



# Tecan Group Capital Markets Day 2019

MÄNNEDORF, CH - JUNE 6, 2019



# Agenda Capital Markets Day 2019

Time	Duration	Topic	Presenter
8:45 – 10:00		<b>Empowering the Century of Biology</b> <b>Application focus: Genomics</b> Tecan's offering and strategy Customer presentation: Ambry Genetics	Achim von Leoprechting, CEO  Klaus Lun, EVP, Head Life Sciences Business Joy Crandall, Director of Assay Automation
10:00 – 10:15	15 min	Coffee Break	
10:15 – 11:15		<b>Application focus: Cell &amp; Tissue Analysis</b> Tecan's offering and strategy  <b>Application focus: Protein Analysis</b> Tecan's offering and strategy Customer presentation: The Binding Site	Klaus Lun, EVP, Head Life Sciences Business  Klaus Lun, EVP, Head Life Sciences Business Stephen Harding, CSO
11:15 – 11:30	15 min	Coffee Break	
11:30 – 13:00		<b>Tecan's Enabling Competencies</b> Innovation for the Century of Biology Operational Efficiency as the foundation  <b>Focus topic: Partnering Business</b> <b>Summary &amp; Close</b> <b>Q&amp;A</b>	Wael Yared, designated CTO and Head R&D Ulrich Kanter, Head Operations & IT (presented by Achim von Leoprechting, CEO)  Achim von Leoprechting, CEO Achim von Leoprechting, CEO All







# Empowering the Century of Biology.

**DR. ACHIM VON LEOPRECHTING**  
**CEO**



# Tecan Benefitting from Various Megatrends

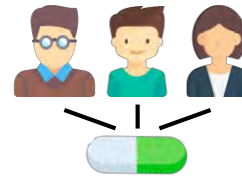
POPULATION  
GROWTH  
AND THE  
AGING  
POPULATION



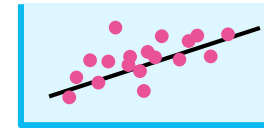
HIGH LEVELS OF INVEST-  
MENT IN HEALTHCARE  
AND LIFE SCIENCE  
RESEARCH IN EMERGING  
MARKETS



DEVELOPMENT OF  
TARGETED PHARMA-  
CEUTICALS AND USE  
OF COMPANION  
DIAGNOSTICS



EXPLOSION OF  
BIOLOGICAL  
KNOWLEDGE IS  
LEVERAGED INTO  
APPLIED MARKETS



GENETIC TESTING  
DIRECTLY  
FOR  
CONSUMERS



INCREASING TEST VOLUMES

**Need for increased...**

- Productivity
- Reproducibility and standardization
- Precision
- Robustness of processes
- Regulatory compliance



**Laboratory Automation**





# Not Too Long Ago: The Human Genome Project

THE WORLD'S LARGEST COLLABORATIVE BIOLOGICAL PROJECT EVER

## All About The Human Genome Project (HGP)



The Human Genome Project (HGP) was one of the great feats of exploration in history - an inward voyage of discovery rather than an outward exploration of the planet or the cosmos; an international research effort to sequence and map all of the genes - together known as the genome - of members of our species, *Homo sapiens*. Completed in April 2003, the HGP gave us the ability, for the first time, to read nature's complete genetic blueprint for building a human being.



**1990** | The Human Genome Project begins

**1999** | Chromosome 22 first human chromosome to be decoded

**2001** | First draft of the human genome released

**2003** | Human Genome Project completion announced

**2000** | Genome sequence of model organism fruit fly reported

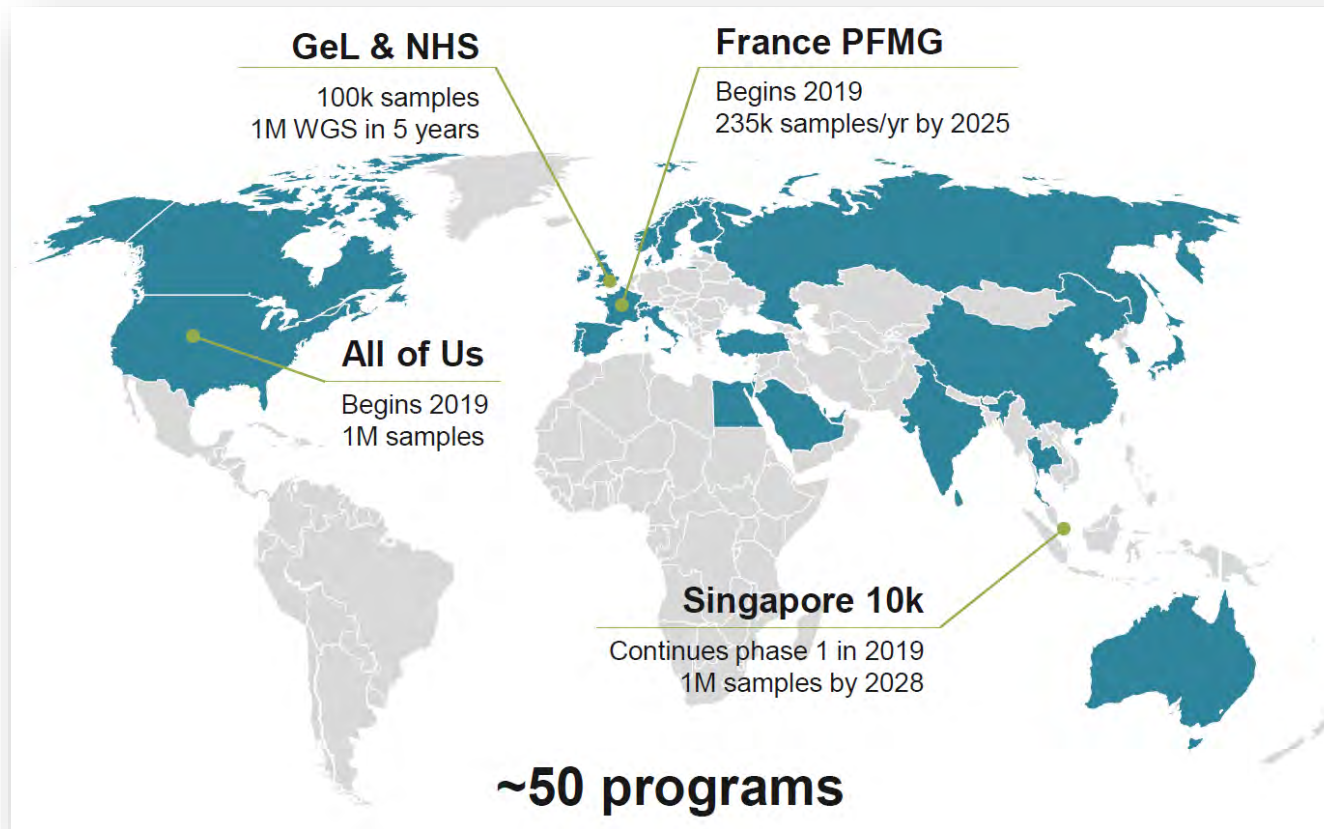
**2002** | Mouse becomes first mammalian research organism with decoded genome

Source:© NIH, National Human Genome Research Institute, <https://www.genome.gov/10001772/all-about-the--human-genome-project-hgp/#al-2>



# Population Sequencing Programs in Numerous Countries

SEVERAL MILLIONS OF HUMAN GENOMES TO BE SEQUENCED IN THE COMING 5-10 YEARS



- Data of millions of genomes will benefit
  - Rare disease diagnostics
  - Drug discovery
  - Carrier status
  - Pharmacogenomics
  - Population wide susceptibilities
- Already today, Population Sequencing programs are significantly increasing diagnosis rates for rare diseases

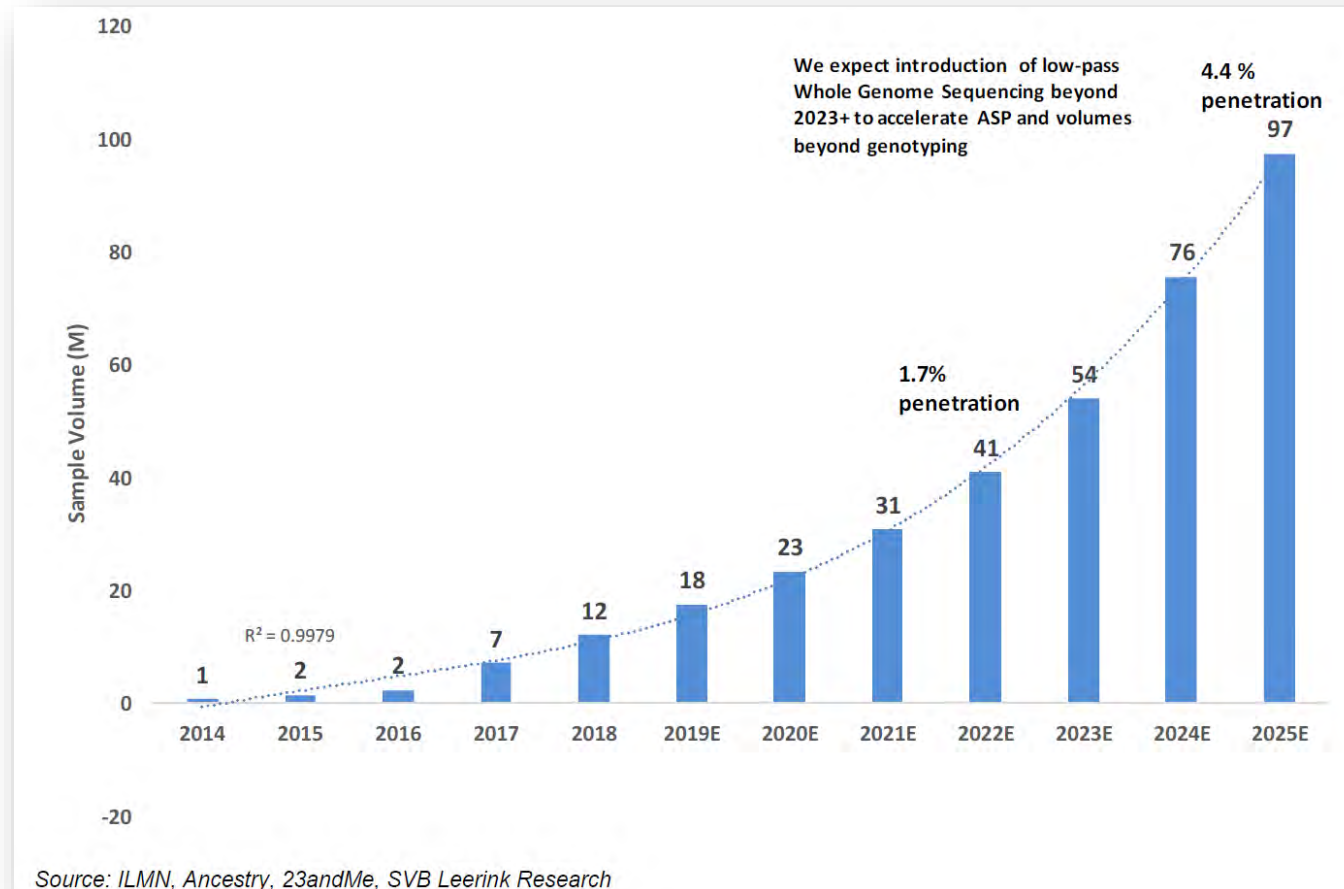
Source:© 2019 Illumina Inc., Enabling the New Possible, Barclays Global Healthcare Conference, 13 March 2019





# Consumer Genomics Sample Volumes Thriving

PROBABLY THE STRONGEST EVIDENCE WE ARE TRULY LIVING IN THE CENTURY OF BIOLOGY



- **Ancestry research**  
(e.g. ancestry composition, DNA family, relative finder tool)
- **Genetic health risks**  
(genetic markers associated with risks for certain conditions e.g. BRCA1/BRCA2)
- **Wellness**  
(e.g. food intolerances, genetic weight)
- **Carrier status**  
(«carrier» for certain inherited conditions, e.g. cystic fibrosis, sickle cell anemia)
- **Traits**  
(likelihood of having certain characteristics)

Source:© 2019 SVB Leerink LLC., What's in Your DNA? Consumer Genomics Market Poised to Deliver Longer-term; March 27, 2019



# Tecan Competencies Empowering the Century of Biology

FROM DISCOVERY OF NOVEL MEDICATIONS ALL THE WAY TO BETTER DIAGNOSIS OF DISEASES

## HEALTHCARE USE

### Better...

- understand
- diagnose
- and treat

Cancer

Infectious  
Diseases

Hereditary  
Diseases

Rare  
Diseases

and also  
applies to  
other  
markets

Metabolic  
Diseases

AND MANY MORE

## APPLICATIONS

- Genomics
- Protein analysis
- Cell & tissue analysis

## DETECTION & ASSAY TECHNOLOGIES

- Sequencing
- PCR
- Mass Spectrometry
- Immunoassays
- Imaging
- Advanced Staining

## TECAN'S ENABLING COMPETENCIES

- Applications and Workflows
- Robotics and Automation
- Software and Informatics
- Detection and Imaging
- Precision Handling of Liquids
- Reagents and Consumables

### All built on a robust foundation of:

- Product Development and Systems Integration Expertise
- Quality Management System
- Regulatory Expertise
- Efficient Operations





# Tecan at a glance

~1'800 professionals  
"Always there for you"



**66%** Men  
**34%** Women

A diverse education level



**10%** PhD  
**31%** Scientists  
**29 %** Engineers

Application expertise  
covering several fields



>550 application experts

In **genomics**, **cell biology**, **mass spectrometry** and more.



