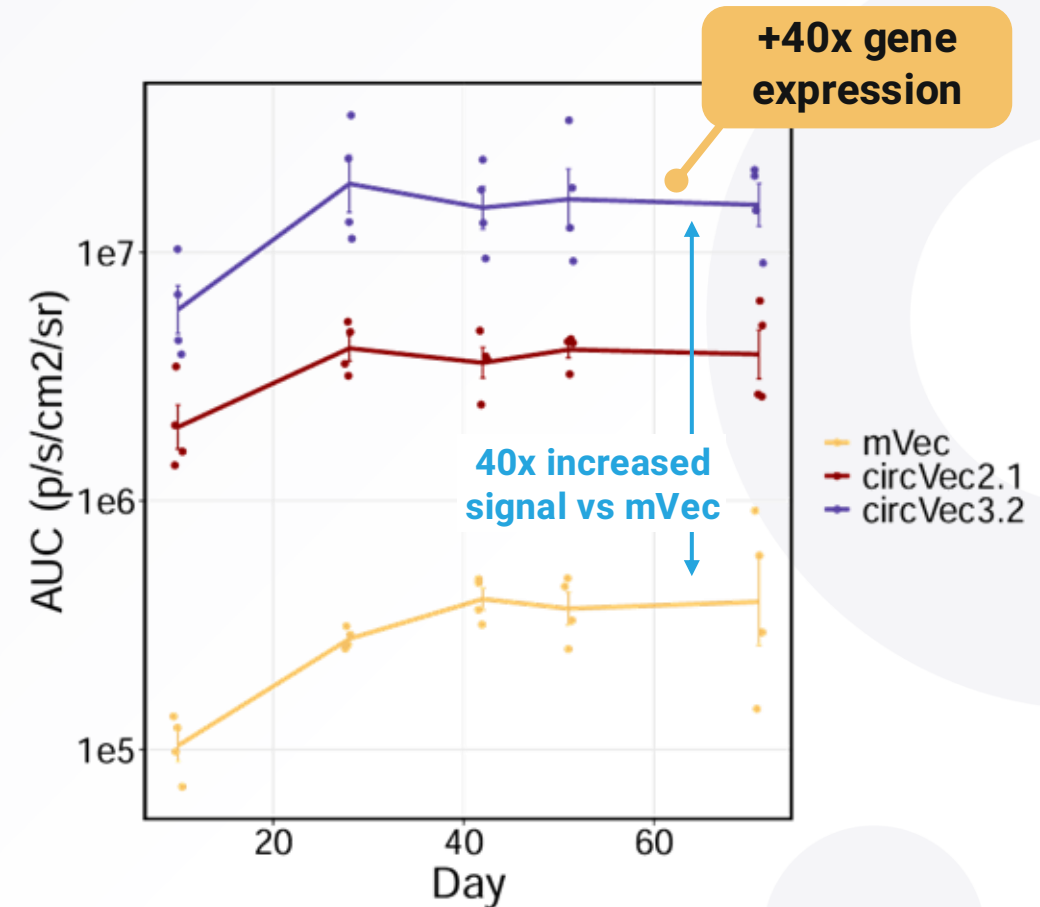
AAV-circVec 2.1



AAV-circVec 3.2

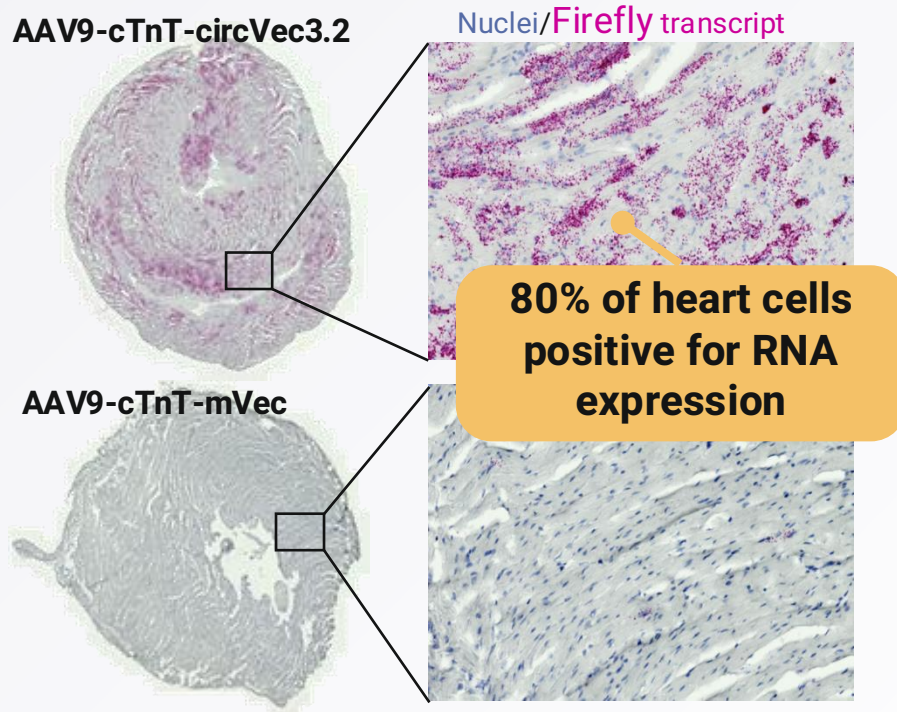


Gene expression quantification, f-luc IVIS signal

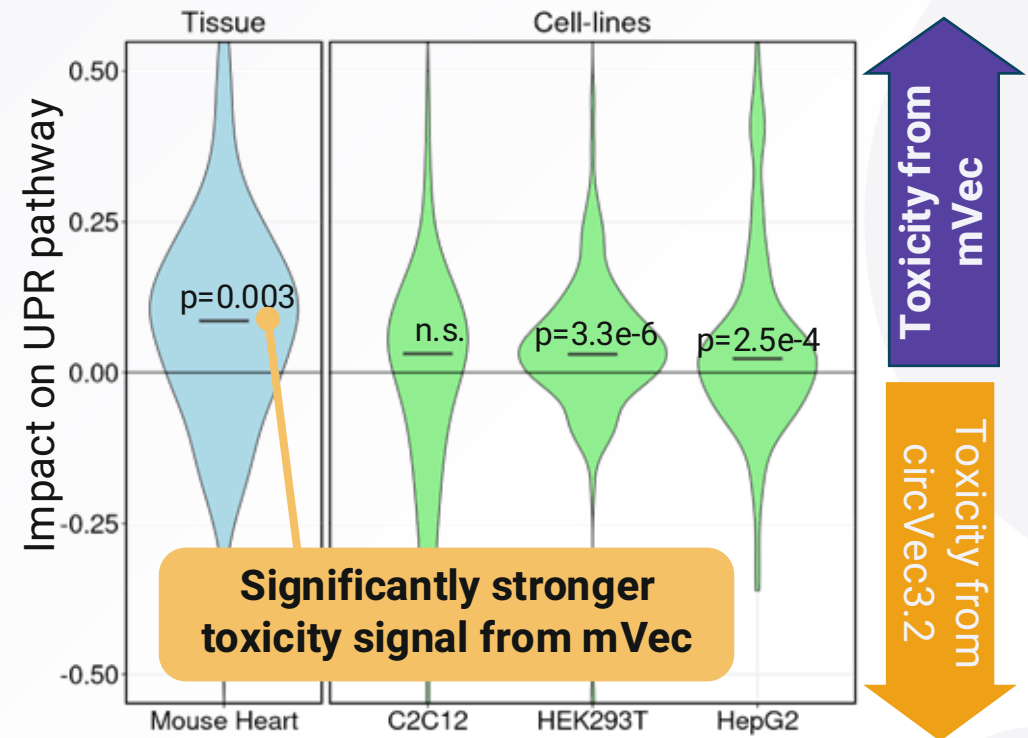


circVec increases heart penetrance and reduces cellular stress response vs. conventional AAV

