

The logo features a dark blue gradient background with a black silhouette of a mountain range. A small white circle, representing a sun or moon, is positioned above the letter 'i' in the word 'alpine'. The word 'alpine' is written in a black, lowercase, sans-serif font. The word 'antiviral' is written in a white, lowercase, sans-serif font, positioned below 'alpine' and partially overlapping the mountain silhouette.

alpine

antiviral

# RNAi Based Antiviral Drug Discovery & Development

Non confidential

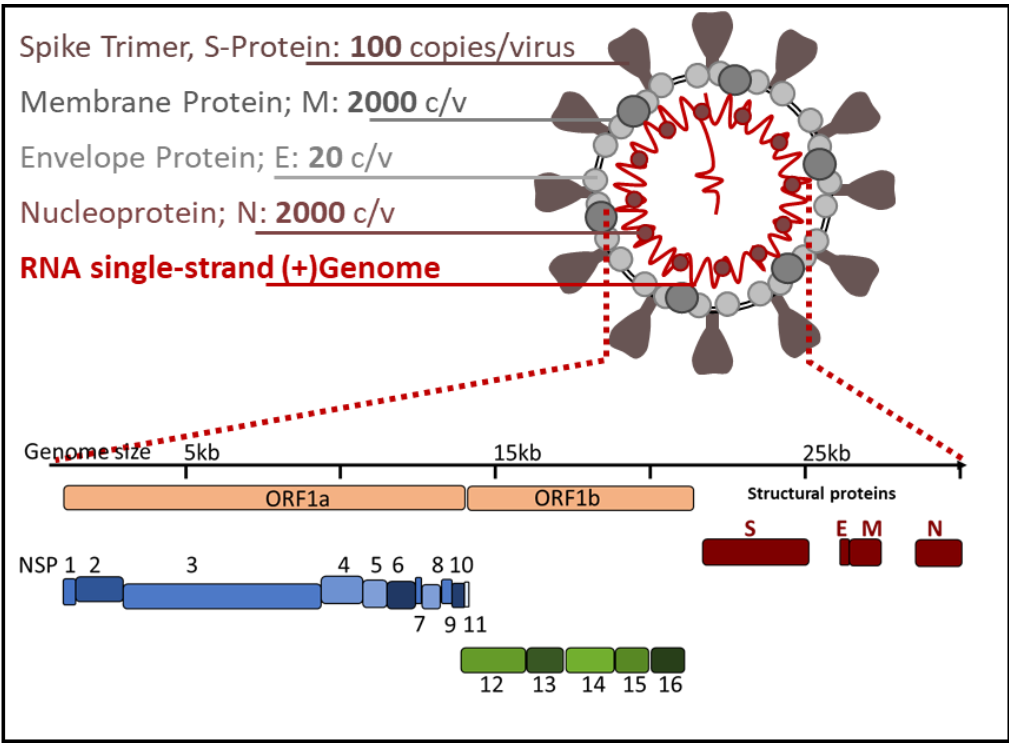
2021

# Alpine Antiviral at a Glance

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- **Alpine Antiviral GmbH** is a start up harnessing the benefits of **RNAi** to combat **viral infections** in general and **Covid-19** in particular
- **Leading experts** in the field of Virology, Phamaceutics and RNAi collaborate to advance siRNA-drug discovery and development
- Results from **own research** identify susceptible regions in genome and transcriptome for RNAi based intervention.
- **FTO, proprietary IP**, and a robust **patent strategy** protect the companies business case.
- The **Friedrich Loeffler Institute (FLI)** is partner of alpine antiviral, providing **facilities and expertise** to advance drug discovery against pathogenic viruses
- Currently seeking **Seed Funding** for PoC studies in animals