We spend more  
than **85'000** hours  
helping our  
**customers** with  
applications &  
trainings

From research to clinics

60%

CDx

40%

Bio/Pharma Academia



**Many thousands** of  
research and clinical  
labs

Innovation



**600+** Patents  
to foster new  
innovative  
solutions

Our technology is inside many leading diagnostic players

 **Abbott**

 **Dako**  
Applied Technology Solutions

**Ortho Clinical Diagnostics**

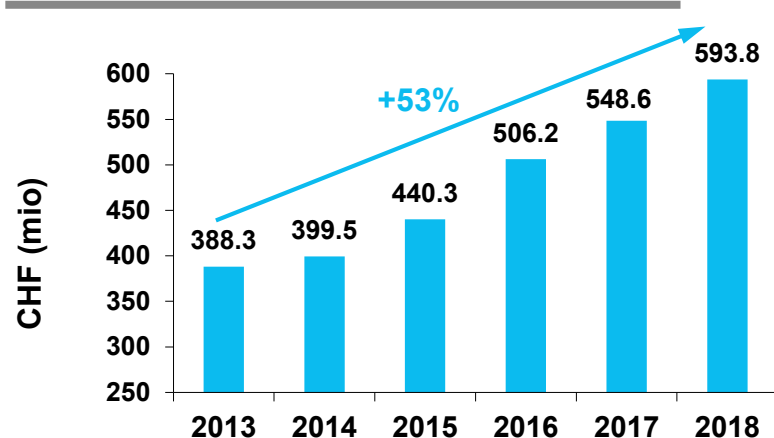
**Singulex**

... and many more

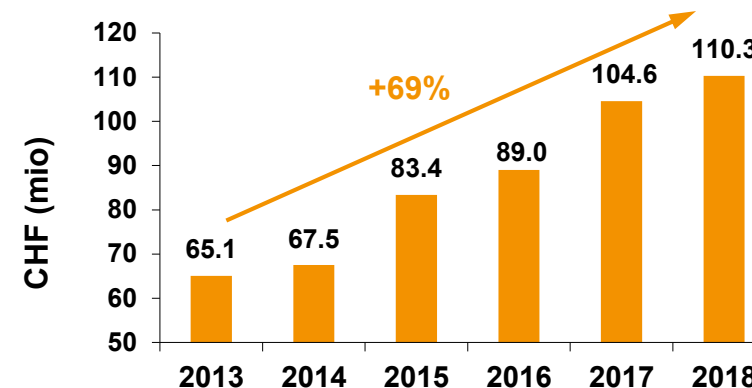
# Successful Financial Performance in Recent Years

MEGATRENDS TRANSLATING INTO GROWTH OPPORTUNITIES

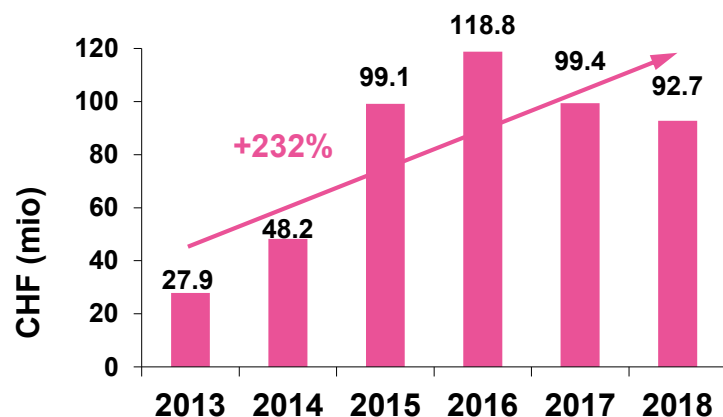
## SALES DEVELOPMENT



## OPERATING PROFIT (EBITDA)

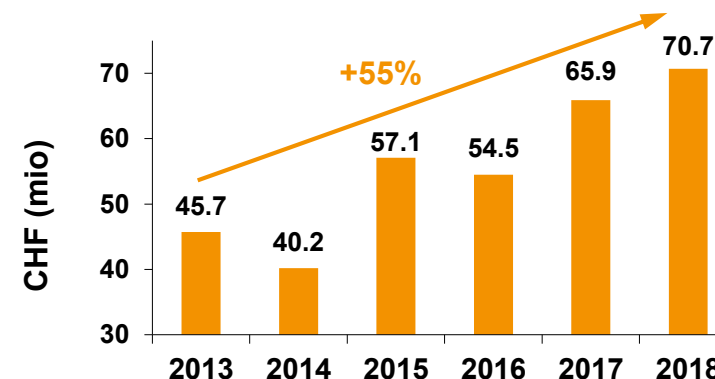


## OPERATING CASH FLOW



All figures are as reported,  
non-adjusted

## NET PROFIT

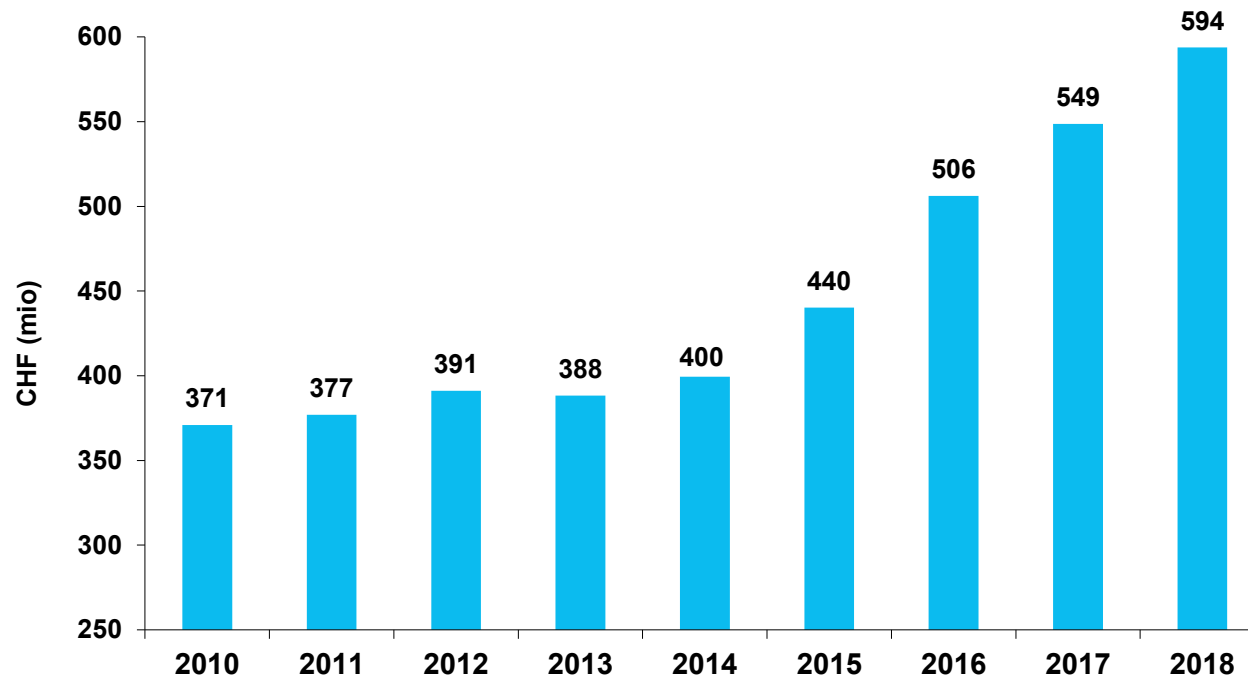




# Delivering Accelerated Growth

## REFINED STRATEGY AND ITS DEPLOYMENT PAYING OFF

### SALES DEVELOPMENT



- Sales up by more than 50% since 2013
- Around two thirds of the increase derived from organic growth
- Major new instrument platform launches in both business segments
- Regional expansion, especially in China
- Expanding addressable market and recurring revenues through targeted acquisitions
- Offering complete solutions for select application areas

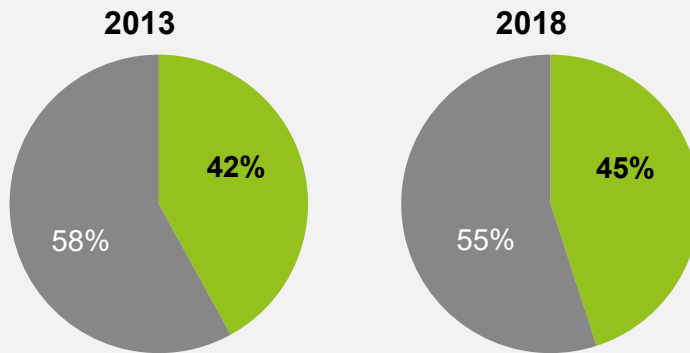


# Delivering Accelerated Growth

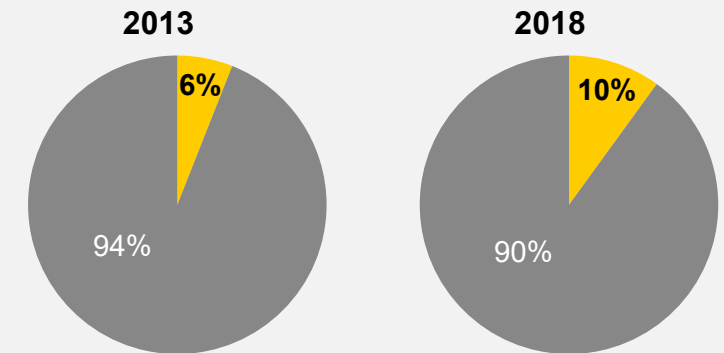
FOCUSING ON HIGHER GROWTH AREAS AND REGIONS – COMPLEMENTED BY M&A

## ABOVE AVERAGE GROWTH FROM<sup>1</sup>

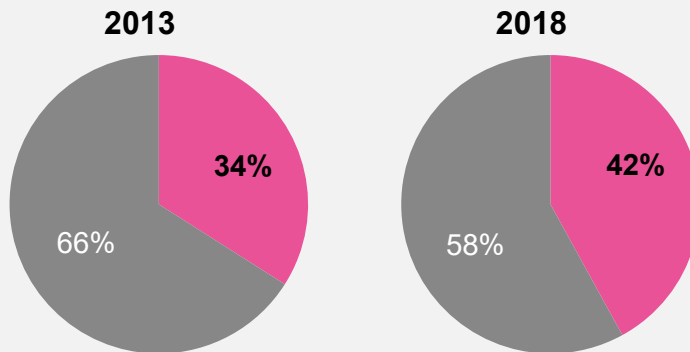
### Partnering Business



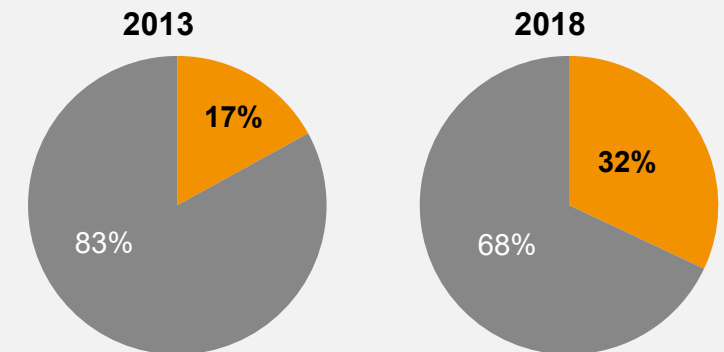
### China



### Recurring Revenues



### Genomics within Life Sciences Business (as % of segment sales)

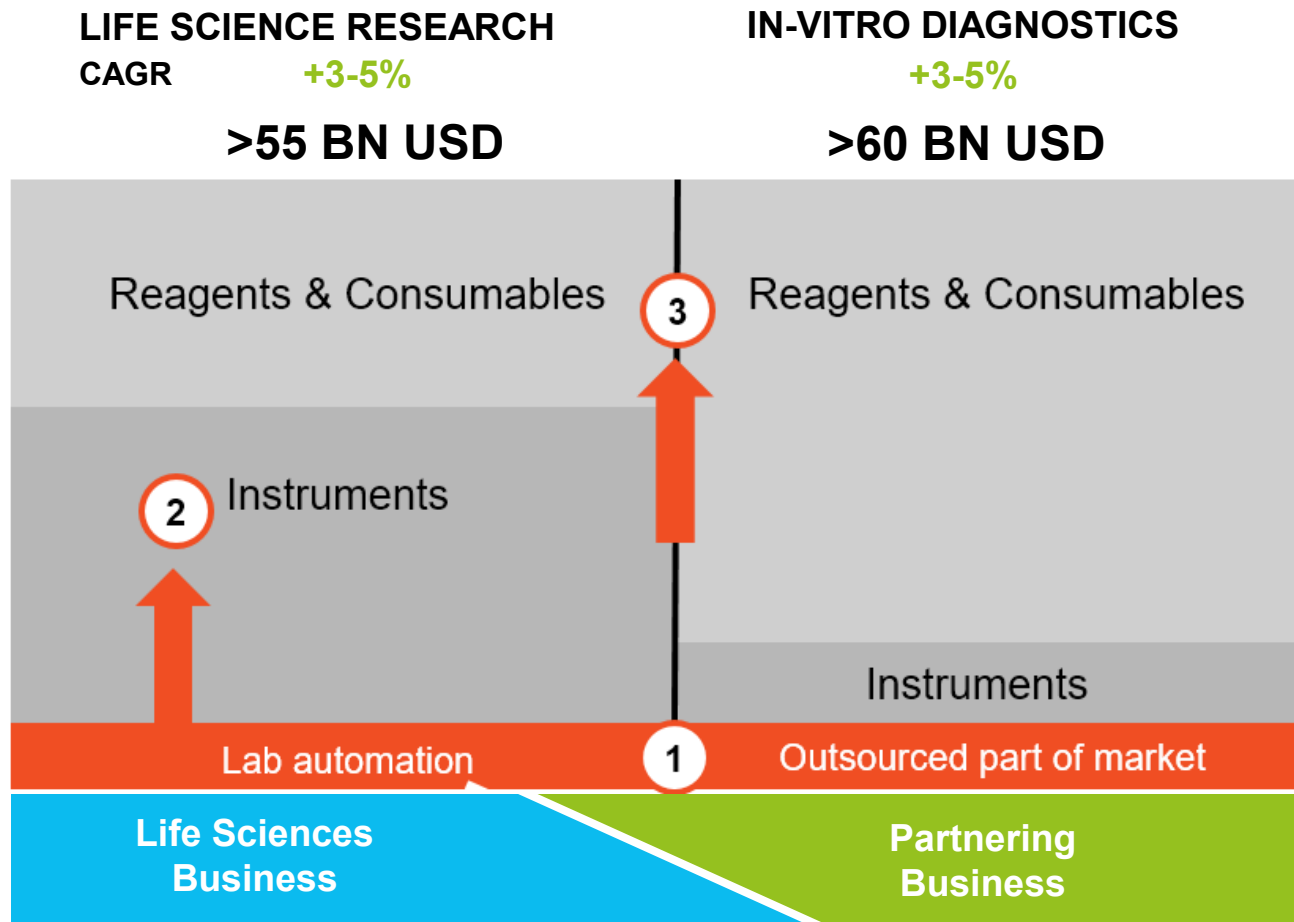


<sup>1</sup> Each chart as a % of total Group sales in CHF, unless otherwise stated; including acquired businesses



# Continuing to Deploy Successful Corporate Strategy

FOCUSING ON HIGHER GROWTH AREAS AND REGIONS – COMPLEMENTED BY M&A



## STRATEGIC PILLARS

- 1 Scale & capability
- 2 Build additional pillars and complete portfolio
- 3 Offer solutions in selected areas

## COMBINATION OF ORGANIC GROWTH AND M&A

- In all pillars, a combination of organic growth and M&A will continue to play a role
- Special focus for M&A on pillar 3: Reagents & Consumables

# Focus on Key Application Areas for Future Growth

FROM DISCOVERY OF NOVEL MEDICATIONS ALL THE WAY TO BETTER DIAGNOSIS OF DISEASES

## HEALTHCARE USE

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- Sequencing
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- Mass Spectrometry
- Immunoassays
- Imaging
- Advanced Staining

## TECAN'S ENABLING COMPETENCIES

- Applications and Workflows
- Robotics and Automation
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### All built on a robust foundation of:

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# Transition from Research to Diagnostics

TECAN HAS A UNIQUE POSITION TO BRIDGE FROM RESEARCH TO DIAGNOSTICS SETTINGS

LIFE SCIENCE RESEARCH



LAB DEVELOPED TESTS (LDT)



IN-VITRO DIAGNOSTICS

Life Sciences  
Business

Partnering  
Business

Empowered with Tecan.

