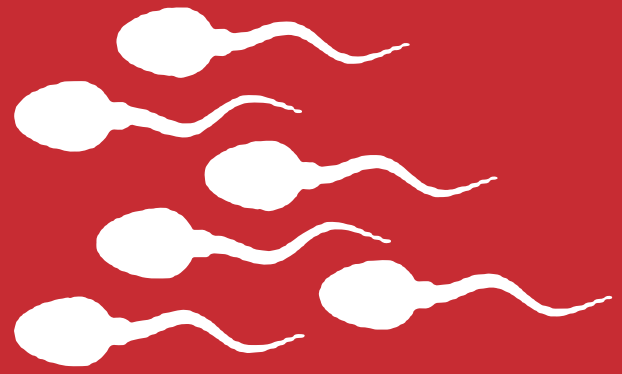
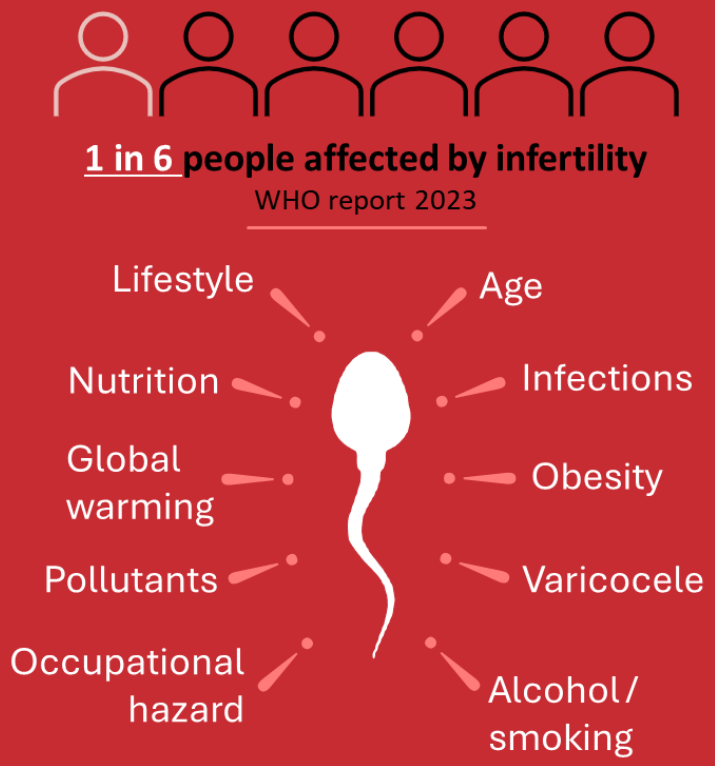
Spermotile