## Viruses are perfect RNAi targets

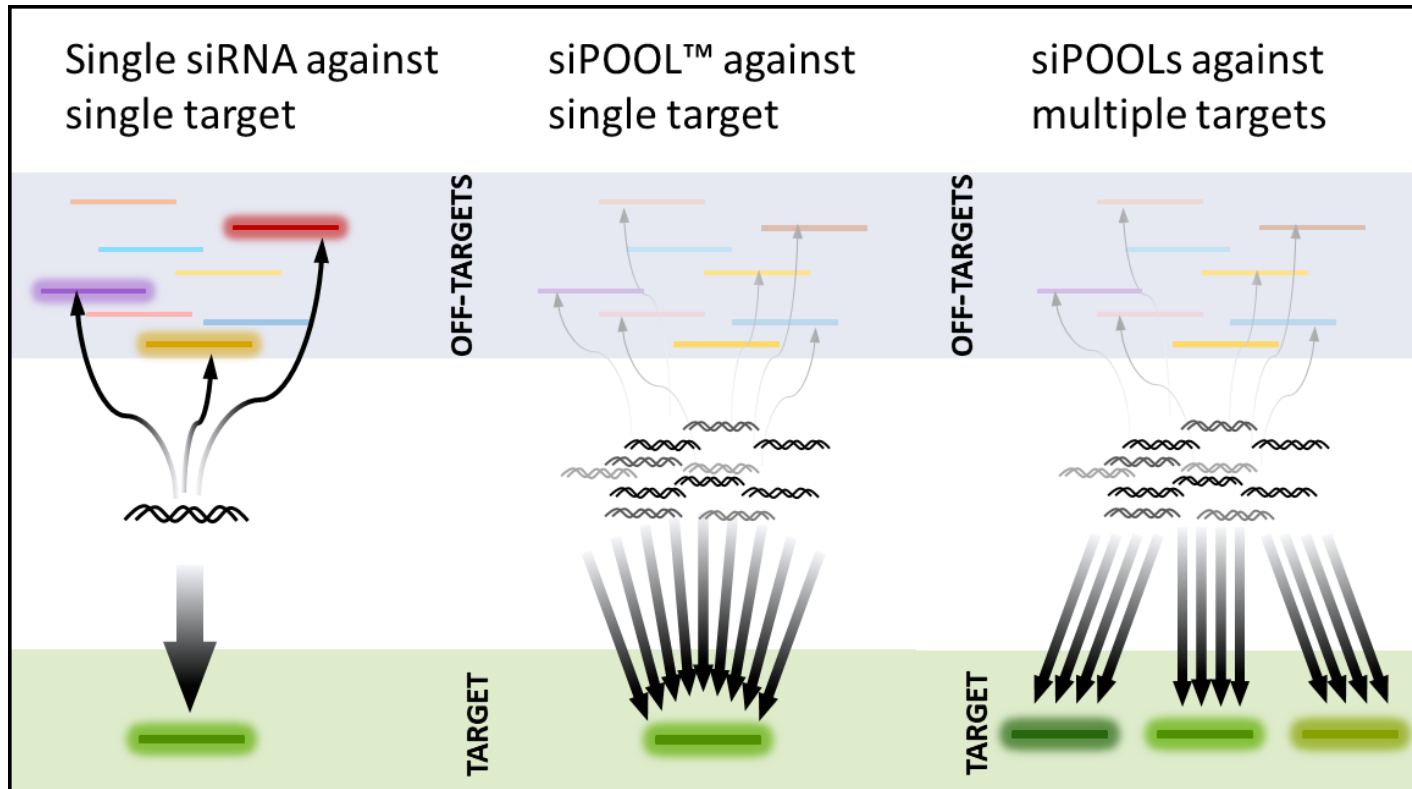
- Many viruses have RNA genome
- All have RNA transcripts
- ⇒ Ideal targets for siRNAs
- ⇒ siRNA development easy & fast

**RNAi is the ideal rapid response drug for emerging viral diseases**

**⇒ Targeting the virus with siRNA mixtures against multiple essential viral genes**

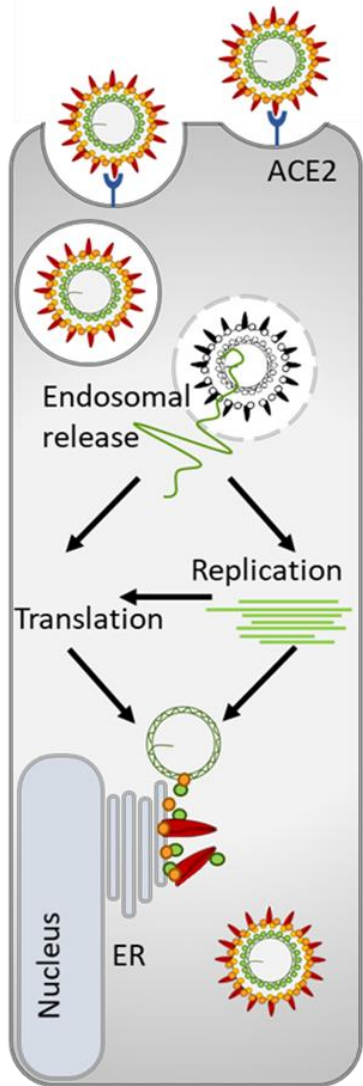
# .... Harnessing siPOOL Technology to Prevent Resistance Formation and Off Target Effects.