Covering individual steps of a  
specific workflow

Sample-to-Result Solution

## EXAMPLES

- Next-Generation Sequencing (NGS)
- Mass Spectrometry
- Liquid Biopsies / Circulating Tumor Cells (Oncology / NIPT / Infectious Diseases)
- Tissue Pathology (IHC, ISH, NGS, MS)
- Ultra-Sensitive Biomarker Detection and many more...





## Focus on Key Application Area: Genomics

**FROM DISCOVERY OF NOVEL MEDICATIONS ALL THE WAY TO BETTER DIAGNOSIS OF DISEASES**

## HEALTHCARE USE



## APPLICATIONS

- **Genomics**
- Protein analysis
- Cell & tissue analysis

## DETECTION & ASSAY TECHNOLOGIES

- **Sequencing**
  - **PCR**
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## AND MANY MORE

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		<b>Focus topic: Partnering Business</b>	Achim von Leoprechting, CEO
		<b>Summary &amp; Close</b>	Achim von Leoprechting, CEO
		<b>Q&amp;A</b>	All



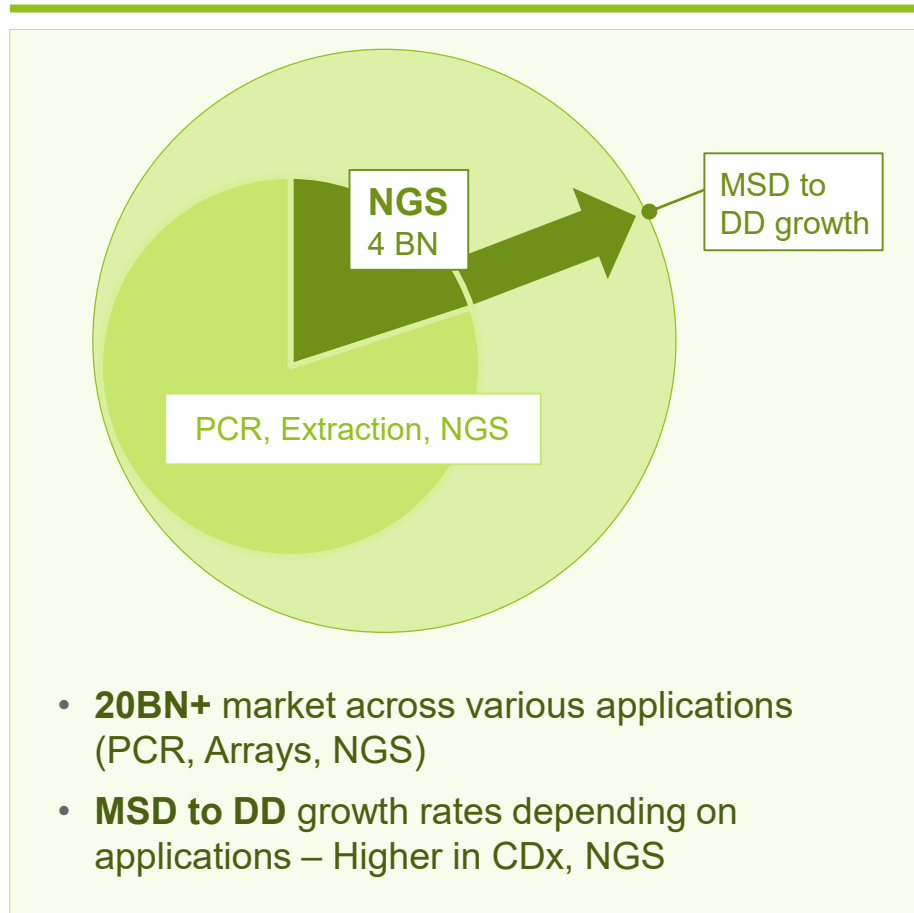
# Genomic offering and strategy

**DR. KLAUS LUN**  
**EVP HEAD OF LIFE SCIENCES BUSINESS**





# Genomics is a rapidly growing market



## CORE TRENDS



- Genomics has matured in the research area and is rapidly finding its way into Clinical Applications



- Uptake of NGS in the Clinics
- Microbiome interest in Clinical Research
- Single Cell analysis



- Direct-To-Consumer, genetic information offering to consumers (cancer testing, family ancestry, health, traits)



- Improved and faster technology for gene-editing. Uptake in clinical research and Agricultural Biotech



- New area for Oncology and Reproductive Health (NIPT)

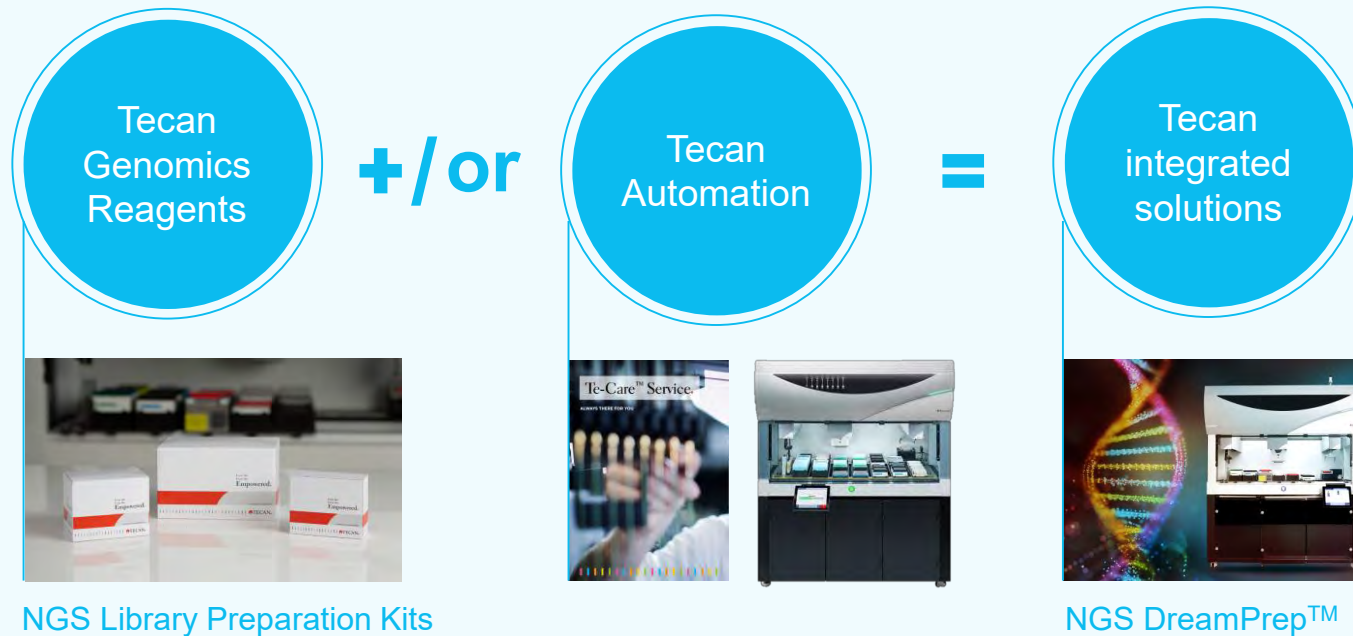


# Genomic strategy at Tecan

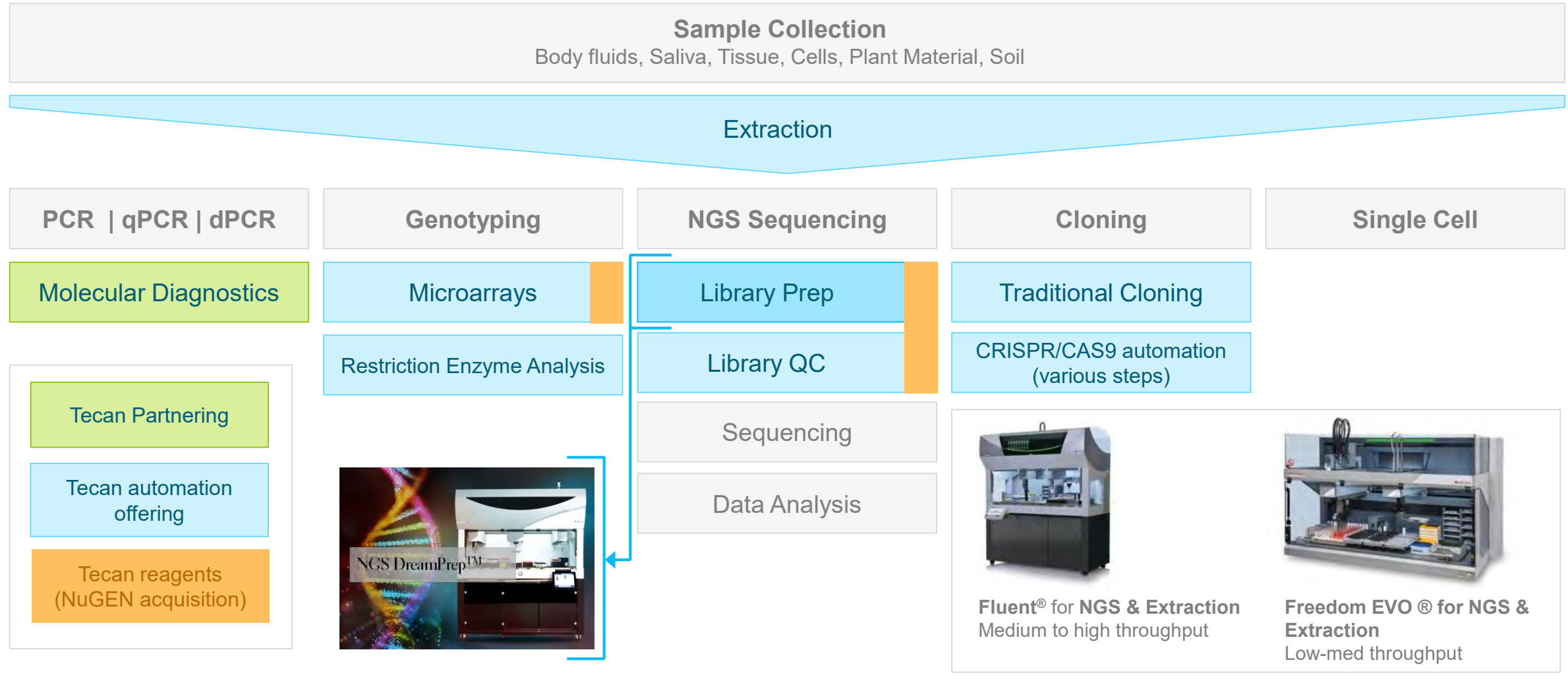
Within Genomics, Tecan will provide sample prep solutions for NGS, PCR and Extraction for all major customer types

## CORE PILLARS

- Expand **NGS reagent portfolio & footprint**
- Develop **new work-stations** for genomic sample preparation
- Launch **new solutions**
- Continue to sell reagents to 3<sup>rd</sup> party platforms
- Enable **Partnering projects**



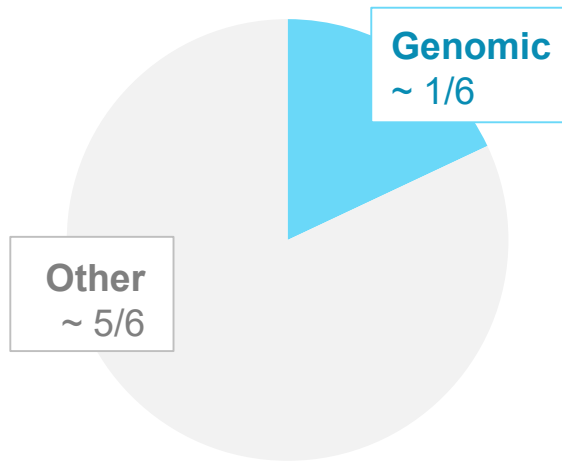
# Genomic workflows and what it covers today



# Genomic is a significant growth contributor for Tecan

## GENOMIC SALES LSB IN 2013

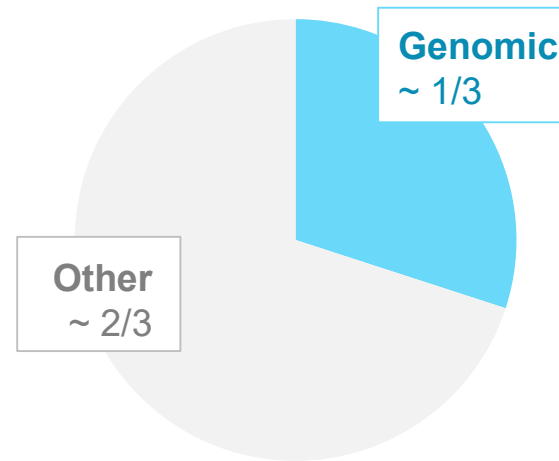
(as % of total LSB sales)



~ x2

## GENOMIC SALES LSB IN 2018

(as % of total LSB sales)