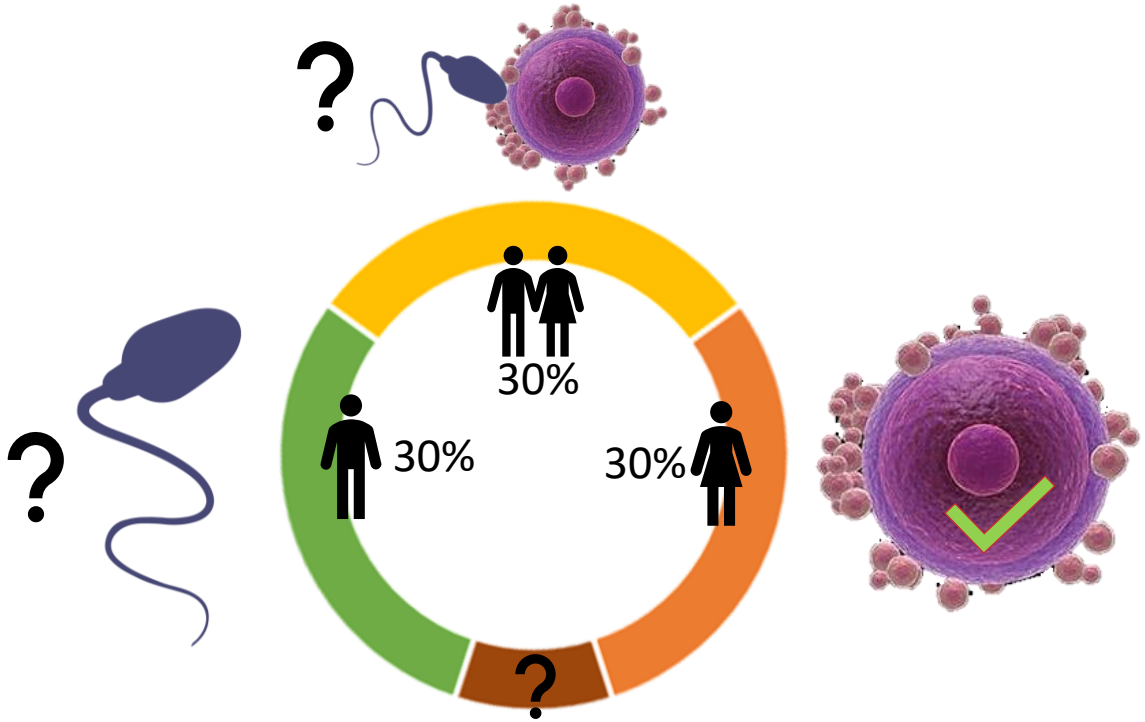


Cultivating hope one star sperm at a time

Krishna Agarwal
ERC Stg 2019 – 3D nanoMorph
ERC PoC 2023 – Spermotile

>1 Billion people





Problem

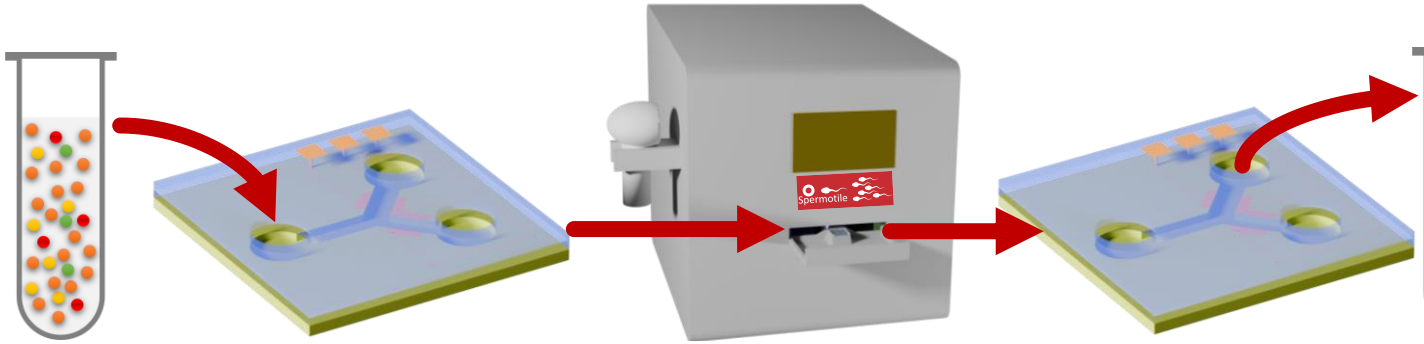
Sperm selection for treatment

Spermotile

We identify and select the ‘star sperms’

Semen sample
All variety of sperm

Dead/non-motile
Non-progressive
Progressive but haphazard
Highest quality ‘star sperm’

