



INFORMATION MEMORANDUM

June 2019

IF YOU HAD CANCER...



1

Did you know your cancer cells can be grown **outside your body** and drugs can be tested on your cancer before you are treated?

2

Did you know this **organoid approach** can predict the right treatment for you **90% of the time?**

3

This is **precision medicine** and data from this **organoid approach** vastly strengthens current day genetic approaches to **personalized care**

4

QGel is a **biomedical technology company** at the forefront of the organoid applications and solutions to fight cancers

TABLE OF CONTENTS



Executive summary

Positive healthcare market dynamics

- 2.1. Cancer: major and increasing epidemic
- 2.2. Treatment is still far-from being tailor-made
- 2.3. Organoid: a major opportunity, with some limitations
- 2.4. A novel approach to precision medicine
- 2.5. A precision medicine heat map attracting prominent players
- 2.6. An industry sought by investors
- 2.7. Key sector trends legitimating QGel approach

QGel today: a strong foundation for what's to come

- 3.1. Critical steps already validated
- 3.2. Clear established business work flow
- 3.3. A detailed look at the work flow
- 3.4. Unique, scalable and patented gel technology
- 3.5. A highly patented company...
- 3.6. Tier 1 partners validating technology and market demand
- 3.7. Seasoned management team

Exciting prospects

- 4.1. Vision, mission and strategy
- 4.2. Focus on clinical trials
- 4.3. Focus on regulatory approval
- 4.4. Focus on market launch
- 4.5. Scaling up the organization - People
- 4.6. Scaling up the organization - Facilities
- 4.7. Business Plan



1

EXECUTIVE SUMMARY

CEO COLIN SANCTUARY OPENING STATEMENT

- On behalf of the Management Team, I am delighted to describe our journey and plans for the future. As you read through this document, you will see that market dynamics make for impeccable timing for QGel to be first-to-market in a highly lucrative market segment.
- Firstly, there is irrefutable scientific consensus that drug tests on patient cells grown in a lab, or organoids, have an unparalleled ability to predict the best treatment for a patient. This will greatly enhance precision medicine, which today relies on genomic sequencing offering little benefit to patients so far. Combining data from drug tests on organoids with genomic sequencing, will provide oncologists with superior tools to restore patient health and drive down healthcare costs.
- Secondly, cancer healthcare is a tremendous market opportunity ripe for disruption. Recent multi-billion dollar transactions are testimony of the market value of precision medicine, especially relating to digital health. I feel strongly that our intellectual property and future plans put QGel in a strong position to become an impactful player in this sector in the coming years.
- Thirdly, our scientific evidence is solid. Thanks to the success of our proof-of-concept studies with several hospitals, we have been able to validate QGel's technology to tests drugs on organoids to predict in vivo drug response.
- Finally, and perhaps most importantly, our technology can be scaled unlike any other, to meet the tremendous rate and increasing burden of cancer globally.
- The next step, and the purpose of this financing round, is to enroll patients in clinical trials and become the first organoid company to receive regulatory approval. Precision medicine will be made accessible to patients like never before with QGel's novel biomedical device. By 2020, QGel will be the first player to move organoid solutions into a regulated, clinical setting.
- I am excited about the prospects of you joining as an investor to take part and witness how our highly qualified team of cancer biologists, biomedical engineers and biochemists, will work to improve the lives of the millions affected each year by cancer.



VISION

Cancer is a manageable disease



MISSION

Make precision medicine a powerful tool that is accessible to everyone



**COLIN
SANCTUARY**

CEO & Founder

QGEL AT A GLANCE

QGel: A cancer fighting game changer

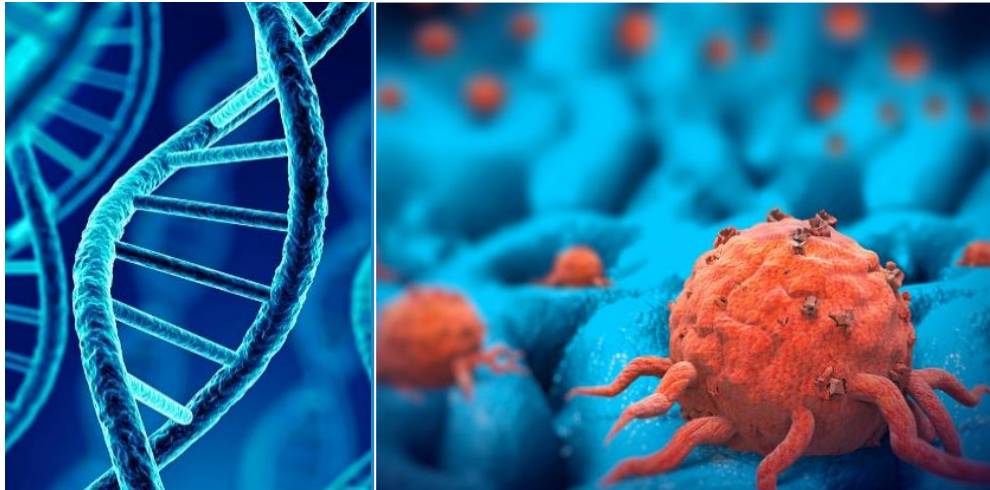
QGel is a Swiss based **biomedical technology company** specialized in **organoid applications and solutions** to fight cancers

QGel's **live-cell drug testing platform** aims to connect oncologists and patients with optimal anti-cancer therapies with proven predictive power, a solution which can be used for **drug discovery and clinical decision making**

The Company's **proprietary hydrogel technology**, designed to mimic the microenvironment surrounding cells inside the human body, is capable of growing patient cells from biopsy outside of the body, while maintaining the key biomarkers from the patient's originating tissue. This **organoid technology** can be used to identify personalized treatment plans for patients

QGel's **synthetic extracellular matrices** (ECMs) are uniquely reproducible, industrially scalable as well as suitable for clinical use

Based on successful **proof-of-concept** studies with **leading cancer centers**, QGel is now designing **clinical trials** to obtain **regulatory medical device approval**



C. 100

PATIENT SAMPLES
HANDLED SO FAR

6

CURRENT HOSPITALS
PARTNERS

CHF 60m

TARGETED CAPITAL
RAISE TO FINANCE
CLINICAL TRIALS

CHF 20m

FUNDS RAISED
SO FAR

90%

CLINICAL SUCCESS RATE
WITH ORGANOIDS

QGEL MARKET SOLUTION

A service for oncologists to identify optimal patient therapies



PRODUCT DESCRIPTION

A **Drug Response Report** ordered by a cancer patient's oncologist that **ranks drug response** of many potential drug therapies tested on each patient's cells in QGel labs.



VALUE PROPOSITION

Oncologists will have access, for the first time, to drug test data on patient organoids to make improved treatment decisions, before treating the patient

Patients receive the right treatment, the first time and avoid unnecessary suffering

Payors avoid costs of ineffective treatments



EST. PRICE

Ca. \$15'000 per patient test

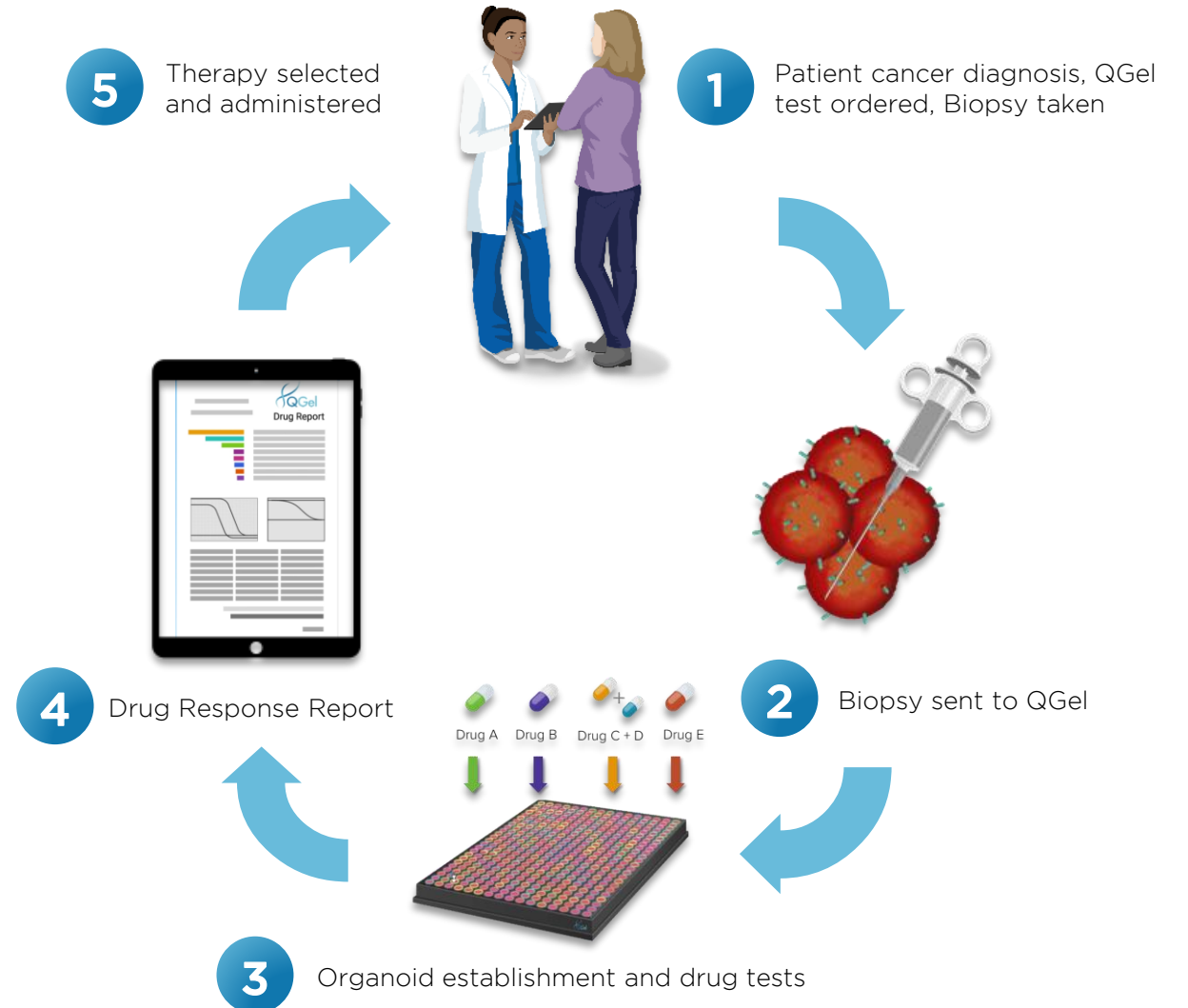


CANCER MARKET

6.6 million new cancer cases annually in Europe & North America

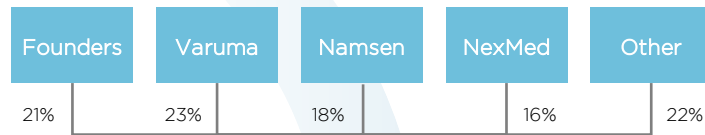


THE PROCESS



A QUALITY STAKEHOLDERS BASE

Shareholding structure



Largest investors

Rudolf Maag (Varuma), a Basel-based high net worth individual (HNWI), who has notably successfully invested in Actelion, Straumann, Santhera Pharmaceuticals and NovImmune

Andrey Verevskij (Namsen), a Geneva-based HNWI, is successful entrepreneur and investor, founder of Kernel, a leading global agricultural company

Dominik Ellenrieder (NexMed), a serial entrepreneur with over 27 years of experience in building and managing successful medical technology companies including Endeavour Vision, Symetis, Sentec, Straumann and Medartis

Team and organization

Colin Sanctuary Founder & CEO

Passionate and driven by a powerful vision, Colin is an entrepreneur at heart. Biomedical Engineer by training, he founded QGel after working in Marketing and Sales in large multi-national healthcare corporations

17

FULL TIME EMPLOYEES (FTEs)

5 DEPARTMENTS TODAY



Commercial
1



R&D
11



Operations
1



Admin
4

Scientific and industrial partners

6

HOSPITALS PARTNERS



**Herlev
Hospital**



**UniversitätsSpital
Zürich**



iOR Institute of Oncology Research



**DANA-FARBER
CANCER INSTITUTE**



NOVARTIS

EPFL



charles river

KEY INVESTMENT HIGHLIGHTS

Executive summary

Positive healthcare
market dynamics

QGel today

Exciting prospects

1

POSITIVE HEALTHCARE MARKET DYNAMICS

- Cancers are increasingly costly and widespread
- Organoids represent a major opportunity to improve personalized therapies
- A market attracting prominent players and investors

2

PROPRIETARY TECHNOLOGY, PASSED PROOF-OF-CONCEPT

- 8 patents covering hydrogel and organoid methodology for a broad range of fields
- Proof-of-concept achieved based on data from close to 100 patient samples

3

FIRST-TO-MARKET WITH FULLY SCALABLE SOLUTION

- Uniquely positioned to bring organoids for precision medicine to the clinic
- Fully automatable solution from patient biopsy to treatment recommendation
- Suitable for global deployment

4

SEASONED MANAGEMENT AND HIGHLY QUALIFIED TEAM

- Scientific team of PhDs made of biomedical engineers, cancer biologists and biochemists
- An ambitious scaling up hiring plan

5

EXCITING PROSPECTS

- Initiate clinical trials to obtain regulatory approval
- Build a pioneering organoid facility to handle patient samples on a large scale
- Make organoid precision medicine accessible to millions of patients

2

**POSITIVE
HEALTHCARE
MARKET
DYNAMICS**

2.1. CANCER: MAJOR AND INCREASING EPIDEMIC

Cancer is a significant cause of death, on the rise and costly to society



The number of new cancer cases per year are expected to increase from **18 million** to **24 million** patients



The cost to society is tremendous – direct cost for treatment is in the **\$100 billions** in Europe and USA alone



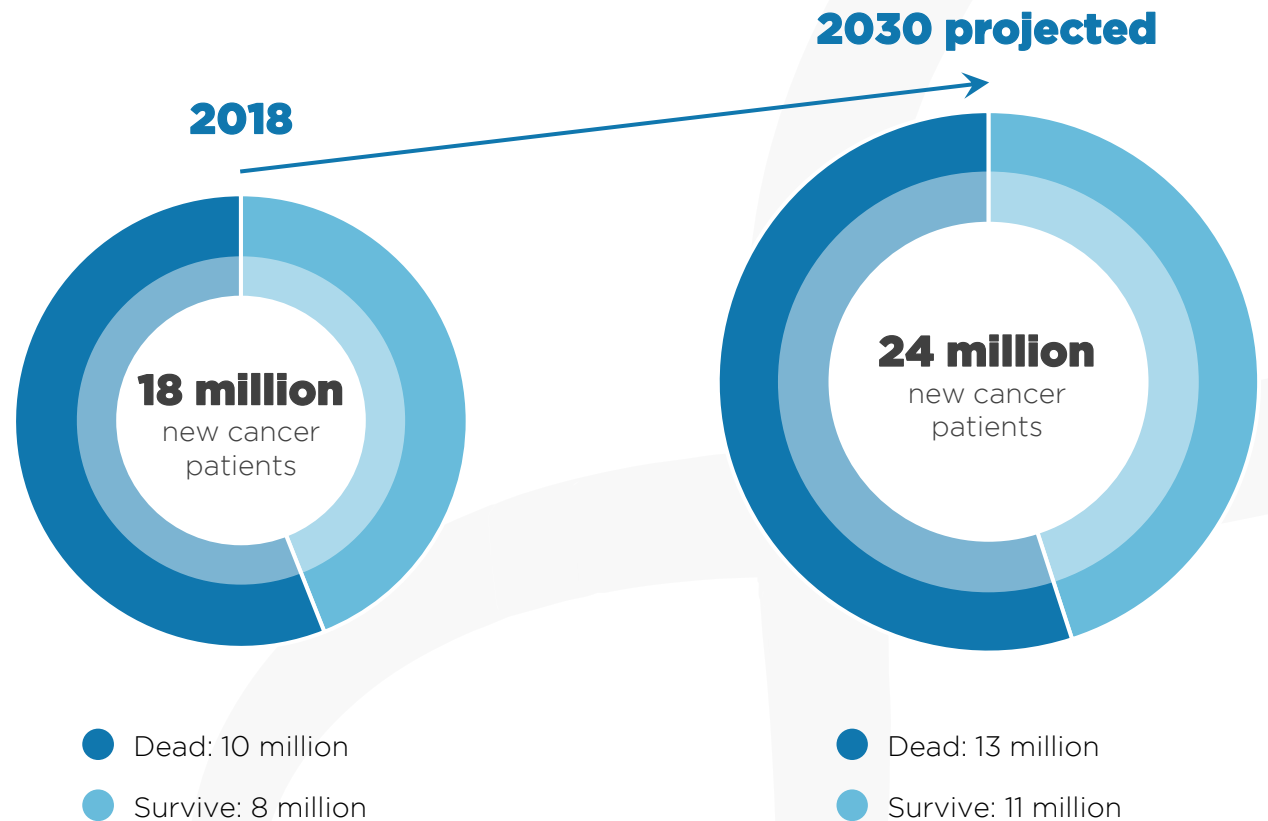
Indirect costs for lost income, mental health, disability and emotional burden is unfathomable



