

KILOBASER

BECOMING WORLDS LEADING DNA COMPANY



**EVERY STEP
IN LIFE SCIENCES**

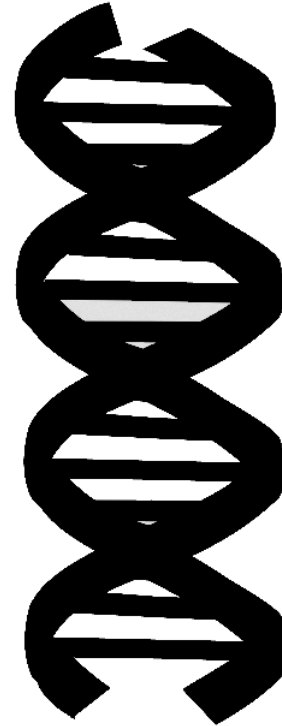
**REQUIRES
DNA PRIMERS.**

5'...ACGCTATTA...3'

**SLOW SPEED OF
OUT-SOURCED
PRIMER SYNTHESIS**

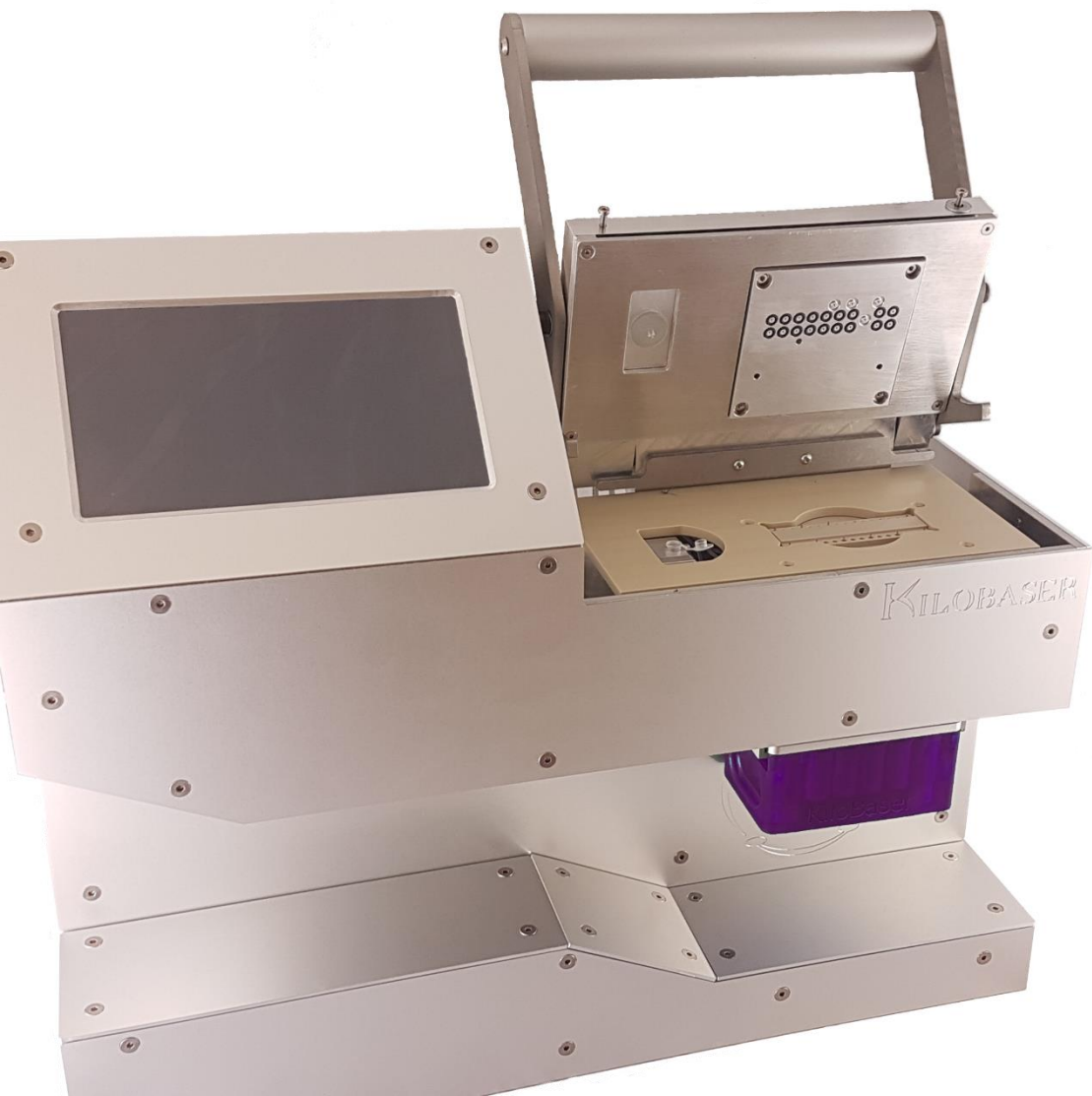
**MEAN PERMANENT
COSTLY DELAYS**





WHAT IF WE HAD A
PERSONAL
DNA SYNTHESIZER

AS **SIMPLE** AND
CONVENIENT AS A
NESPRESSO
MACHINE?



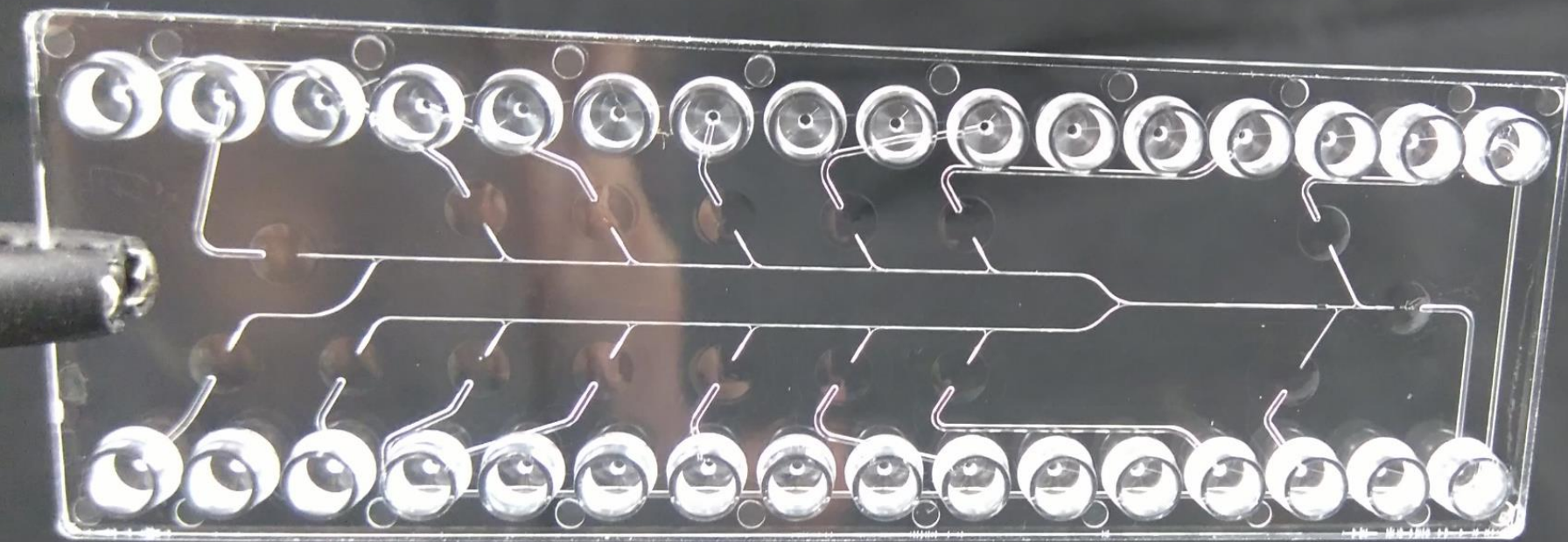
KILOBASER

THE NESPRESSO-MACHINE FOR DNA SYNTHESIS

THE FIRST **PERSONAL DNA SYNTHESIZER**

...

MAKES PRODUCING DNA PRIMERS
AS CONVENIENT AS
BREWING A NICE CUP OF COFFEE



ITS
**MICROFLUIDIC
TECHNOLOGY**

IS CAPABLE OF
**REDUCING THE
REAGENT USAGE 100
FOLD**

WHILE STILL
SYNTHESIZING UP TO
500 PICOMOLES DNA

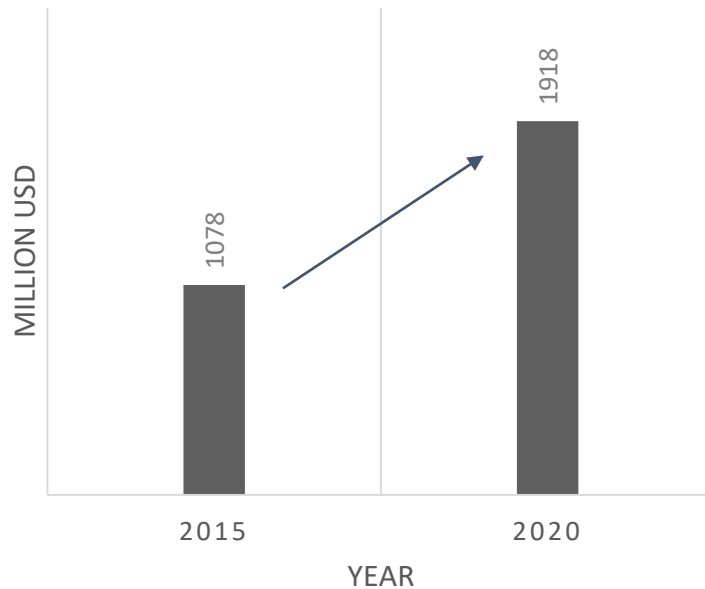
ALLOWING
REVOLUTIONARY
SIMPLICITY:

KILOBASER
IS FUELED BY A
PLUG & PRIME
REAGENT CARTRIDGE

RECURRING
REVENUES



OLIGO SYNTHESIS MARKET



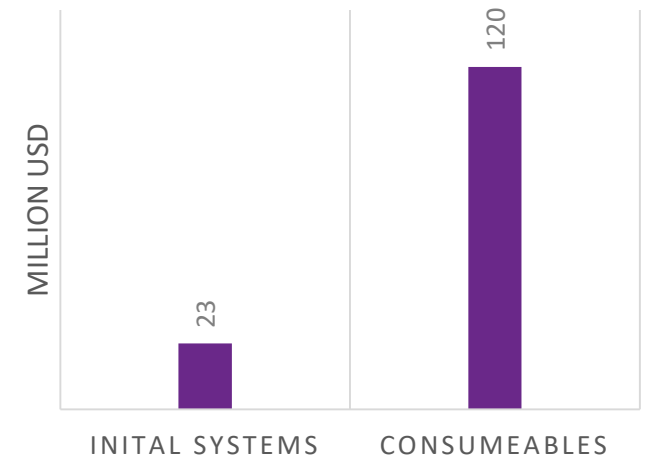
THE OLIGONUCLEOTIDE SYNTHESIS MARKET IS EXPECTED TO REACH USD 1918.6M AT A CAGR OF 10.1% BY 2020 FROM USD 1078.1M IN 2015.