Increased RNA penetrance in heart, RNAscope analysis

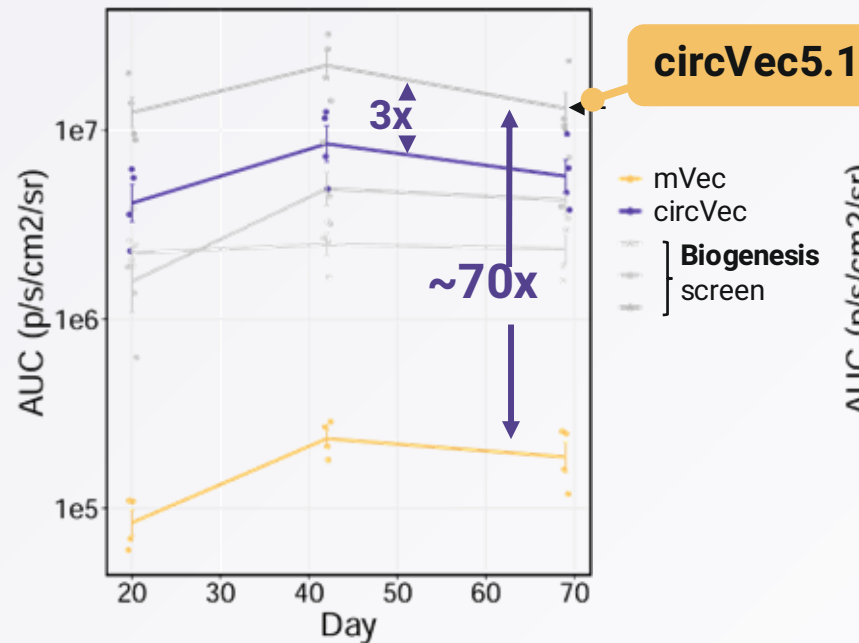


Reduced stress response, RNAseq analysis

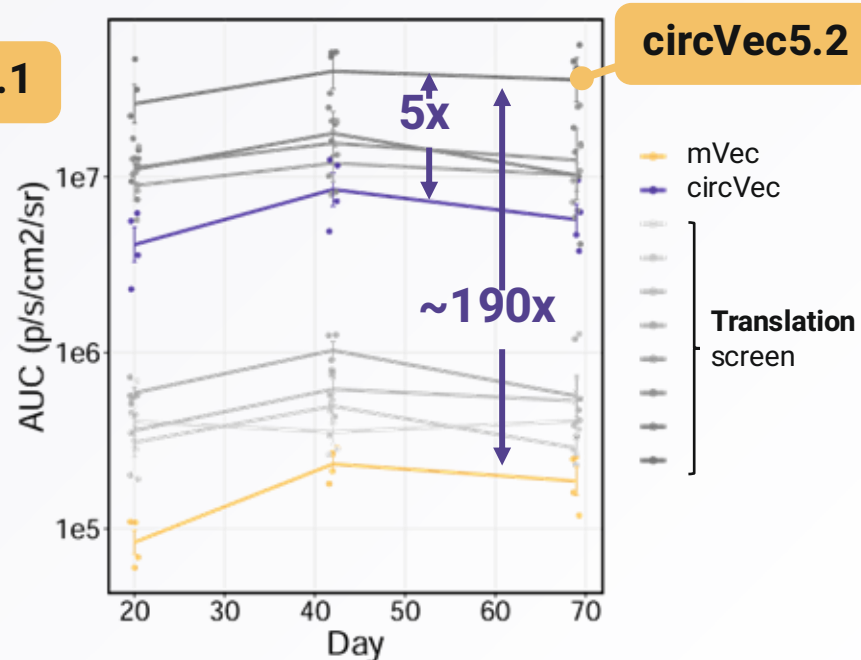


circVec optimization for heart increases expression advantage to ~200-fold with 95% on-target specificity