Treatment cost inefficiency driven primarily by patients who receive a treatment that fails to cure the patient resulting in death

Average direct treatment costs over a 5-year period

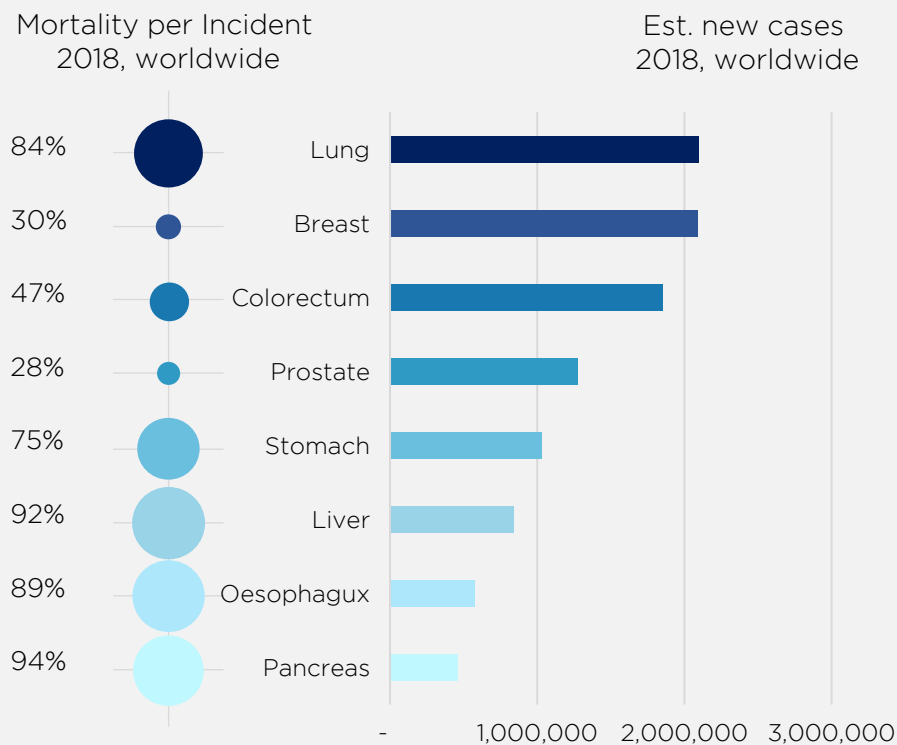
\$150 000
Per Patient



2.2. TREATMENT IS STILL FAR-FROM BEING TAILOR-MADE

Precision medicine is today largely based on genetic sequencing despite limitations

SELECTED CANCERS



The “one-size-fits-all” approach to treating cancer patients falsely assumes that all patients are the same



Precision medicine aims to account for these differences to match the right drugs to patients to increase chances of survival



Precision medicine today is largely based on genetic sequencing which has its shortcomings



Genetic sequencing alone is insufficient largely due to a lack of drugs that target specific cancer mutations



Chemotherapies generally are not specific to genetic mutations and are thus not effective



Most cancer patients do not benefit from genetic sequencing because looking at a patient’s DNA alone, the complexity of human biology is not taken into account

2.3. ORGANOID: A MAJOR OPPORTUNITY, WITH SOME LIMITATIONS

Organoids are predictive but have not made it to the clinic yet

Organoids are miniature 3d in vitro structures grown from patient-derived cells that mimics key features and functions of its original healthy or diseased tissue



Scientific consensus supports the predictive power of organoids for precision medicine



Drug response on organoid augments the power of genetic sequencing data



Organoids can be used to advance and accelerate drug discovery efforts



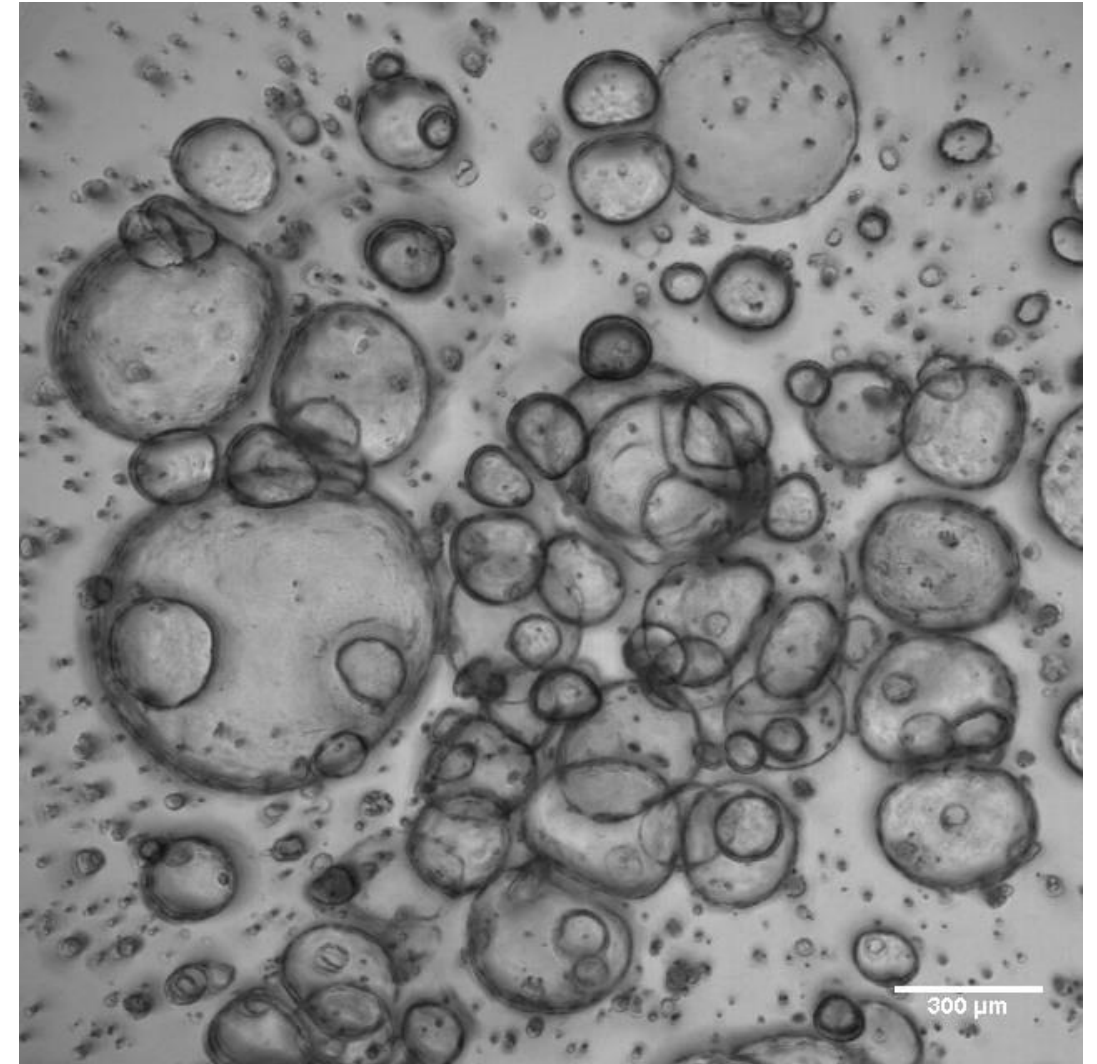
Organoids today depend on poorly defined animal-derived gels making them unusable for clinical applications



Existing organoid applications are unsuitable to address millions of patients



Time to establish organoids is long for the clinic and requires standardization

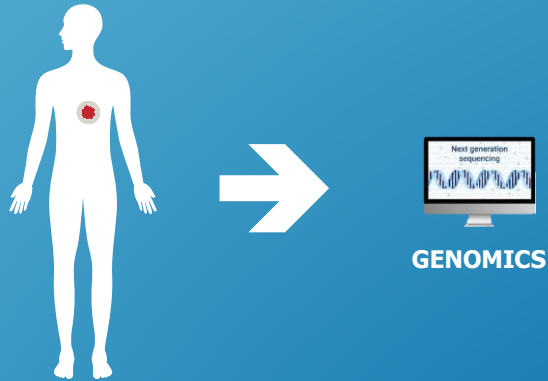


Pancreatic cancer organoids grown in QGel's proprietary matrix

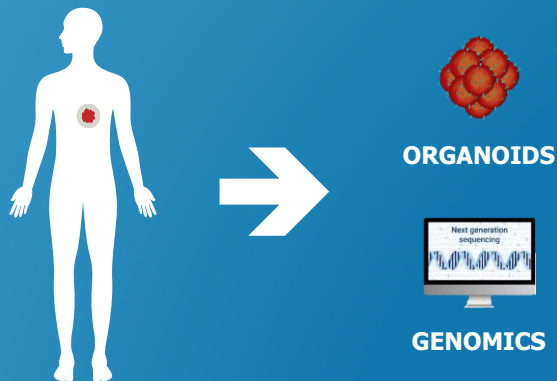
QGel has solutions to overcome these limitations

2.4. A NOVEL APPROACH TO PRECISION MEDICINE

Existing approach



Organoid approach



**Eligible patients
18%**

5.5% success

**Eligible patients
>70%**

**>90%
success**

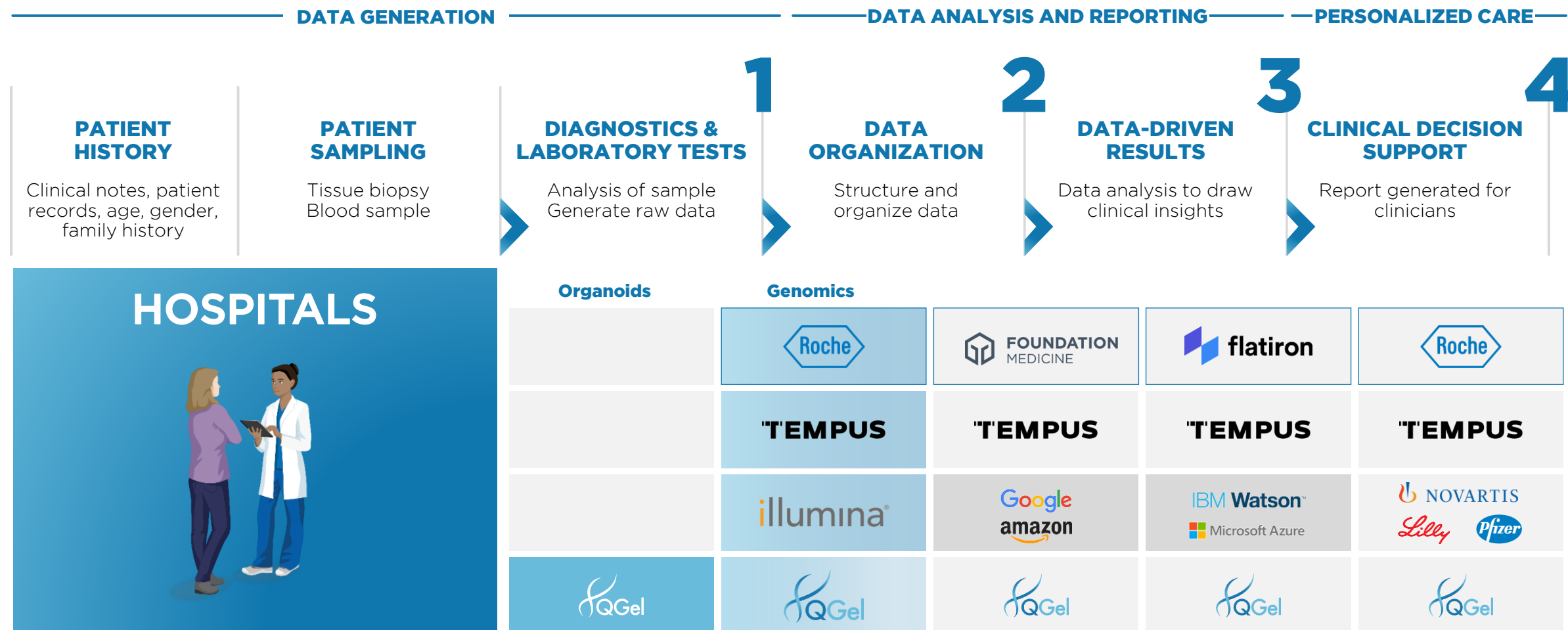
Capturing the complexity of human biology to improve patient care

- The existing approach based on genomics shows a limited success rate
- Data from testing living patient-derived organoids, called **functional precision medicine**, has the potential to be a powerful ally to current genomic approaches
- Functional approaches are badly needed to identify new drugs and assign existing drugs to larger numbers of patients with cancer
- Clinical validation of functional approaches have lagged behind genomic approaches, largely due to logistics hurdles in handling fresh patient biopsy material.