Tecan Genomics – Reagents only  
included for 4 months post  
acquisition only

## GENOMICS IN PARTNERING

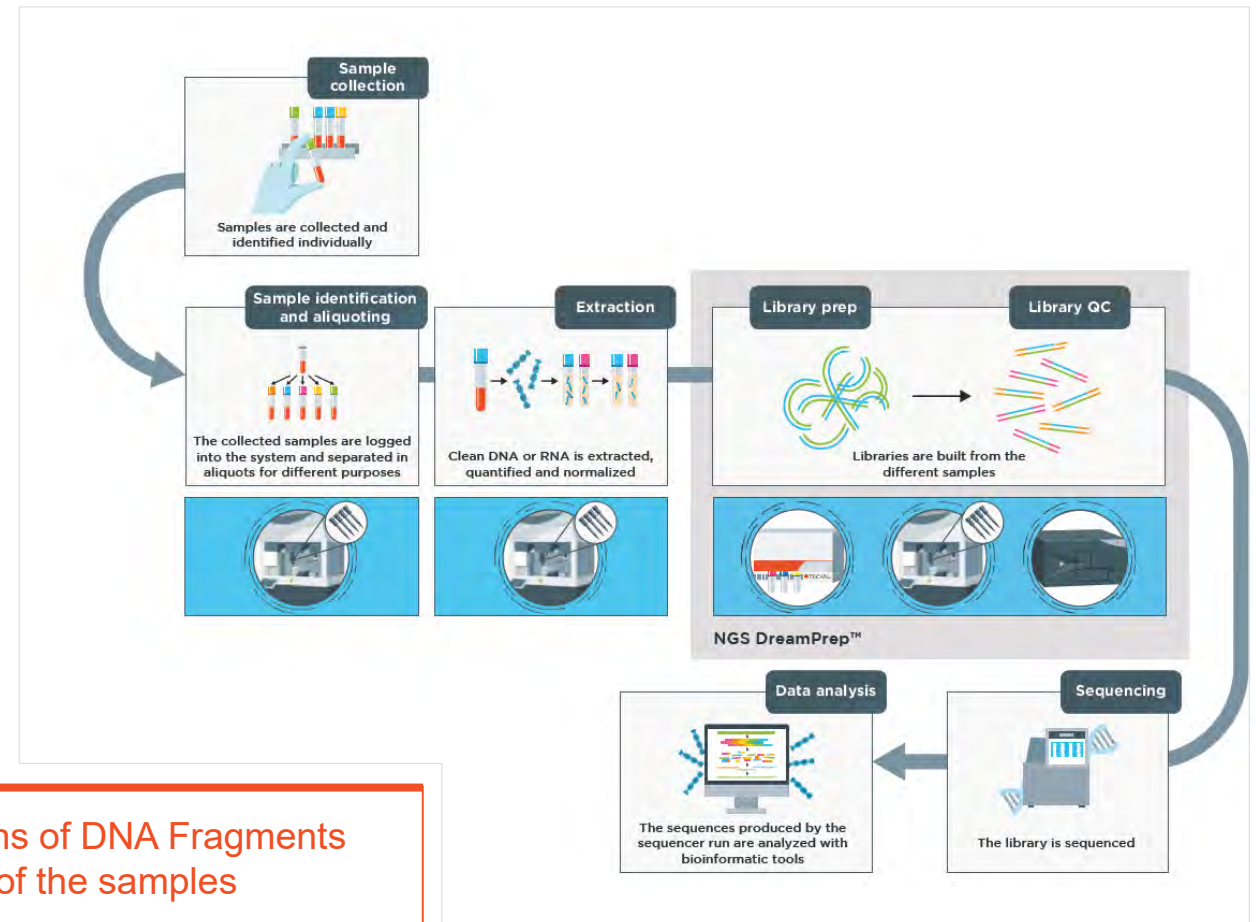




# Sample Library Preparation key to successful sequencing

## NGS LIBRARY PREPARATION IN STEPS

- 1 Sample collection
- 2 Sample identification & aliquoting
- 3 DNA or RNA extraction
- 4 Library preparation / Library quality control
- 5 Sequencing
- 6 Data analysis



Hi-Tech Sequencers have been developed to Sequence millions of DNA Fragments in parallel, but will not work without tedious preparation of the samples

# Tecan Genomics NGS library workflows and microarrays

## PERFORMANCE AND SIMPLE WORKFLOWS FOR A BROAD RANGE OF SAMPLE TYPES

### NEXT GEN SEQUENCING

- DNA-Seq
- RNA-Seq
- Target Enrichment
- Methyl-Seq

### MICROARRAYS AND QPCR

- cDNA amplification from total RNA
- FFPE cDNA preparation
- High throughput systems
- Affymetrix and Illumina compatible

### AUTOMATION

- Streamline sample preparation technologies for Next Gen Sequencing and other genomics assays through NGS DreamPrep and automated liquid handling

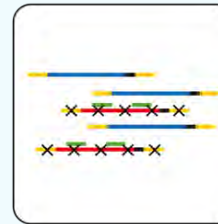
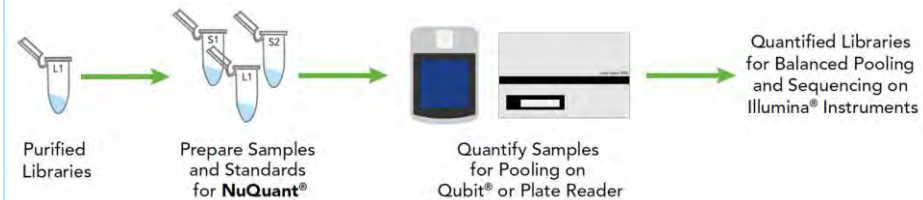
### TECHNOLOGY USP (SELECTION)

#### DNA-seq – Celero

library preparation in less than 4 hours

#### NuQuant

integrated quantitation of DNA without sample loss in less than 6 minutes instead of hours

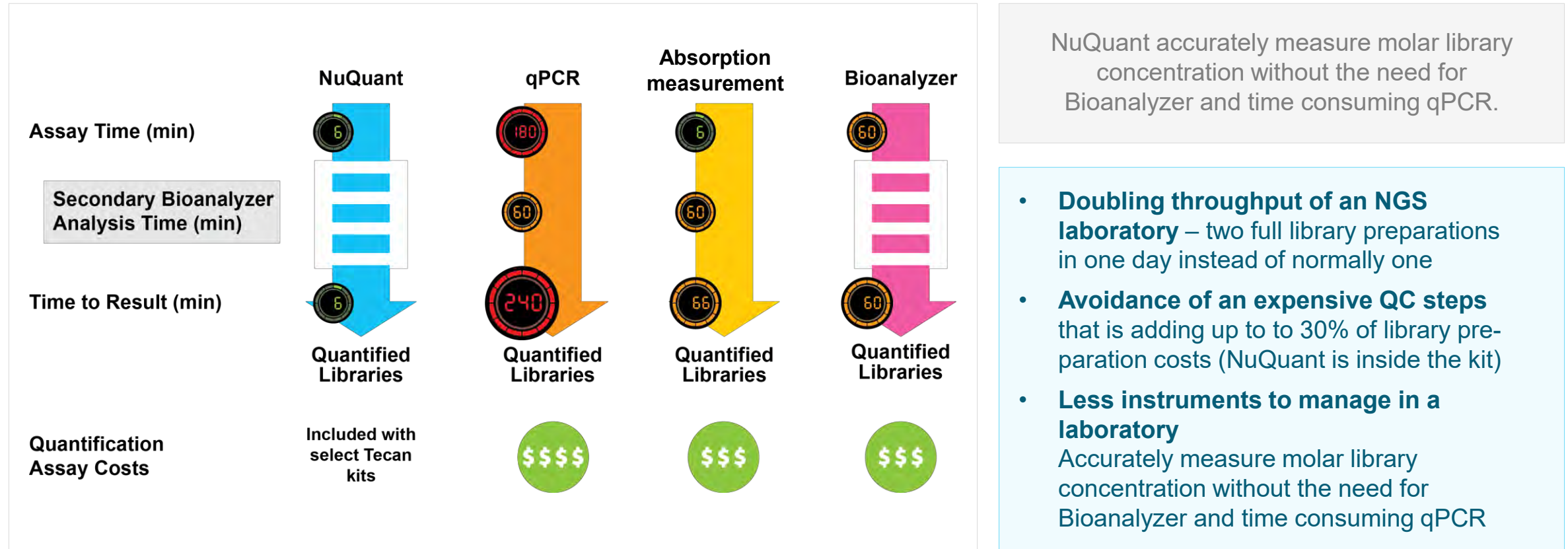


#### AnyDeplete

Stranded RNA-Seq library prep with targeted transcript depletion to simplify workflow and improve sequencing efficiency

*Protected by  
30 Patent Families*

# NuQuant® reduces time and total cost with library preparation & quantification



Reference: NuQuant®: A simple and accurate method to quantify molar concentrations of NGS libraries for Illumina sequencers

# NGS DreamPrep™ – Complete automation for NGS library prep and quantification

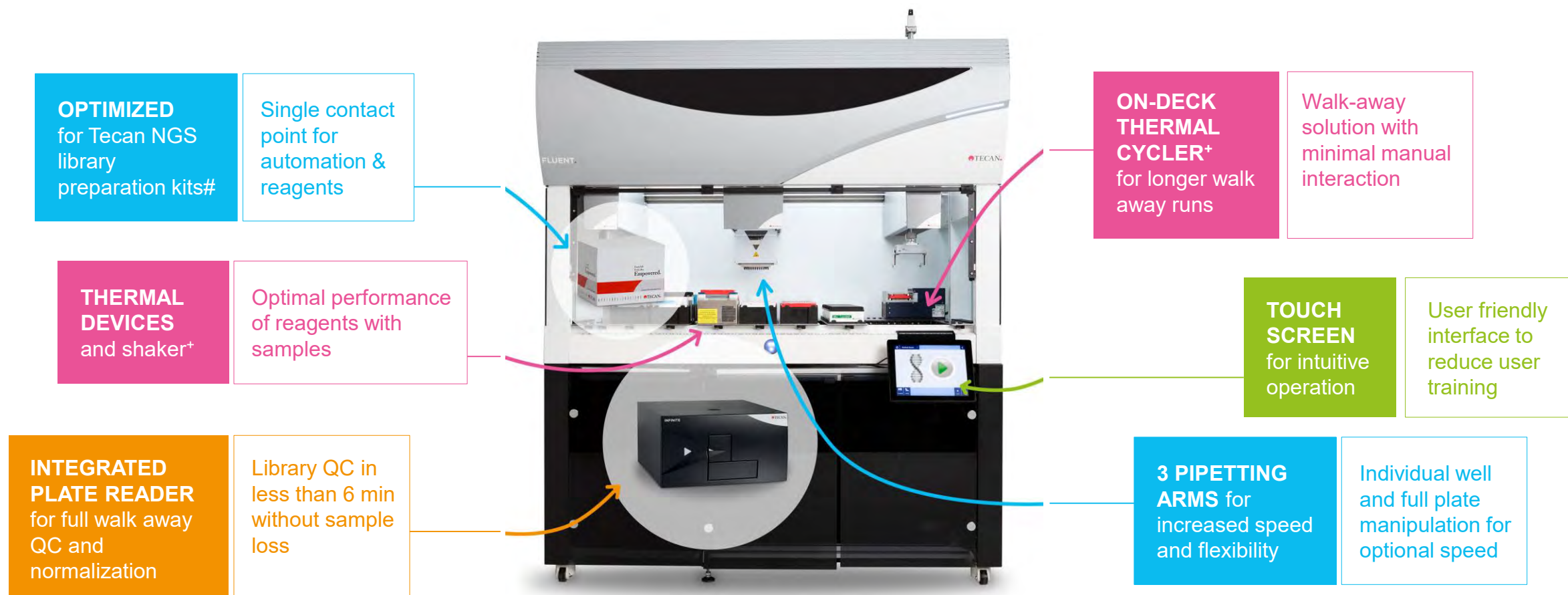


## Unprecedented speed and accuracy for automated library preparation and quantification

- **Two library preps in a day**  
DNA-seq libraries, normalized and ready to sequence, in less than 4 hours
- **Library QC in less than 6 min with no sample loss**  
Measure 96 samples simultaneously with the Infinite® F Nano+ plate reader
- **Full walk-away solution**  
Hands-off for DNA & minimal manual interaction for RNA-seq
- **User friendly interface**  
Intuitive touchscreen operation, designed to reduce operator training
- **Single contact point for everything**  
Automation, reagents, consumables, application support, troubleshooting, service



# NGS DreamPrep™ – A fully optimized solution for walkaway NGS library prep & QC



## TYPICAL TIPS USAGE IN GENOMIC WORKFLOWS



## Tecan offers disposable tips with assured purity levels for different genomic assays

Tecan Pure	
Genomics research	Applications
Forensics	examples/customer
Molecular diagnostics	segments
✓	Tecan Standard quality
✓	Human DNA free
✓	PCR Inhibitor
✓	RNase/DNase free
-	Pyrogen/Endotoxin free
-	Sterile

Launched in a new packaging reducing plastic and volume

- Space saving for laboratory storage
- 45% less packaging waste



# Genomics in GxP and LDT markets with Fluent<sup>®</sup> Gx, Tecan's Flagship Liquid Handler

## SIMPLICITY

Simple Touch Interface  
Collaborative Design

## PRODUCTIVITY

Blazing parallel processing  
Big capacity, small footprint

## CONFIDENCE

Modern platform design  
Global Service organization



- Registered with FDA as Class 1 Medical Device
- Certified ISO 13485 (Medical Devices Quality Mngmt)
- 21 CFR 820 Quality System (US FDA)
- 21CFR Part 11
- Additional EN Norms

**Tools for GMP, GLP, QC labs, and clinical diagnostic facilities:**

- Permissions
- Method Approval
- Electronic Signatures
- Sample Traceability
- Audit Trail & Audit Tools



Fluent Gx **Assurance Software**  
(User Mgmt., Method approval, sample tracking, Electronics records, Audit tool)



**INTROSPECT**

Connected  
to generate  
**insights**

# Tecan Fluent<sup>®</sup> applications beyond genomics

Suited for **many more adjacent applications**

(examples)