(MarketsANDMarkets 2015)

CONSUMEABLES (MAINLY REAGENTS) MAKE UP THE MAJORITY OF THE OVERALL DNA SYNTHESIZER MARKET

(SDi 2013)

CONSUMABLES & SYSTEMS 2013



FOUNDERS



Martin Jost, COO

Background in Programming;
Molecular Biology



Alexander Murer, CEO

Background in Biotechnology;
Lab Automatisatation

Bernhard Tittelbach, CTO

Background in Computer Engineering;
Electrical Engineering



Gerhard Murer

Chief scientist – Anton Paar GmbH
Center for Analytical Instrumentation

Bill Liao

CEO Finaxis AG, CoderDojo
Co-founder XING

INVESTORS / ADVISORS



SERIES PRODUCTION: DEC. 2018

ZERO SERIES: APR. 2018

μFLUIDIC CHIP P.O.C.:
DEC. 2016

2016 APR.: DEVICE P.O.C.

2015 FEB.: SEED INVESTMENT

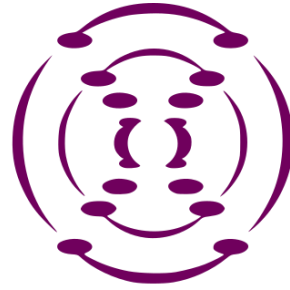
2014 MAY.: INDIE.BIO

2014 JAN.: LAUNCH

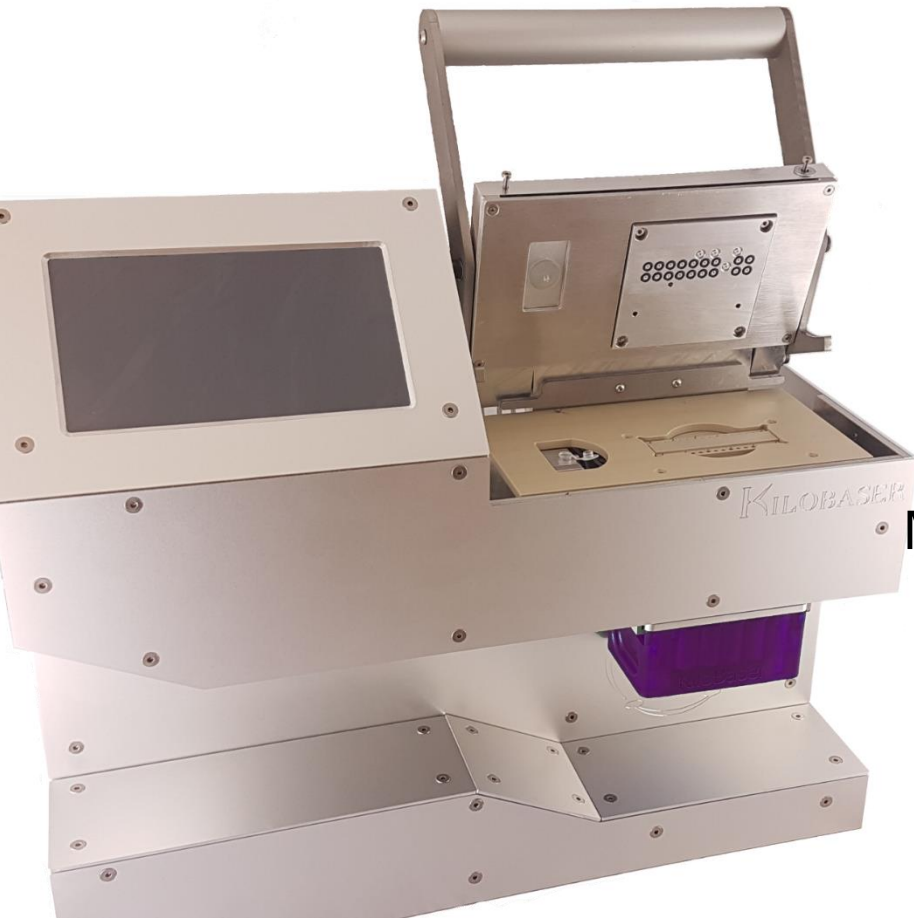


**INVESTMENT NEEDS
3 M€**

PREVIOUS ROUNDS:
€M 1,6 (SOSv+FFG)



KILOBASER



CONTACT:

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Tel.: +43 650 4223727

• Market data appendix available!

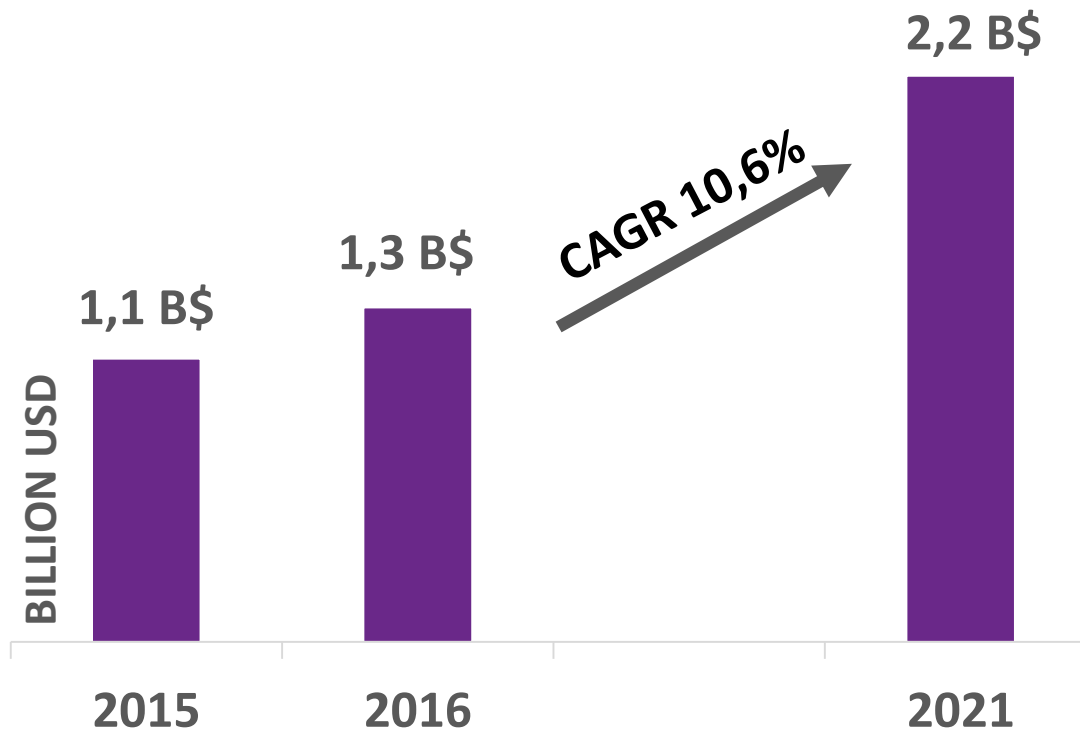
Briefcase Biotech GmbH
Reininghausstrasse 13a
8020 Graz, Austria



APPENDIX

MARKET DATA - BUSINESS PLAN - DNA PRIMER SURVEY - FAQ

What is the market size?

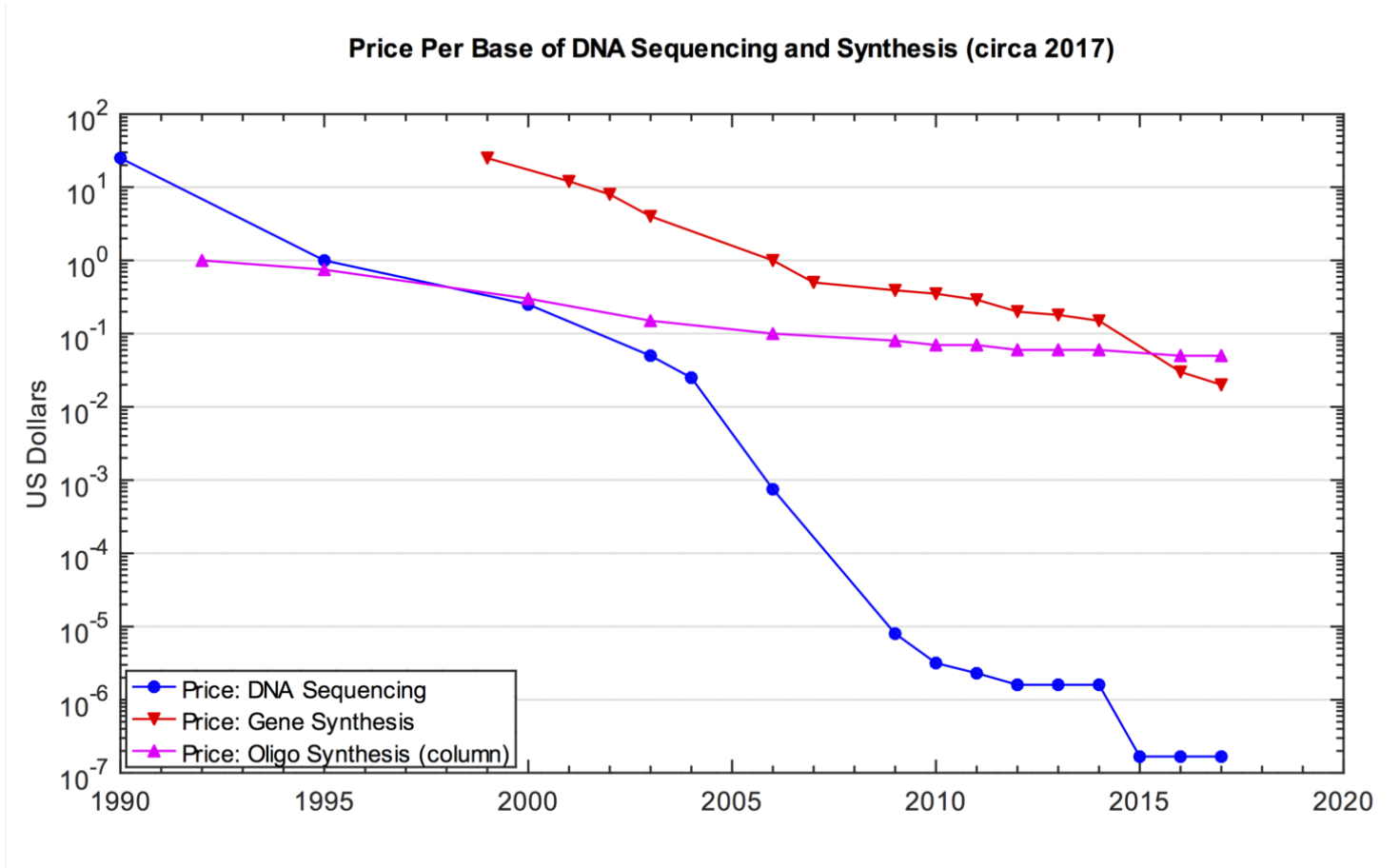


The oligonucleotide synthesis market is doubling in just six years.

Oligonucleotides are short fragments of DNA or RNA molecules.