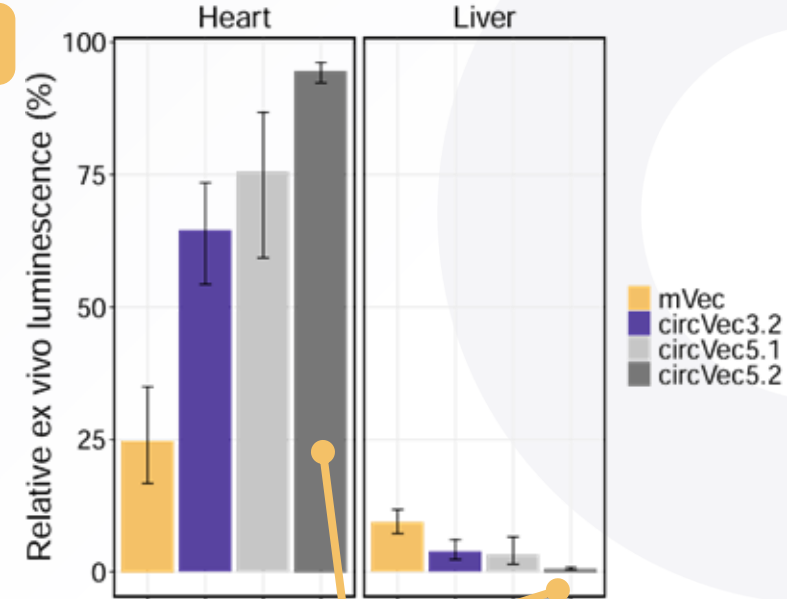
Enhancement of biogenesis in heart, In vivo heart luminescence



Enhancement of translation in heart, In vivo heart luminescence

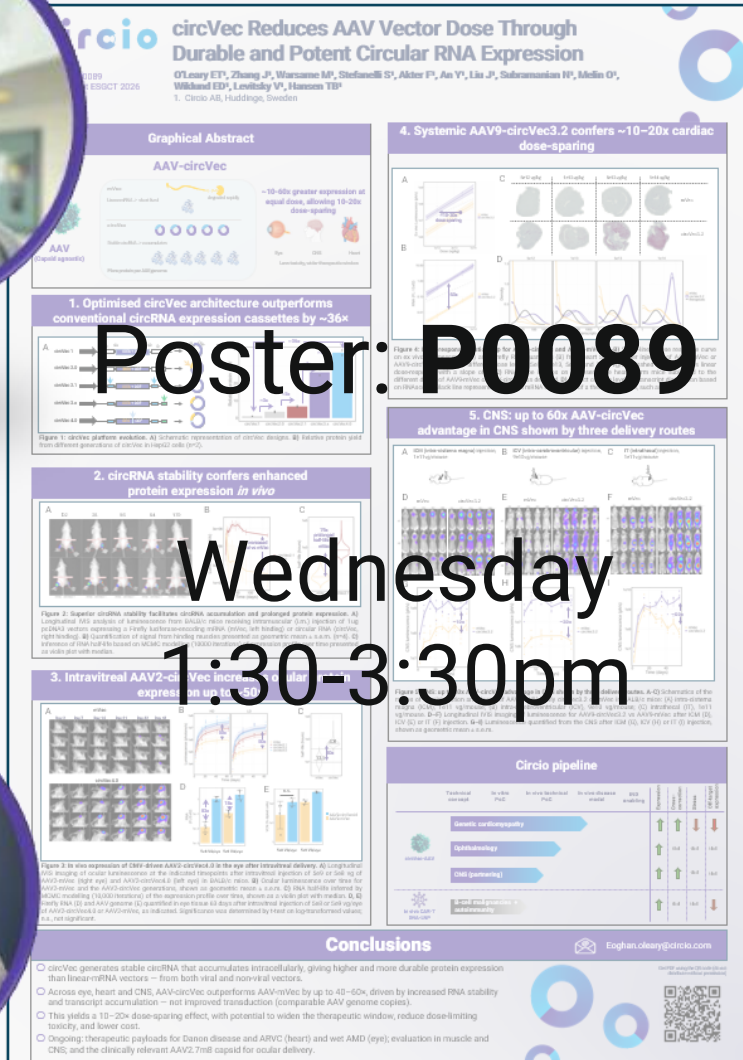


Reduced off-target liver expression, Ex vivo luminescence



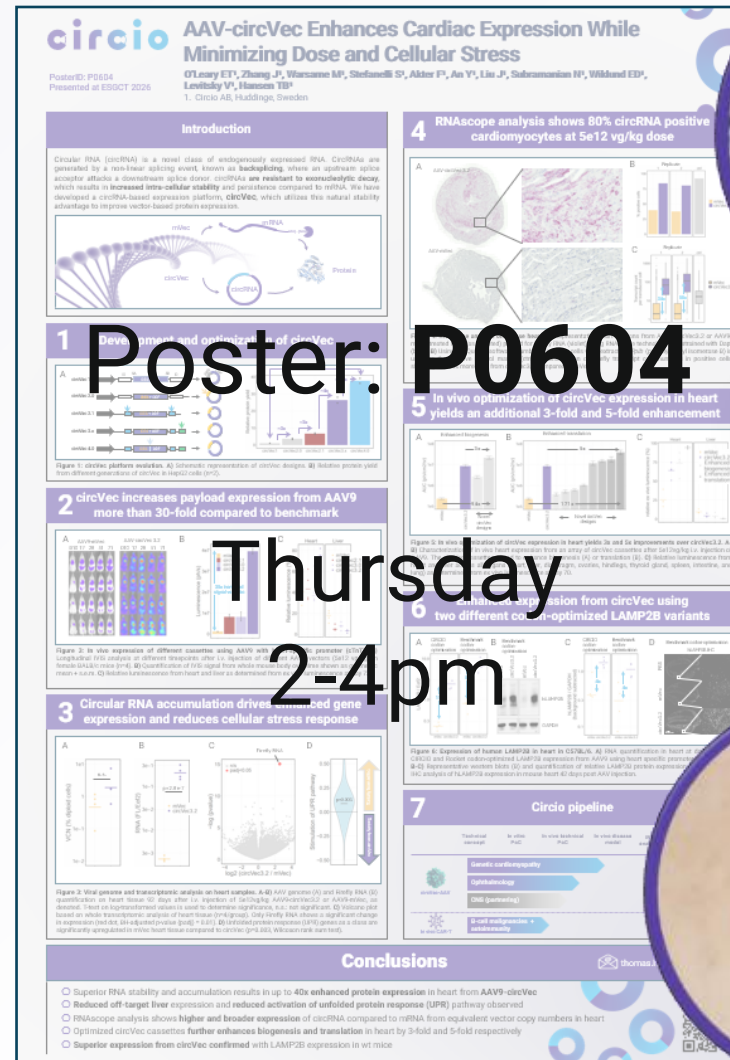
95% on-target heart expression
<1% off target liver expression