Combining organoids and genomics solutions show second to none results

2.5. A PRECISION MEDICINE HEAT MAP ATTRACTING PROMINENT PLAYERS

Industry attractiveness is driven by both market size and importance of data to address it

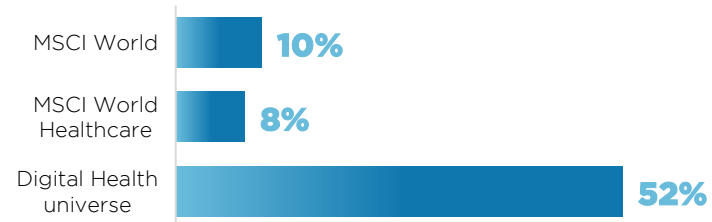


Note: Selection of companies making a press release on precision medicine related to digital health in past 18 months

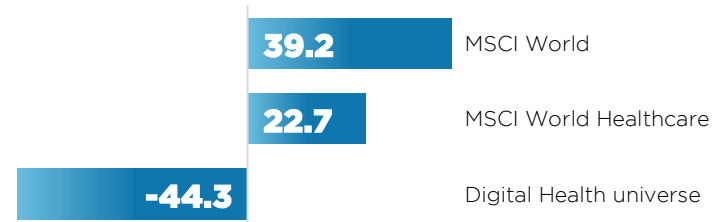
2.6. AN INDUSTRY SOUGHT BY INVESTORS

Listed digital health companies are highly appreciated by investors

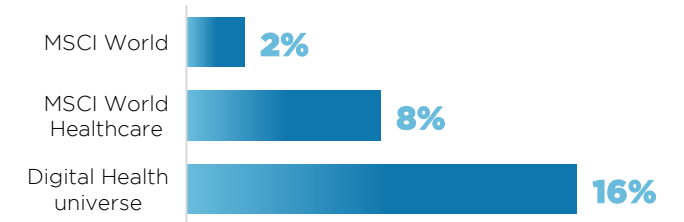
Share of companies with negative net income



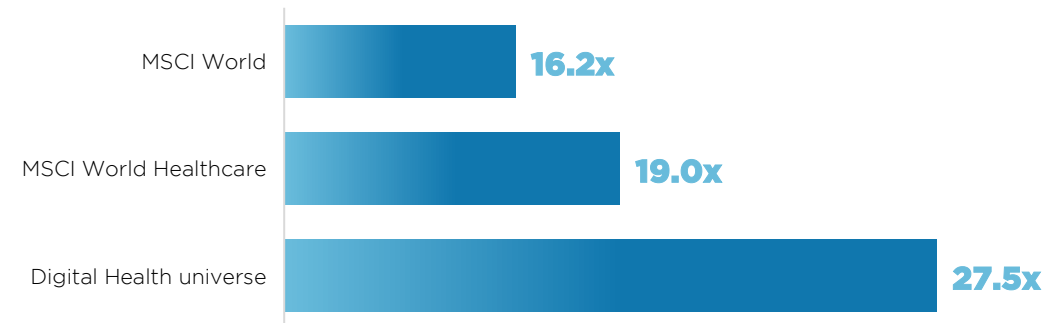
Net debt to equity ratio



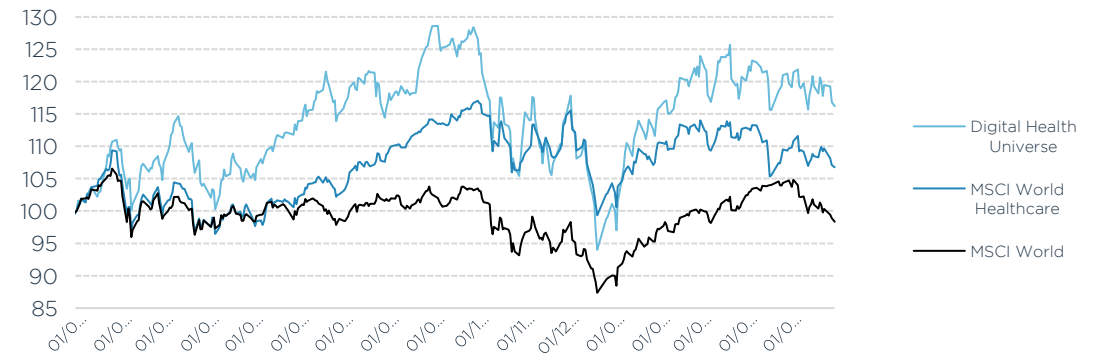
Revenue growth



Forward P/E ratio



Valuation



2.6. AN INDUSTRY SOUGHT BY INVESTORS

M&A in bio/med tech, including precision medicine, is also buoyant



Switzerland-based, Roche is one of the largest listed research healthcare company (SWX: ROG) engaged in the discovery, development and commercialization of pharmaceuticals and diagnostics

2018 sales \$57bn / 2018 EBIT \$20bn

2018 sales of cancer drugs \$28bn (twice as much as its major competitor, Celgene, with \$14 bn)

Market cap \$240bn



FEBRUARY 2018

- Listed US-based precision medicine biotechnology company (RXDX) dedicated to discovering or acquiring, then developing and commercializing, precisely targeted new drugs for cancer patients whose tumors harbor specific molecular alterations
- In February 2018, acquired by Roche for **\$2bn1**, a 75% premium on share price the day before the announcement



FEBRUARY 2018

- US-based health care technology company engaged in building data pipelines and structured databases for oncology and healthcare markets
- In February 2018, acquired by Roche from PE investors for **\$2bn1**



JULY 2018

- US-based listed company developing precision medicine tool in oncology
- In July 2018, Roche acquired the remaining stake for **\$5bn1, 33x 2017 Revenues)**
- Roche previously acquired a 56% stake for \$1.7bn1 (50x 2014 Revenues), in April 2015



Agilent Technologies

Listed US-based company (NYSE: A) providing bio-analytical and electronic measurement solutions

2018 sales \$5bn / 2018 EBIT \$1bn

Market cap \$25bn



JANUARY 2017

- Belgium-based company developing, manufacturing and commercializing molecular diagnostic assays, provided as kits, which enable personalized medicine
- In January 2017, acquired by Agilent from PE investors for **€70m**



MAY 2018

- US-based company providing capillary electrophoresis-based solutions for fully-automated analysis of a range of molecules, including nucleic acids (RNA and DNA)
- In May 2018, acquired by Agilent for **\$250m**



NOVEMBER 2018

- US-based company providing cell analysis platforms used in life science research
- In November 2018, acquired by Agilent for **\$200m**

biotechne

Listed US-based company (NASDAQ: TECH) developing, manufacturing and selling reagents and instruments for the research and clinical diagnostic markets

2018 sales \$650M / 2018 EBIT \$250M

Market cap \$7.5bn



AUGUST 2016

- US-based company developing of cell-and tissue-based diagnostic tests for personalized medicine
- In August 2016, acquired by Bio-Techne from PE investors for **\$300m, 13x ACD's 2016 revenue**



JANUARY 2018

- US-based company manufacturing cell culture sera and reagents
- In January 2018, acquired by Bio-Techne from PE investors for **\$50m**



AUGUST 2018

- US-based company developing and commercializing revolutionary, bio fluid-based diagnostics
- In August 2018, acquired by Bio-Techne from PE investors for **\$200m**

2.6. AN INDUSTRY SOUGHT BY INVESTORS

Three peers in precision medicine are especially relevant for QGel

CAPITAL RAISE

'T'EMPUS

- Incepted in 2015, **Tempus** is a US-based company collecting both molecular and clinical data from hospitals and analyzes it within a database with the aim of improving treatment for patients with cancer
- **May 2019**: the company hits **\$2.9bn** pre-money valuation with total fundraising amount of **\$520m**

M&A



FOUNDATION
MEDICINE

Acquired by



- **Foundation Medicine** was a US-based listed company developing precision medicine tool in oncology with a portfolio of comprehensive genomic profiling tests and data offerings alongside extensive partnerships with the academic and biopharmaceutical communities
- **April 2015**: 56% stake acquisition by Roche for **\$1.7bn1 (50x 2014 Revenues)**
- **July 2018**: Remaining stake acquired by Roche for **\$5bn1, 33x 2017 Revenues)**



BUY & BUILD & STOCK MARKET

illumina®

- **Illumina** is a US-based listed company developing DNA sequencing technology and very acquisitive:
- **November 2018**: Acquisition of rival **Pacific Biosciences** for **\$1.2bn**, following investments in Prospect Bio (seed round), Vitagene (seed round), Grail (Series A), Helix (Series A), Twist Bioscience (Series C)
- Current **market cap is \$55bn, 13x Revenues, 41x EBITDA**

2.6. AN INDUSTRY SOUGHT BY INVESTORS

But these three peers offer less comprehensive merits vs. QGel

	TEMPUS	 FOUNDATION MEDICINE	illumina®	
Patient access	✓	✓	✗	✓
Genetic sequencing	✓	✓	✓	✓
Biological modeling for precision medicine	✗	✗	✗	✓
Analysis & clinical reporting	✓	✓	✗	✓
Living biobank	✓	✗	✗	✓
Digital biobank	✓	✓	✗	✓
Proprietary product technology	✗	✗	✓	✓
Latest / Last valuation	\$2.9bn	\$5bn	\$55bn	

2.7. KEY SECTOR TRENDS LEGITIMATING QGEL APPROACH

Both technology and market trend favour Qgel vision and solution

Healthcare market trends



1

Healthcare spending is on the rise and unsustainable to payors



2

Genetic approaches are recognized as insufficient for standalone personalized care



3

Data analysis market players are targeting data generators for strategic M&A opportunities to support artificial intelligence healthcare product initiatives



4

Testing drug response on live patient samples is recognized as one of the most attractive niches in the healthcare sector



5

Governments are steering towards value-based (cost-saving) innovations linked to personalized care



Technology market trends



1

Precision medicine is value-based and reduces healthcare costs



2

Market recognizes the opportunity for disruptive technology to capture complex human biology patient data



3

Owners of technology that generate structured human data to complement genomics are high-value targets



4

Drug tests on patient organoids in vitro are scientifically accepted as a valid approach to functional precision medicine



5

Disruptive, cost-saving technology must be backed by data originating from regulated clinical studies proving safety and efficacy evidence



3



See online video of complete
workflow at:
<https://vimeo.com/qgel/workflow>

**Q G E L T O D A Y :
A S T R O N G
F O U N D A T I O N F O R
W H A T ' S T O C O M E**

3.1. CRITICAL STEPS ALREADY VALIDATED

- ✓ Proprietary technology
- ✓ Proven scalability
- ✓ Demonstrate human equivalence
- ✓ Clinical proof-of-concept with drugs

Clinical trials

Regulatory approval

Market launch

Solid foundations backing the vision, the technology, and the proof-of-concept

QGel designs hydrogels specific to each cancer using proprietary technology and know-how

Successfully manufactured products on a large scale and developed automation protocols to demonstrate applicability to several 1000s of patients

Human equivalence of organoids has been shown to be comparable to in vivo patient tissues based on genetic and phenotypic analyses

Drug tests on patient organoids in vitro have shown in vivo equivalency

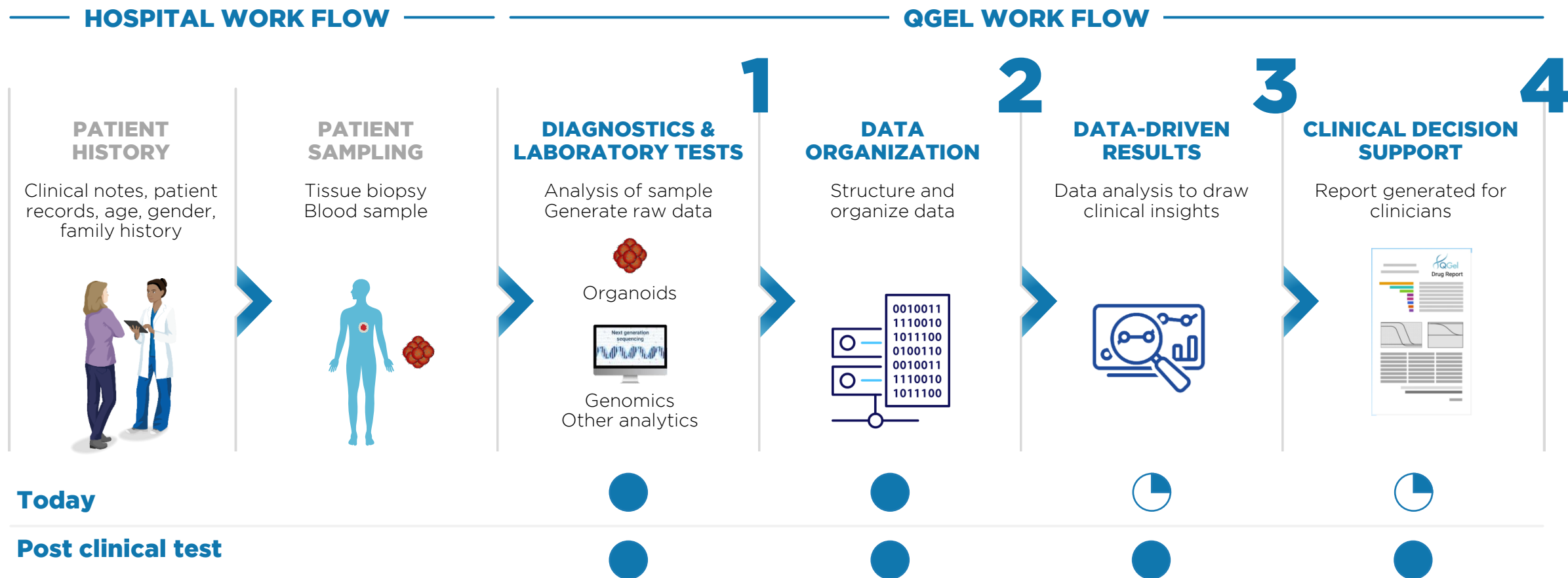
Clinical trials are the clear next step based on the clinical proof-of-concept results

In vitro diagnostics medical device approval will be based on the data generated from planned clinical trials

Market launch to a global population will require standardized and scalable operations through automated protocols

3.2. CLEAR ESTABLISHED BUSINESS WORK FLOW

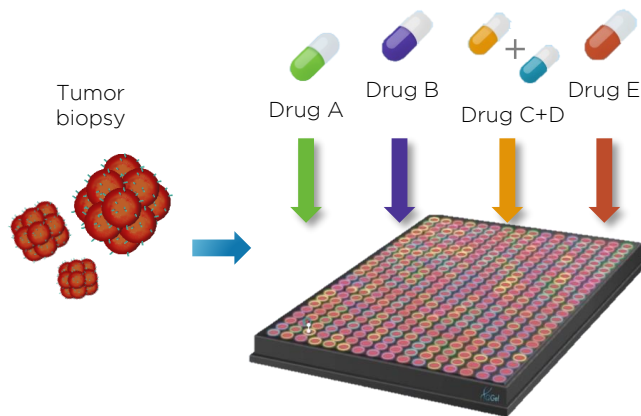
QGEL PROVIDES SOLUTIONS FOR CANCER PRECISION MEDICINE



Today, QGel covers patient diagnosis and data organization, tomorrow, it will cover the full spectrum to clinical treatment recommendation

3.3. A DETAILED LOOK AT THE WORK FLOW

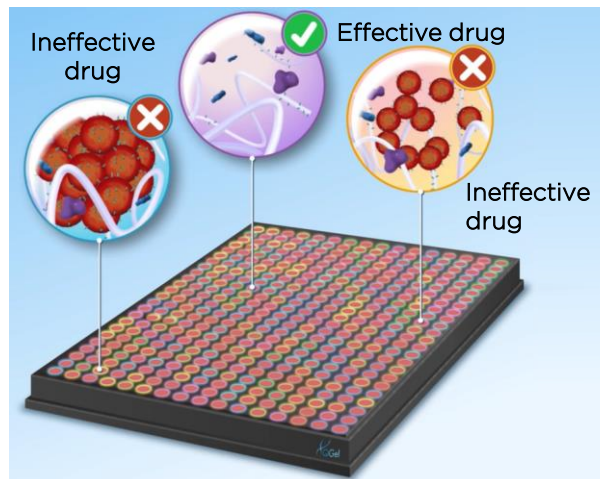
A STRUCTURED WORKFLOW TO GROW ORGANOIDS ON A LARGE SCALE FOR PRECISION MEDICINE



1. QGel's approach to functional precision medicine starts with a patient tumor biopsy taken at the patient's hospital and sent to a QGel organoid and drug testing facility
2. The cancer cells from the biopsy are grown in a proprietary QGel formulation until a quantity sufficient for drug testing is available
3. All relevant drugs and drug combinations, whether approved or in development, are tested on the patient tumor organoids

3.3. A DETAILED LOOK AT THE WORK FLOW

A STRUCTURED WORKFLOW TO GROW ORGANOIDS ON A LARGE SCALE FOR PRECISION MEDICINE



5. Data on how the cancer organoids respond to the drugs are collected
6. Genomic and histological data are also recorded
7. Patient organoids are cryopreserved and stored in QGel's living organoid biobanks as an asset for later use in drug discovery research

3.3. A DETAILED LOOK AT THE WORK FLOW

A STRUCTURED WORKFLOW TO GROW ORGANOIDS ON A LARGE SCALE FOR PRECISION MEDICINE



8. Drug response data is analyzed by comparing to digital health databases and the treatment option that is most successful in treating the cancer is identified
9. Drug response data is correlated to the genetics of the tumor

