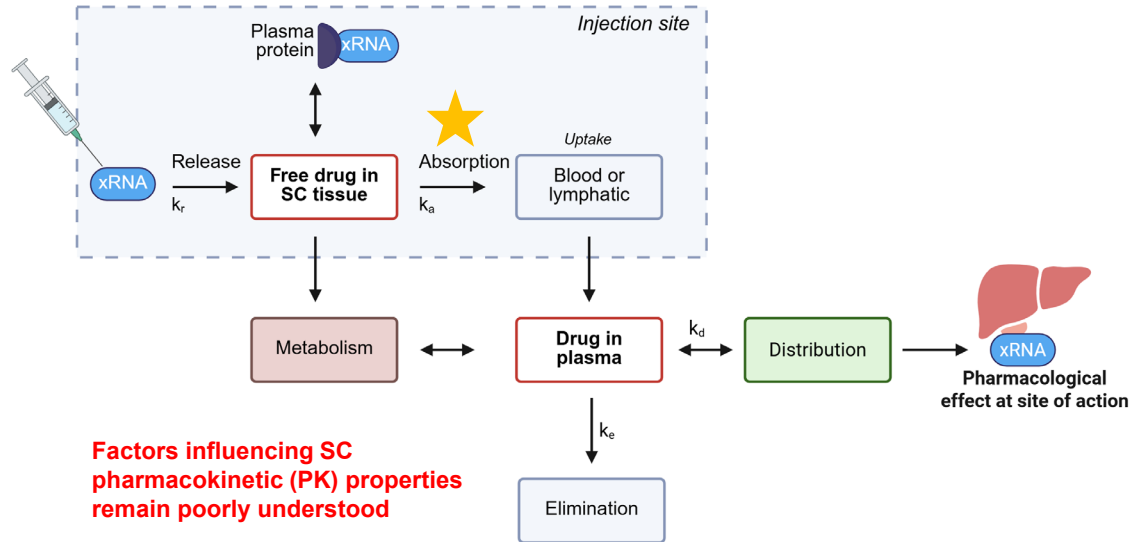


The SCISSOR technology for Investigating the Biopharmaceutics of Subcutaneously Delivered Oligonucleotides

Karin Somby, PhD student
Novartis Pharma AG and King's College London

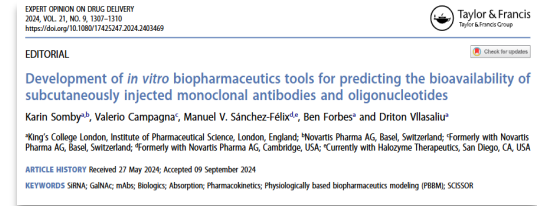
Biopharmaceutics for oligonucleotides

Understanding the fate of oligonucleotides following SC injection



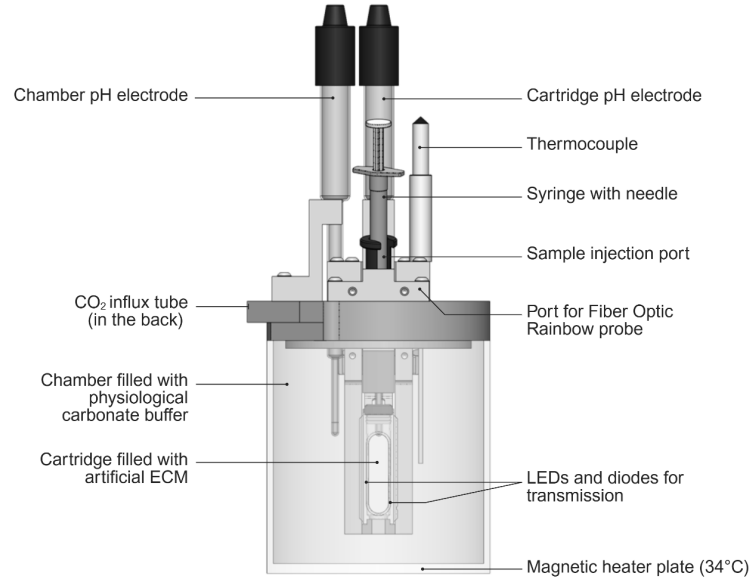
Importance of SC biopharmaceutics

- Understanding how different formulations affect drug absorption and bioavailability
- Enables more **accurate, ethical, and cost-effective** drug development



Roadmap to Reducing Animal Testing in Preclinical Safety Studies

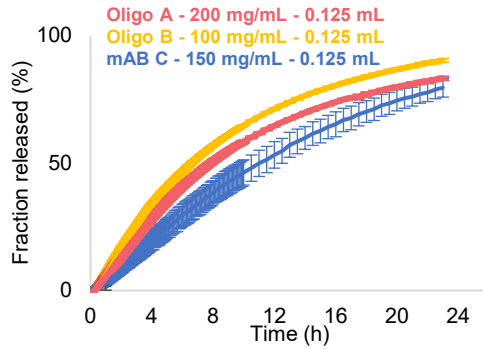
Subcutaneous Injection Site Simulator (SCISSOR)



Pictures from Pion Inc.