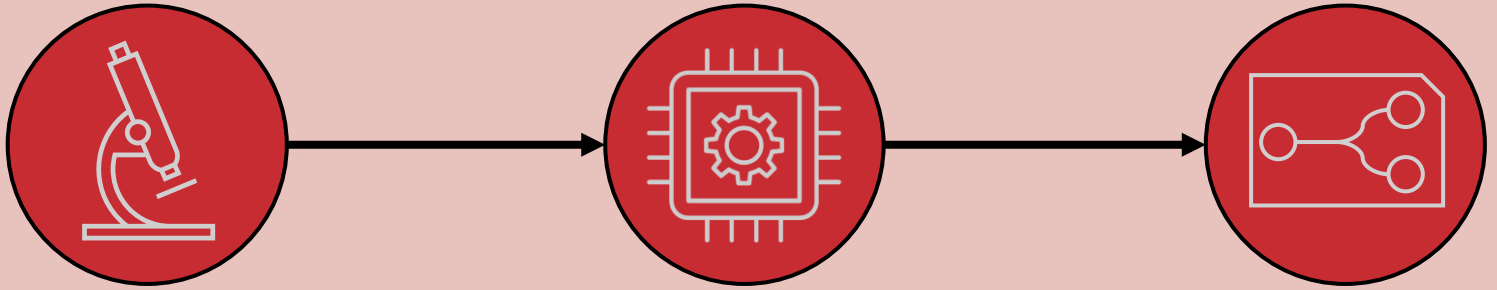


ActiveFilter Chip

Spermotile device

Star sperm

Shape	*****
Size	*****
Speed	*****
Pattern	*****
Regularity	*****



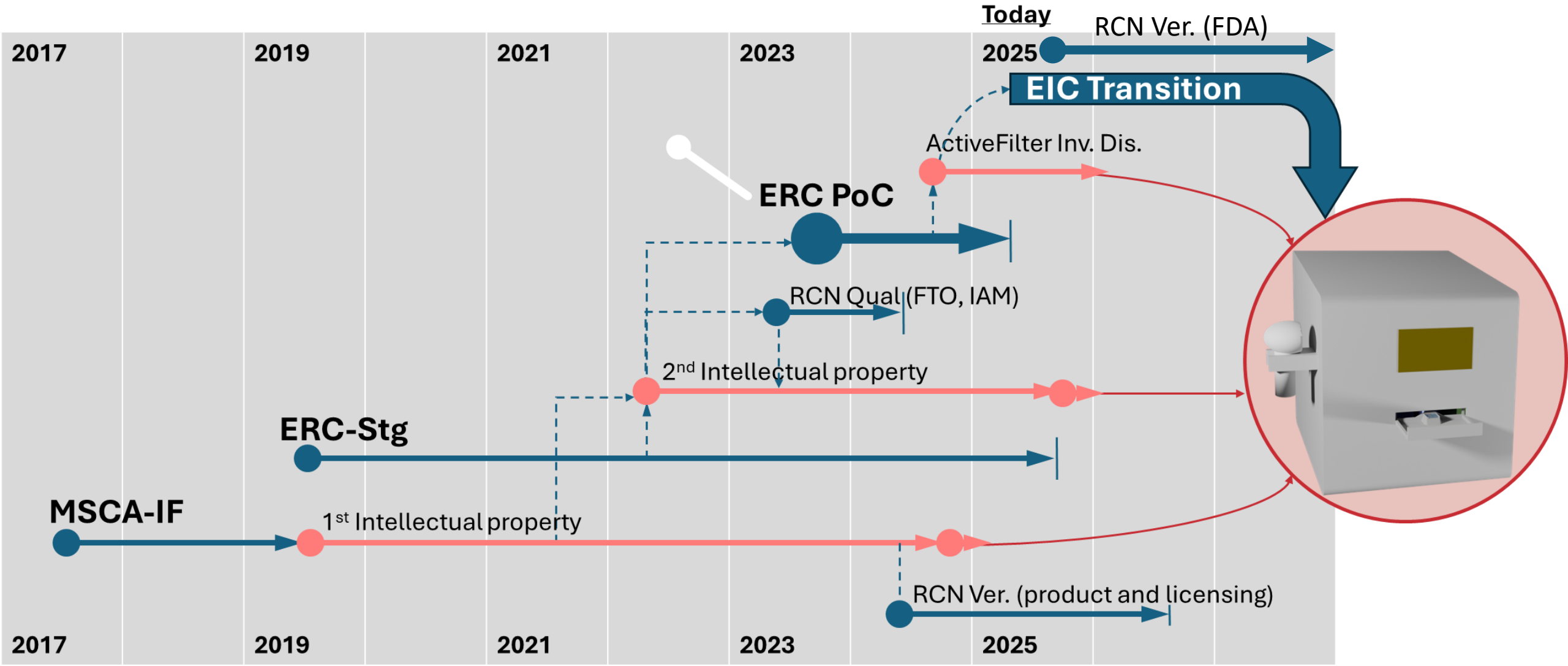
Stain-free microscope images all the sperm