3.3. A DETAILED LOOK AT THE WORK FLOW

A STRUCTURED WORKFLOW TO GROW ORGANOIDS ON A LARGE SCALE FOR PRECISION MEDICINE



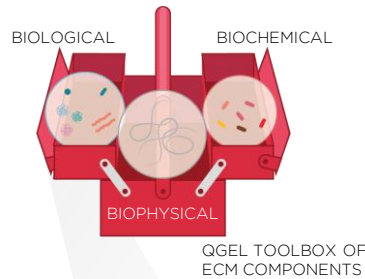
- Today, a comprehensive report containing the results of the QGel drug tests, along with the genomic sequencing data are made available to our research partners for publication
- Tomorrow, after clinical trials and regulatory approvals, physicians will use this drug report to support their clinical decision in prescribing the treatment for the patient

3.4. UNIQUE, SCALABLE AND PATENTED GEL TECHNOLOGY

QGEL'S PROPRIETARY AND PATENTED HYDROGEL TECHNOLOGY

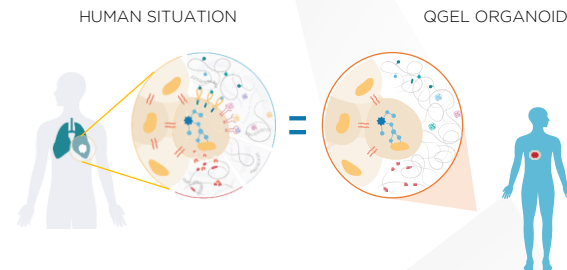
1

QGel has 'deconstructed' naturally occurring ECM molecules (fibronectins, laminins, collagens, etc) into functional synthetic components that become the building blocks for synthetic ECMs



2

Artificial ECMs, capable of growing patient biopsy cells that maintain patient disease biomarkers, are constructed using the building blocks from the QGel toolbox



3

Due to the synthetic nature of the gels, they can be manufactured at large scale with no batch-to-batch variability and can be deployed globally while guaranteeing consistent and reliable results



See online Video of QGel ECMs at:
<https://vimeo.com/qgel/explainer>

3.5. A HIGHLY PATENTED COMPANY... ... COVERING A BROAD RANGE OF FIELDS IN THE PRECISION MEDICINE SPACE (AND OTHERS)

Field	Description	# Owned	# Licensed
General hydrogel chemistry	Protection of chemistry for the production of QGel formulations, including gel components and non-gel components and to identify formulations to grow of cell lines, primary cells and organoids		Patent #1 Patent #2 Patent #3
Product and manufacturing process of defined hydrogels	Protects product and manufacturing of defined hydrogel formulation for growth of specific patient cell types in product device form	Patent #6 Patent #8 Patent #9	Patent #1 Patent #2 Patent #5
Precision Medicine	Protection of growth of organoids in a defined hydrogel formulation for a specific patient cell type, including the application of drugs to the established patient organoid	Patent #6 Patent #7 Patent #8 Patent #9	Patent #1 Patent #2 Patent #5
Regenerative Medicine	Regenerate human cells, tissues or organs in a defined hydrogel to restore or establish normal function	Patent #6 Patent #8 Patent #9	Patent #1 Patent #2 Patent #5
Drug Screening	Protection of the application of drugs to cell types grown in a defined hydrogel formulation for cell types in general	Patent #6 Patent #7 Patent #8 Patent #9	Patent #1 Patent #2 Patent #5









QGel's patent protection positions the Company as the only one that can scale the production of fully-defined ECM, a substance essential to benefit millions of cancer patients for organoid applications in precision medicine

The technologies are owned or licensed exclusively to QGel

All major geographies are covered through PCT-patent applications, with extensions to Brazil, Russia, India, China, USA, Canada, Mexico, Europe, Japan, Australia and some additional geographies

3.6. TIER 1 PARTNERS VALIDATING TECHNOLOGY AND MARKET DEMAND

ESTABLISHED ACCESS TO PATIENTS PRODUCT DEVELOPMENT AND CLINICAL PROOF-OF-CONCEPT

Alliance partner		Organs	Date of first patient	N° patients	Achievements
 charles river	DE	Lung cancer	Aug 2017	12	Organoids grown in fully synthetic QGel achieved same drug response as normally observed only <i>in vivo</i> with correlation to tumor target expression
 NOVARTIS	CH	Pancreatic cancer	Aug 2017	1	Dose dependence of drugs tested on QGel organoids correlate with <i>in vivo</i> data
 Herlev Hospital	DK	Colon healthy	Sep 2017	23	The first known organoid model with a fully defined gel that proved human equivalency with fresh patient material that fully bypasses animal-derived gels. Publication expected Q4'19
 IOR Institute of Oncology Research	CH	Prostate cancer	March 2018	31	Fully synthetic QGel formulation identified with growth studies ongoing
 UniversitätsSpital Zürich	CH	Colon & pancreatic cancer	May 2018	11	Fully synthetic QGel achieved growth of organoids to comparable standards as organoids grown in gold standard, animal-derived gels
 Thoraxklinik Universitätsklinikum Heidelberg	DE	Lung cancer	Aug 2018	3	First freshly isolated lung cancer cells from patient biopsies successfully encapsulated and grown in QGel's fully synthetic gel technology
 Herlev Hospital	DK	Pancreatic cancer	Jan 2019	2	First freshly isolated cells from patient biopsies successfully encapsulated and grown in QGel's fully synthetic gel technology. Clinical protocol in progress
 DANA-FARBER CANCER INSTITUTE	USA	Metastatic breast cancer	May 2019	4	First patient-derived material received at QGel (Q2'19) and experiments starting

Total patients

87

3.6. TIER 1 PARTNERS VALIDATING TECHNOLOGY AND MARKET DEMAND

PATIENT ACCESS THROUGH HOSPITAL PARTNERSHIPS HAS BEEN KEY TO THE RESEARCH EFFORTS

1

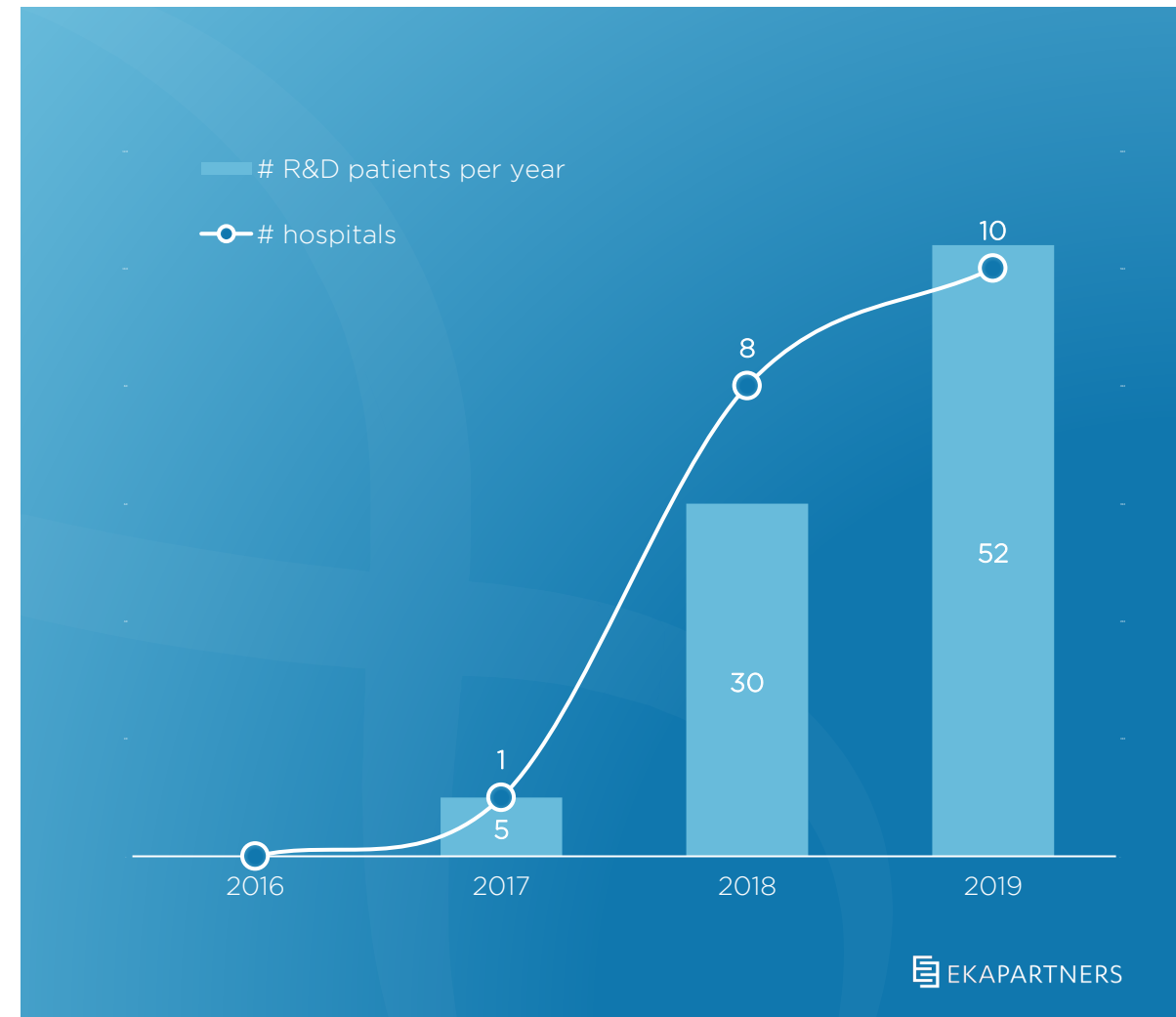
QGel has been successful in partnering with 6 hospitals in Europe and the USA to obtain patient samples to develop products, workflows and generate clinical proof-of-concept data

2

To date, QGel has processed close to 100 patient samples since 2017 that has resulted in proprietary products for pancreatic cancer, lung cancer and colon cancer

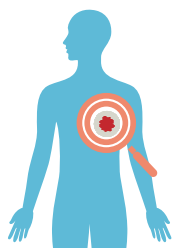
3

With strong scientific results generated with the hospital partners, QGel is now planning to enroll first patients in clinical studies in 2020 as a final step to achieve regulatory approval



EXAMPLE: HOSPITAL PARTNERSHIP IN DENMARK

FIRST TO PROVE HUMAN EQUIVALENCY OF PANCREATIC CANCER IN A FULLY SYNTHETIC GEL



+

Technology

=



QGel Case Example

Pancreatic Cancer



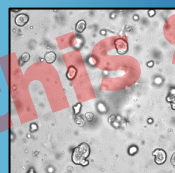
First freshly isolated cells from patient biopsies obtained from hospitals were successfully grown in QGel's fully synthetic gel technology. Proof-of-concept data indicate high reproducibility

Next steps: Clinical protocol design and patient enrollment



Growth

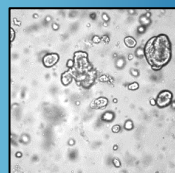
Biology



No Treatment



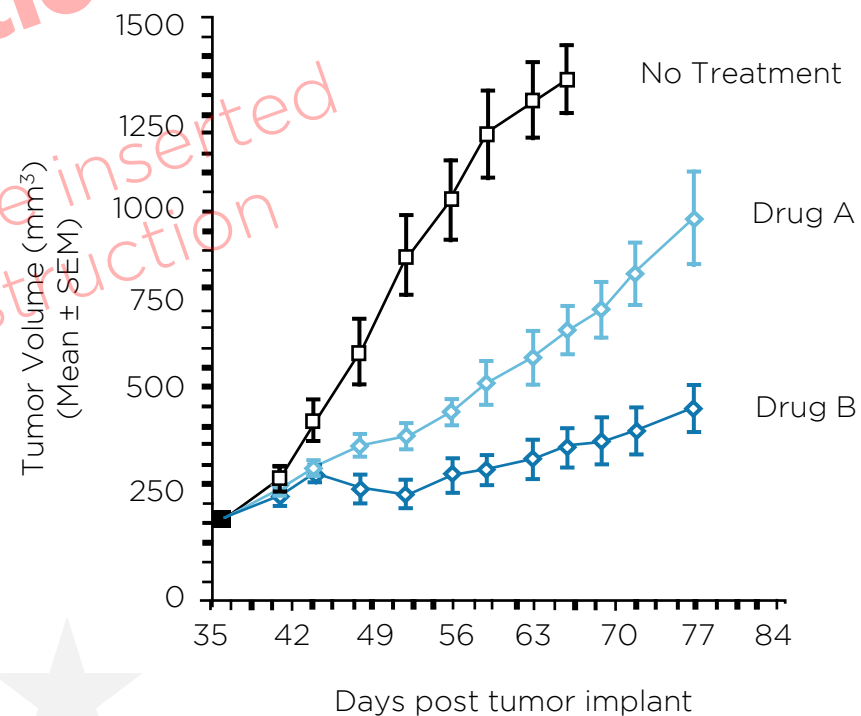
Drug A



Drug B

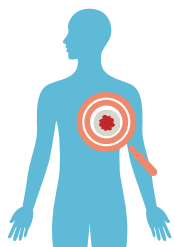
+

Drug Response



EXAMPLE: PROMINENT PARTNERSHIPS IN GERMANY

EXPECTED DRUG RESPONSE DEMONSTRATED ON ORGANOIDS GROWN IN FULLY-SYNTHETIC QGEL



+

Technology

=



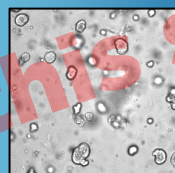
QGel Case Example Lung Cancer



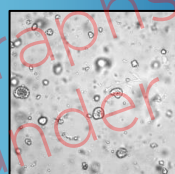
Freshly obtained lung cancer cells were used to grow organoids in fully synthetic QGel technology. Drug tests on the organoids demonstrated drug response that is normally observed only in vivo. Also, drug tests correlated to tumor target expression

Growth

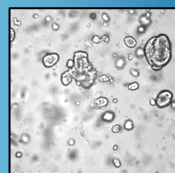
Biology



No Treatment



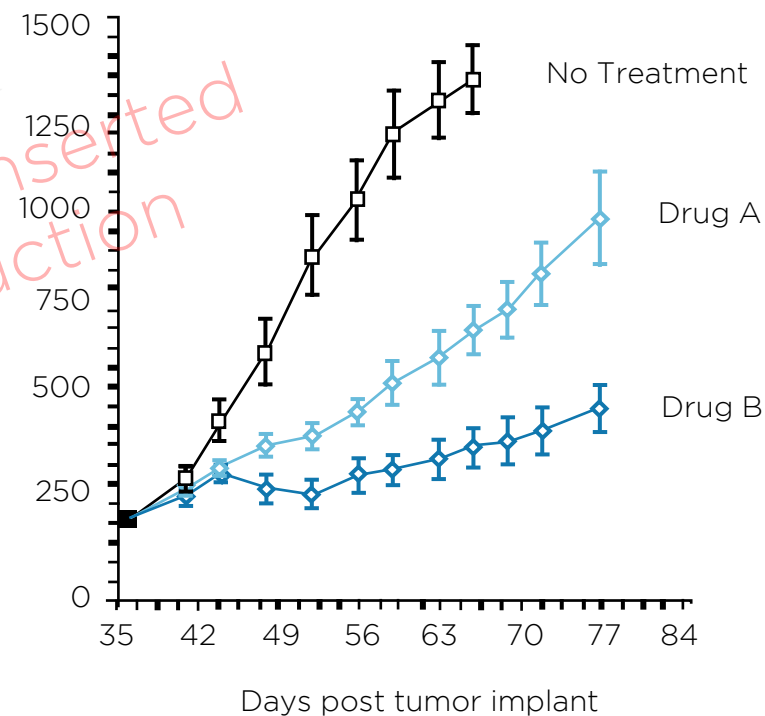
Drug A



Drug B

+

Drug Response



3.7. SEASONED MANAGEMENT TEAM

A seasoned leadership team



Dr. Colin Sanctuary
Founder & CEO

Passionate and driven by a powerful vision, Colin is an entrepreneur at heart. Biomedical engineer by training, he founded QGel after working in marketing and sales in large multi-national healthcare corporations

Simone leads operations at QGel and his passion is to translate cutting-edge technical and scientific developments into innovative solutions to improve patient care