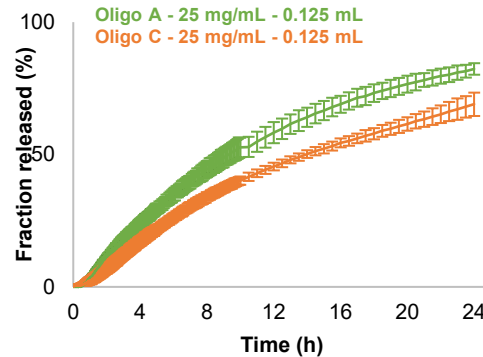
Potentials of SCISSOR as oligonucleotide release method

Oligonucleotide (and biologics) development



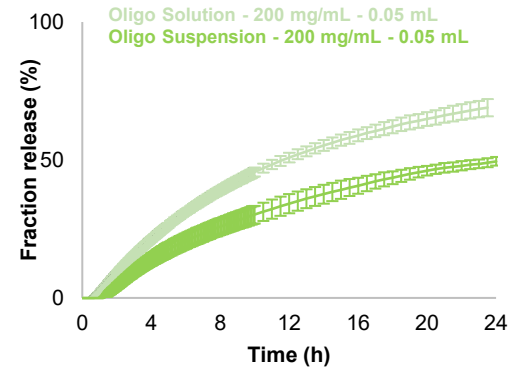
Oligo A; GalNac-xRNA
Oligo B; GalNac-ASO
mAB C; monoclonal antibody

Oligonucleotide conjugation development

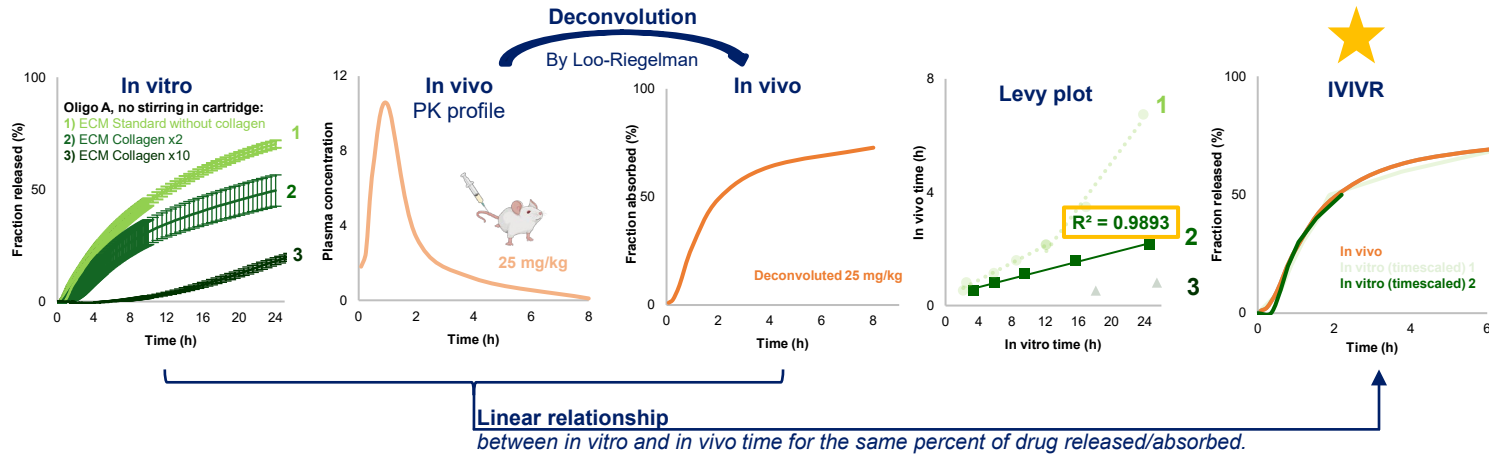


Oligo A; GalNac-xRNA
Oligo C; Fatty Acid ligand conjugated-xRNA

Oligonucleotide formulation development



Developing *in vitro-in vivo* relationship (IVIVR)



Conclusions and future directions

For the first time, an IVIVR approach was established for an oligonucleotide, linking the *in vitro* release rates from SCISSOR to *in vivo rat* rates of absorption

Future directions:

Validation

Exploring the transferability of

1. In vitro SCISSOR system
2. IVIVR approach (including *in vivo* specie translation)



Implementation

In vitro methodology and approach at Novartis, seeking regulatory approval?



Future use

Support development of oligonucleotides and novel modalities/formulations

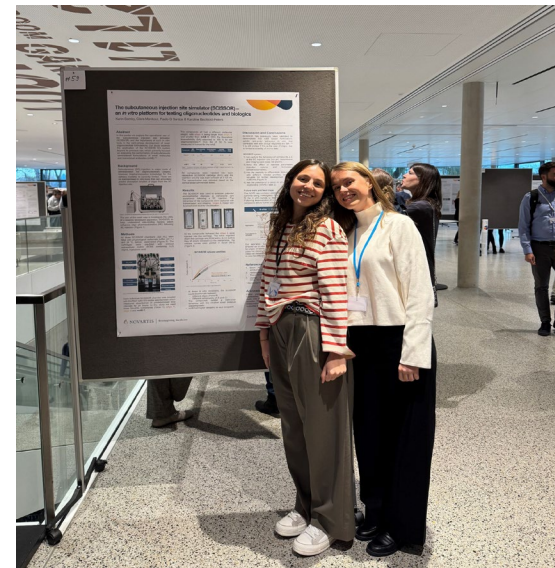
FDA





Thank you

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JULY 13-18, 2025

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DELIVERY INNOVATIONS**