Cell  
Biology

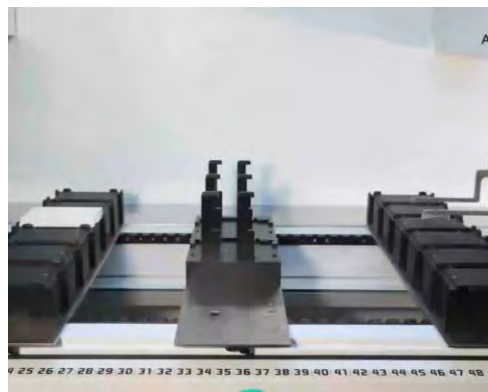
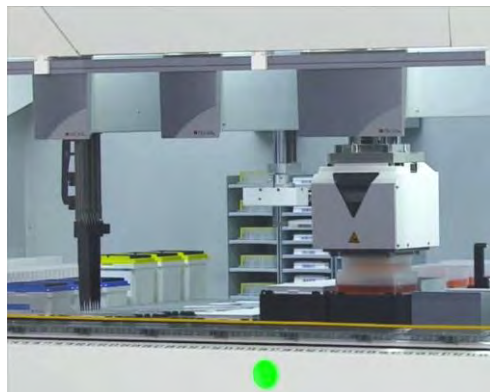
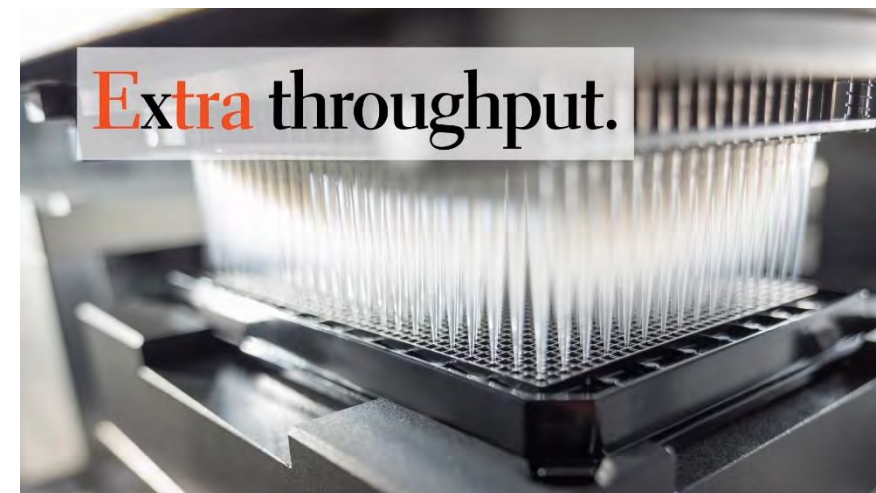
Protein  
Sciences

Synthetic  
Biology

LCMS

Bio-  
banking

... and for Partnering projects



**“Two identical Fluent systems can  
each run 16 or 17 different assays.”**

*Roche Drug Disposition and  
Safety Department*





# Transition from Research to Diagnostics

TECAN HAS A UNIQUE POSITION TO BRIDGE FROM RESEARCH TO DIAGNOSTICS SETTINGS

LIFE SCIENCE RESEARCH



LAB DEVELOPED TESTS (LDT)



IN-VITRO DIAGNOSTICS

Life Sciences  
Business

Partnering  
Business

Empowered with Tecan.

Covering individual steps of a  
specific workflow

Sample-to-Result Solution

## EXAMPLES

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- Mass Spectrometry
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# Transition from Research to Diagnostics

TECAN PARTNERING SUPPLYING PROVEN SOLUTIONS FOR MOLECULAR DIAGNOSTIC LABS

## Life Sciences Business

Tecan application expertise and platforms in Genomics



- Covering all genomics needs, including standardized workstations with validated applications and dedicated user interfaces
- Automated DNA/RNA extraction, clean-up and quantification, PCR set-up and more

## Partnering Business

Example 1: m2000sp and m24sp for Abbott Molecular



- Highly flexible and proven solution featuring a broad menu of IVD assays
- Allowing consolidation of PCR testing on a single platform
- Abbott m24sp for laboratories with mid-throughput requirements

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## Partnering Business

Example 2: Natch S for Sansure Biotech



- Sansure Biotech is a Chinese provider of MDx solutions
- Fully automated system for the extraction and purification of nucleic acids (DNA/RNA)
- Handling of multiple assay formats through easy-to-use interface in local language

# Focus on Key Application Area: Genomics

FROM DISCOVERY OF NOVEL MEDICATIONS ALL THE WAY TO BETTER DIAGNOSIS OF DISEASES

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Better...

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- **and treat**

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Infectious  
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Rare  
Diseases

Applied  
Markets

Metabolic  
Diseases

AND MANY MORE

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# Leveraging Tecan Automation to Revolutionize Ambry

Joy Crandall, Director of Assay Automation

June 6, 2019



# Ambry Genetics

Over **1.5 million**  
genetic tests

Identified over  
**50,000**  
mutations

1999

**2007: First to offer next-generation sequencing (NGS)**

SCIENTISTS

GENETIC COUNSELORS

PHYSICIANS

# Breadth of Ambry Genetics Services

**11k**

clinicians order from  
Ambry/year

**500**

tests CAP/CLIA LDTs

**3k**

capacity to process  
~3000 samples/day

**4k**

unique institutions order  
from Ambry/year

**65k**

square foot state-of-the-  
art SuperLab



Hereditary Cancer



Cardiology



Clinical Exome  
~20,000 genes



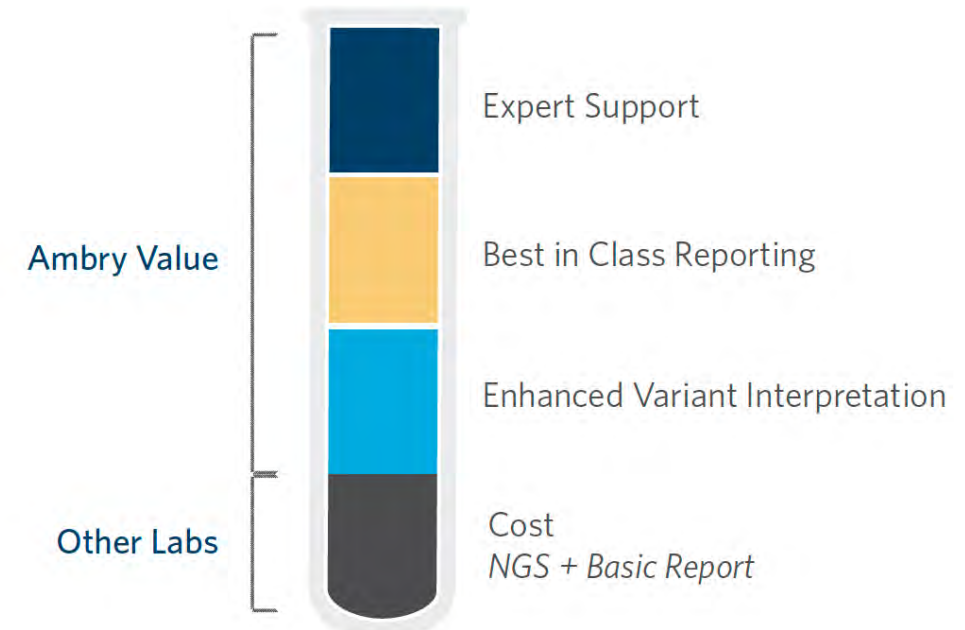
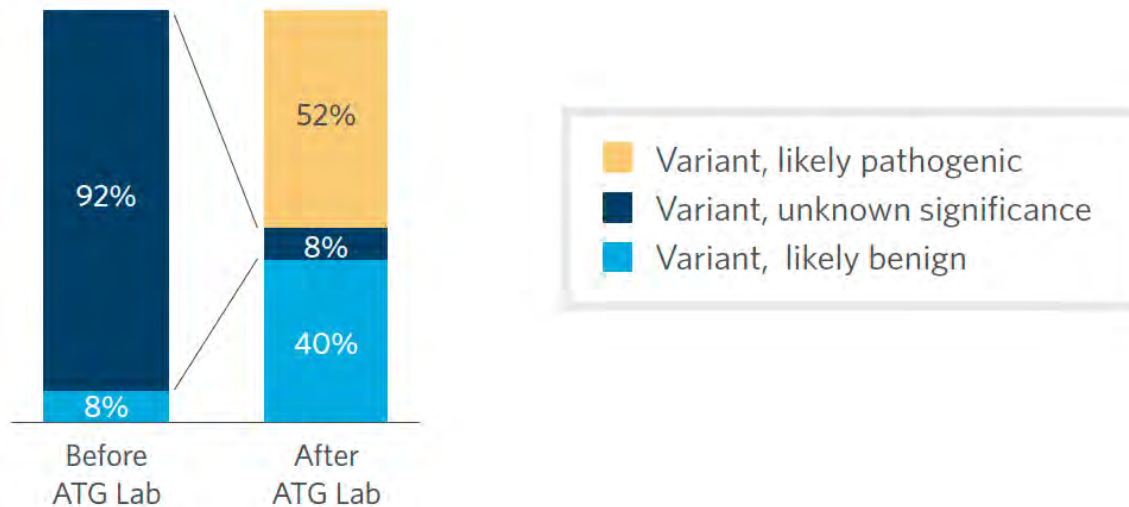
Somatic



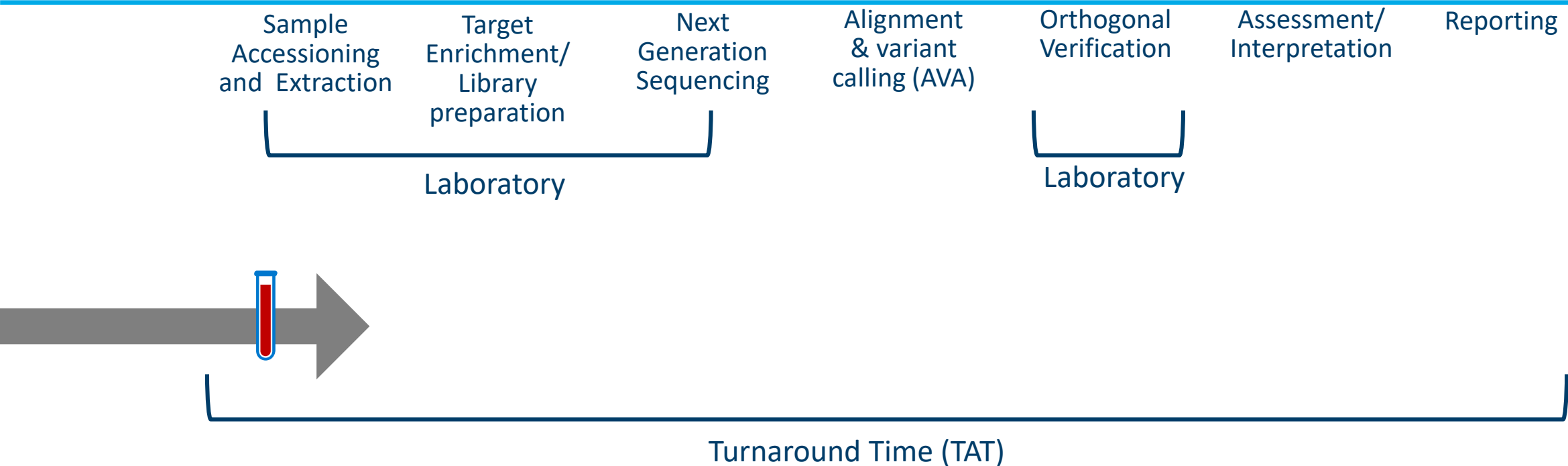
Neurology

# Leaders in Accurate Variant Assessment

- Ambry maintains one of the most sophisticated bioinformatics platforms in the industry
- Ambry's Variant Analyzer (AVA) is a sophisticated proprietary platform to lower VUS rates
- Core team of structural biologists and medical experts
- RNA functional assays



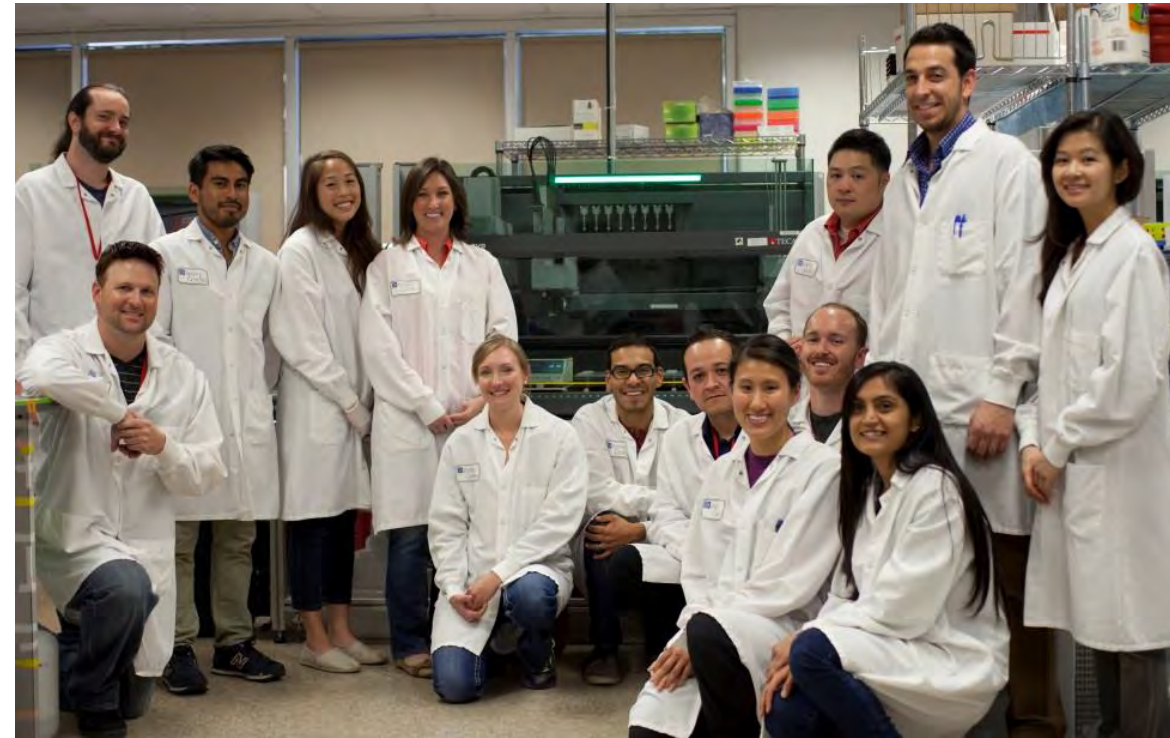
# Ambry Genetics Testing Workflow



- **Laboratory Goal:** Increase sample throughput while maintaining or decreasing TAT