Dr. Simone Rizzi
Chief Scientific Officer

Ryder Clifford
Director of Marketing



Ryder is a serial entrepreneur with a passion for market validation & development of early stage companies that have the potential to improve the world. He now leads QGel's commercial efforts

3.7. SEASONED MANAGEMENT TEAM

A NIMBLE AND DEDICATED TEAM



KATIA ANTONIELLO
LAB TECHNICIAN



DR. CARA BUCHANAN
ORGANOID BIOLOGIST



DR. NICOLAS CHARTIER
ORGANOID BIOLOGIST



CHRISTINE DI NATALE
LAB TECHNICIAN



**DR. FRANCK
COURMAILLEAU**
ORGANOID BIOLOGIST



SOPHIE CRETAZ
ORGANOID ENGINEER



DR. GIULIA FREGNI
ORGANOID BIOLOGIST



**DR. EMANUELE
GAUDIELLO**
ORGANOID BIOLOGIST



DR. MATHIEU HEULOT
ORGANOIDS & CLINICAL



GEORG MÜLLER
BUSINESS & CLINICAL
DEVELOPMENT



MARC SUGNAUX
LAB TECHNICIAN



DR. JEREMY TOUATI
HYDROGELS

4

EXCITING PROSPECTS



See online video of complete
workflow at:
<https://vimeo.com/qgel/workflow>

4.1. STRATEGY GOING FORWARD

A CLEAR STRATEGY TO ACHIEVE THE MISSION

Clinical trials

2019 - 2022 (24 months twice)

QGel will leverage clinical proof-of-concept results to initiate clinical trials

Key objectives

Be the first commercial player to prove cancer organoids support clinical decision making

How to get there

Enrol patients and test drugs on organoids at QGel's certified testing facility to produce clinically relevant data for delivery to clinicians

Step 1: Observational Clinical Trial

Prove the reliability of QGel's clinical workflow, and use findings to attain first level of regulatory approval

Step 2: Interventional Clinical Trial

Match in vitro drug test results to patient outcomes

Regulatory approval

2023 (12 months)

QGel will classify its products as in vitro diagnostics medical devices and seek the appropriate regulatory approval

Build first-of-kind organoid facility and handle patient samples on a large scale to demonstrate scalability

Launch pre-market testing services for pharma clients and develop patient access network with key hospitals in preparation of global launch

Step 3: Regulatory Approval

Use clinical results to file application to obtain in vitro diagnostics medical device market approval

Market launch

Post 2024

Market launch to a global population will require standardized and scalable operations through automated protocols

Prepare robust plan to make organoid precision medicine accessible to millions of patients globally

Design automation workflows to prepare scale-up and roll-out to handle thousands of patients per day at hospitals globally

Step 4: Market Launch

4.2. FOCUS ON CLINICAL TRIALS

CLINICAL TRIALS ARE DESIGNED TO SUPPORT INTENDED USE OF QGEL PRODUCTS

Role of Clinic

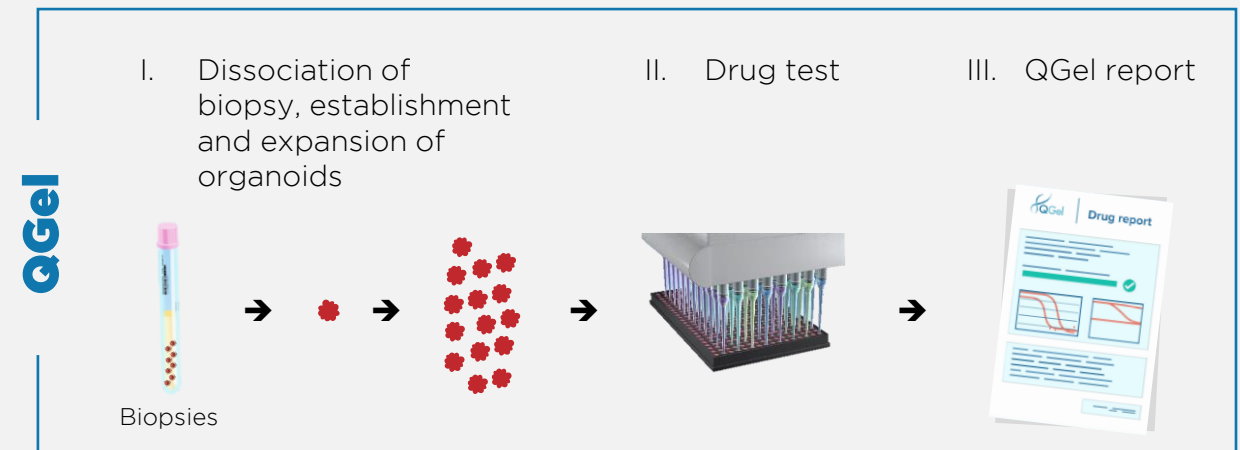
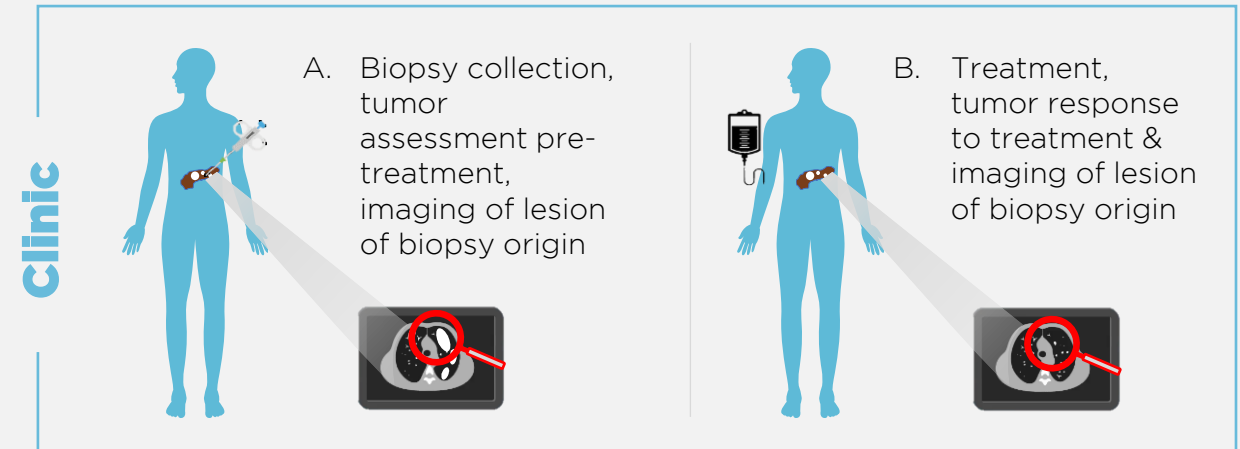
- A. Obtain tumor biopsy, and collect routine clinical data relating to patient's diagnosis
- B. Treatment is prescribed to the patient and tumor response to treatment is observed and recorded

Role of QGel

- I. Receive patient biopsy from (A) and establish organoids
- II. Test drugs on tumor organoids and record results
- III. Produce a report summarizing drug response results:
 - To compare QGel results to the clinical decision that was made → **observational study**
 - To support clinical decision making for treatment selection for the patient → **interventional study**

Clinical study workflow

QGel will gain access to patients by sponsoring studies at hospitals through partnerships



4.2. FOCUS ON CLINICAL TRIALS

COST BREAKDOWN OF OBSERVATIONAL AND INTERVENTIONAL CLINICAL TRIALS

Medical device clinical trials

Planned clinical trials for medical device regulatory approval are shorter, require fewer patients and are less costly compared to drug-related clinical trials

	Observational Study	Interventional Study
Patients	60	90
Duration	18 months	24 months
QGel sample processing costs	CHF 1.8 m	CHF 2.6 m
Contract Research Organization Fees	CHF 1.5 m	CHF 2.7 m
QGel Clinical Management Fees	CHF 0.3 m	CHF 0.3 m
Total cost per study	CHF 3.6 m	CHF 5.6 m

4.3. FOCUS ON REGULATORY APPROVAL

REGULATORY PATHWAY: A NECESSARY STEP FOR MARKET ENTRY

	Regulation / Norm	QGel Pathway Defined?
Clinical Use of QGel Products	EU regulation 2017/746/EC	✓
QGel clinical Laboratories	ISO 15189	✓
Manufacturing of QGel Products	ISO 13485	✓

Target Intended Use of QGel Products:

To generate functional in vitro data that increases accuracy of treatment decision by health care providers, optimizing patient treatment outcome

QGel's products used in accordance with the intended use are to be classified as a class C in vitro medical device according to European regulation 2017/746/EC, ISO 15189 and ISO 13485

EU regulation 2017/746/EC on in vitro diagnostics medical devices

QGel must demonstrate general safety and efficacy of the device based on scientific validity, analytical and clinical performance data

Clinical performance shall follow a defined and methodologically sound procedure for the demonstration of:

- Scientific validity
- Analytical performance
- Clinical performance

ISO 15189: Medical laboratories – requirements for quality and competence

The clinical evidence must be generated in an ISO 15189 certified laboratory to demonstrate that the intended clinical benefit(s) will be achieved and that the device is safe

ISO 13485: Medical devices – quality management systems – requirements for regulatory purposes

Products used for clinical trials and for clinical market use must be manufactured according to ISO 13485

4.4. FOCUS ON MARKET LAUNCH

GENERATING PATIENT DATA ONE PATIENT AT A TIME

2020-2023 Recruit hospitals and enroll patients



From R&D to clinical

QGel will shift from being R&D focused in 2019 to being a company focused on clinical development in 2020



Clinical data is key

QGel will drive clinical trials and must own the workflow to control how data is generated



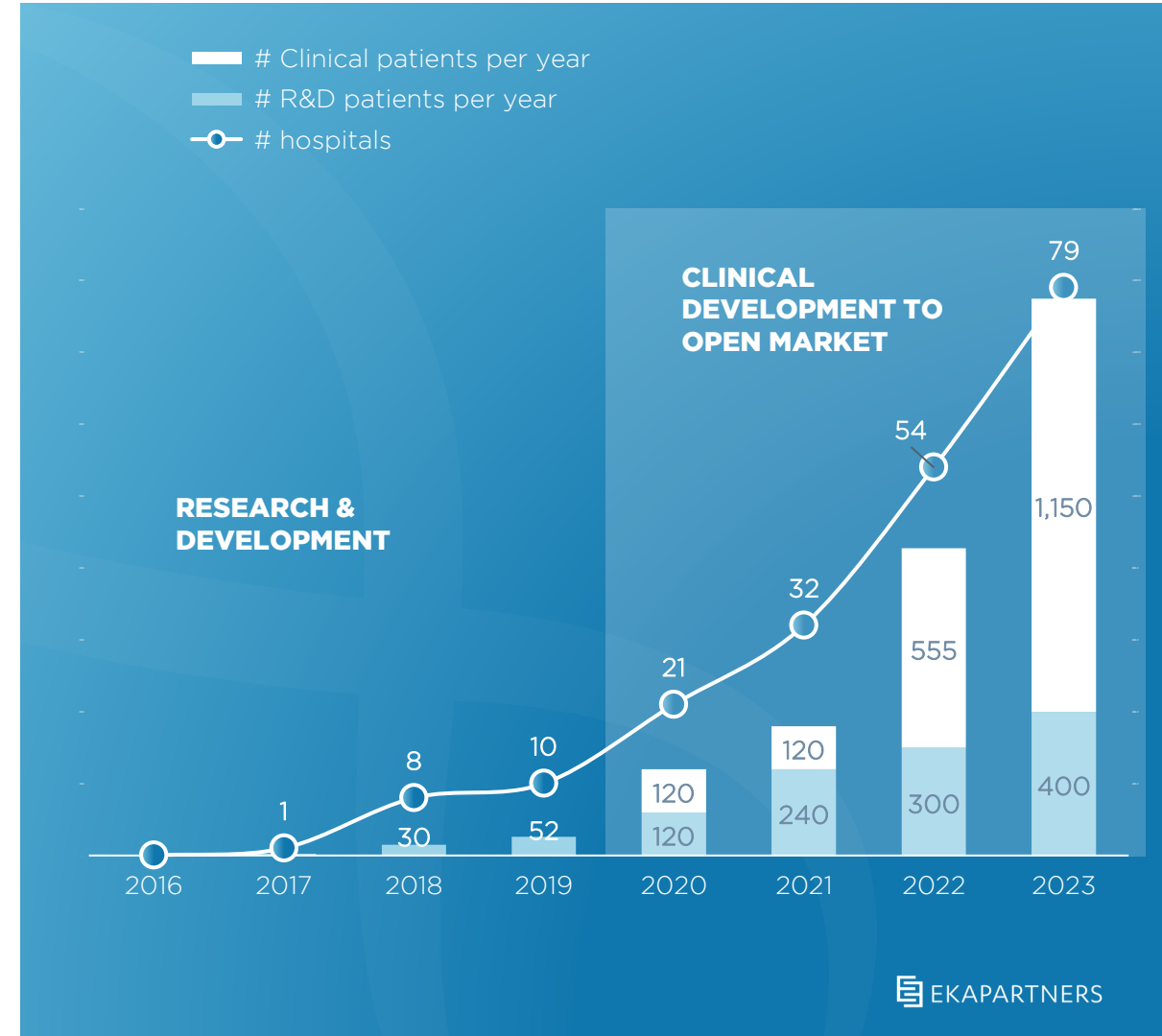
Site outreach

Hospital partnerships and engaging clinicians to take part in the studies will be the first step



Patient enrollment

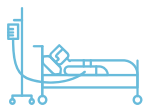
With hospitals onboard, QGel will enroll patients, receive patient biopsies, and organoids will be grown and tested at accredited QGel laboratories to generate valuable clinical data



4.4. FOCUS ON MARKET LAUNCH

STRONG CLINICAL RESULTS AND QGEL'S SCALABILITY WILL ENABLE ACCESS TO MILLIONS OF PATIENTS

Beyond 2025: treating patients to save lives



From clinical to routine patient treatment

Regulatory approval will allow to launch first clinical products for precision medicine in 2025 to support clinical decision making



Automated scalability

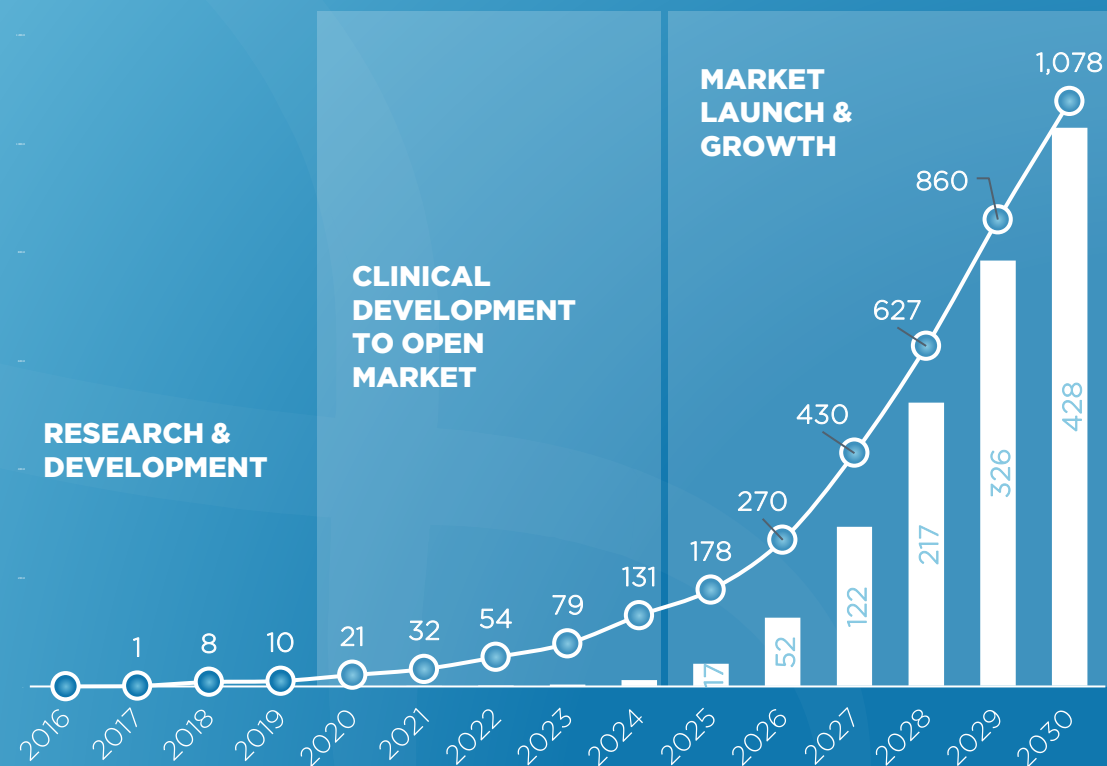
Hospitals and local clinical testing laboratories will be equipped to grow organoids locally