Visit CIRCIO posters for more information on the AAV programs



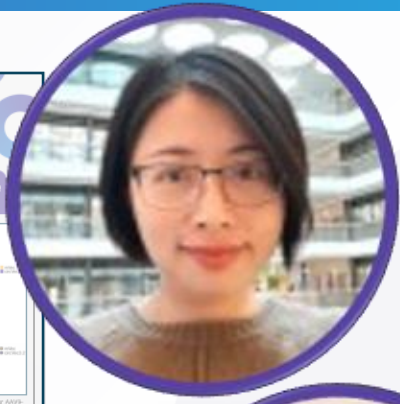
Poster: P0089

Wednesday
1:30–3:30pm

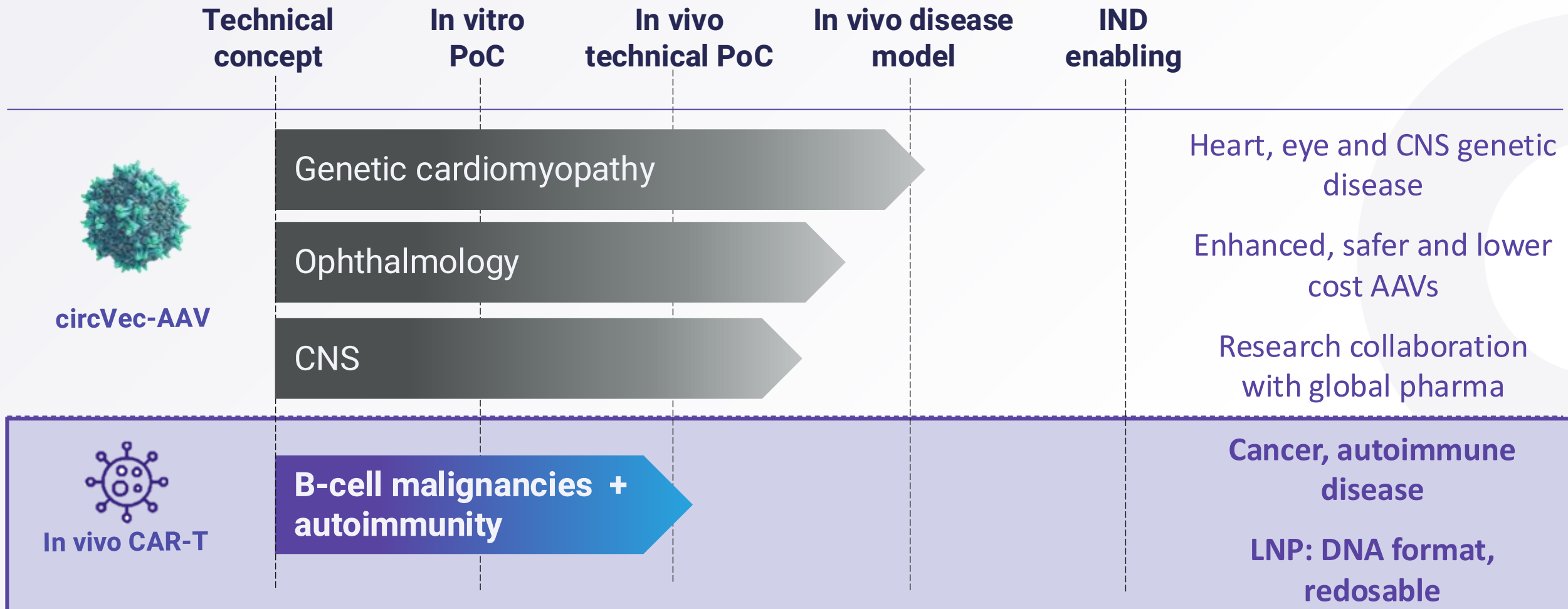


Poster: P0604

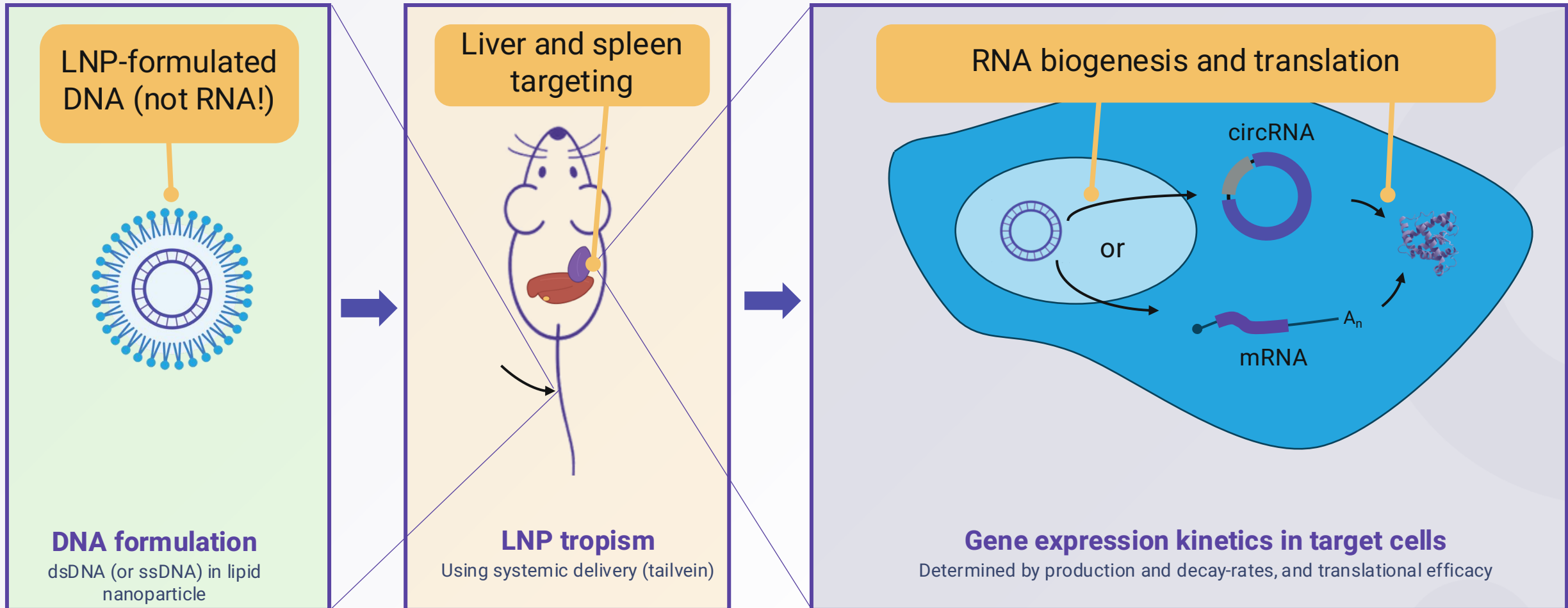
Thursday
2–4pm