# 2012-Ambry's Introduction to Tecan Automation

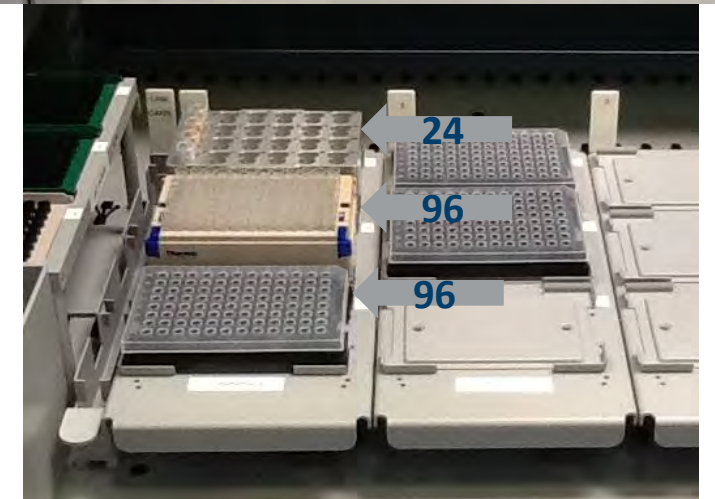
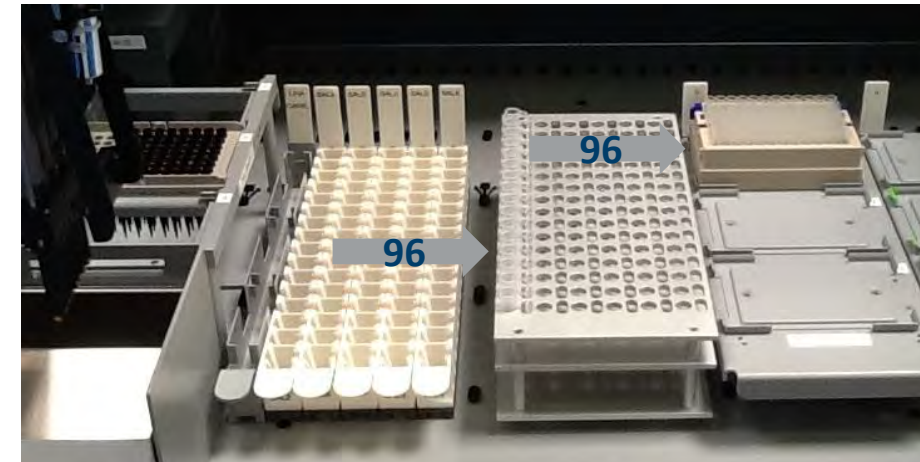
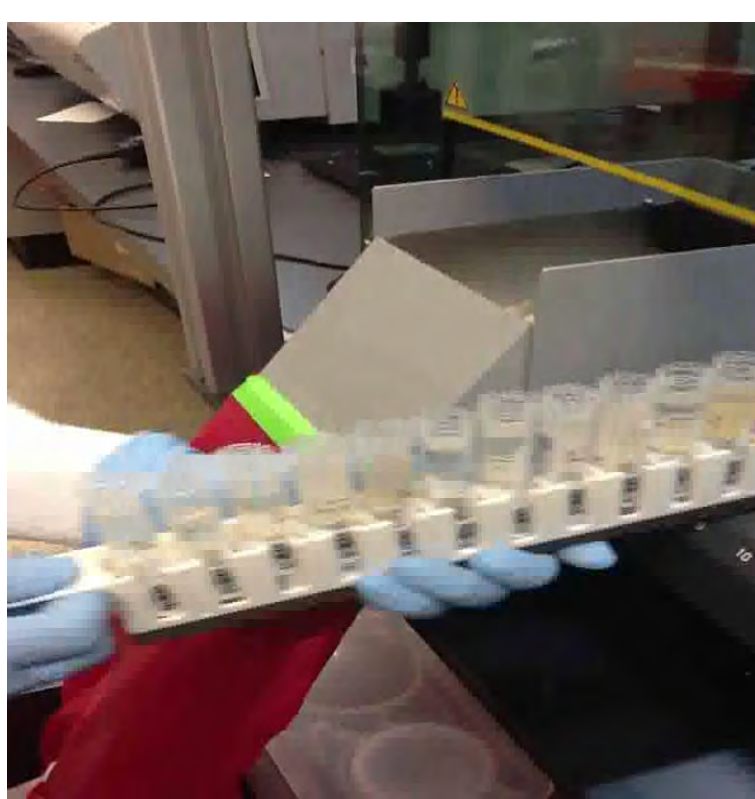
- 2012-First Tecan Freedom EVOs
  - Automated Normalization
    - Previously required 2 people to double-check manually
    - Amounted to 9 hours of FTE time savings a day





# 2012-2015 Focus on Increased Throughput

- Automated Traceability
- Maximize Per Run Processing and Speed
  - Tubes to 96 Well Plates/Racks
    - 3X increased capacity
    - 12X faster processing
    - Reduced Errors
- Results (per Week)
  - 25X-100X increase in samples prepared per person



# 2016 Ambry's SuperLab



- 2016-SuperLab Grand Opening
  - Enable an increase company's genetic testing volume (9X)
  - Decrease turnaround times (TAT)
  - Focus on accuracy and maintaining sample integrity through traceability
  - Expanding Ambry's reach to Pharmaceutical Companies

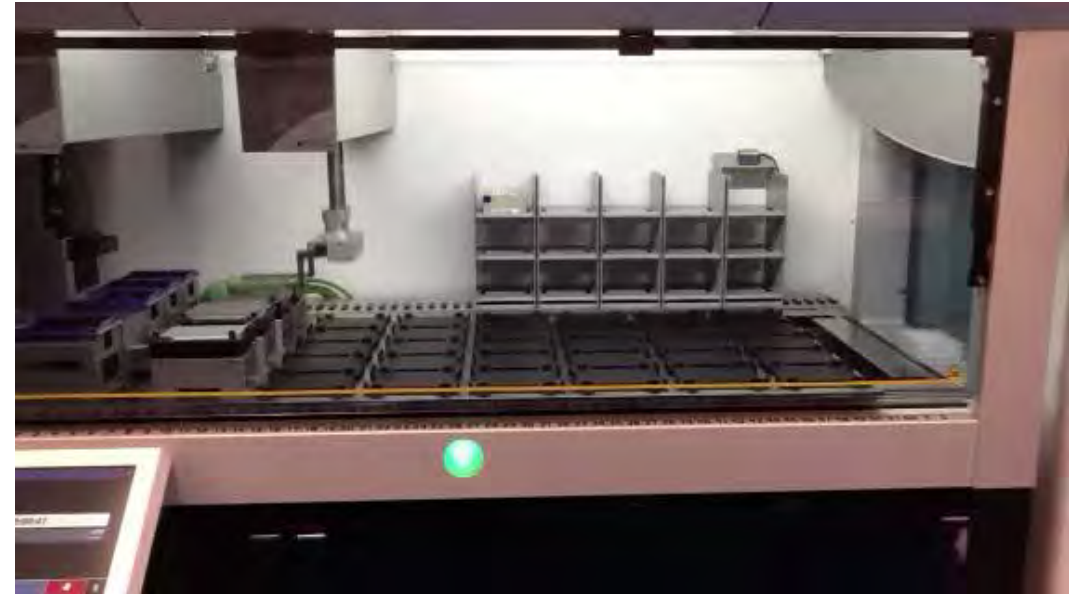




# SuperLab's Sample Tracking

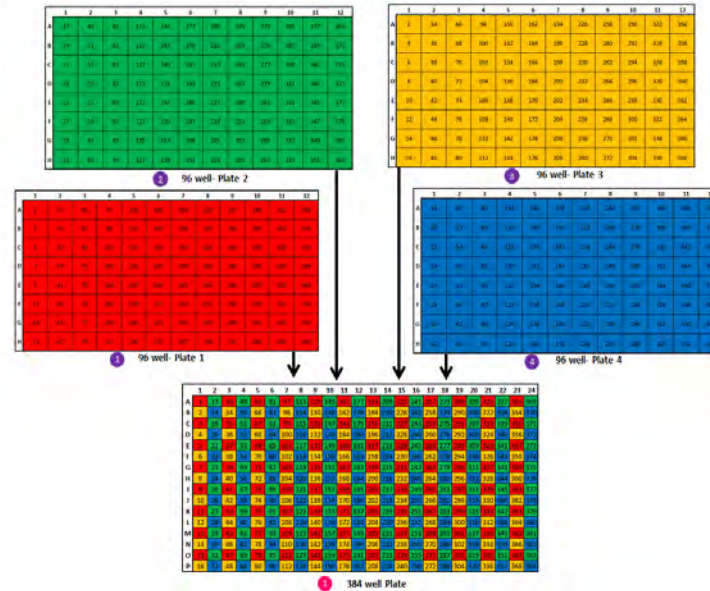
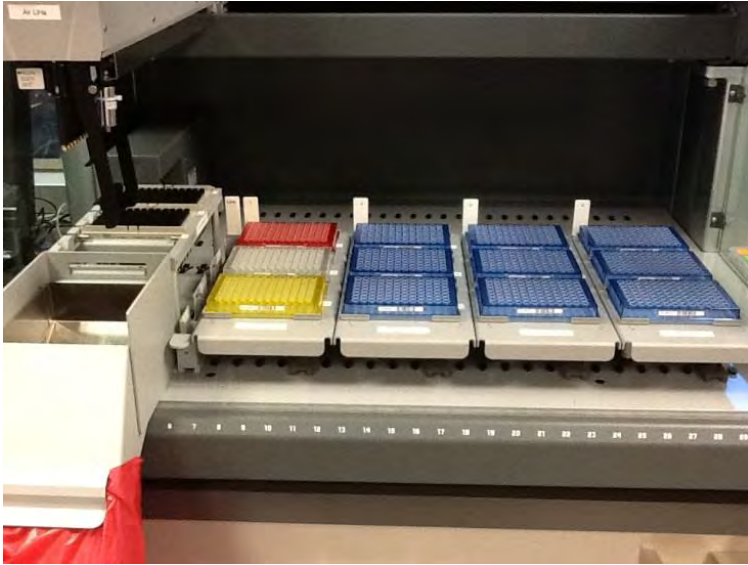


- Real-Time Sample Tracking and Traceability
  - All sample tubes and plates have unique barcodes
- “Barcode-based” pulling or pipetting logic
  - Added sample integrity measures



- Audit Trail
  - Paper forms are considered “high-risk” by regulators
  - Enables faster troubleshooting

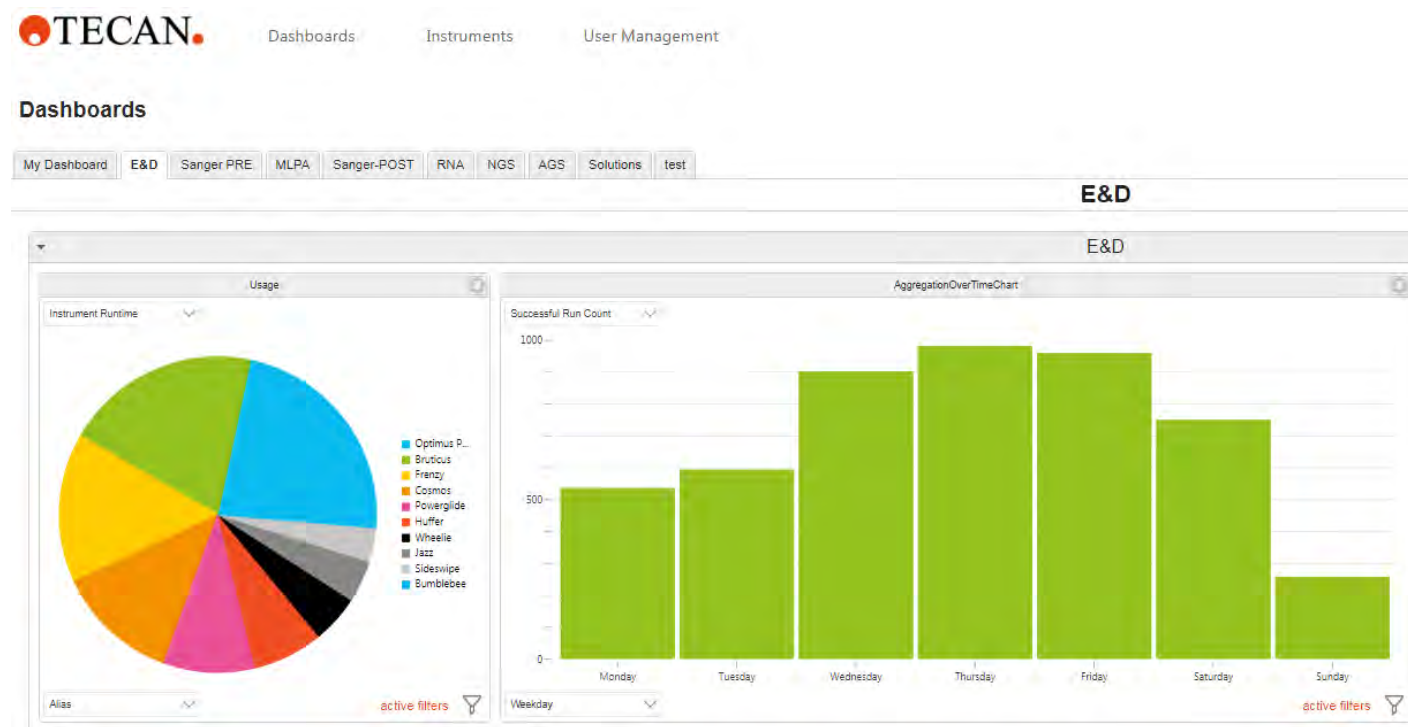
# SuperLab's Sample Throughput



- 96 Well Plates to 384 Well Plates
  - 4X increased Capacity
  - Decreased Peripheral Required
  - Decreased Reagent and Consumable Costs
    - Assay Miniaturization
  - Increased Instrument Walk-Away Time