Data-driven digital health

Data from each patient will be organized and centralized for analysis. Better clinical decision support will improve with the number of patients treated

█ # Clinical patients per year (in '000s)
█ # R&D patients per year (in '000s)
○ # hospitals

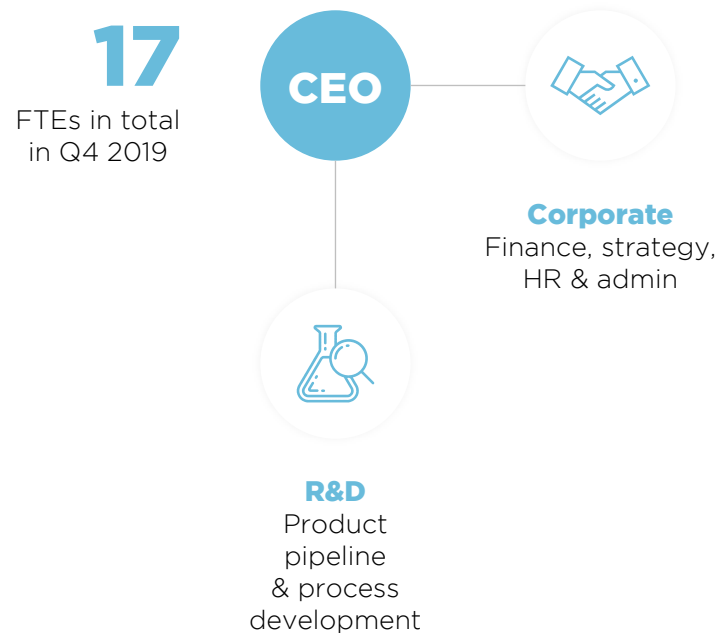


4.5. SCALING UP THE ORGANIZATION - PEOPLE

FROM FOCUSED R&D GROUP TO A CLINICALLY DRIVEN SALES ORGANIZATION

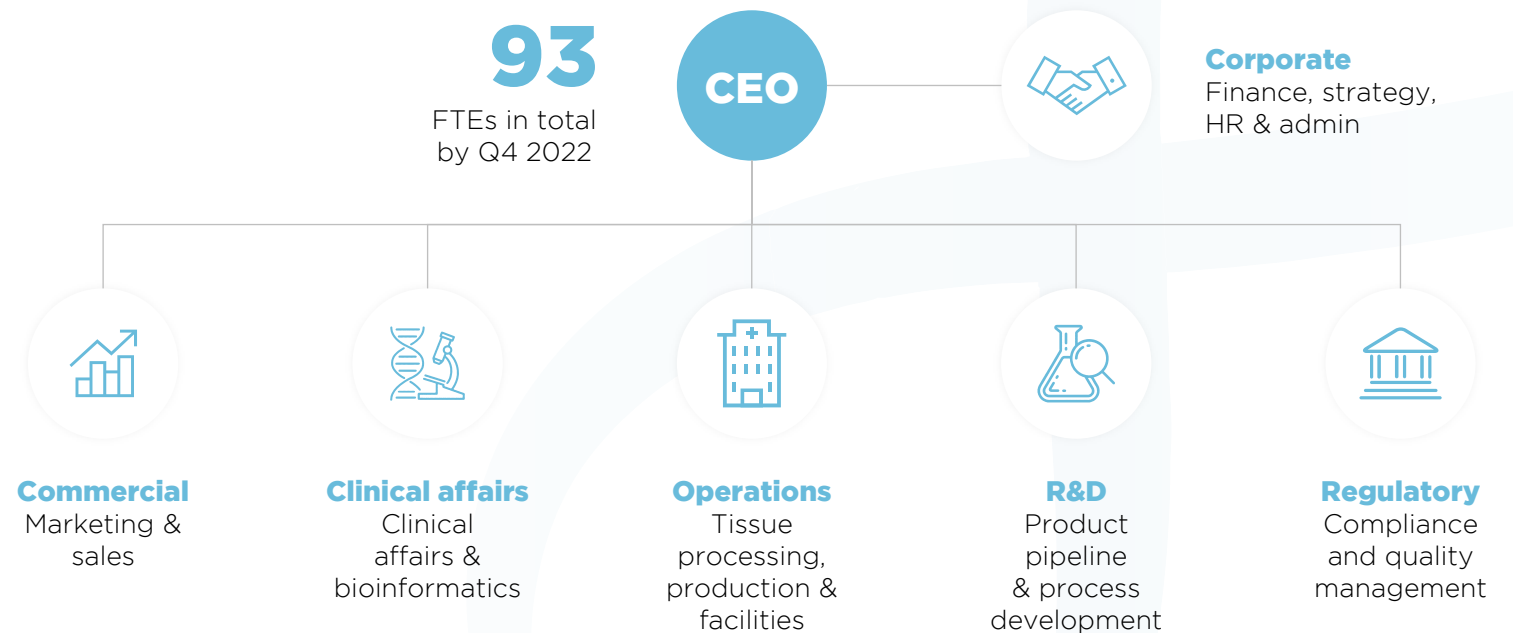
2019

Today, QGel is a R&D group that has focused on developing organoid products and generating clinical proof-of-concept data through hospital partnerships



2022

By 2022, QGel will be a commercially driven company marketing products based on solid clinical evidence obtained through diligent clinical studies



4.5. SCALING UP THE ORGANIZATION - PEOPLE

OVERVIEW OF DEPARTMENTS



Commercial

Marketing & sales

Purpose

To gain access to patients, whether for clinical studies or as part of a drug development program

Key Talent

- Director marketing
- Product management
- Field specialists (sales)



Clinical & data

Patient studies & data management

To generate data from clinical trials by managing hospitals, doctors and external contract research partners

- Head of clinical operations
- Medical affairs
- CRO manager
- Data manager



Operations

Tissue processing & production

To run workflows to receive and test patient biopsy material, and to produce data that meet regulatory quality requirements

- Head of operations
- Facility manager
- Engineers
- Technicians



R&D

Product pipeline & process development

To drive new product development, adopt and apply technology to refine processes for efficient operations

- Chief scientific officer
- Life scientists
- Technicians
- Lab manager



Regulatory






Compliance & medical affairs

To ensure company products, operations are compliant to regulation and quality requirements

- Head of quality & regulatory
- Quality manager













4.5. SCALING UP THE ORGANIZATION - PEOPLE

SUMMARY OF ACTIVITY AND TALENT REQUIREMENTS

Full time equivalents by department	FINANCING PERIOD				REFINANCE
	2019	2020	2021	2022	2023
 Commercial	1	4	5	6	18
 Clinical & Data	0	5	10	17	25
 Operations	1	13	17	41	59
 R&D	11	13	20	22	27
 Admin, Corporate & Regulatory	4	4	6	7	9
TOTAL FTEs	17	39	58	93	138

4.6. SCALING UP THE ORGANIZATION - FACILITIES

CAPITAL EXPENDITURES 2020 – 2023: PLANNED INVESTMENTS IN LEASEHOLD, LABORATORY AND EQUIPMENT

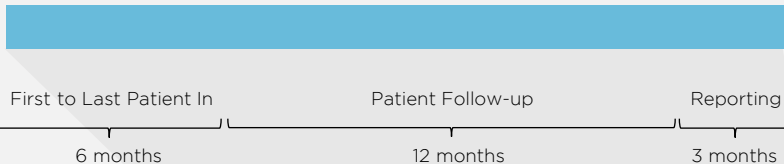
Department	Geographic leasehold locations	Specialized requirements	Capital expenditure in millions CHF
 Commercial	2020  2021 	None	-
 Clinical & Data	2020 	Server and patient data hardware	0.1
 Operations	2020  2021 	Dedicated regulated <i>in vitro</i> diagnostics facility for clinical testing including gel production	7.8 1.5
 R&D	2020 	Dedicated non-regulated laboratory for non-clinical research Pilot automation laboratory	0.6 7.2
 Regulatory	2020 	None	-
Note: Leasehold improvements and furniture for period are less than CHF 500'000 for all planned employees		Total CapEx in millions CHF	CHF 17.6

ROADMAP TO PRODUCT COMMERCIALIZATION

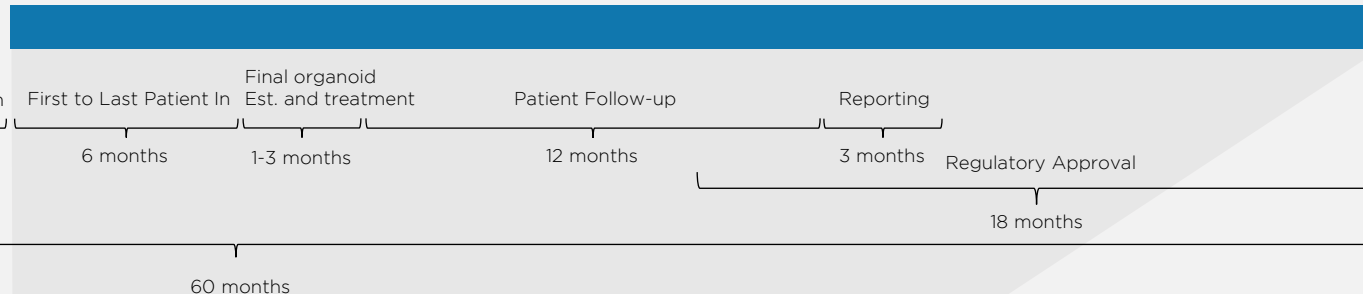
OBSERVATIONAL AND INTERVENTIONAL CLINICAL TRIALS TO ACHIEVE REGULATORY APPROVAL

PER CANCER TYPE

Observational Clinical Trial

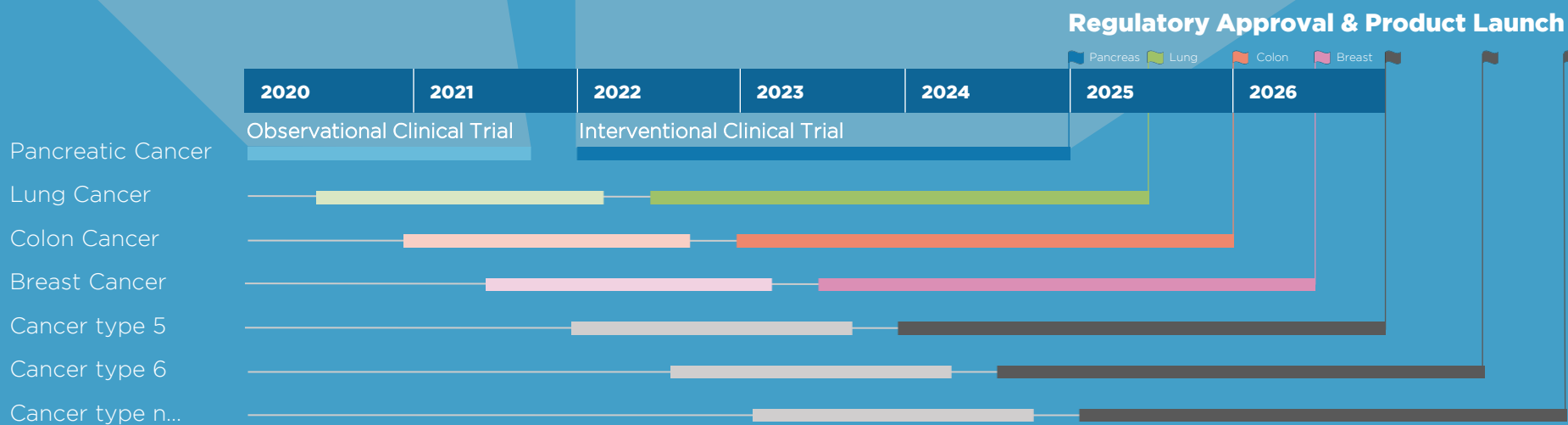


Interventional Clinical Trial



Regulatory Approval & Product Launch

PRODUCT DEVELOPMENT PLAN



4.7. BUSINESS PLAN

BUILDING FOR CLINICAL OPERATIONS. PREPARING FOR COMMERCIAL LAUNCH

	2019 FY	2020 FY	2021 FY	2022 FY	2023 FY	2024 FY	2025 FY	2026 FY	2027 FY
Product Revenue	-	-	-	7362,943	2,943	14,473	57,626	180,527	427,470
Service Revenue	-	-	-	2,318	8,631	43,674	177,724	563,081	1,339,651
Cost of Products Sold	-	(10)	(15)	(2,402)	(6,959)	(30,438)	(97,342)	(293,078)	(691,104)
Other Products Costs	-	-	-	-	-	-	-	-	-
GROSS MARGIN	-	(10)	(15)	652	4,615	27,710	138,009	450,530	1,076,017
	0%	0%	0%	21%	40%	48%	59%	61%	61%
OPERATING COSTS									
General & Administrative	(1,046)	(1,977)	(2,606)	(3,742)	(5,059)	(5,799)	(6,229)	(7,033)	(8,102)
Research & Development	(1,968)	(3,226)	(5,137)	(5,521)	(6,566)	(6,845)	7,107)	(7,371)	(7,643)
Clinical Development	(17)	(6,709)	(9,328)	(14,963)	(17,940)	(14,419)	(14,867)	(15,491)	(15,303)
Sales & Marketing	(291)	(812)	(970)	(1,355)	(3,085)	(10,767)	(19,025)	(37,091)	(70,490)
TOTAL OPERATING COSTS	(3,321)	(12,724)	(18,040)	(25,581)	(32,650)	(37,830)	(47,226)	(66,987)	(101,538)
	0%	0%	0%	838%	282%	-65%	-20%	-9%	-6%
EBIT	(3,321)	(12,733)	(18,056)	(24,929)	(28,035)	(10,121)	90,782	383,543	974,480
	0%	0%	0%	-816%	-242%	-17%	39%	52%	55%

Key objectives

- First revenue from clinical organoids services products expected in 2022
- Ex Vivo Operations, or patient organoid testing operations, will start in 2022
- R&D will focus on filling the pipeline with new cancer types and assist in developing efficient operations
- A few internal QGel employees will manage clinical trials externally through mandates with Contract Research Organizations
- Alternative study funds sources from patient-interest groups are planned to accelerate patient access to precision medicine applications
- Main operations site to be inaugurated in Switzerland by end 2019. CapEx figures also include plans to build a basic testing unit in USA by 2021