Computational nanoscopy and AI identifies ALL the star sperm

ActiveFilter separates the star sperm

Spermotile

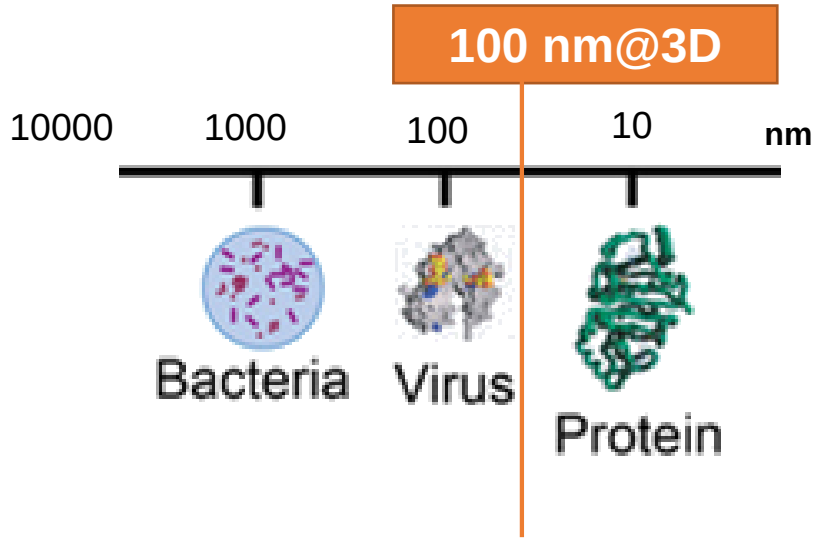
Trailblazer in funding and intellectual properties