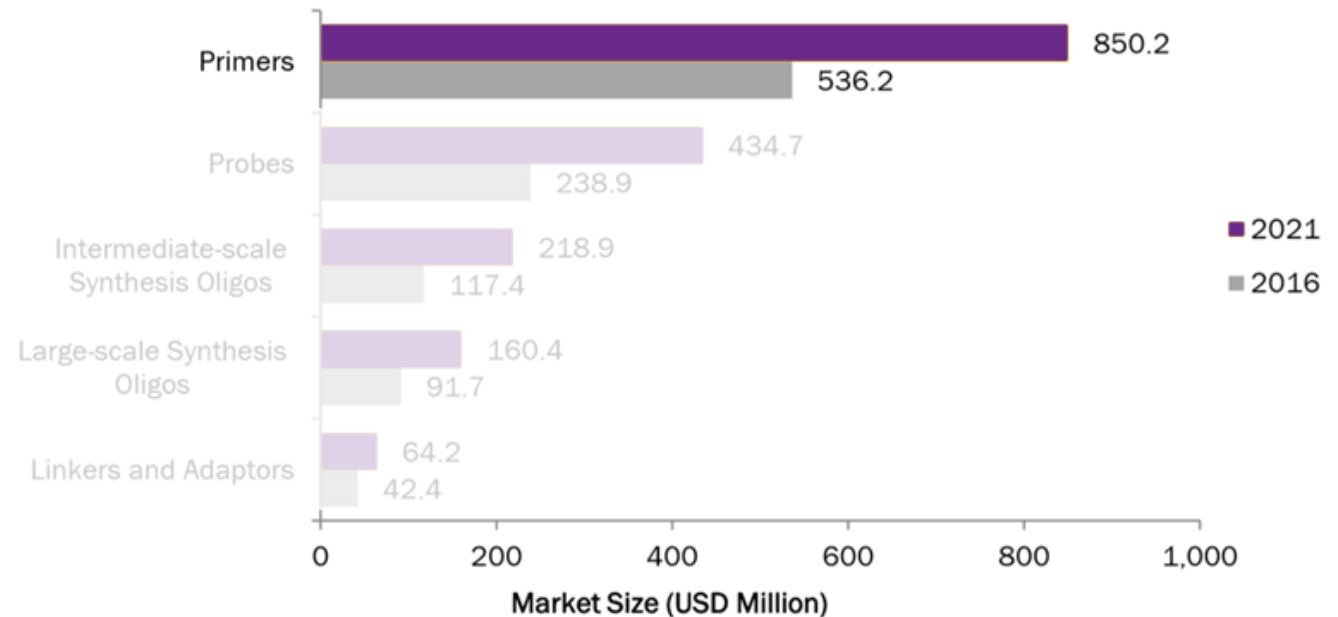
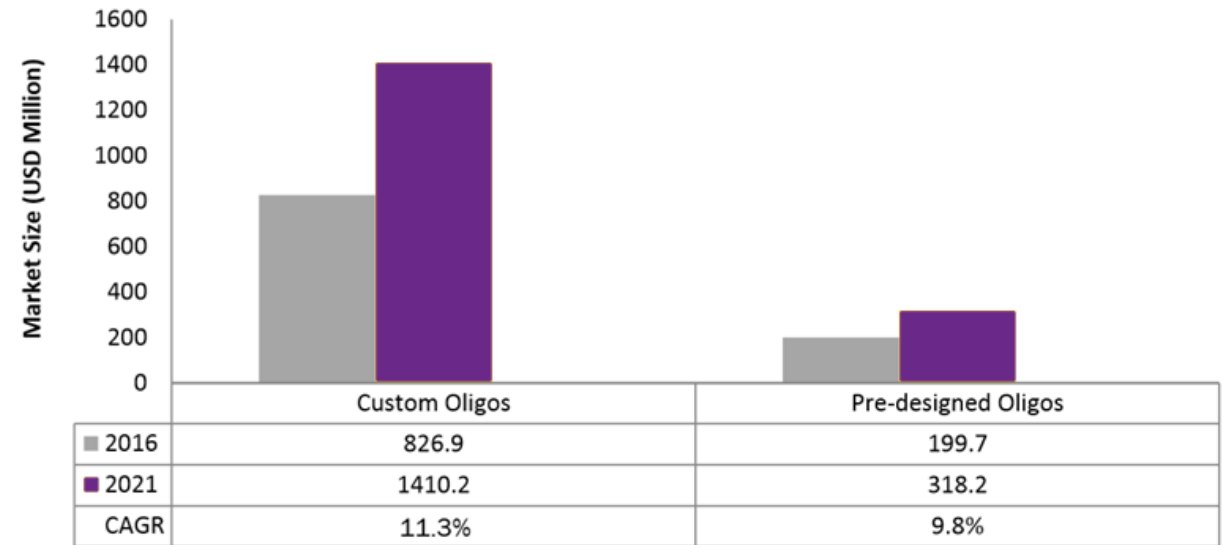
The price development?



While gene synthesis and especially DNA sequencing experienced heavy price drops in the past years, the oligo synthesis prices remain relatively stable, due to a lack of innovation in our target field so far. Except for our upcoming technology, there haven't been any considerable advancements in the field in recent years.

Where is our focus?

Kilobaser is focused on custom oligos and primers, the largest market segments. This is where fast turn-around times are needed. Primers are mainly used for PCR applications and usually about 25 bases long.



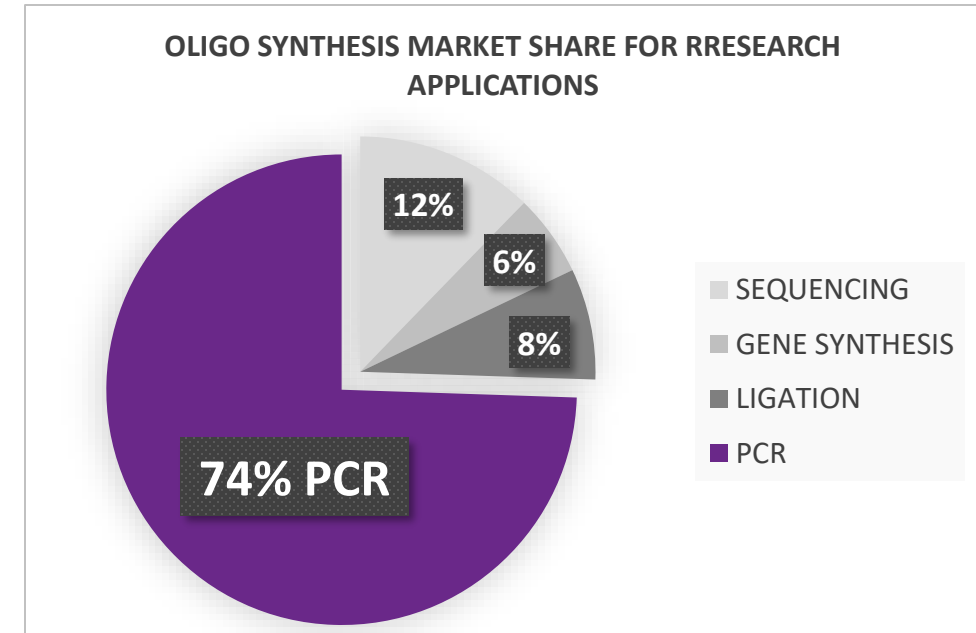
Why do we estimate to sell more than 1,000 Kilobasers a year?

a.) Your PCR system is a lame duck without instant primer supply.

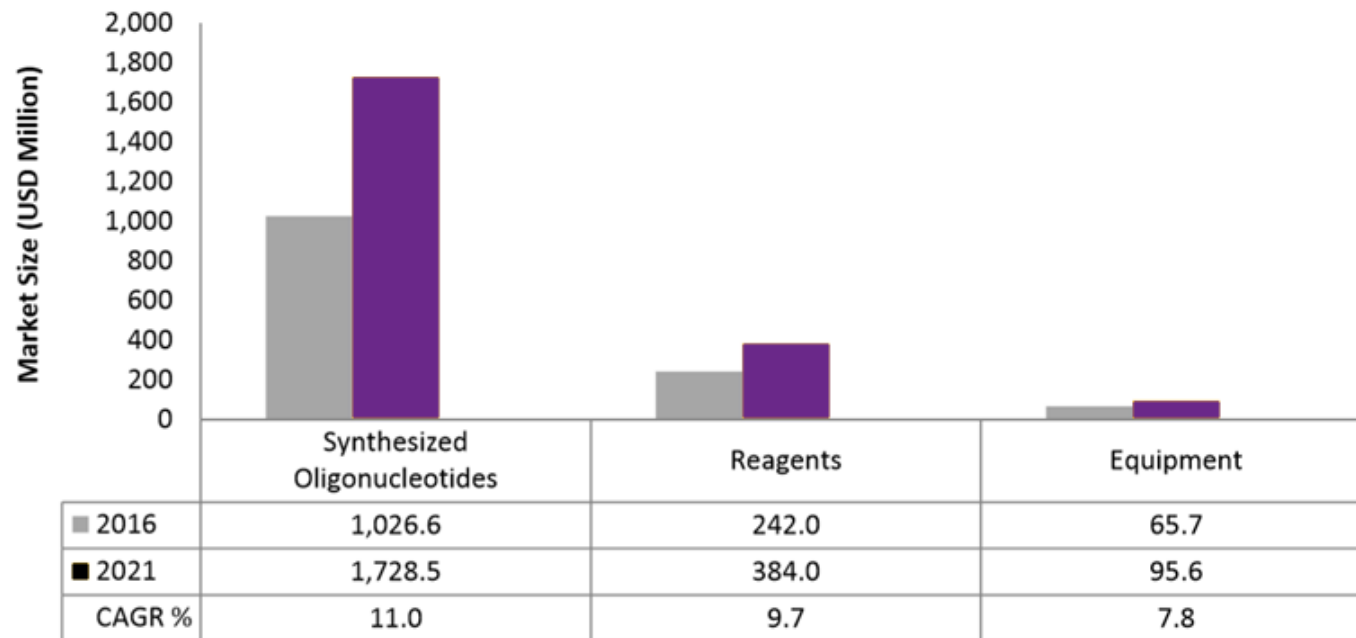
PCR systems are the largest life science instrument segment. In the year 2013, there were 28,250 new PCR systems sold, and 230,000 PCR systems in the installed base already.

Having a Kilobaser to synthesize primers in a matter of 2 hours instead of frequent delays of 1-3 days or even more delivery time means a massive upgrade for each of these systems. Therefore we are aiming to sell one Kilobaser along with every 10th sold PCR systems worldwide – at least.

PCRs are also by far the largest consumer of oligos, accounting for 74% of the oligo synthesis market.



Why do we estimate to sell more than 1,000 Kilobasers a year?



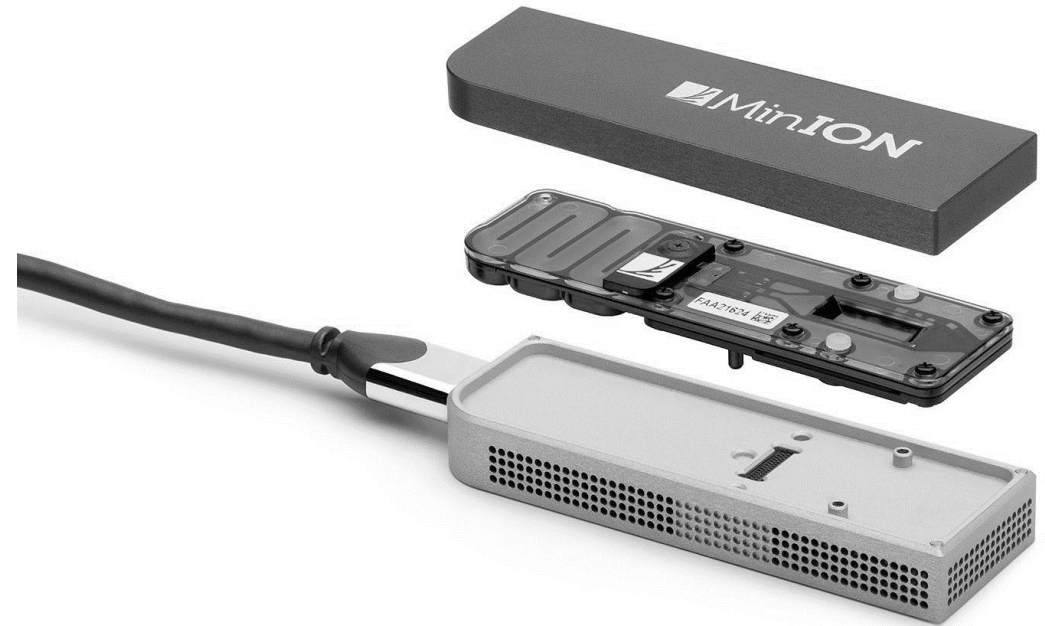
b.) Currently the market is so strongly dominated by out-sourced synthesis, that it is wide open for a new kind of personal synthesizer – Kilobaser

Because of their high complexity and high costs, only about 250 traditional synthesizers are sold per year worldwide. Due to that, individual researchers nowadays have to deal with the problem of slow turn-around time of synthesized oligos.



Why do we estimate to sell more than 1,000 Kilobasers a year?

c.) MinION follows a similar path in the field of DNA sequencing very successfully. Their low-cost, cartridge driven personal sequencer competes against out-sourced providers, which dominated the sequencing market – but also suffered from slow turn-around times compared to a personal device.



Competitors I

Online order services

The first and by far most important group of competitors consists of four key players who dominate the online order service for DNA primers: **IDT, Sigma Aldrich, Eurofins, Thermo Fisher**. All of them offer a pretty similar service. They have a homepage where the desired DNA sequence(s) can be entered, the DNA primers will be produced in a central factory and usually delivered in 2-5 business days via express shipping. The minimum amount per primer is usually 25nmol.