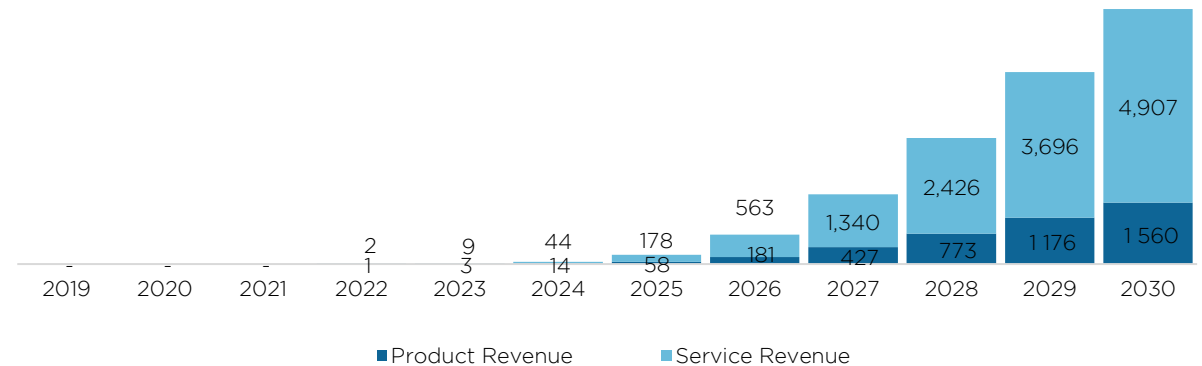
4.7. BUSINESS PLAN

DRIVE REVENUE THROUGH PRODUCT AND SERVICE

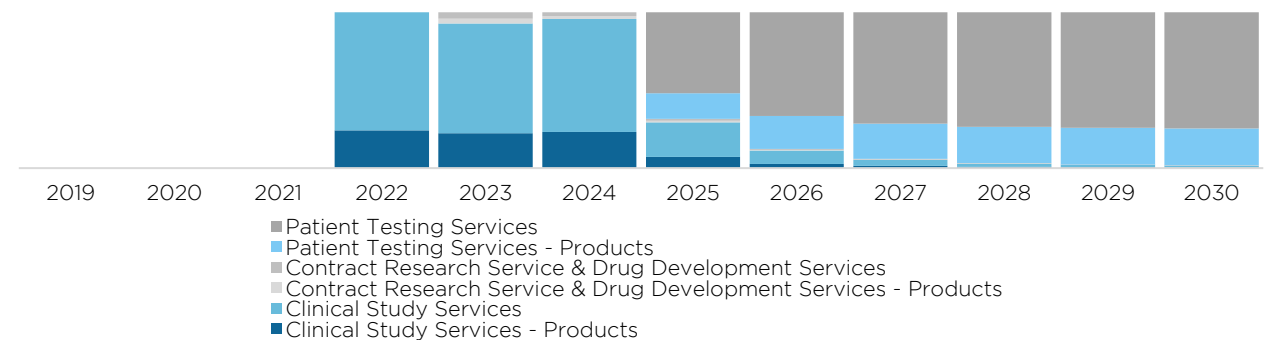
Revenue drivers

- QGel's revenue comes from Product and Service, which is split between:
 - Product revenue corresponding to **organoid packages** sold
 - Service revenue coming from **drug test reports** sold
- Buyers of QGel's products and services are:
 - Hospitals for patient testing
 - Pharma & biotech for contract research and drug development applications and clinical study
- A new developed product is a new cancer type ready for clinical trials
- The product output from the R&D pipeline will be two new cancer types per year and when the most important types have been developed, one new cancer type
- This is based on the R&D pipeline progression since 2016

Revenue evolution breakdown between products and services (M-CHF)



Revenue repartition breakdown by type of product and services

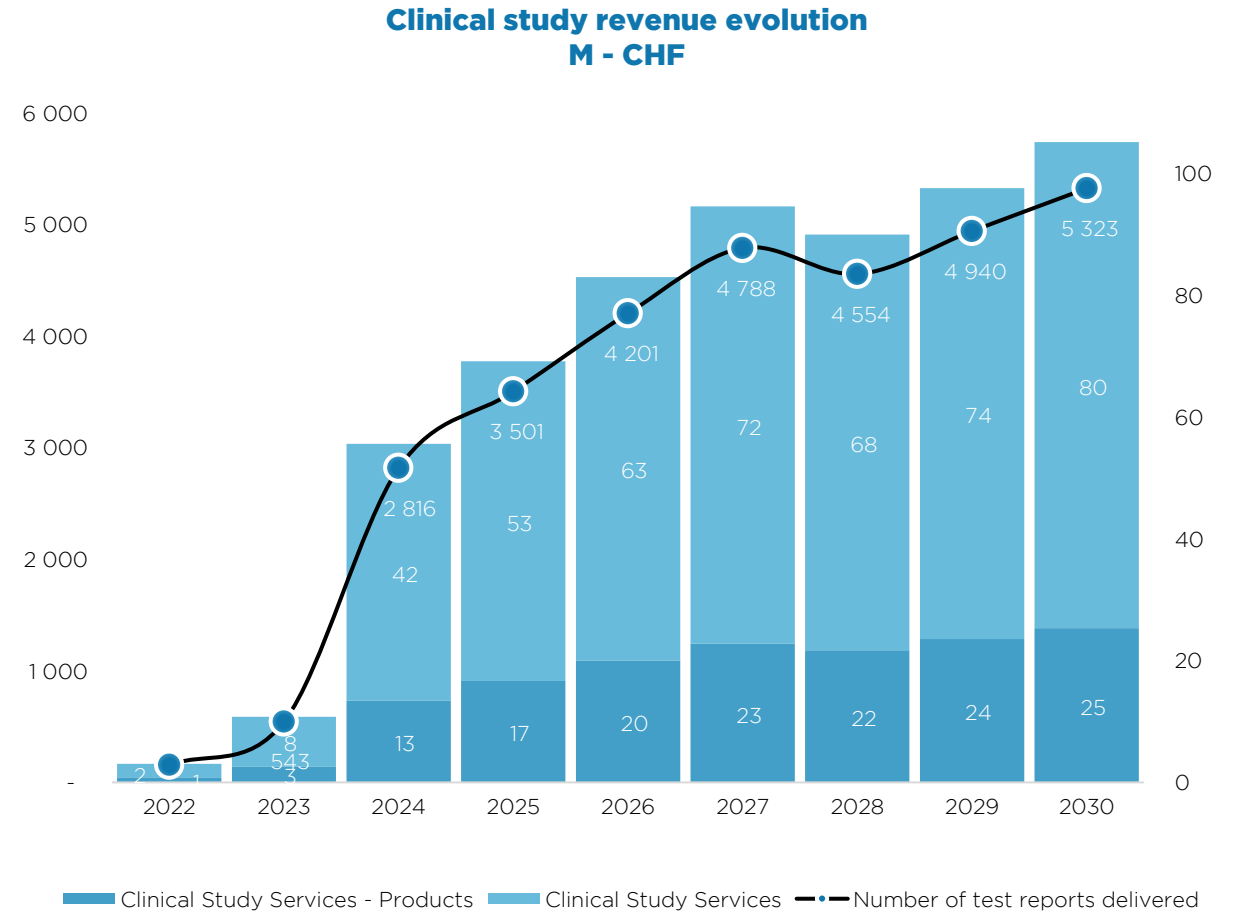


4.7. BUSINESS PLAN

FOCUS ON CLINICAL STUDY REVENUE

Clinical study drivers

- Clinical study products and services revenue is planned to start by 2022
- This offer is designed to pharmaceutical companies which would like to perform drug discovery activities on real-life tumor models
- Clinical study offer is composed of:
 - 119 mini vials sold at CHF 40 per unit (Products)
 - A drug test report sold at CHF 15K (Service)
- QGel plans start selling c. 150 clinical studies in 2022 and exceed 5300 units by 2030 (green line)



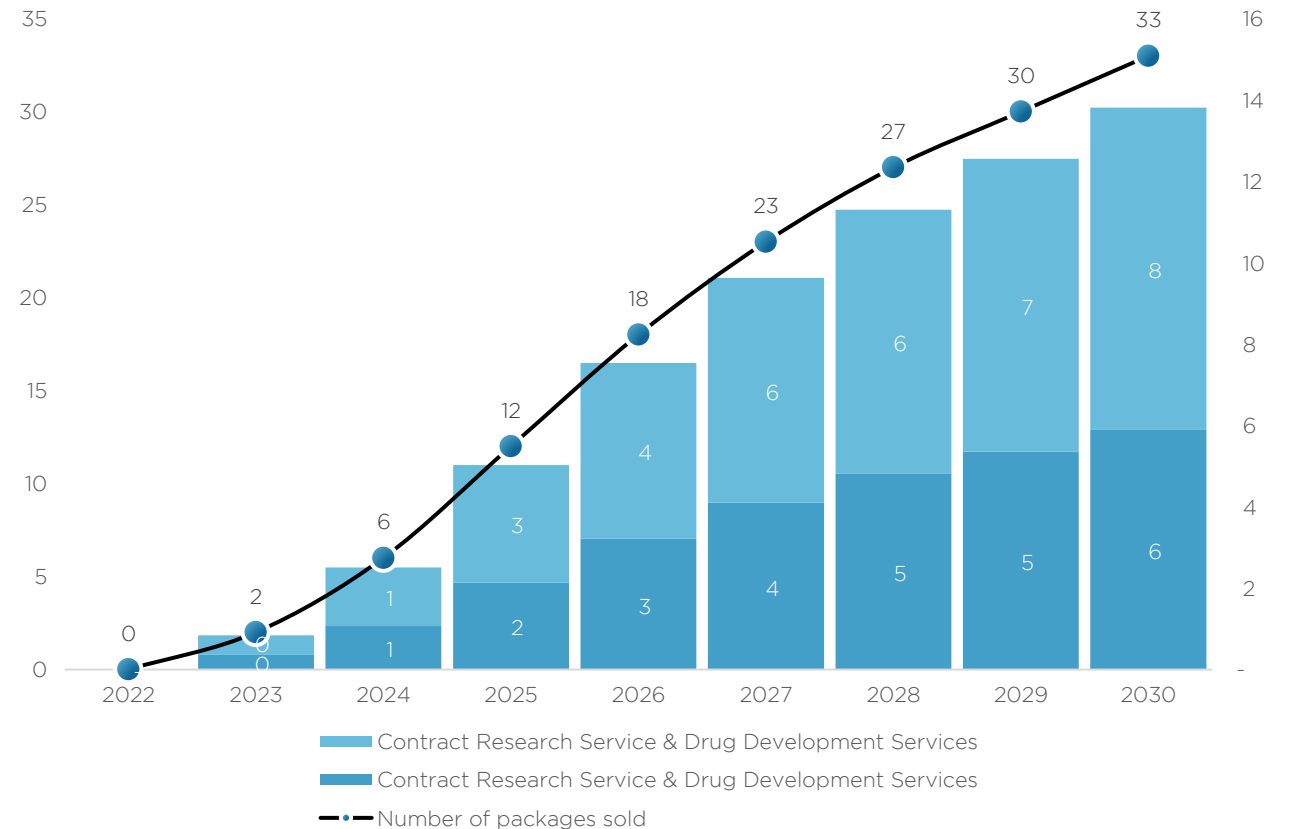
4.7. BUSINESS PLAN

FOCUS ON CONTRACT RESEARCH SERVICE & DRUG DEVELOPMENT REVENUE

Contract research service & drug development revenue drivers

- Contract research service & drug development products and services revenue is set to start by 2023
- This offer is designed to pharmaceutical companies which would like to perform drug discovery activities on real-life tumor models
- Contract research service & drug development packages are composed of:
 - **119 mini vials sold at CHF 25 per unit (Products)**
 - **[20 organoids that can support 3 experiment each (Products)]**
 - A licensing fee of CHF 12K per organoid (Service)
- **119 mini vial are required to carry out an experiment**
- QGel plans start selling c. 2 packages studies in 2023 and reach 33 by 2030 (green line)

Contract research service & drug development revenue evolution M - CHF



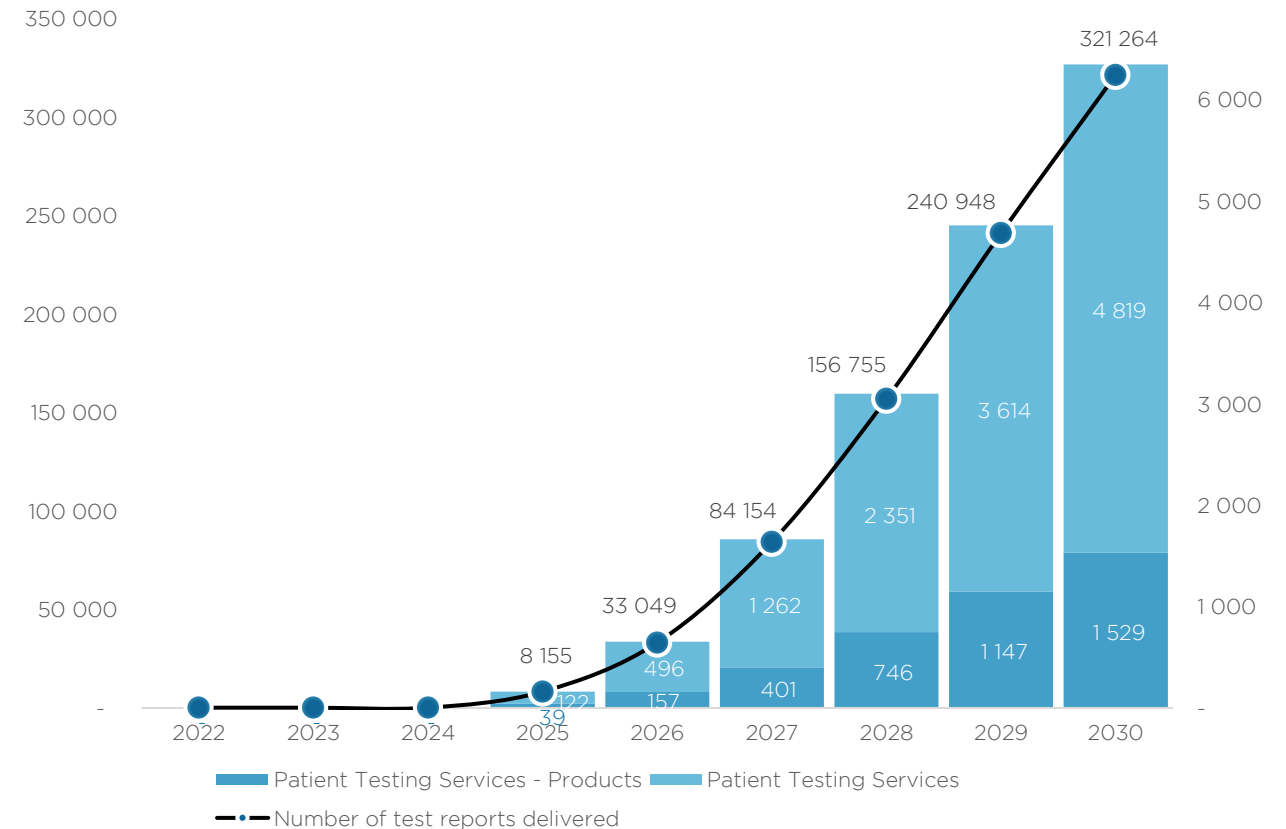
4.7. BUSINESS PLAN

FOCUS ON PATIENT TESTING REVENUE

Patient testing revenue drivers

- Patient testing products and services revenue is set to start by 2025 when the drug test report will be available, 24 months after observational clinical study started
- This offer is designed to **oncologists**, willing to match the right drug therapy with their patients cancers
- Patient testing offer is composed of:
 - 119 mini vials sold at CHF 40 per unit (Products)
 - A patient testing report sold at CHF 15K (Service)
- QGel plans start selling c. 8200 test delivered in 2025 and exceed 320K units by 2030 (green line)
- These numbers are based upon growing market penetration rate from 2% in 2025 to 16% in 2030 applied to an increasing number of cancer types treated with QGel's solutions, from 2 in 2025 to 10 in 2030