Circio is deploying the circVec platform for development of next generation gene and cell therapies



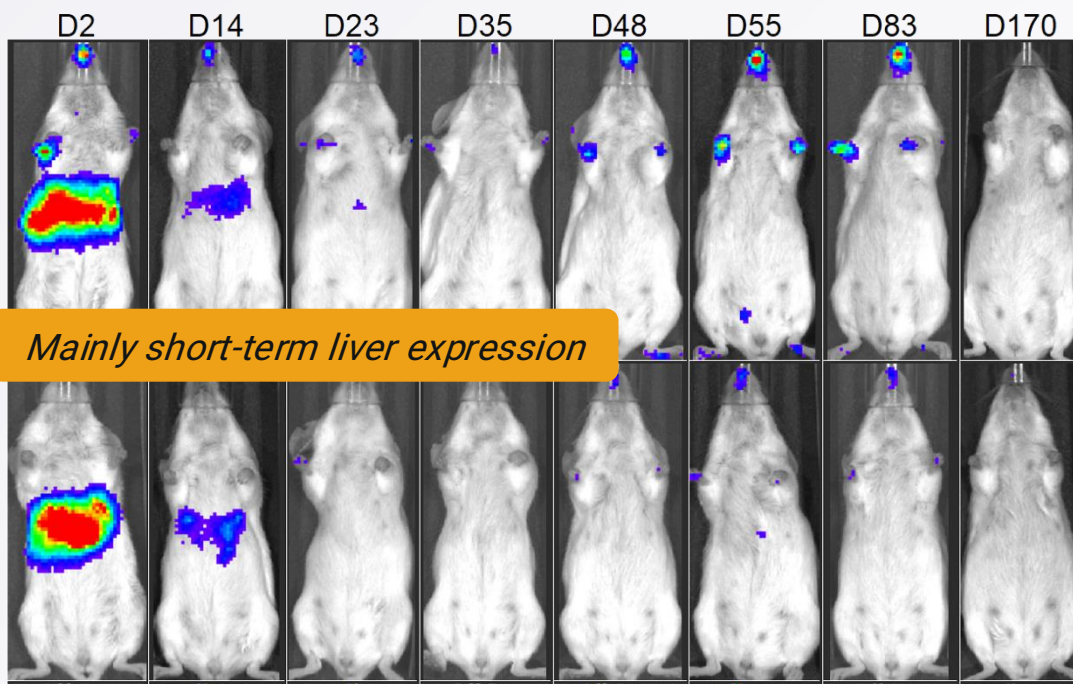
Non-viral circVec: LNP-formulated DNA for durable and repeat-dosable in vivo cell therapy



In vivo cell therapy: circVec expression duration up to 6 months vs. 2 weeks for mVec