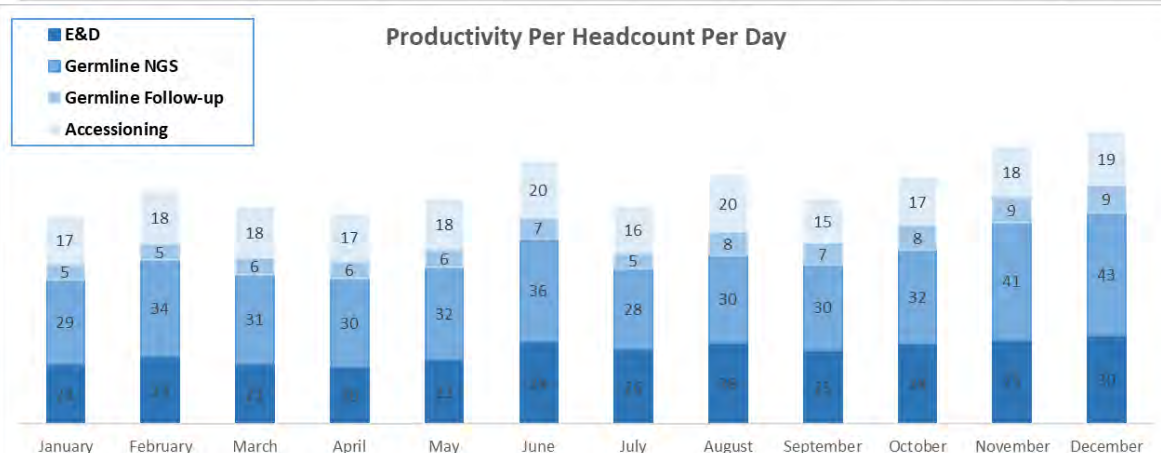
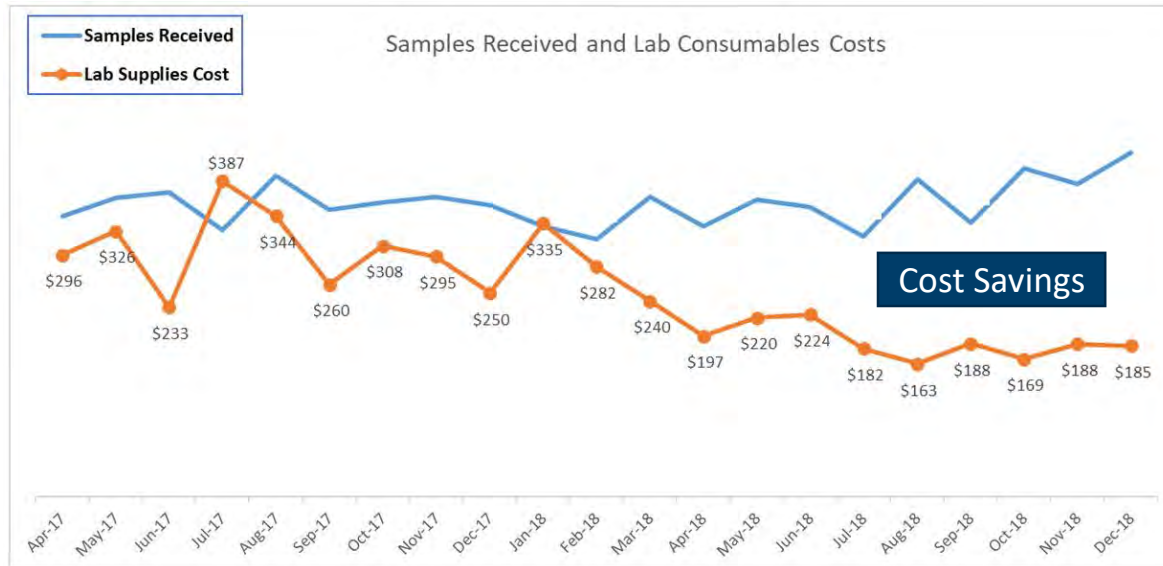
# Tecan's Introspect Software

- 2016 Ambry was an Alpha User
- Potential for Proactive versus Reactive approach
- Easy visualization of instrument utilization
  - Efficient scheduling of processing
  - Assist in building a business case for additional instrument purchasing
- 2019 Over 50 Tecans Active





# 2018 Focus on Cost Savings and Productivity

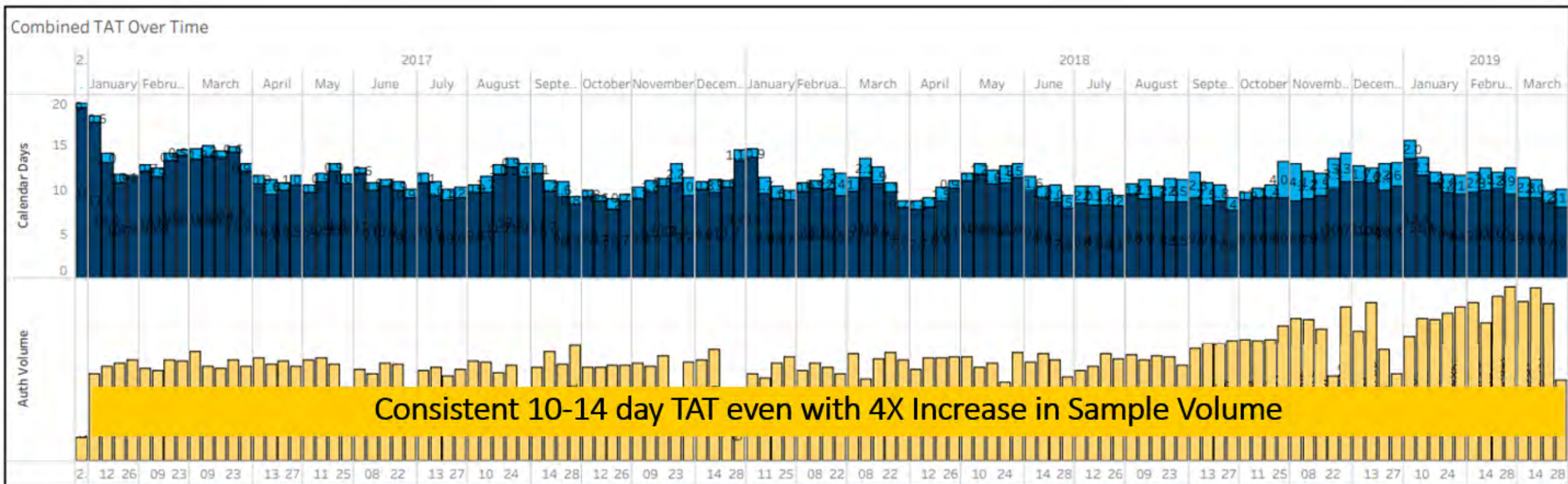


## Cost Savings Initiatives

- ✓ Assay miniaturization
- ✓ Automation of leaner processes to reduce lab supply costs, reduce errors & labor, enhance lab tracking
- ✓ Eliminating legacy redundancy waste
- ✓ Reducing consumable waste and costs

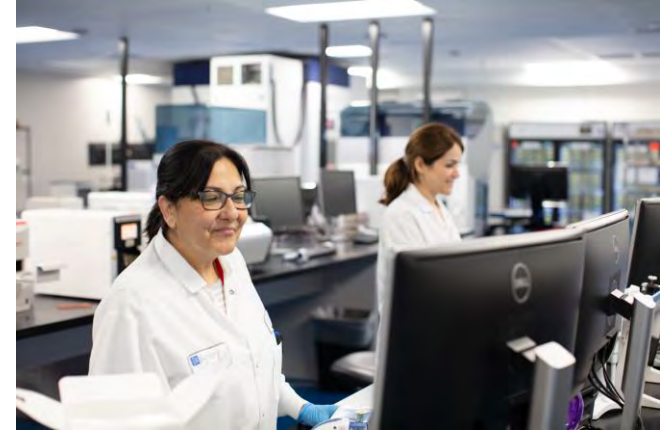
Metric	FY17	FY18	FY18 Growth
Headcount	113	78	-31%
Productivity/HC/Day	3.34	5.46	63%
<ul style="list-style-type: none"> <li>- Assay Automation</li> <li>- LIMS Data Integration</li> </ul>			

# Impact of Tecan Automation on TAT with Increasing Sample Volume



# Acknowledgements

- Tecan Support
  - David Dela Cruz, Robert Taylor, Vincent Ahlheit, Edmund Kraft, and Expertline
- Ambry Genetics
  - Assay Automation Team
    - Jacqueline Caesar-Bennett, Sinead Charpentier, Nina Do, Julia Burdette, Keith Mulholland, Leo Lai, Sara Valencia, Catherine Pham
  - R&D
    - Brigitte Tippin Davis, Ruth Baxter, Rashmi Mody, Susanne Fox, Christian Chua, Jennifer Masuzumi, Lernni Juco, Michele Fennessy
  - Clinical Lab Staff
    - Sharon Mexal, Manny Jaquez, Aaron Campbell, Alina Sisombath, Brady Barrows, Brian Ramirez Enriquez, Ishita Vyas, Jennifer J. De La Cal, Tamara McBride, Micah Ranney, Pierre Samson, Raymonde Saintil, Richard Srey, Rocio Martinez, ALL END USERS







# Questions



Coffee break.





# Agenda Capital Markets Day 2019

Time	Duration	Topic	Presenter
8:45 – 10:00		<b>Empowering the Century of Biology</b> <b>Application focus: Genomics</b> Tecan's offering and strategy Customer presentation: Ambry Genetics	Achim von Leoprechting, CEO  Klaus Lun, EVP, Head Life Sciences Business Joy Crandall, Director of Assay Automation
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# Cell & Tissue Analysis

**DR. KLAUS LUN**

**EVP HEAD OF LIFE SCIENCES BUSINESS**



# Focus on Key Application Area: Cell & Tissue Analysis

FROM DISCOVERY OF NOVEL MEDICATIONS ALL THE WAY TO BETTER DIAGNOSIS OF DISEASES

## HEALTHCARE USE

Better...

- **understand**
- **diagnose**
- and treat

Cancer

Infectious  
Diseases

Hereditary  
Diseases

Rare  
Diseases

Applied  
Markets

Metabolic  
Diseases

AND MANY MORE

## APPLICATIONS

- Genomics
- Protein analysis
- **Cell & tissue analysis**

## DETECTION & ASSAY TECHNOLOGIES

- Sequencing
- PCR
- Mass Spectrometry
- Immunoassays
- **Imaging**
- **Advanced Staining**

## TECAN'S ENABLING COMPETENCIES

- Applications and Workflows
- Robotics and Automation
- Software and Informatics
- Detection and Imaging
- Precision Handling of Liquids
- Reagents and Consumables

### All built on a robust foundation of:

- Product Development and Systems Integration Expertise
- Quality Management System
- Regulatory Expertise
- Efficient Operations

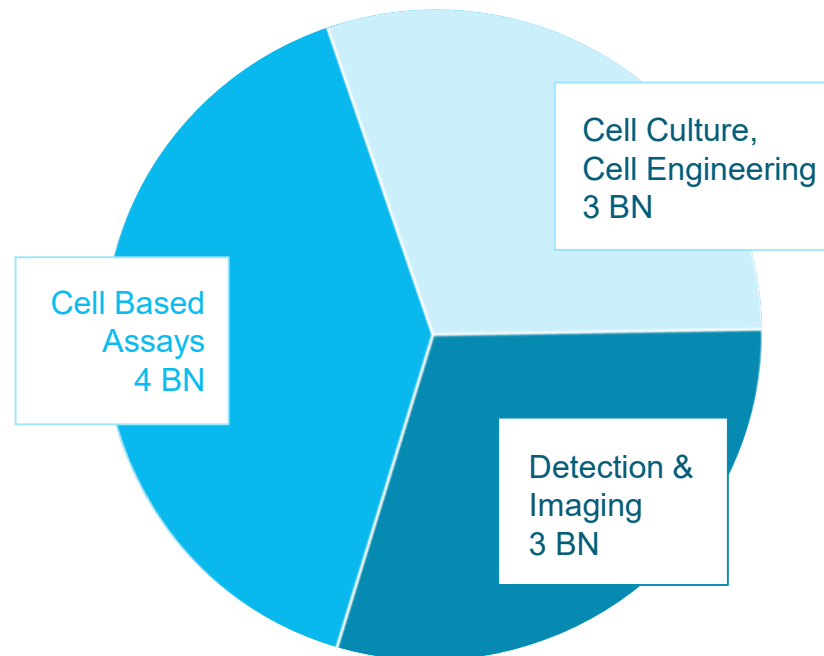


# Cell Biology & Imaging Market growth driven by bio-therapeutics, biosimilars and personalized medicine growth

## MARKET DYNAMICS DRIVING FOR MORE AUTOMATION:

- Growing importance of cell based disease models in drug discovery screening, fueled by rising incidence of cancers, age-related diseases and ongoing need for improved biological relevance
- Strong growth of cell engineering/bioprocessing driven by personalized medicine, biotherapeutics and biosimilars
- Complexity of cell-based workflows – need for multiple parameters analysis to reduce drug development time and reduce cost

## CELL BIOLOGY & IMAGING MARKET: ~10BN GROWING MSD

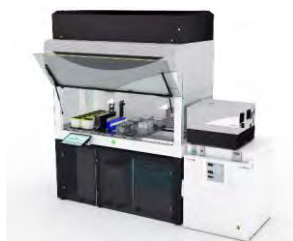


# Tecan's offering in Cell Biology and with Spark<sup>®</sup> Cyto expansion in new imaging segment

## CELL CULTURE, CELL ENGINEERING

### Liquid Handling

- Fluent<sup>®</sup>
- Freedom EVO<sup>®</sup>



### Labwerx

- Customized automation for complex workflows

## CELL BASED ASSAYS

### Liquid Handling

- Fluent<sup>®</sup>
- Freedom EVO<sup>®</sup>



### Dispenser

- D300e



### Washers

- HydroFlex<sup>™</sup>
- Hydrospeed<sup>™</sup>



### Labwerx

- Customized automation for complex workflows

## DETECTION & IMAGING

### Multimode readers Spark<sup>®</sup>



### Multimode readers with imaging capacity **NEW!** Spark<sup>®</sup> Cyto





# The Spark<sup>®</sup> Multimode Microplate Reader

SPARK – YOUR RESEARCH PARTNER.

Four configurations for **today**. Ready for **tomorrow**.