Contrast between my ERC Stg and ERC PoC

ERC Stg

Label-free nanoscopy for live cell imaging

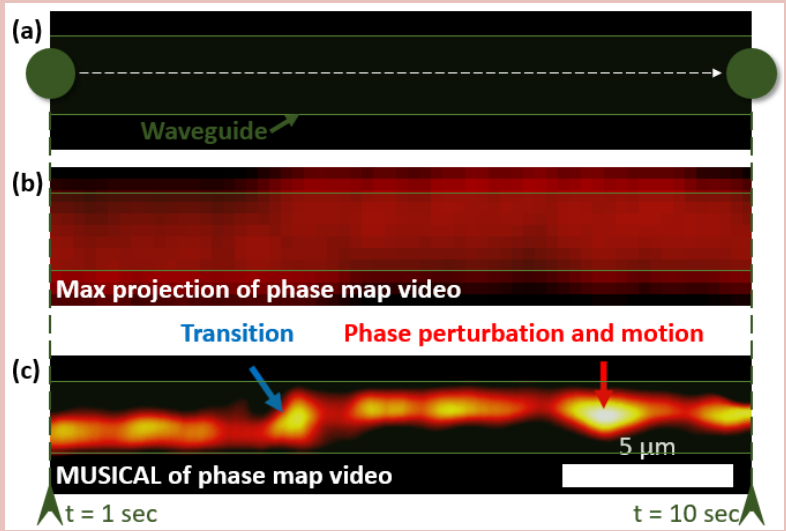


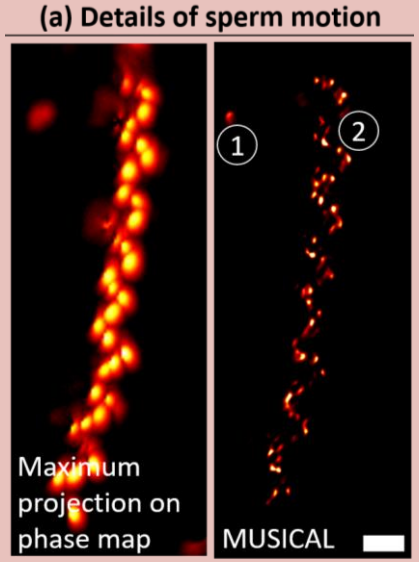
- × Toxic
- × Short lived
- × Complex protocols
- × Sensitive to alignments

- ✓ More accurate 3D morphology
- ✓ More accurate optical contrast
- ✓ More accurate size
- ✓ Hardly any artefacts
- ✓ Robust to alignment imperfections

Sperm filtration for improved success rate of assisted reproduction technology

ERC PoC





+ evaluate the utility and value of our **breakthrough innovation**

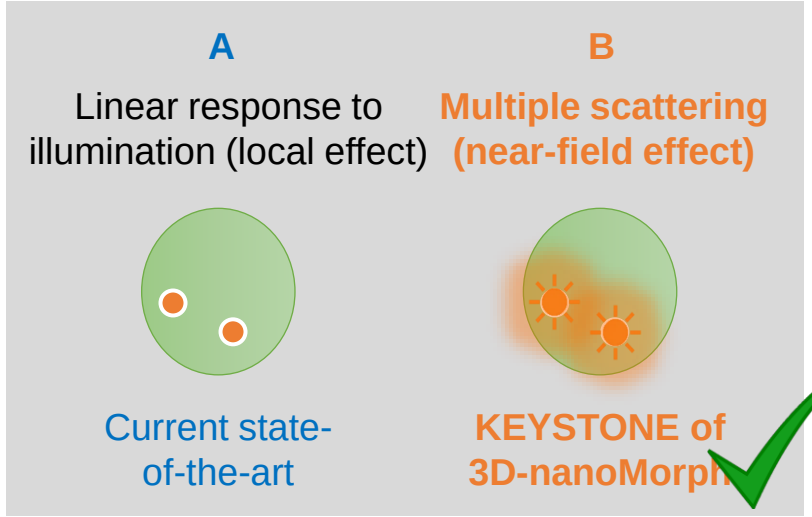
+ improve the technology to TRL3,

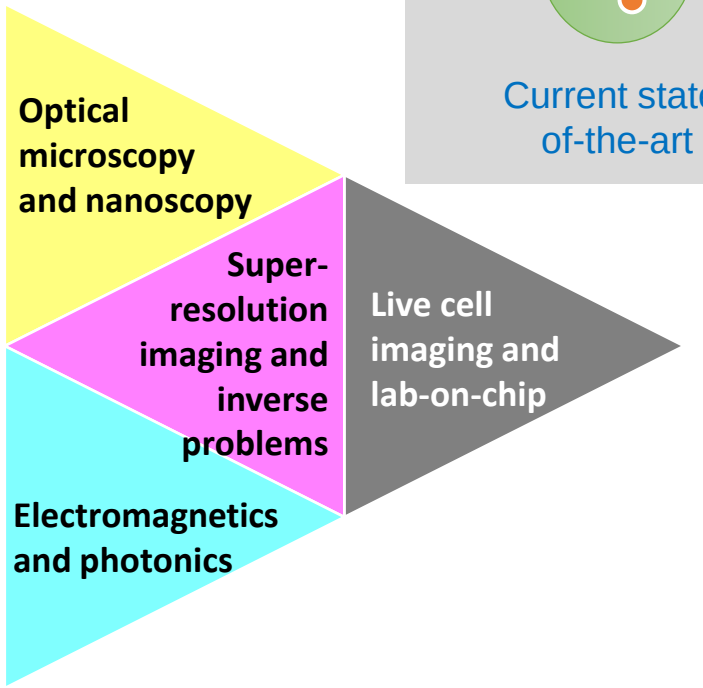
+ strike industry collaborations & partnerships