Next day service: 3 of them offer a ,next day service‘ in europe. They promise to deliver on the next business day, usually if 1) the order is done before 13:00 2.) the oligo is shorter than 25 bases 3.) an extra fee is payed.

IDT, the market leader in the field of DNA primers, with an estimated yearly revenue around 500 M\$. It has 5 factories worldwide, 3 in the US, 1 in Europe (Belgium), 1 in Singapore and more than 1000 employees. The company was sold to Danaher in March 2018 for 1.9 B\$. They ship more than 55.000 custom oligos daily.

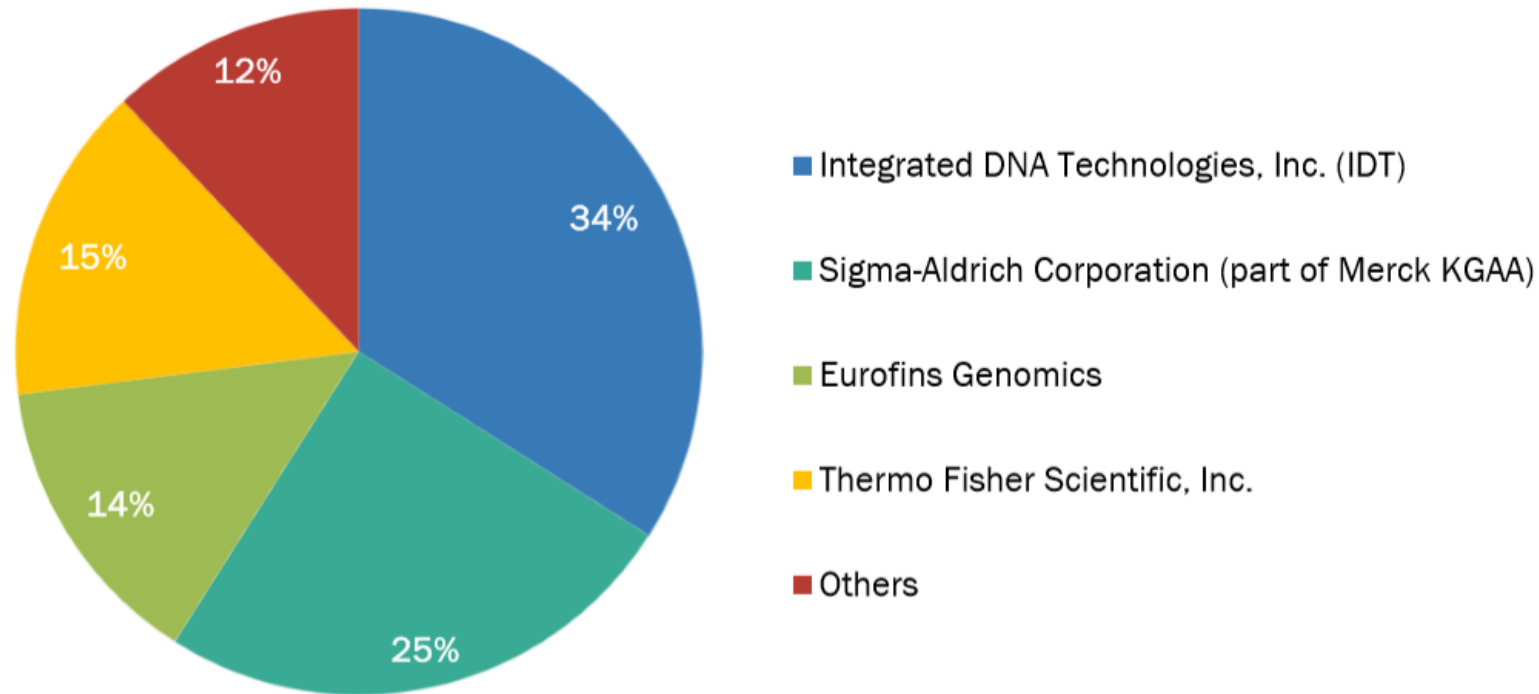
Drawback: According to our research, many customers demand faster primer availability, to be able to continue their research on the same day. Kilobasers desktop solution is at least 20x faster than any online service.

	Costs per base	Shipping, handling
IDT	0,25 €	18 €
Sigma Aldrich	0,41 €	5,24 €
Eurofins	0,49 €	9,76 €
Thermo Fisher	0,33 €	?



Competitors II

GLOBAL OLIGONUCLEOTIDE SYNTHESIS MARKET SHARE ANALYSIS, BY KEY PLAYER, 2015



Note: Other players include BioAutomation Corporation (U.S.), LGC Biosearch Technologies, Inc. (U.S.), Eurogentec (Belgium), GeneDesign, Inc. (Japan), GE Healthcare (U.K.), TriLink BioTechnologies (U.S.), Agilent Technologies (U.S.), Gen9, Inc. (U.S.), GenScript (U.S.), Nitto Denko Avecia Inc. (U.S.), ATDBio Ltd. (U.K.), Bio-Synthesis Inc. (U.S.), IBA GmbH (Germany), Gene Link Inc. (U.S.), and AITbiotech Pte. Ltd. (Singapore).



Competitors III

Hardware

Old-fashioned DNA synthesizers and their manufacturers experienced a major market shift in the past 25 years - not in their favour. When the internet and online services like IDT appeared, fewer and fewer labs were willing to deal with the high initial system costs of at least 35.000€ and especially the need for trained personal to operate these complex and error-prone systems. Internal synthesis departments were often slower than out-sourced services. Due to the lack of innovation in the old industry – that latest commercially available synthesizer for DNA primers was launched about 20 years ago – only four smaller manufacturers remain today: **GE Healthcare; K&A Laborgeräte; Polygen; Bioautomation.**

They represent less than 50 M\$ of the ~1.5 B\$ DNA primer market.

Kilobasers cartridge & microfluidics based system combines the speed of a personal DNA synthesizer with the convenience of online DNA services.



ABI 392 DNA Synthesizer



What about intellectual property or a copy?

Our patent „System and device for DNA synthesis“ is pending and was filed in february 2017.

Our cartridges are too complex to be easily copied and are electronically identified by our device.

BETRIFFT: Europäische Patentanmeldung 17157421.3
"System und Vorrichtung zur DNA Synthese"

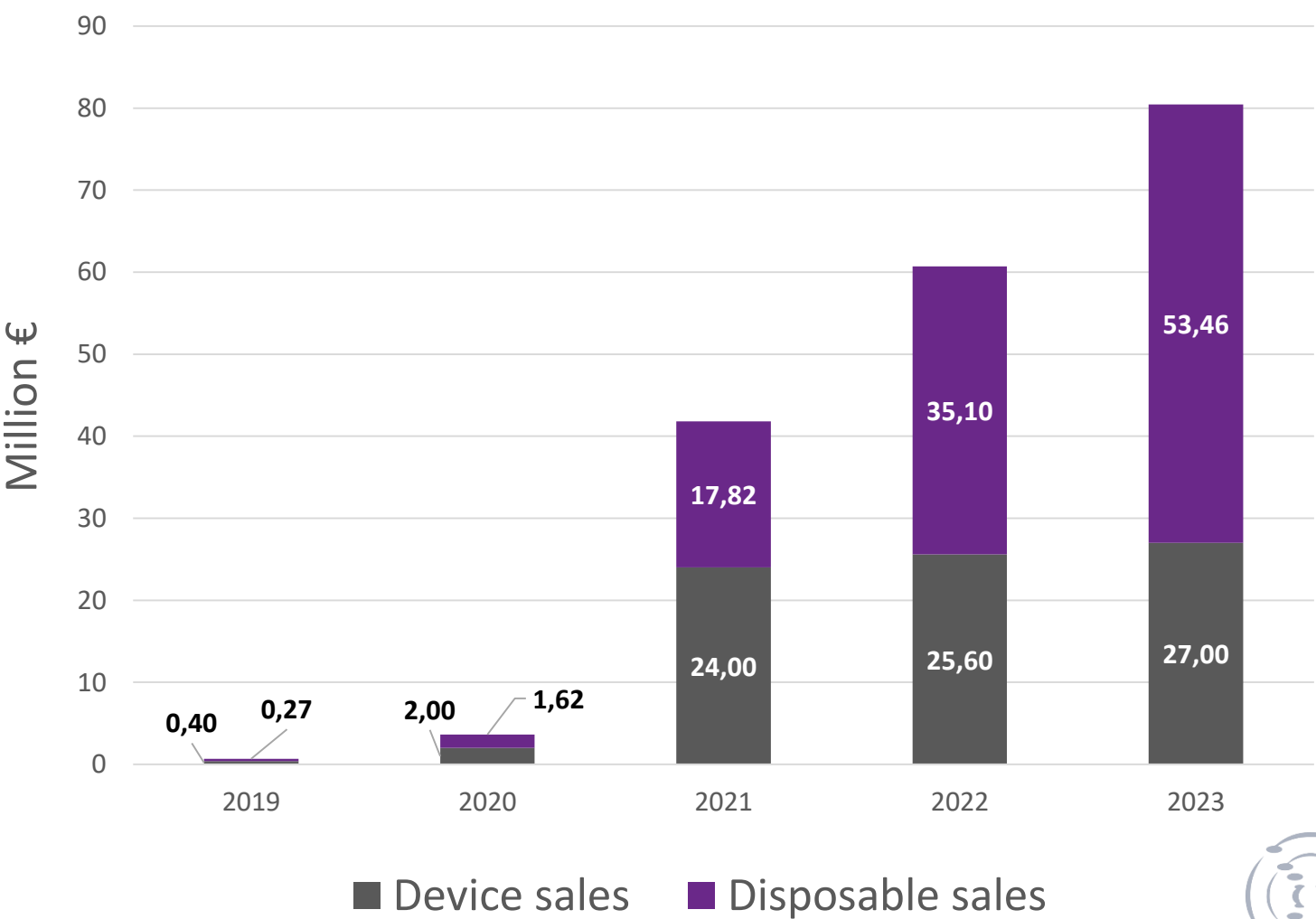
Sehr geehrter Herr Murer!
Sehr geehrter Herr Jost!

Obige Anmeldung wurde ordnungsgemäß eingereicht; die Anmeldedaten sind folgende:

Aktenzeichen:	17157421.3
Anmeldetag:	22. Februar 2017
Anmelder:	Briefcase Biotec GmbH

Our revenue forecast

While our mission in the first years is to sell a large amount of the low priced Kilobaser systems, the main revenue and profit comes in sales year 4 from the fast raising cartridge sales.



Why the money is in disposables

Pricing strategy - Recurring revenues

The currently dominating out-sourced synthesis providers compete in a price race to the button - which we luckily don't attend. The USP of our patent-pending system is in it's combination of unmatched speed and sweeping convenience – not necessarily low costs per primer.

A single researcher or even a whole team which gets regularly delayed for a day or more due to slow delivery, costs in the end way more than we could ever ask for our cartridges.