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- No off-targets effects => increased **safety**
  - Simultaneous knock down of multiple targets => secured **efficacy**
  - Robust silencing despite viral mutations => **no resistance** formation
  - **Patented** economic siPOOL **production** using scalable enzymatic process
- siPOOLS™ are ideal against emerging and continually mutating viruses

# Own Research Yields the 1st „RNAi-Sensitivity Map“ of the CoV-2 Genome ...



siPOOL #	active	toxic	% infected cells	% total cells	
AA-siP 14	★		1,4		101
AA-siP 48	★		2,9		109
AA-siP 61	★		3,0		101
AA-siP 89	★		3,9		81
AA-siP 7	★		5,0		95
AA-siP 53	★	★	5,4		46
AA-siP 88	★		7,5		100
AA-siP 17	★		9,5		98
AA-siP 26			12,0		104
AA-siP 30			12,1		95
AA-siP 39			25,5		90
AA-siP 76		★	33,0		66
AA-siP 2			41,8		112
AA-siP 15		★	45,5		72
ACE 2			49,7		103
AA-siP 45			94,8		111
Kif 11		★	97,3		59
Neg. C. Pool			100, 0		100

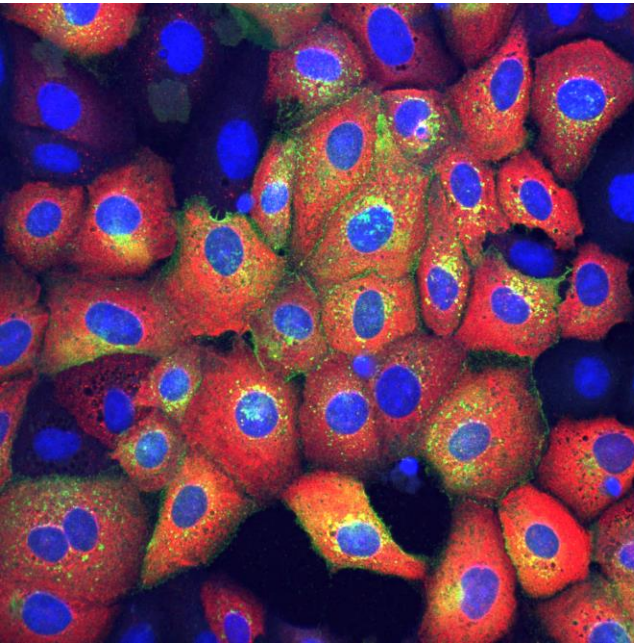
**Selected siPOOLS combine remarkable antiviral activity with good tolerability**

# ...Using High Content Screening ...

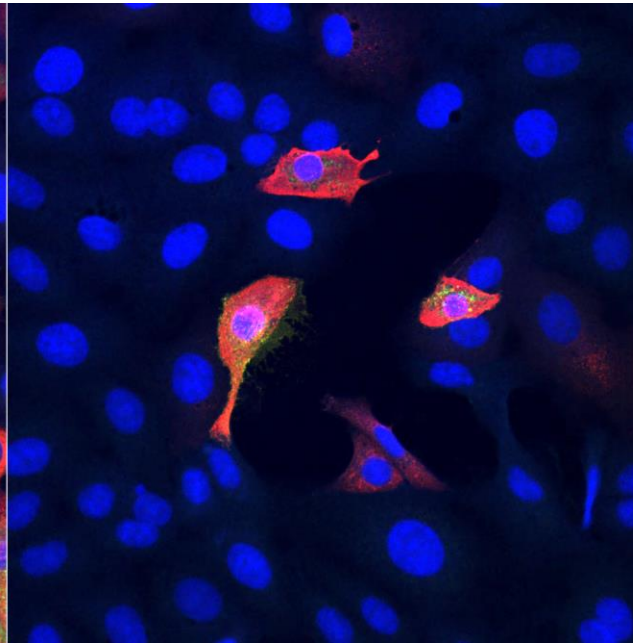
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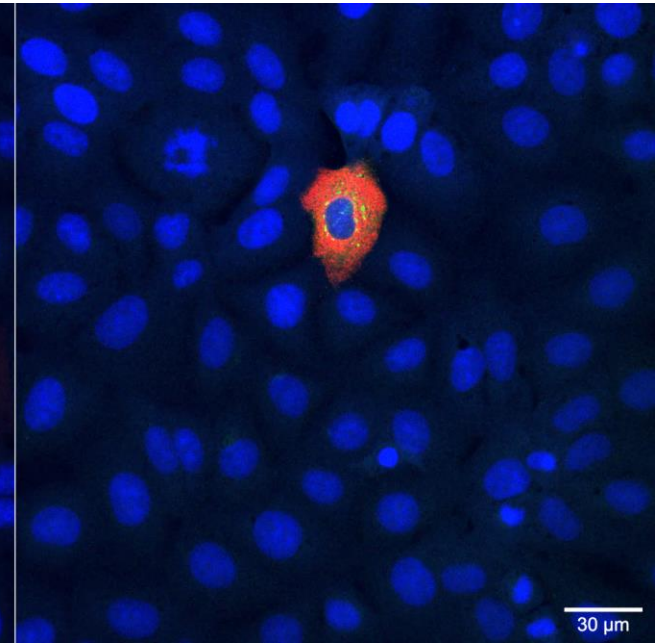
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siPOOL against S-Gene