+ form a business plan

ERC Stg

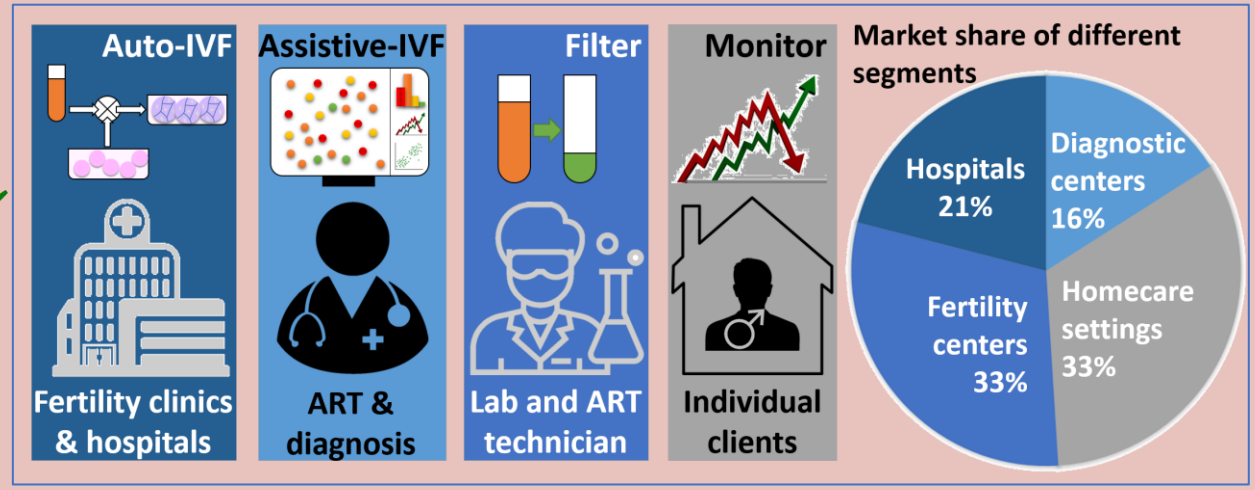
Label-free nanoscopy for live cell imaging





Sperm filtration for improved success rate of assisted reproduction technology

ERC PoC



- ✓ Pitch request
- ✓ Premarket survey
- ✓ Clinical interest

Computational microscopy

Motivation

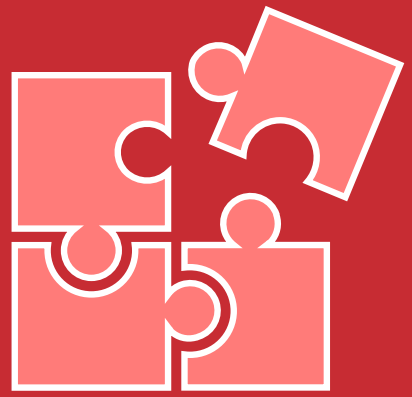
Realization

- Open science
- Open source
- Open resource

No price = No value

Initial efforts

- Nordic life science days
- Digital Life Norway
- Novo Nordisk BII



Let's talk to clinicians!
Let's listen to them!

But also file an invention disclosure

Ingredients

1

Breakthrough INNOVATION (laymen terms)

- What is it?
- What does it MEAN (application)?
- HOW MUCH does it mean?

- ❑ Chemical-free super-resolved motion tracing
- ❑ Motion feature of sperm beyond SOTA
- ❑ 100s of sperms in one go, varieties of infertility conditions (clinical viability and clinical relevance)

2

One box summary

Value proposition
DOFI
Objectives

Spermotile's value proposition is 'ability to identify the best quality sperms from a semen sample' for use in the fertilization process of the ARTs.