	Initial Kilobaser System	Disposables (cartridge + chips, for 500 bases)
Production costs	4.500€	30€
Revenue per unit	8.000€	300€
Profit per unit	3.500€	270€
Annual sales (per customer)	one time	18
Yearly revenue per system	-	5.400€
Sold systems (1st year)	50	900
(2nd year)	250	4.500
(3rd year)	3.000	54.000
Revenue (year 3)	24 M€	16 M€
Total profit (year 3)	10,5 M€	14,6 M€



Further business model considerations

Rental model

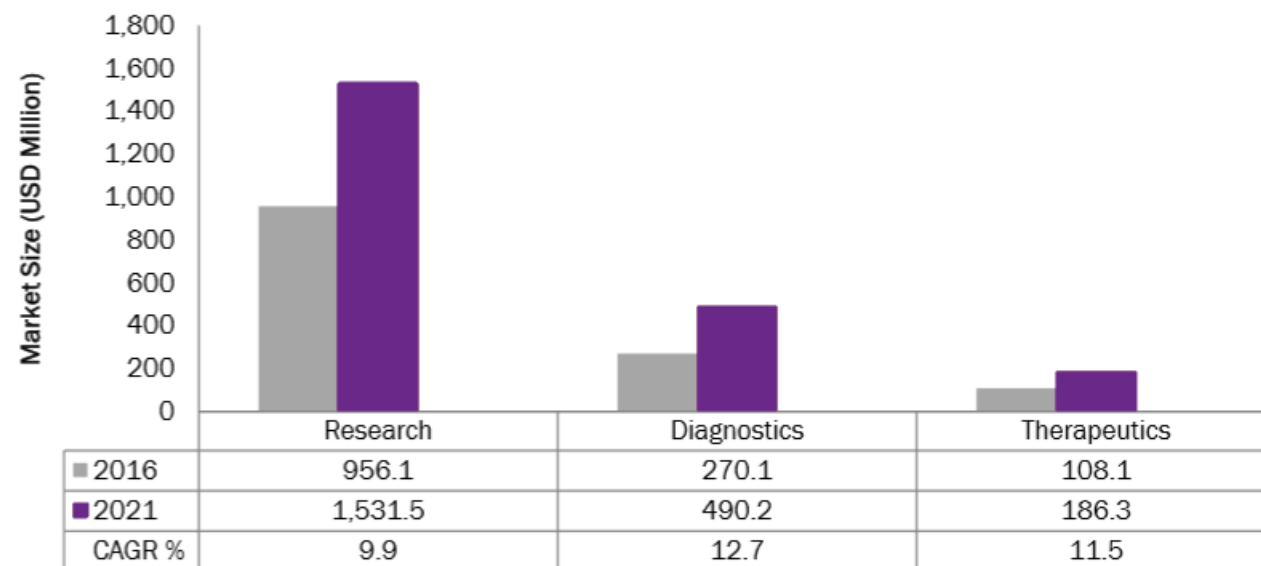
Apart from the classic razor-razorblade business model, we additionally plan to even lower the initial costs and overcome service issues by introducing a renting business model. Instead of paying 8.000€ initial costs, customers can choose to pay a monthly fee of 350€, where we guarantee that they will have a running machine at any time. This model is very valuable in our case – since high-tech lab machinery always needs maintenance after a certain time. This means downtimes for the customer and high technical support costs for us. We can overcome this by just sending the customers a new or refurbished machine, either when a machine failure appears or after a timeframe of max. 3 years. That way we can guarantee minimal downtimes, do not have to waste money for complex technical support and can make use of refurbished machines by renting them again.

Initial costs	0€
Kilobaser rental per month	350€
Disposables revenue per month	450€
Monthly revenue per device	800€

So who are our main customers?

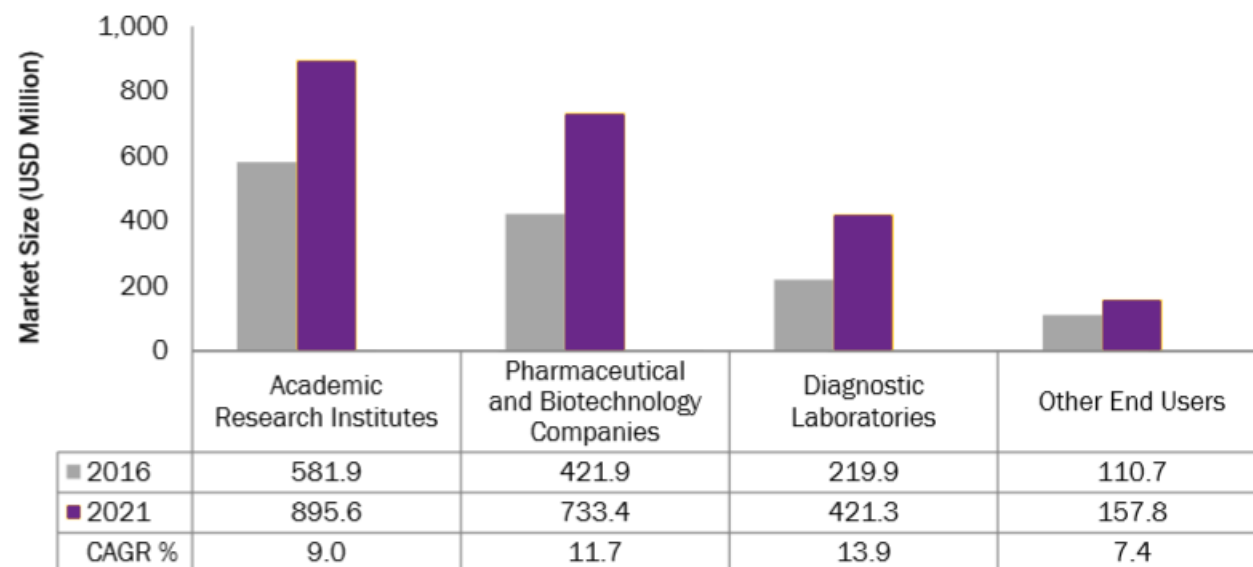
Oligos market by application:

Research is our main field of interest, since there is a frequent need for custom primers and it represents the largest customer segment. In contrast to that therapeutics ask for large volume synthesizing and diagnostics rely mostly on standardised primers.



End-user segment:

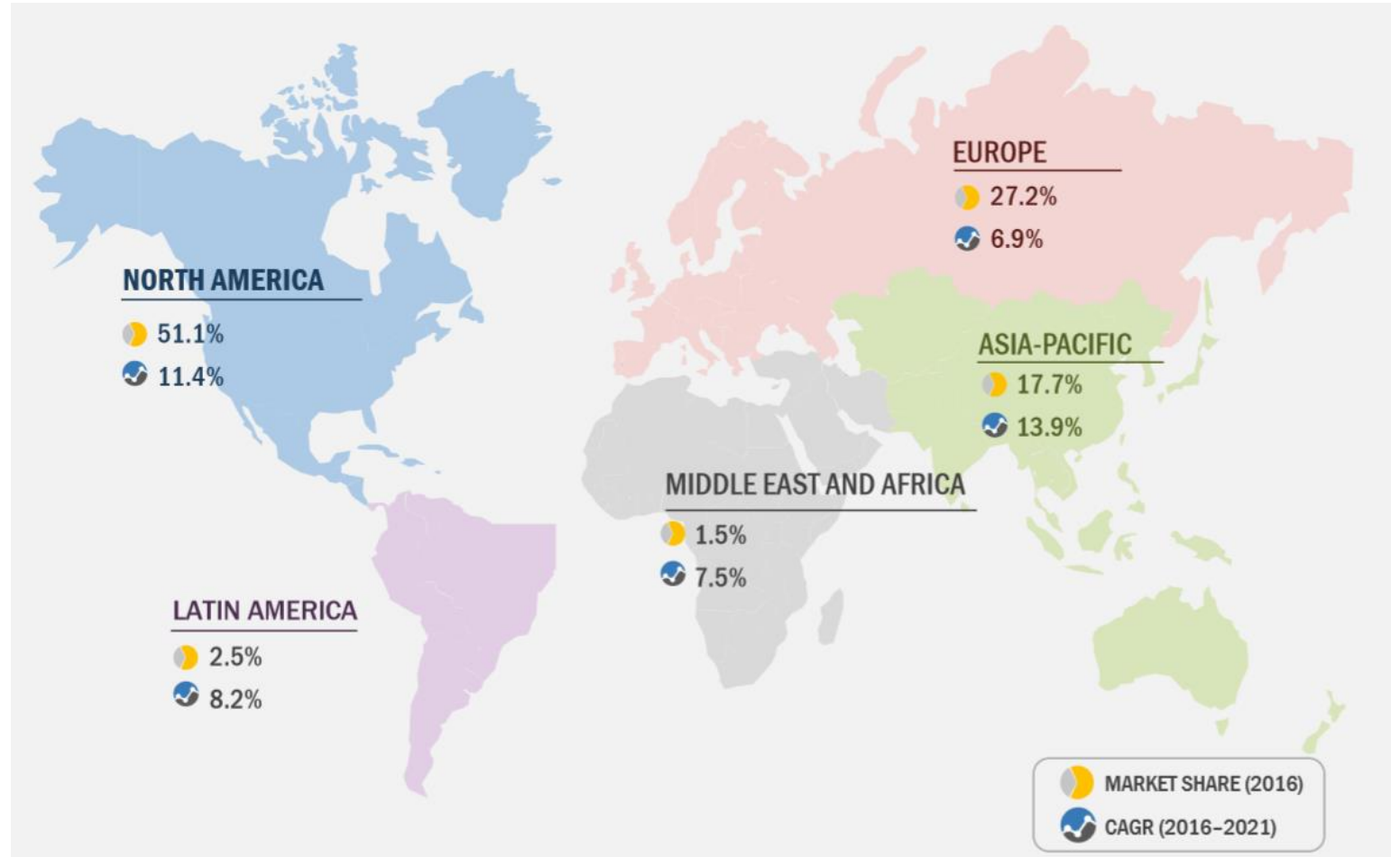
Academic Institutes with their vivid research activities and Pharma / Biotech with their need for security, highly efficient research and financial power represent the most interesting end-users.



Where are our customers?

North America holds with 51.1% the biggest oligo market share.

The Asian-Pacific region experiences the fastest growth with a CAGR of 13.9% and a market share of 17.7%.



Growth strategy

Our current focus is on optimising our prototypes and preparing for the small zero series of 7 devices in April 2018. Four of those we can ship in mid 2018 to early adopter customers. With the coming investment, we will hire additional 4 employees, built another 10 devices in house, while preparing for the manufacturing of the first series of up to 50 devices. Those we are planning to sell and distribute ourselves in 2019, while we are currently already establishing contacts and discuss with large, world-wide distribution partners. We are planning to sell the following series through our distribution partners and grow fast from there on.



Use of funds

The funds of the 2018 round will be used for the transition from prototype development to production, market entry & to scale quickly.

Production: 1,3M€

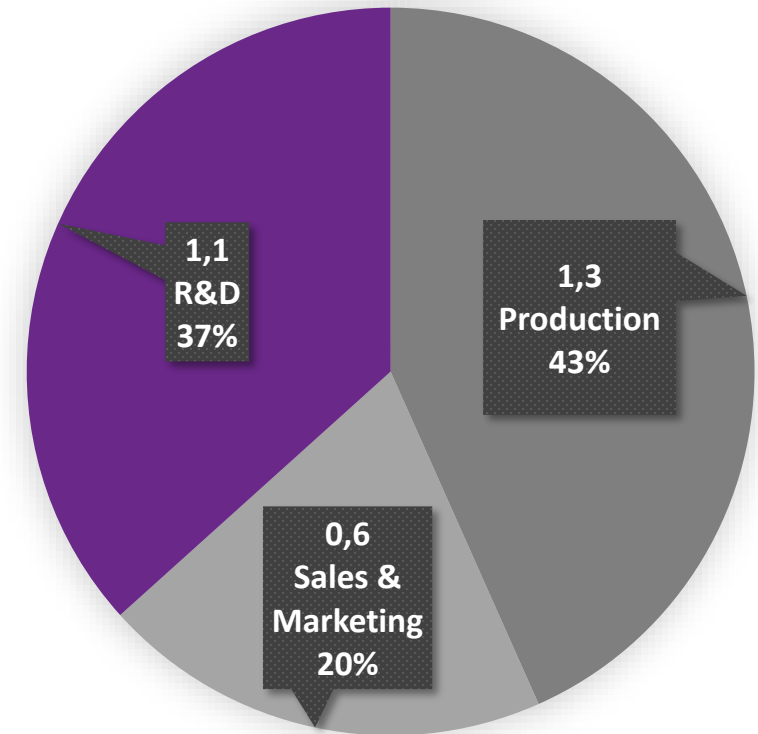
The money goes to 10 in-house built devices, followed by a first series of 50 devices built with a manufacturing partner and a second series of 150 devices. Estimated 4.000€ per device.