siPOOL against other SARS-CoV-2 gene



Hoechst/DNA

α N-Protein AB

α Spike-Protein AB

# ... in Collaboration with Key Partners.

## Prof. Dr. Stefan Finke

Friedrich Löffler Institut (FLI)  
Insel Riems, Germany

SARS-CoV-2 screening assays,  
animal models, virology



## Prof. Dr. Olivia Merkel,

Department of Pharmacy  
LMU Munich, Germany

siRNA Delivery, in-vitro and ex-vivo model



## Antiviral siPOOL testing on cells and animals

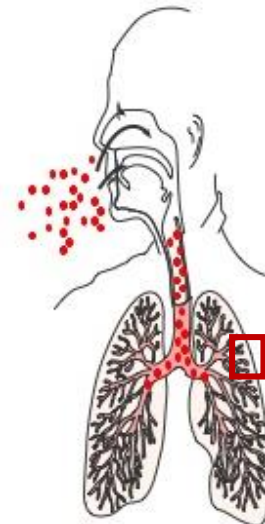
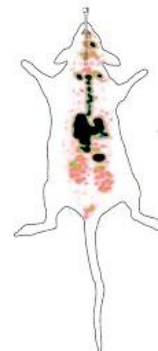
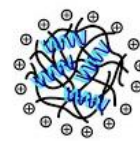
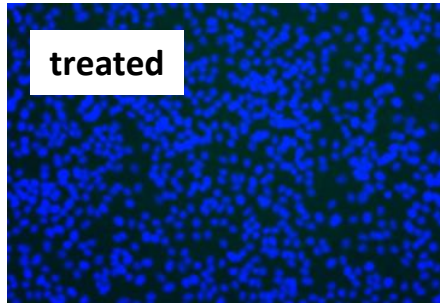
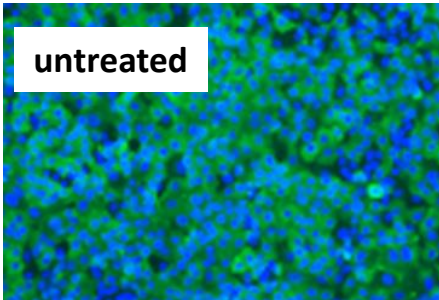
- All Infection Models
- Virology
- Cell Biology
- Imaging
- Biochemistry
- Veterinary med.
- Host-Virus Interaction

## Antiviral siPOOL formulation and delivery

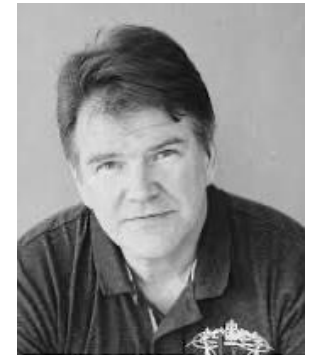
- Synthetic nano-sized delivery systems for RNA
- Novel safe and target-specific nanomedicines
- Local administration routes
- Precision Cut Lung Slices

untreated

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- **Dr. Michael Hannus,**
  - Management & preclinical Research
- **Dr. Reijo Laaksonen, MD, Clinical Pharmacologist,**
  - Management & clinical Research
- **Dr. Frank Becker,**
  - Regulatory affairs & finance
- **Dr. Dirk Bühler, Maiwald Intellectual Property**
  - IP
- **Dr. Stefan Hannus,**
  - Public funding & corporate communication