We have submitted an invention disclosure and a patent application is being drafted.

In this PoC project, we wish to evaluate the utility and value of the new nanoscale motion details of sperms and the new kinematic parameters towards the aim of selecting the best quality sperms. Further in this ERC PoC project, we wish to identify the right industrial partners that can serve as a guide for the development of the technology towards a product that meets industry needs and develop a business plan.

Ingredients

3 Innovation potential – APPLICATION focus

- COMPETITION: What solutions exists today (or might be coming up)?
- SIGNIFICANCE of the value proposition – why will end user care
- POTENTIAL TO DRIVE innovation: More will come/end users will shape
- BUSINESS/SOCIETAL potential: Who will pay/benefit? Is there a market/segment? Is the need or the market growing? Is it voluminous?

4 **Approach and methods (and risks)**

Technical: development, application

Commercial: TTOs, Intellectual properties, partnerships

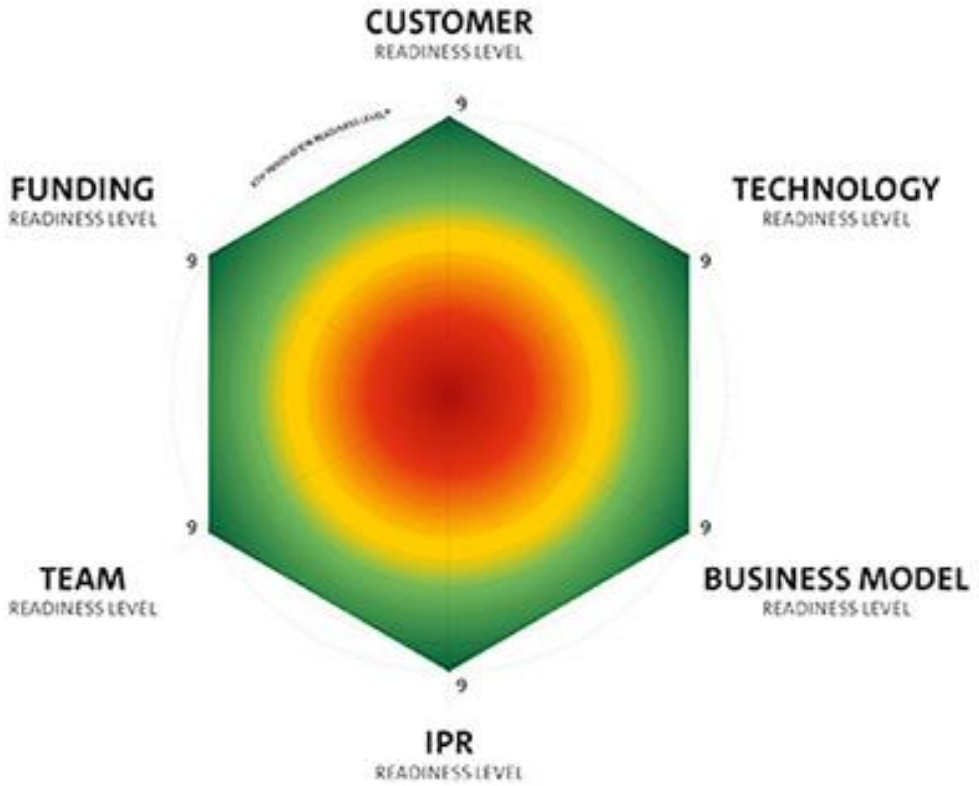
Team's innovation readiness

NOT RESEARCH

Tip!

Tip!

KTH INNOVATION READINESS LEVEL™



The Research Council of Norway

Kvalifisering – Kommersialisering fra offentlig finansiert forskning 2023

- ✓ **Motivation**
- ✓ **Committing person (need not be you)**

We will help millions achieve the dream of starting a family …

Spermotile.com

Do you too wish to contribute

to the society that generously funded your research?