Sales & Marketing: 0,6M€

The money is dedicated to the sales, marketing, distribution of the first 50 devices to early adopters and their technical support as well as feedback analysis to further optimise the devices for the second series.

R&D: 1,1M€

Besides the on-going optimisations of the devices and disposables, we'll develop multi-column chips additionally to the current single column chips and work on RNA synthesis.



Employee growth

Current:

Alexander Murer - Co-founder, CEO, chief developer, Biotech
Bernhard Tittelbach – Co-founder, Electronics, Automatisisation
Martin Jost – Co-founder, Chemical, Software
Reinhard Diethhard – Mechanical
Anna-Valerie Edegger – Lab staff



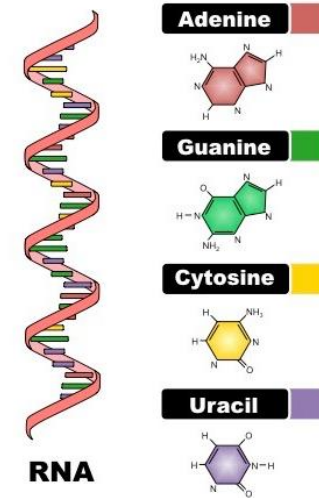
To be hired (2018)

Administration, Marketing – Customer feedback, CEO relieve, reports
Technician - Assembly, Testing
Sales – Customer
Lab staff – Testing, Analysis

What's next?

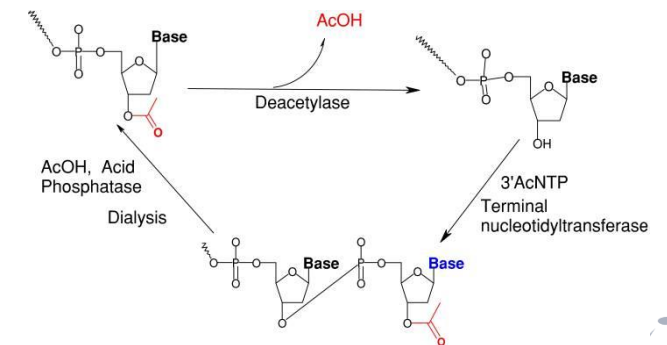
RNA synthesis

RNA synthesis is a worthwhile next target for us. While a DNA primer costs just about 0,25\$ per base, RNA is still expensive: 5,50\$ per base! Also it is a lot less stable than DNA and therefore ideally synthesized right where and when you need it.



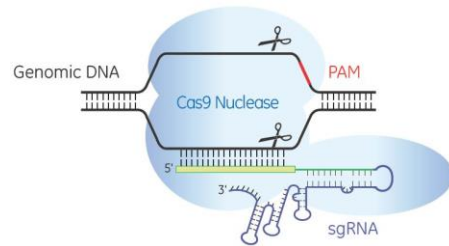
Enzymatic DNA synthesis

Enzymatic synthesis could one day disrupt the DNA synthesis business. We are in contact with several leading researchers in the area and can easily adapt our fluidic system to enzymatic synthesis in future.

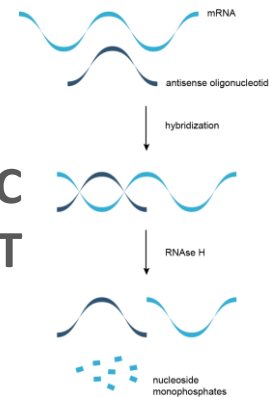


Cutting-edge oligo application fields

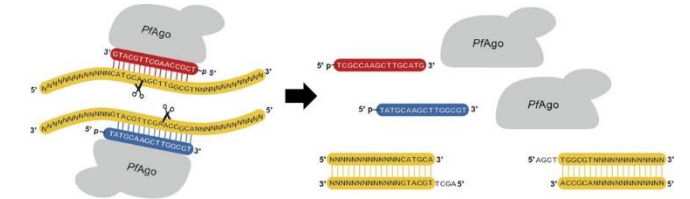
CRISPR / CAS 9



OLIGO THERAPEUTIC DEVELOPMENT



DNA GUIDED ARES





KILOBASER SURVEY

A total of 67 individuals participated in the survey. The survey was openly distributed via our media channels (Facebook, Twitter, mailing list), sent to colleagues all over the world and handed out to individuals during bio conferences, university & company visits. The period was from 1st May 2017 until 15th June 2017.



1.) Do you work or have you been working with DNA/RNA primers at all?

YES

96,9%



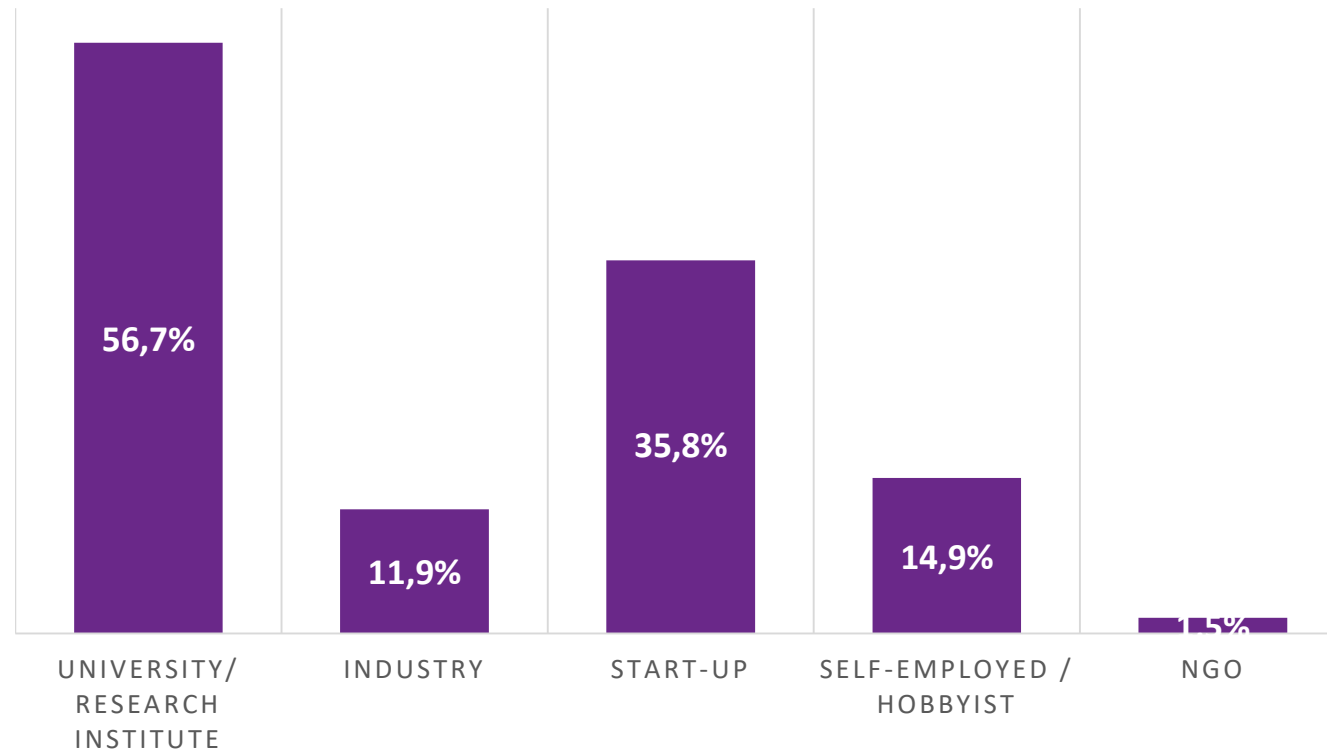
NO

3,1%

The purpose of question 1.) was to check whether the participants fit this survey. Answers: 65



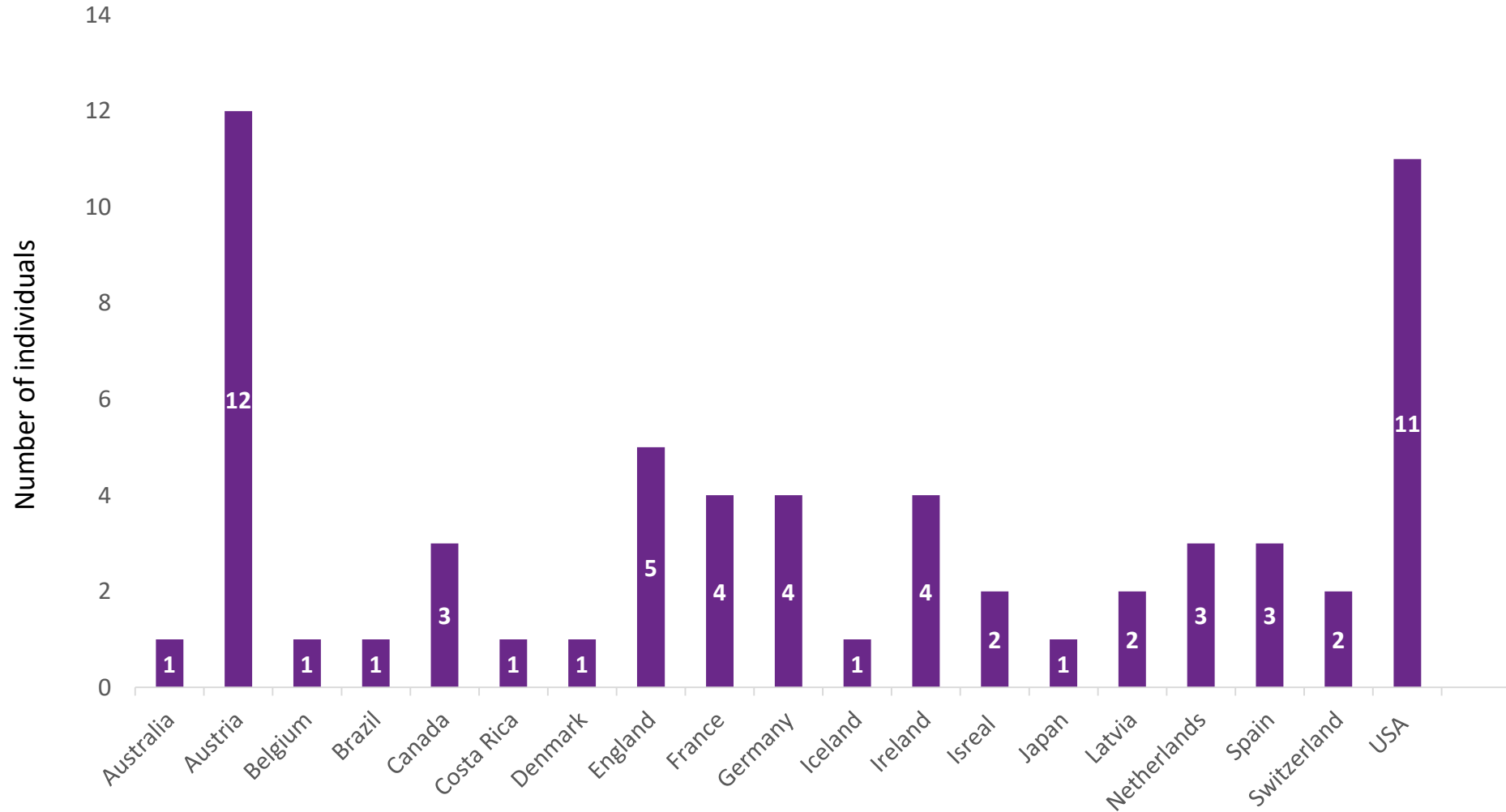
2.) Where do you work?