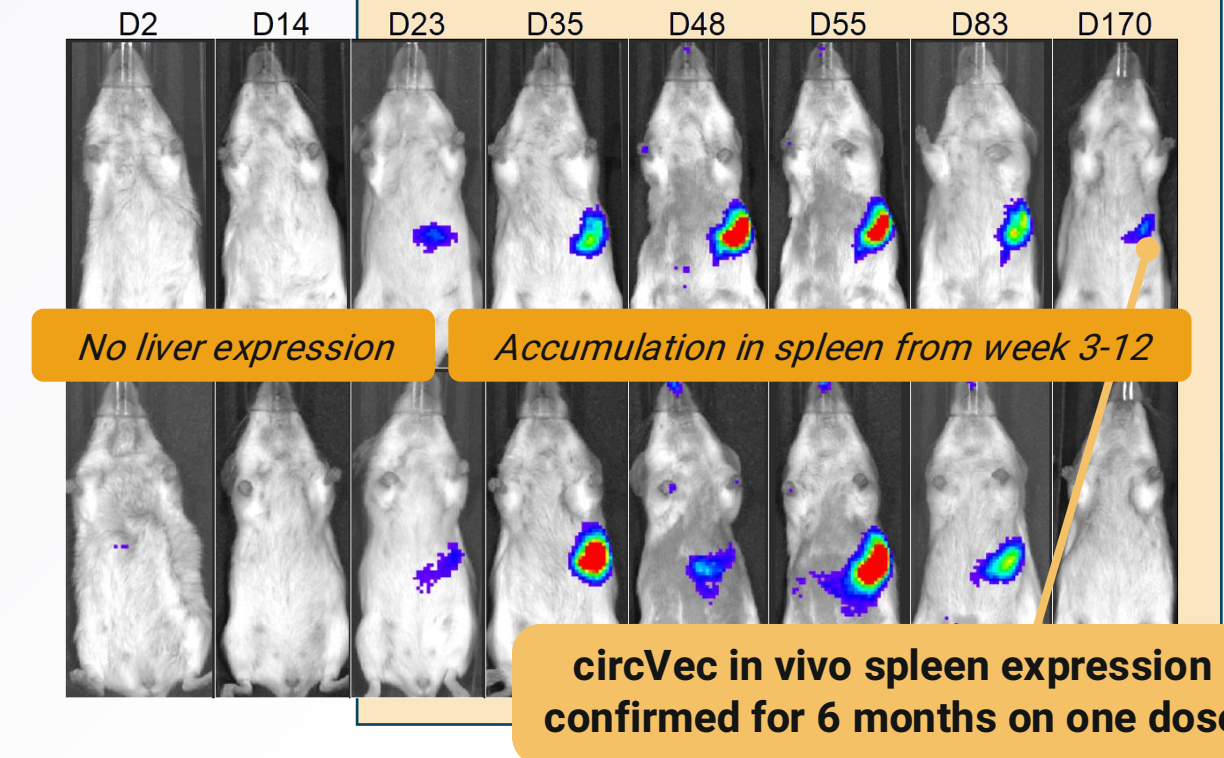
LNP-mVec, luminescence

Systemic I.V. delivery, single dose on Day 0



LNP-circVec luminescence

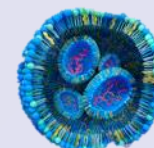
Systemic I.V. delivery, single dose on Day 0