Patient testing revenue evolution
M - CHF



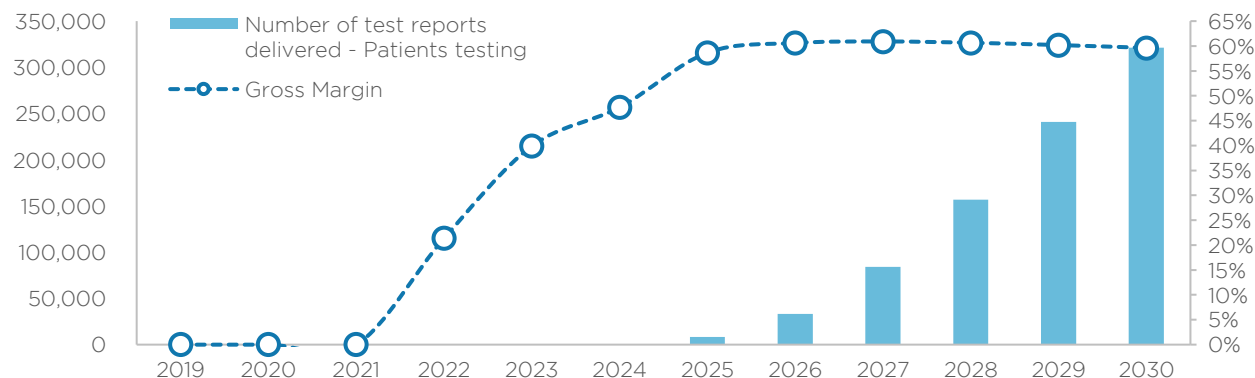
4.7. BUSINESS PLAN

FOCUS ON GROSS MARGIN

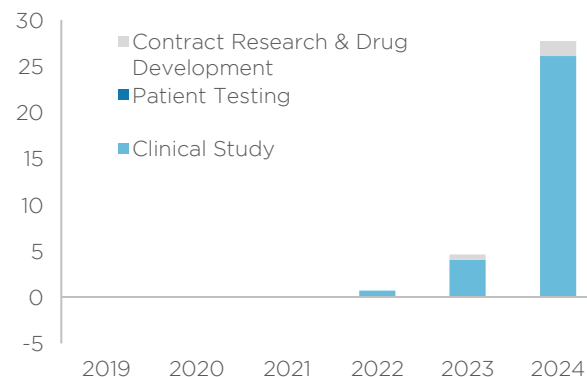
Gross margin drivers

- The start of clinical study activity in 2022 and patient testing in 2024 will unleash profitability
- Clinical study COGS are mainly driven by payroll (technicians, bioinformatician,...), material cost and equipment.
- The cost per sample will sink from c. CHF 11K in 2022 to c. CHF 7,9K through economies of scale and automation
- By 2025, the main contributor to the gross margin will be the patient testing activity
- Patient testing cost per sample slightly goes up from CHF 5,4K to CHF 5,9K due to massive investments in automation

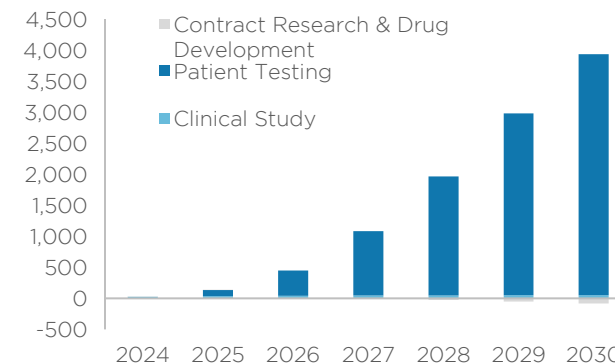
GROSS MARGIN (%)



Gross Margin per division M - CHF



Gross Margin per division M - CHF

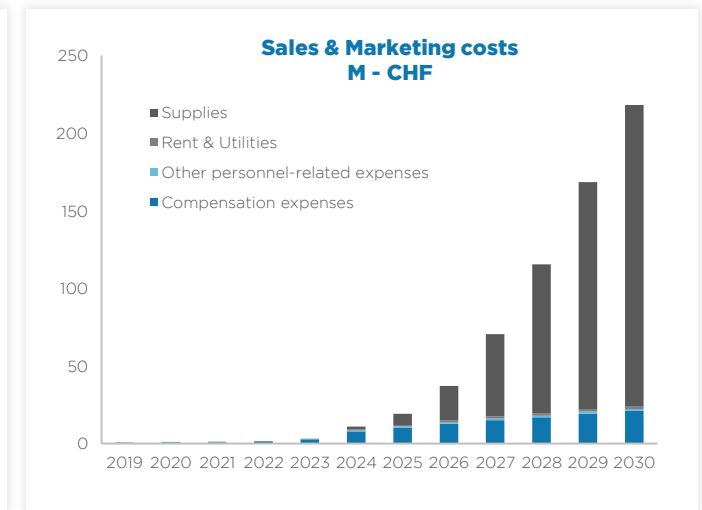
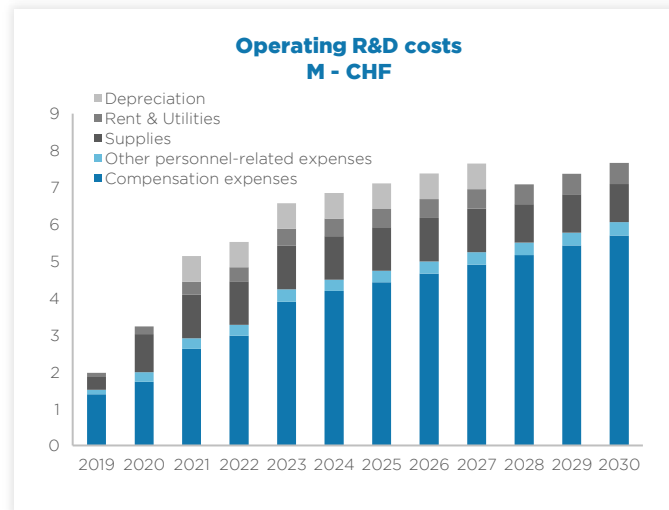
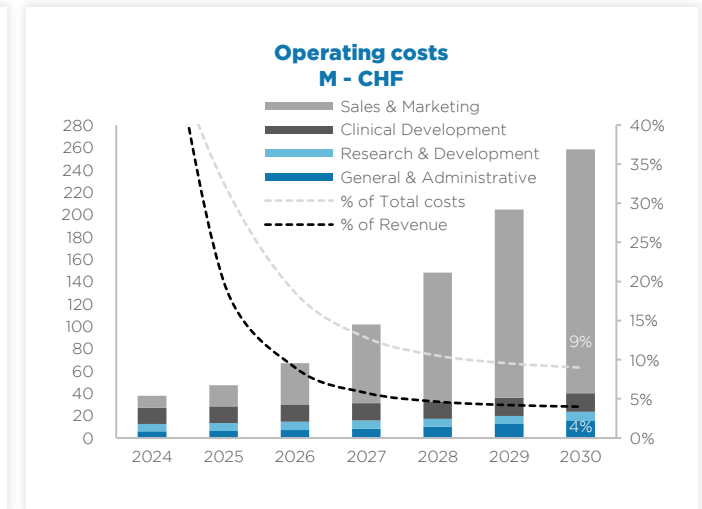
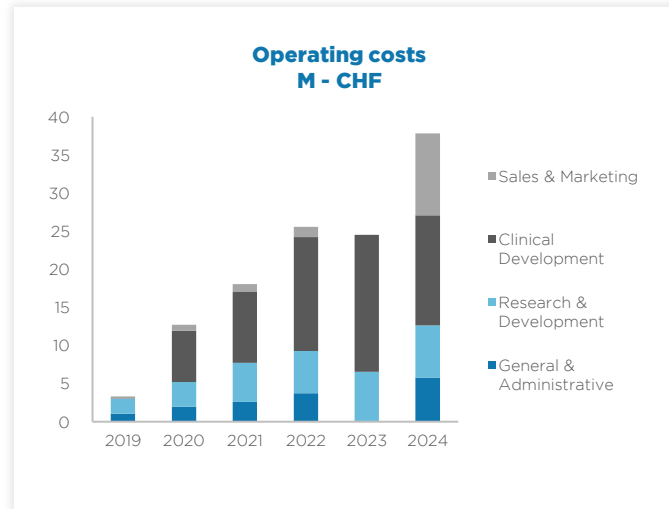


4.7. BUSINESS PLAN

FOCUS ON OPERATING COSTS

Operating costs drivers

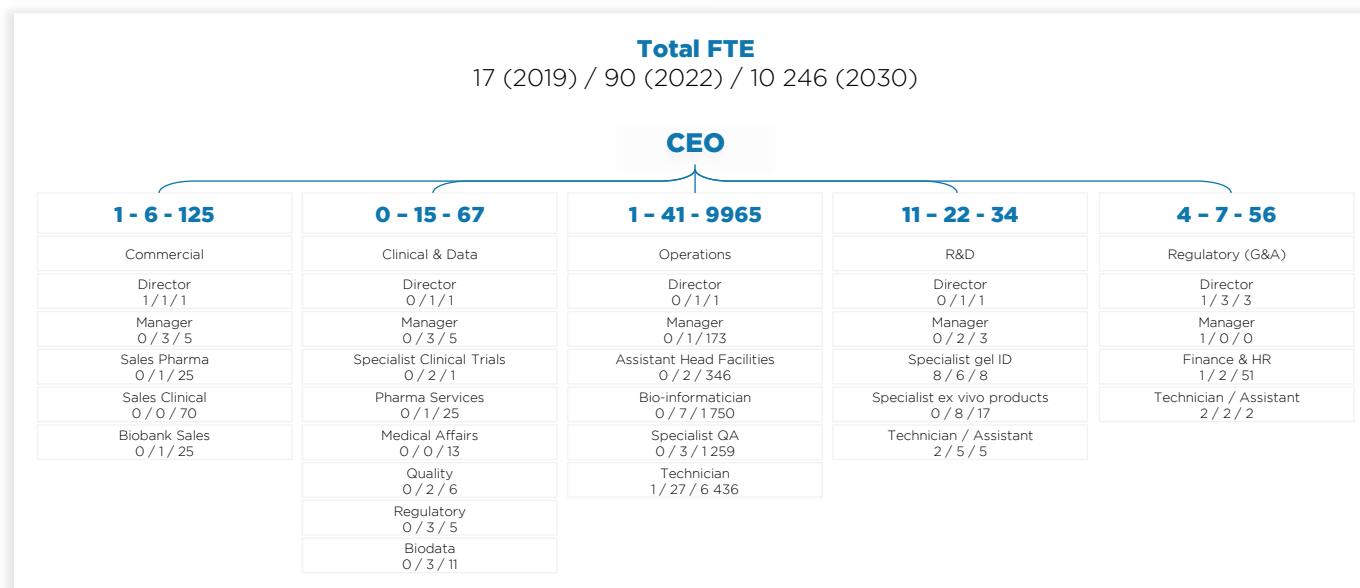
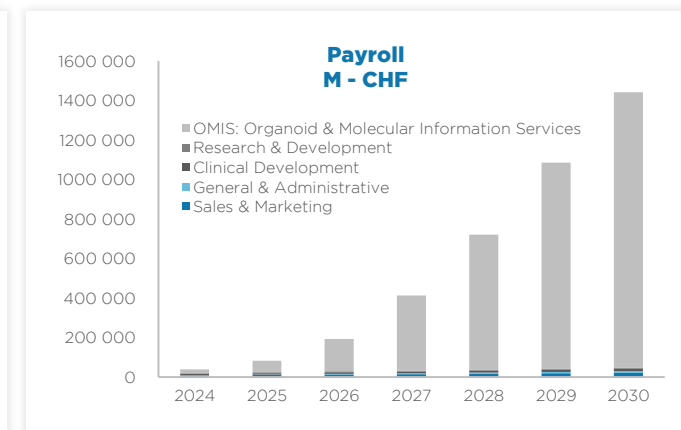
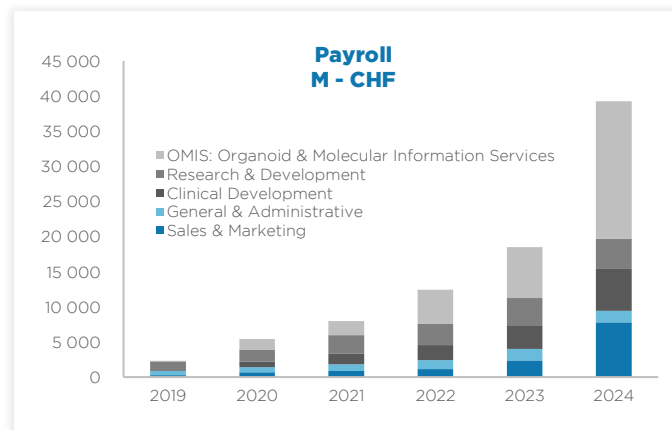
- In the long run, operating costs (OC) tend to have a decreasing impact on EBIT:
 - OC / Total costs ratio tends to 9% in 2030
 - OC / Revenue ratio tends to 4% in 2030
- Over the 2019-2030 period, operating R&D costs are growing at a slower rate over the years, compounded annual rate of 13%. Within operating R&D, compensation expenses are the major growth driver with a 14% CAGR
- Over the same period, sales & marketing costs surge at the fastest pace (CAGR of 83%) to become the largest entry after 2025. Within sales & marketing costs, **supplies** are the major growth driver with a CAGR 2022-2030 equals to 160%



4.7. BUSINESS PLAN

FOCUS ON HR

- The skyrocketing amount of payroll is the direct consequence of outstanding top line growth prospects requiring the implementation of a large hiring plan
- #FTEs CAGR amounts :
 - 74% between 2019 and 2022
 - 81% between 2022 and 2030
- Operation division (OMIS) grows the fastest since thousands of bio informatician and technician are required to handle the surging number of patient testing samples
- As for the commercial division, specialized sales are to be recruited according to the assumption that 5 people are needed for each commercialized cancer type and 0,3 people per pharma services study launched
- The product output from the R&D pipeline will be two new cancer types per year and when the most important types have been developed, one new cancer type allowing Qgel not to recruit specialist gel ID by 2030

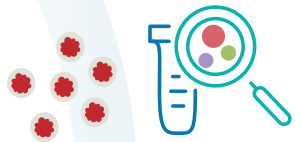


4.7. BUSINESS PLAN

UPSIDES NOT INCLUDED IN BP: OTHER CANCERS, OTHER APPLICATIONS

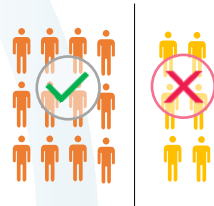
A platform technology with a broad range of applications and solutions

DRUG DISCOVERY PRODUCTS AND SERVICES



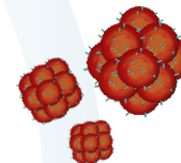
QGel could offer upside scalable research products and services that allows researchers and drug developers to capture the complexity of biology for the discovery of new drug therapies

TOXICOLOGY



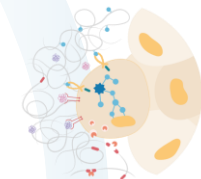
- Drug-Patient Mismatch: patients that could be saved but die because they were prescribed the wrong treatment
- No Drug Therapy: patients die because no drug therapy exists to treat these types of patients. Also, the patients needlessly suffered needlessly side-effects caused by a drug they should not have been prescribed

OTHER CANCERS



State BP only estimated 3-5 cancers? Extra resources could open additional markets

REGENERATIVE MEDICINE








regenerate human cells, tissues or organs in a defined hydrogel to restore or establish normal function

4.7. BUSINESS PLAN

USES OF FUNDS

Purpose and means by sector

Department	Geographic leasehold locations
 Commercial Marketing & sales	Develop sales and support solutions to gain access to patients by hiring 5 FTEs Engage KOLs to open a direct line to the market
 Clinical & Data Patient studies & data management	Generate data from clinical trials to support the intended use product claims and produce regulatory approval by hiring 17 FTEs Engage KOLs and clinical CROs to recruit hospitals to initiate clinical development
 Operations Tissue processing & production	Build diagnostics and production facilities and hire 40 FTEs to ensure organoid workflow operations handle and test patient biopsies
 R&D Product pipeline & process development	Develop new products by hiring 11 FTEs Design and develop new applications and technologies Pilot automation laboratory Dedicate a non-regulated laboratory for non-clinical research
 Regulatory Compliance & medical affairs	Set up the relevant quality system and ensure compliance of regulations by hiring 3 FTEs

Use of funds by sector (M CHF)