Most of the participants work in the university or research institutes, followed by start-ups. Answers: 67



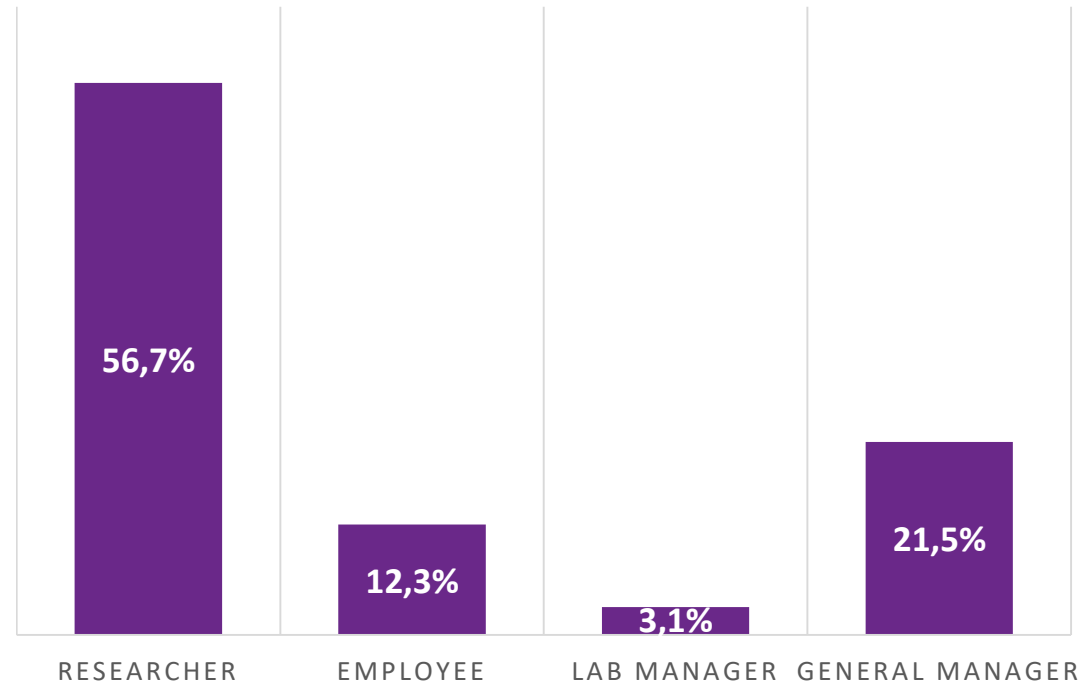
3.) Where do you work?



Apart from our obvious strong connection to Austria being our homeplace, we could find numerous participants from almost any parts of the world. Answers: 63



4.) What is your current position?



Answers: 63



5.) Does your company/institution run a DNA synthesizer for your needs?

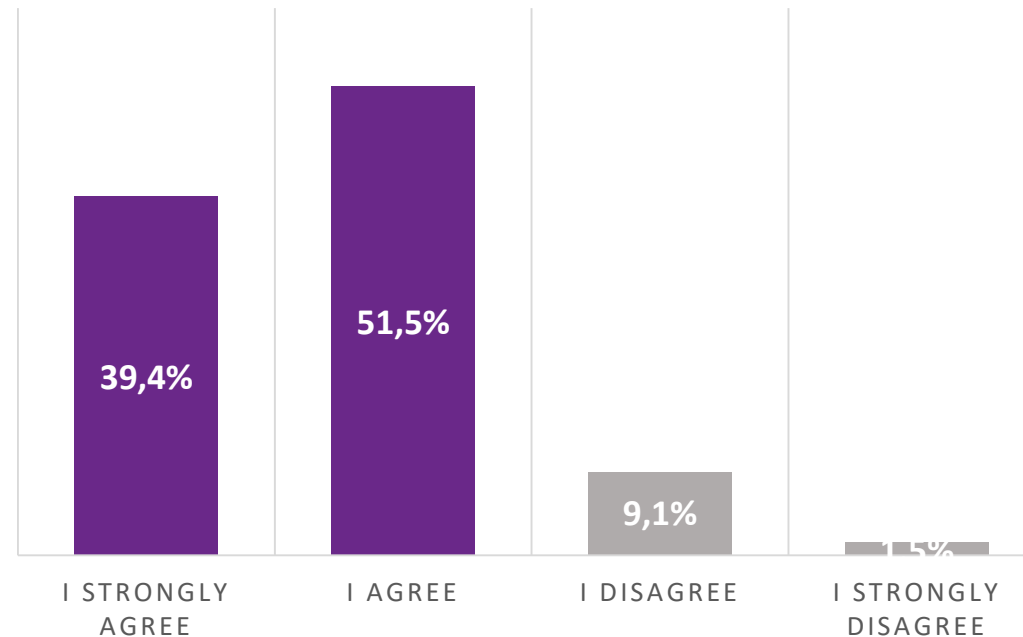
YES 17,9%

NO 82,1%

The purpose of question 5.) was to check how many participants actually had access to in-house DNA synthesis. Apart from the low number we also learned via qualitative research, that even in-house synthesis takes mostly several days due to waiting cues and slow in-house processes. Answers: 67



6.) Could fast DNA primer availability in less than 2 hours accelerate/aid your work?

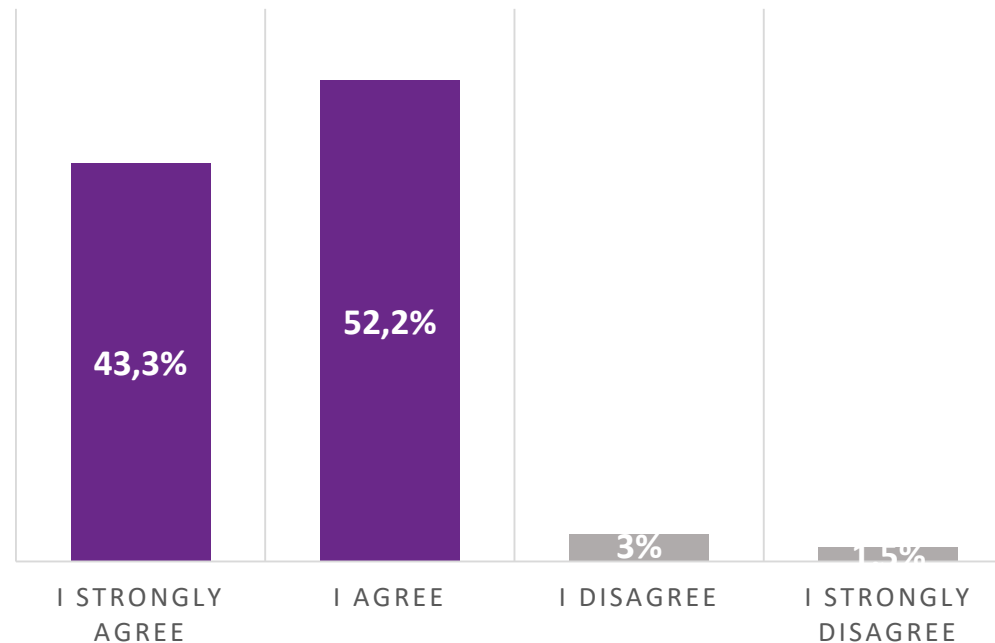


The purpose of question 6.) was to understand if there is a need for Kilobaser. Happily more than 90% of the participants obviously suffer from slow out-sourced primer delivery or slow in-house synthesis.

Answers: 67



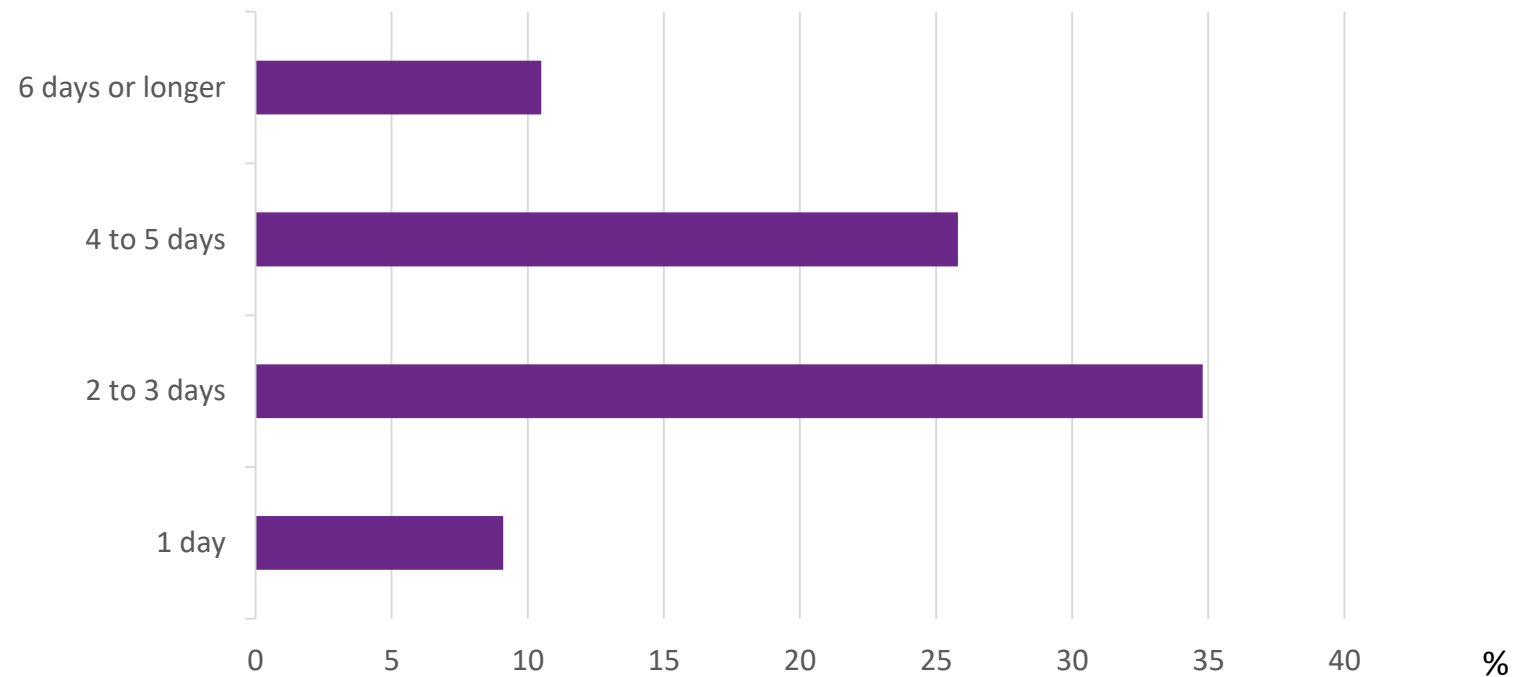
7.) Would you consider purchasing a DNA synthesizer if it was as easy to use as a Nespresso machine and produced primers in just 2 hours?