Non-viral DNA



circVec 2.1

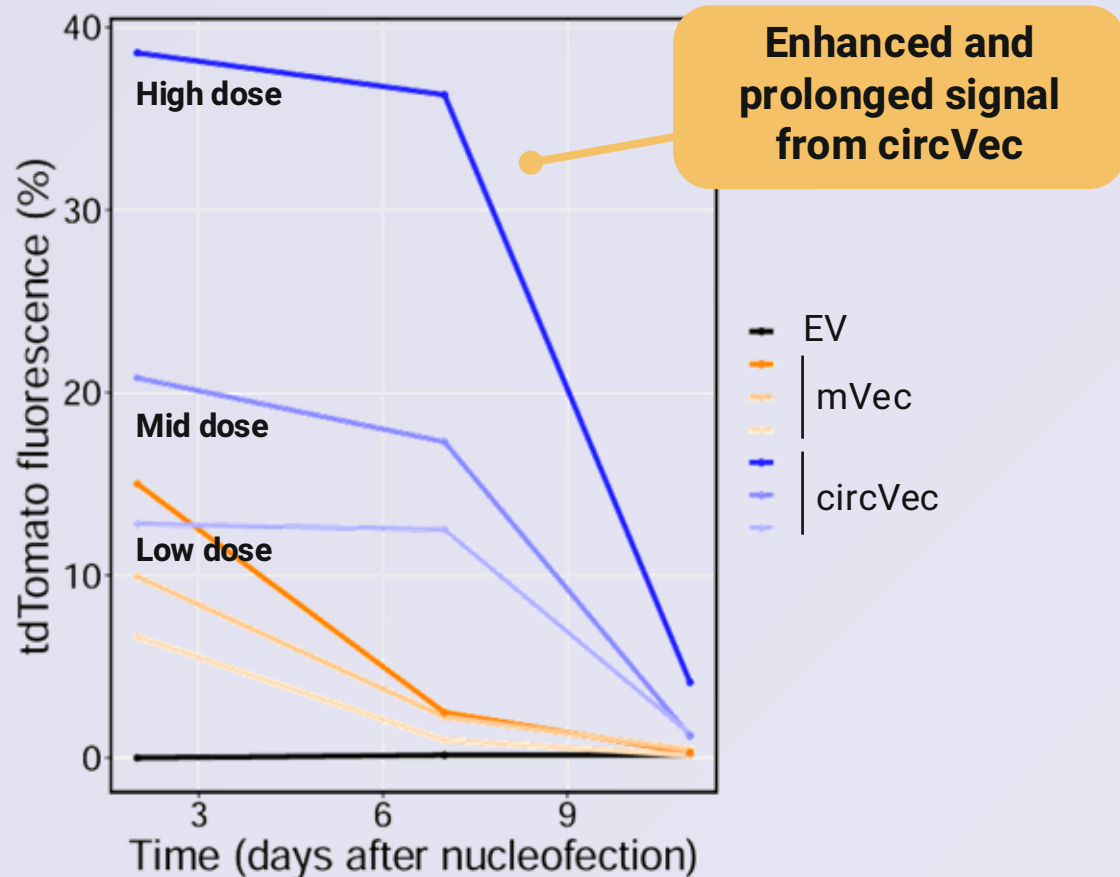


LNP delivery,
non-targeted

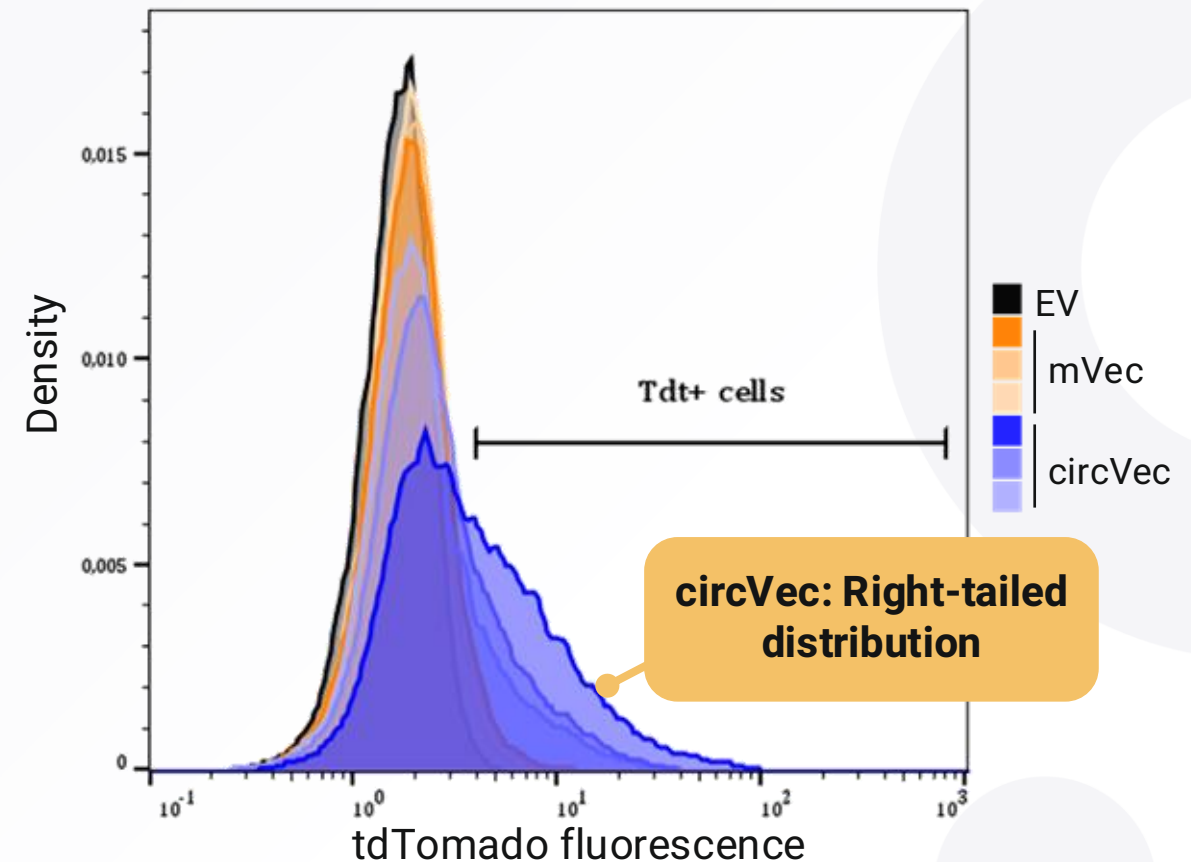
Nucleofection of Jurkat T-cell line in vitro shows enhanced and prolonged expression from circVec

circVec expression temporal kinetics

Vector-based expression of tdTomato in Jurkat

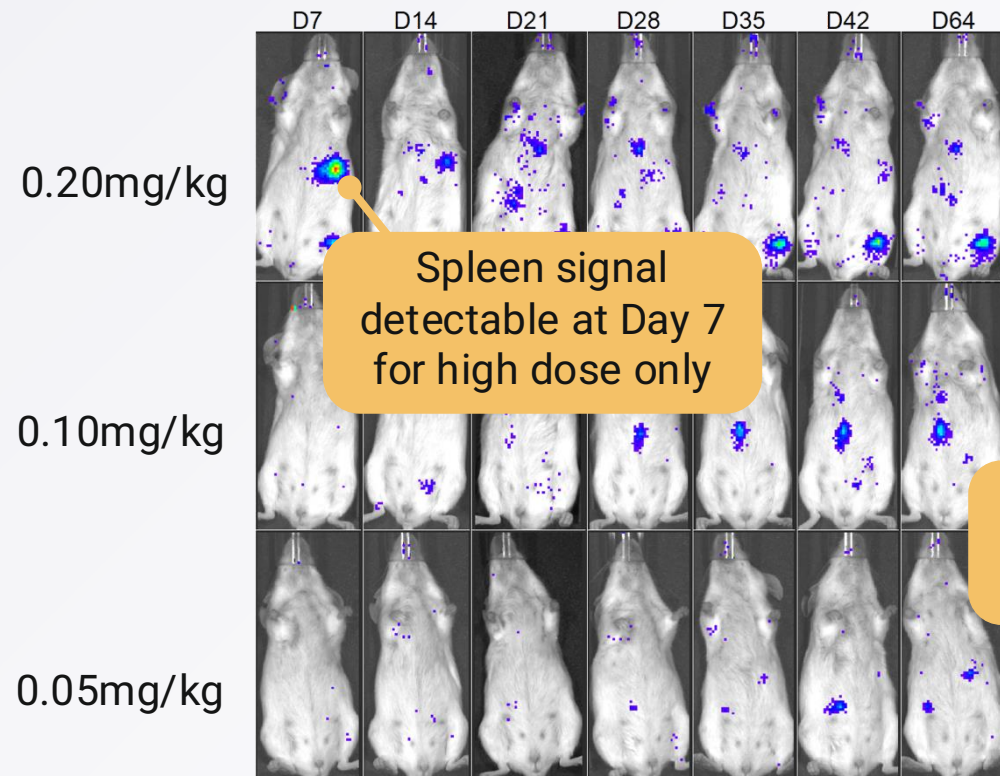


Signal distribution. tdTomato fluorescence at day 7 after nucleofection of Jurkat cells