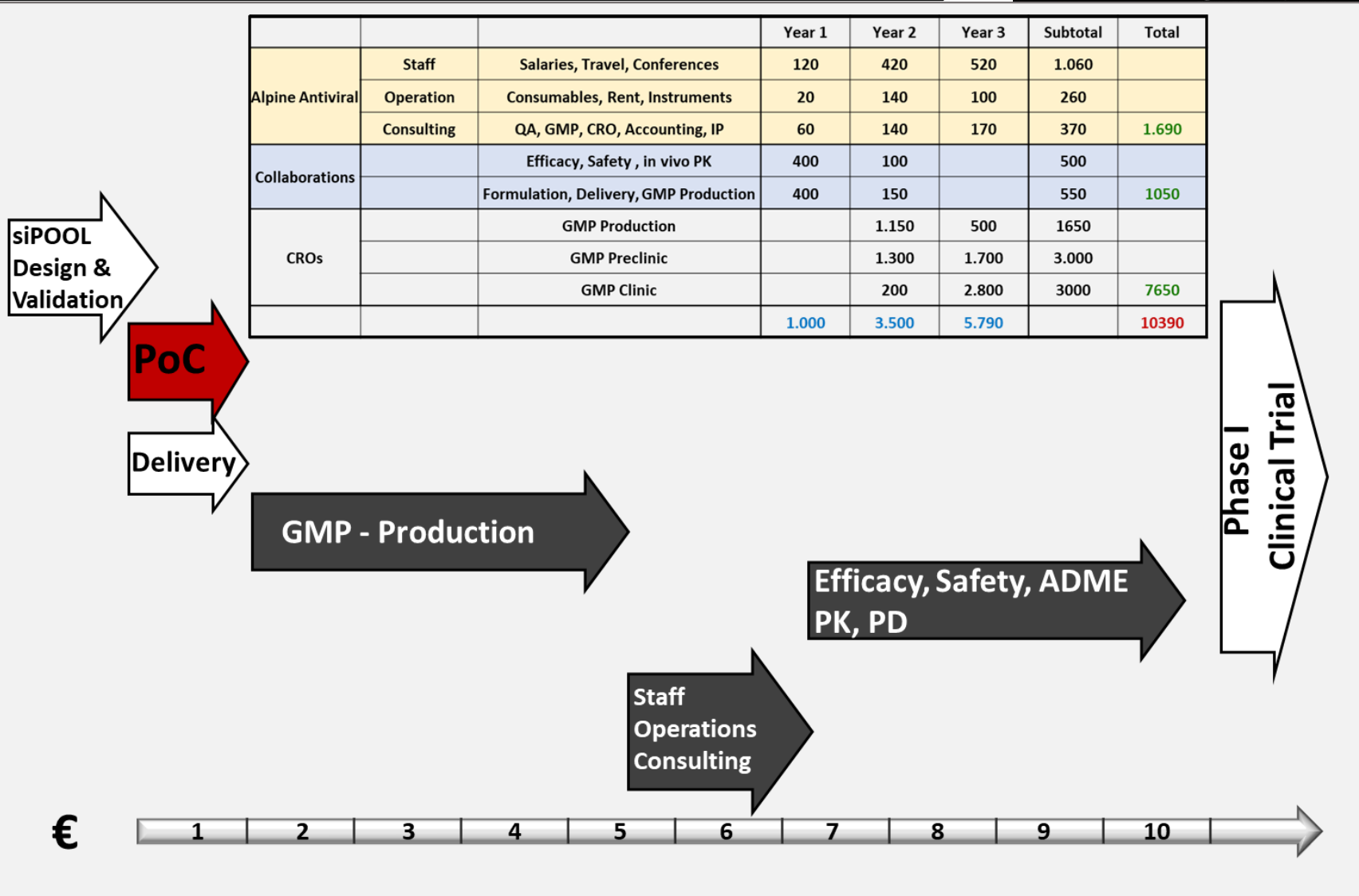
# FTO, Own IP, and a Robust Patent Strategy

## Protect the Business Case



- Relevant Patents (Tuschl I & II) to expire in November 21<sup>st</sup> 2021
- Additional IP only relates to modified siRNAs, while we use non-modified siRNAs
- **FTO**
- WO2013160393A1 protects proprietary IP of siTOOLS Biotech GmbH relating to design and production of unique siRNA pools
- **Protection by own IP**
- Filing of the international application (PCT) ongoing
- IP relates to sequence and combination of individual siRNAs against selected regions of SARS-CoV-2 genome
- **Priority: June 2021**
- Dr. Dirk Buehler, Maiwald Intellectual Property, Munich
- **International renowned Patent Attorney**

# Estimated Equity Requirements to Clin. Ph. I



**1 Mio € to show proof of concept, a total of 10 Mio € to reach Phase I clinical trial**

# Contacts

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