The purpose of the follow up question 7.) was to investigate if the participants were willing to invest in a device like Kilobaser. Again, more than 90% showed interest. Answers: 67



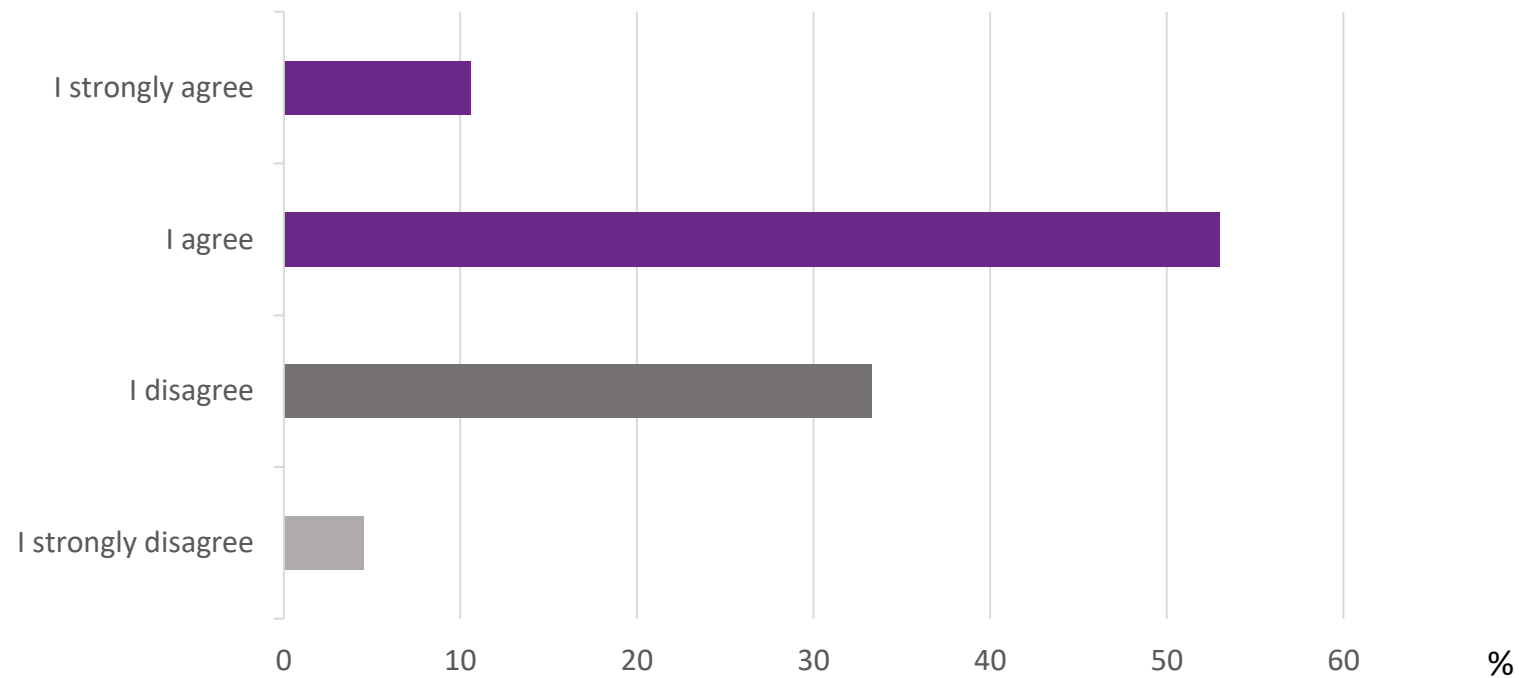
8.) The average delivery time when I order primers (max 45 bases) is:



Most participants have to deal with days long delays when they order primers, due to several reasons such as: High delivery costs, remote locations, internal pooling policies, slow suppliers, psychological avoidance of single costs. With the personal synthesizer Kilobaser researchers can avoid all this costly delays...



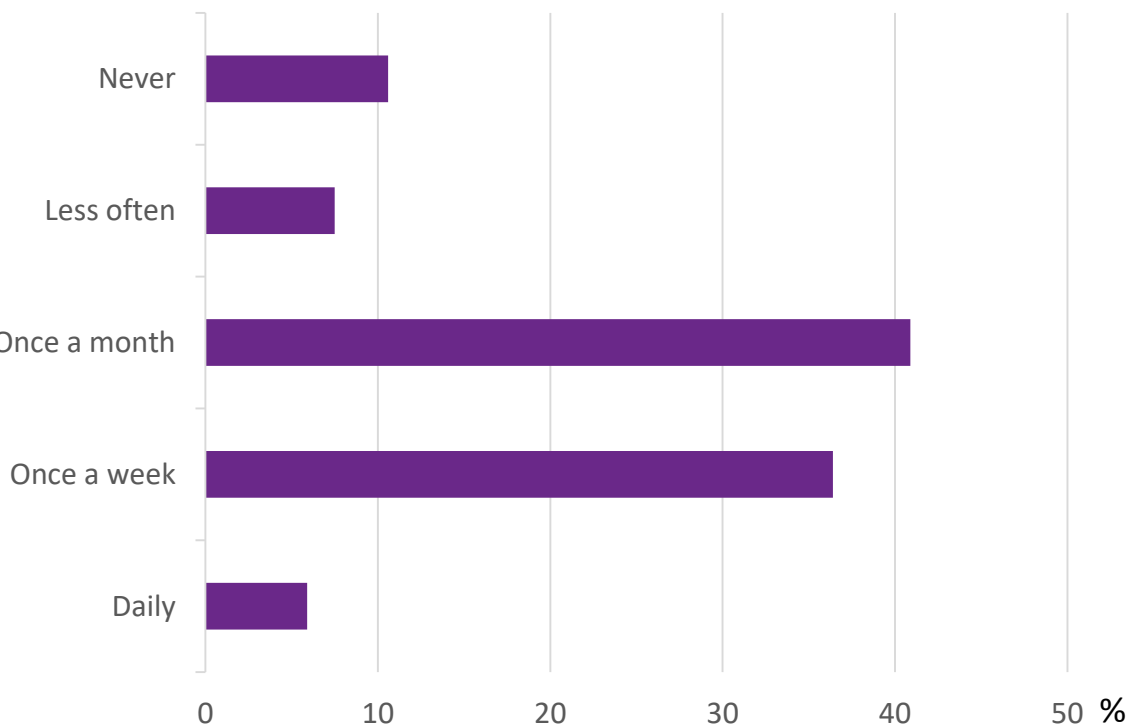
9.) Your research work is delayed through slow primer delivery...



....question 9.) shows that actually most participants suffer from slow DNA primer delivery. Answers: 66

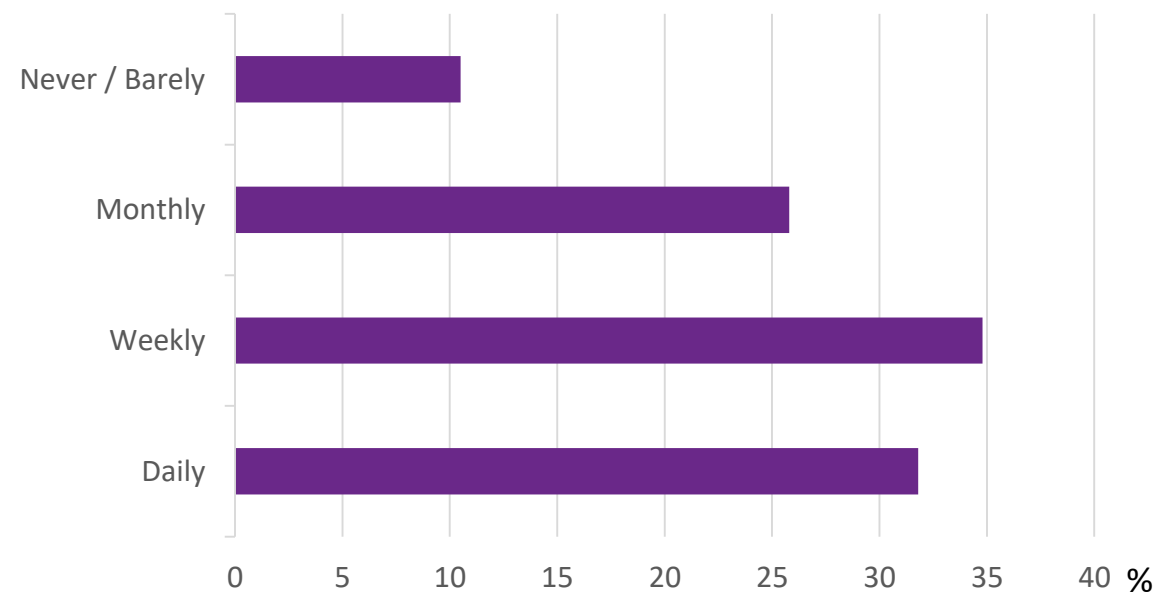


10.) How often do you order DNA primers from external companies?

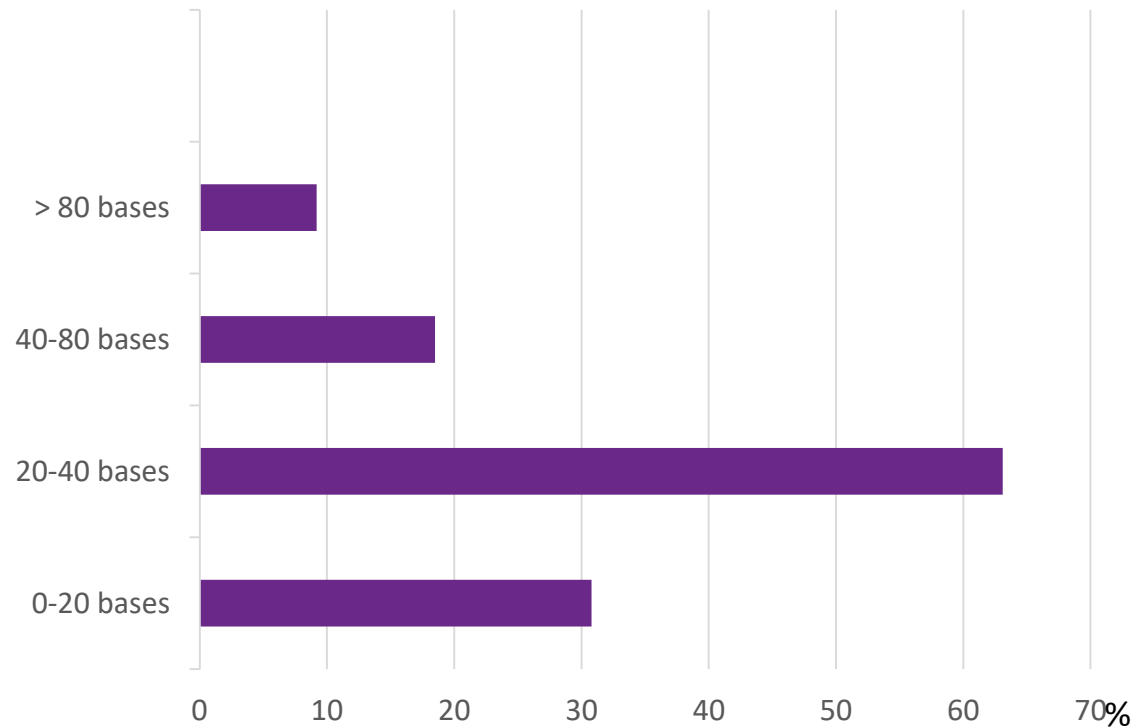


Answers: 66

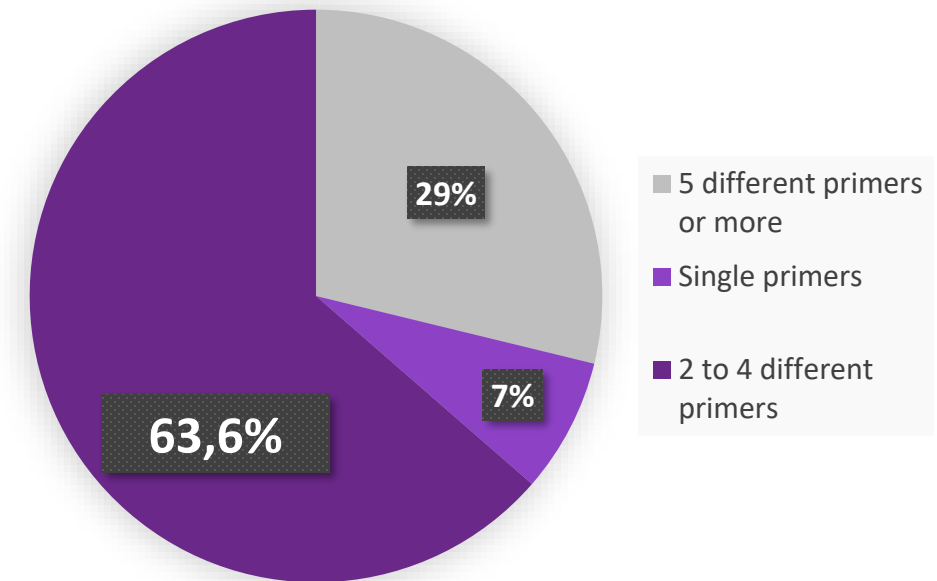
11.) How often do you work with DNA primers?



12.) What is the average length of DNA primers you work with?



13.) When you are in need of primers, do you usually need/order several or just a single primers?



The purpose of questions 12.) and 13.) was to discover if Kilobasers system design met the needs of the largest market segment. And indeed, the highest demand is for rather short oligos of up to 80 bases and 2 to 4 different primers at once. For that our system is perfectly suitable. Answers: 66