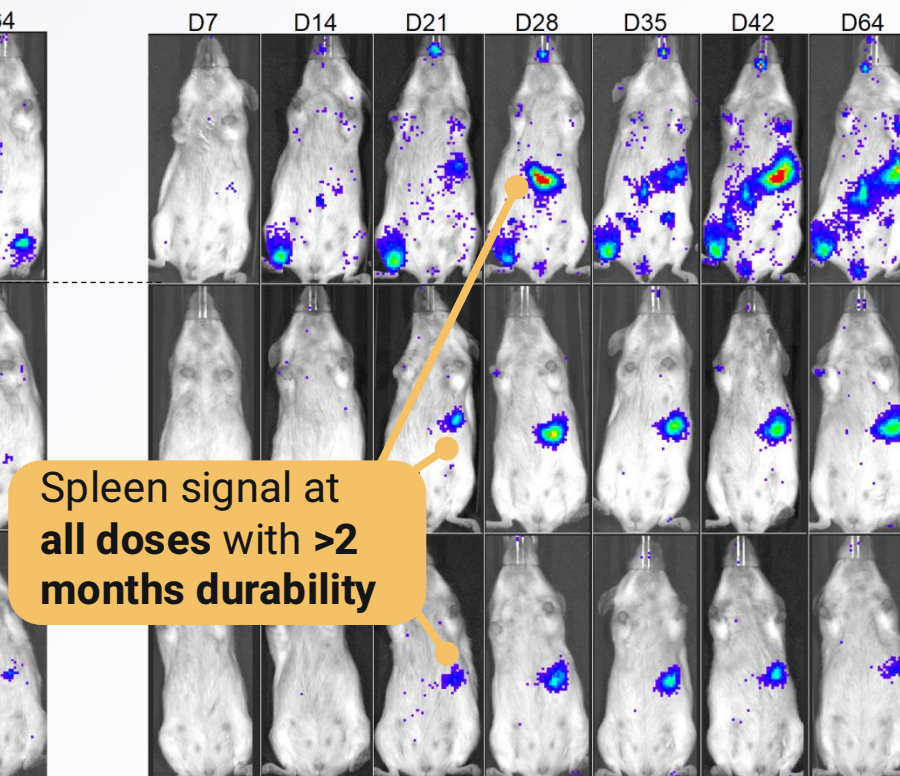


Systemic delivery of T-cell tropic LNP:circVec recapitulate spleen targeting at 10x reduced dose

LNP-mVec w/ T-cell tropic LNP*
Systemic delivery, three dose levels



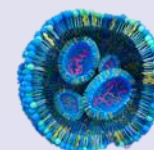
LNP-circVec w/ T-cell tropic LNP*
Systemic delivery, three dose levels



Non-viral DNA



circVec 3.2

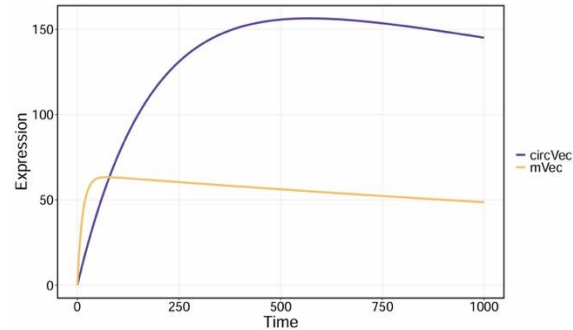


LNP delivery,
T-cell-targeted

Take home messages

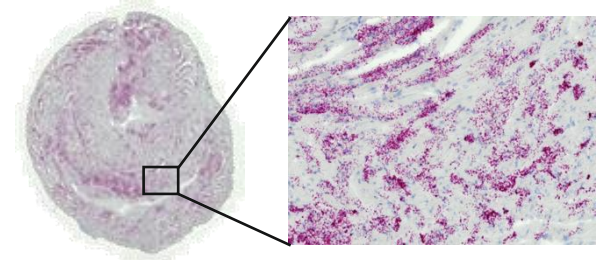
1

Accumulation of circRNA from circVec leads to higher steady state expression



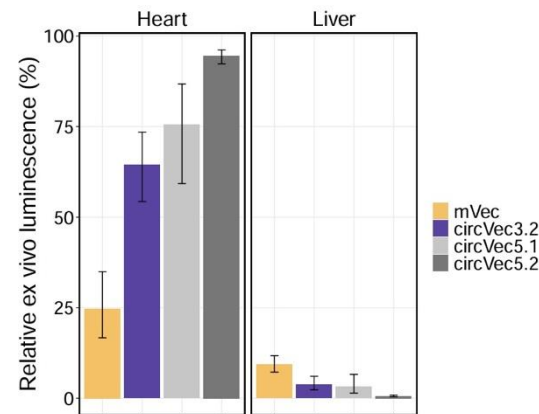
2

circVec delivers high RNA penetrance in heart at low dose



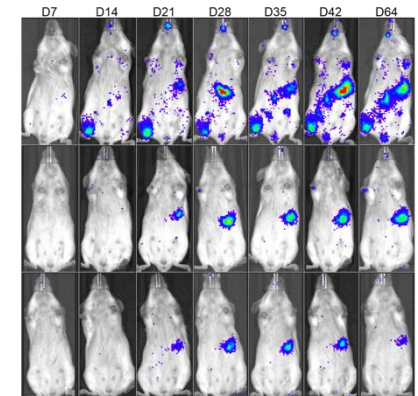
3

circVec reduces translational stress and unwanted expression in liver



4

circVec enables transient spleen signal for 3+ months



Acknowledgements – Circio R&D team in Stockholm



Victor Levitsky
Eoghan O'Leary
Juan Zhang
Summer Stefanelli

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Fahima Akter
Yaxin An
Narmadha Subranian

Jiangnan Liu
Ola Melin
Erik Wiklund

€80 million



Capital raised in 2026 to fuel the next phase of Circio R&D

We're hiring



Scientists at all levels

Early-career

Experienced

Senior