- Designed to offer greater flexibility and increased productivity.
- Four pre-set configurations for specific applications and also available as a fully configurable platform.
- Upgradeable to give the freedom to add modules at any time in the future.



## UNIQUE SPARK FEATURES

Humidity cassette and lid lifter reduces evaporation

- Fusion Optics offers filters to provide sensitivity and a monochromator for wavelength flexibility
- Temperature control with patented Te-Cool for enhanced assay stability
- NanoQuant Plate™ for straightforward measurement of 16 x 2 µl samples simultaneously without calibration.





Spark® Cyto is the only imaging multi-mode reader that can measure cells in a live environment over long period of time that provides results in real time

## OUR UNIQUE FEATURES

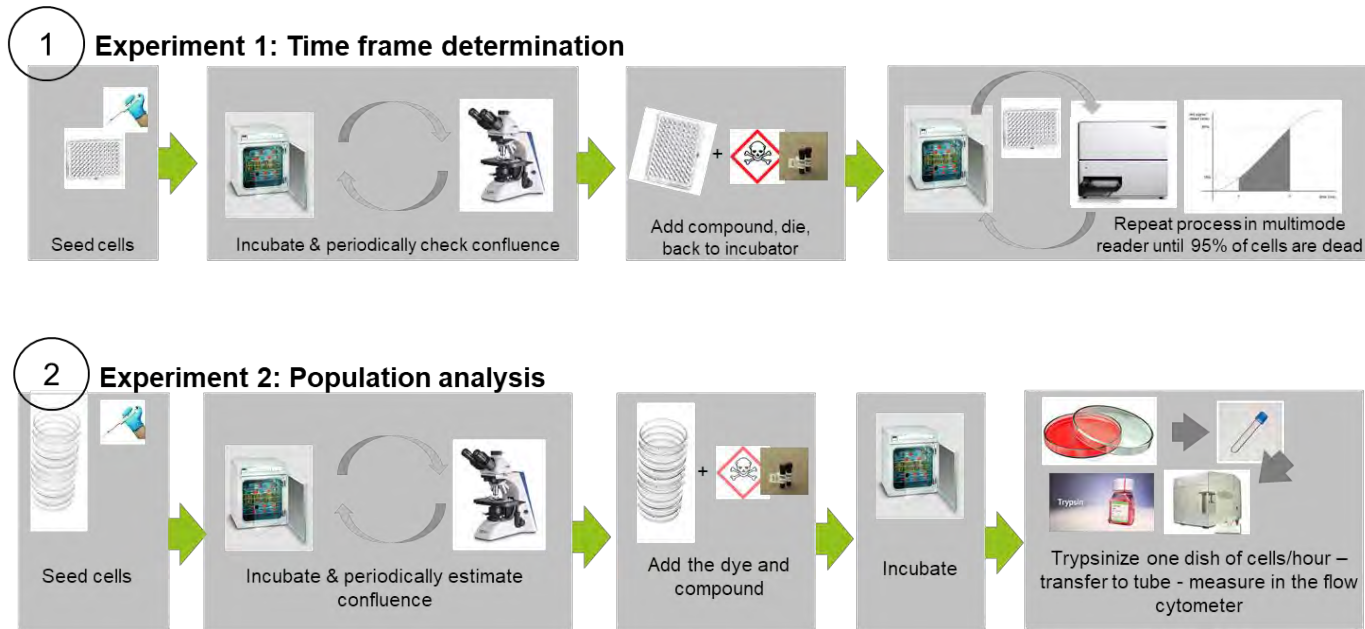
- **More cells analyzed, faster**  
One image of the whole-well in a 96 and 384-well plate (patent pending).
- **Healthy, living cells in a controlled environment**  
Full environmental control with CO<sub>2</sub>, O<sub>2</sub>, temperature and humidity cassette (patented).
- **More parameters analyzed**  
Combine standard read modes with cell imaging.
- **More immediate feedback about the assay**  
The instrument analyses cells in real time i.e. at the same time as it's acquiring images or data.,
- **Never miss a critical event**  
Automatic executiona of kinetic experiments, e.g. add a compound, based on data received while imaging to understand the dynamic behaviour of cells.



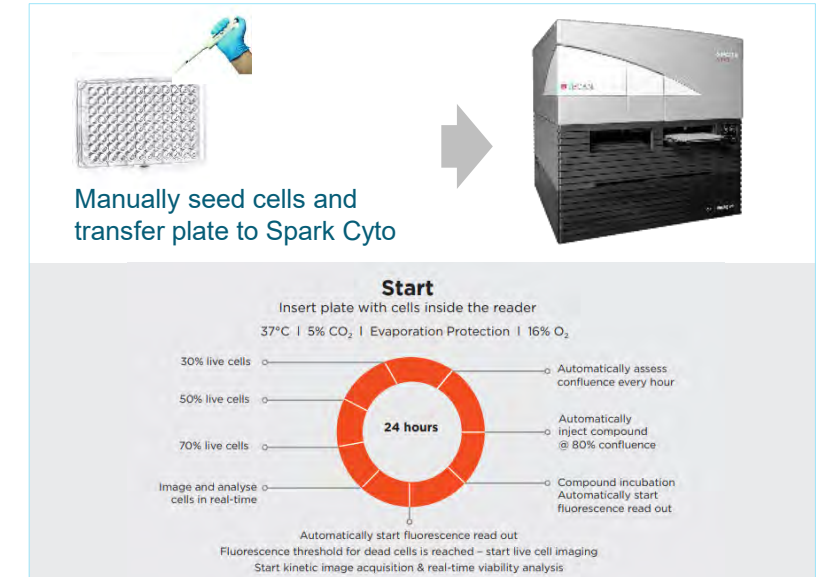


# With Spark<sup>®</sup> Cyto cell viability study will be substantially simplified: from complex workflow to one step experiment

## CURRENT PROCESS IN A LAB



## THE FUTURE PROCESS



### Spark<sup>®</sup> Cyto Benefits:

- minimizes costs
- data from one and the same sample
- no missing data points
- consistent conditions
- shorter time to result



# Beyond the ordinary.



Complete Workflow Automation





**TECAN LABWERX.**

**Beyond the ordinary.**

**Tecan LABWERX** delivers  
a customized, comprehensive  
and productive solution.



# Customer focus

IDEATE. INVESTIGATE. INVENT. INTEGRATE

- Understand **your** goals and challenges
- Translate **your** needs into solutions
- Proven **development** process
- Deliver **custom** laboratory solutions

Cell  
Biology

Synthetic  
Biology

Bio-  
banking

LCMS

Protein  
Sciences

And More!





# Labwerx automates Advanced Bioprocessing workflow at Juelich Research Center in Germany

## CHALLENGE

- Multiple microbial strain phenotyping and bioprocess development. High volumes.
- Multiple experiments simultaneously - up to 48x, 24/7.
- Harvest cells at the night time.

## FEEDBACK

“...With this system we can perform experiments in a completely different way. It has given us the opportunity to develop and test processes that we simply couldn't do before.”

(Dr. Ing. Holger Morschett, Head of MiBioLab)



TECAN JOURNAL 2/2018

To learn more about MiBioLab and see the automated platform in action, go to [www.fz-juelich.de/mibiolab](http://www.fz-juelich.de/mibiolab)

# Transition from Research to Diagnostics

TECAN HAS A UNIQUE POSITION TO BRIDGE FROM RESEARCH TO DIAGNOSTICS SETTINGS

LIFE SCIENCE RESEARCH



LAB DEVELOPED TESTS (LDT)



IN-VITRO DIAGNOSTICS

Life Sciences  
Business

Partnering  
Business

Empowered with Tecan.

Covering individual steps of a  
specific workflow

Sample-to-Result Solution

## EXAMPLES

- Next-Generation Sequencing (NGS)
- Mass Spectrometry
- Liquid Biopsies / Circulating Tumor Cells (Oncology / NIPT / Infectious Diseases)
- Tissue Pathology (IHC, ISH, NGS, MS)
- Ultra-Sensitive Biomarker Detection and many more...





# Transition from Life Sciences Business to Tecan Partnering

## FROM USING TECAN PLATFORMS IN OWN LABS TO PROVIDING FROZEN SOLUTIONS UNDER OWN BRAND

### Life Sciences Business

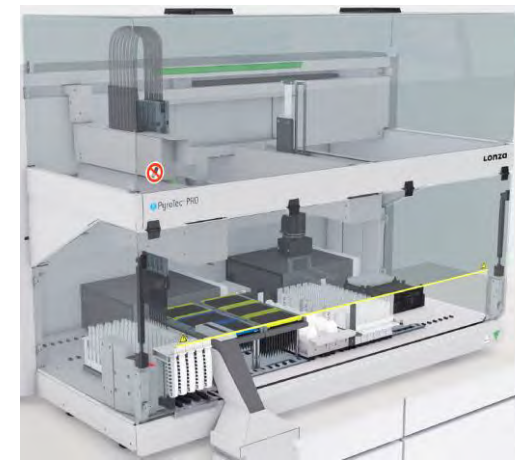
Tecan application expertise and platforms



- Freedom® EVO, one of the most popular and reliable systems
- Highly configurable depending on application needs
- Lonza was using the Freedom® EVO in own testing labs

### Partnering Business

PyroTec™ Pro Robotic Solution\* for Lonza



- Fully automated, plate-based robotic solution for endotoxin detection; frozen solution
- Bacterial endotoxin testing is a fundamental safety requirement in the pharmaceutical and biomedical industries

Source: [https://bioscience.lonza.com/lonza\\_bs/GB/en/endotoxin-automation](https://bioscience.lonza.com/lonza_bs/GB/en/endotoxin-automation)

# Transition from Research to Diagnostics

TECAN PARTNERING CUSTOMERS BENEFITTING FROM TECAN'S EXPERTISE IN FLOW CYTOMETRY

## Life Sciences Business

Tecan expertise and technologies for flow cytometry



- Deep application expertise in automation solutions in cell biology, including flow cytometric analysis
- Fully automated sample preparation steps for flow cytometry – from cell dilution to reagent addition with mixing and shaking

\*not yet available on the market

## Partnering Business

PS-10 Sample Prep System\* for Sysmex Corporation



- Highly automated, flexible sample prep system for LDTs and routine flow cytometry applications
- For real-time, absolute counting of cells, cellular subsets and other particles on a volumetric basis





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# Protein Analysis

**DR. KLAUS LUN**

**EVP HEAD OF LIFE SCIENCES BUSINESS**



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Better...

- **understand**
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Infectious  
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AND MANY MORE

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- **Mass Spectrometry**
- **Immunoassays**
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- Advanced Staining

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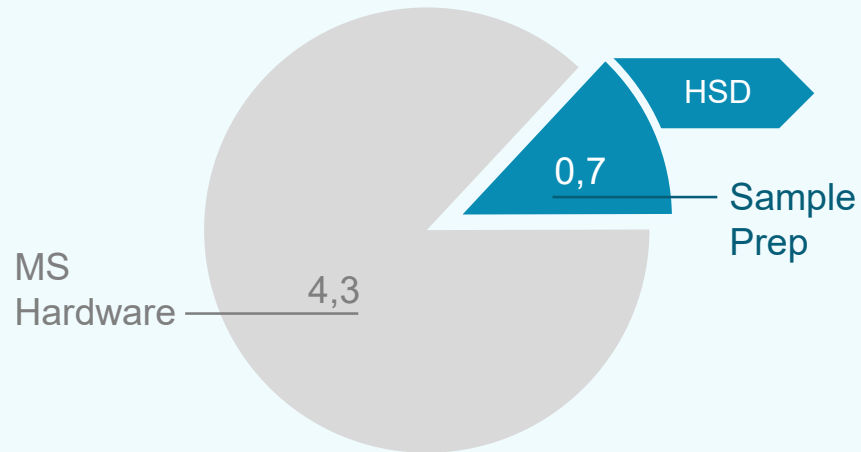
### All built on a robust foundation of:

- Product Development and Systems Integration Expertise
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# Mass Spectrometry is a ~5 BN USD market growing HSD

## MASS SPECTROMETRY MARKET



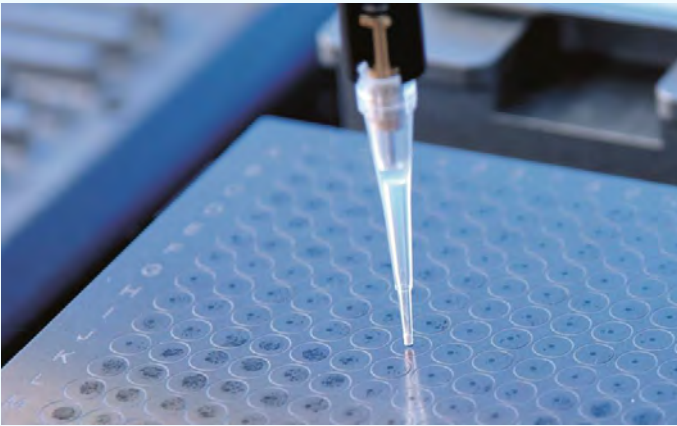
- Mass Spectrometry market is a ~5 bn USD with 7% CAGR
- Sample preparation, includes consumables & automation, is about 0.7 BN USD

## TRENDS

- Pharma is developing more Biologics (protein, peptides, biosimilars) and antibody drug conjugates that require advanced analytical tools to analyze, especially mass spectrometry
- Biologics in pipeline also lead to growing demand for analytics and QC in biopharma
- Advanced MS technology allows analysis of lipids and metabolites
- Wider adoption of MS in clinical diagnostics (e.g. Newborn screening, therapeutic drug monitoring)

# Mass Spectrometry is a core technology & analysis method among several others in the growing field of Proteomics

## SAMPLE PREPARATION FOR MASS SPECTROMETRY



Tailored mass spectrometry sample preparation solutions from **small molecule** and **peptide clean-up to spotting of MALDI targets**

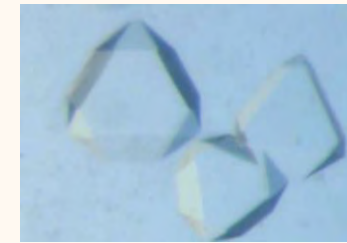
## PROTEOMIC APPLICATIONS



### Protein purification and bioprocessing

Miniaturized and parallelized high throughput **protein purification**

**Biosimilars** and **biologics process** development



### Crystallography

Automation solutions for hanging drop, sitting drop and microbatch protein crystallography experiments



### Protein detection and analysis

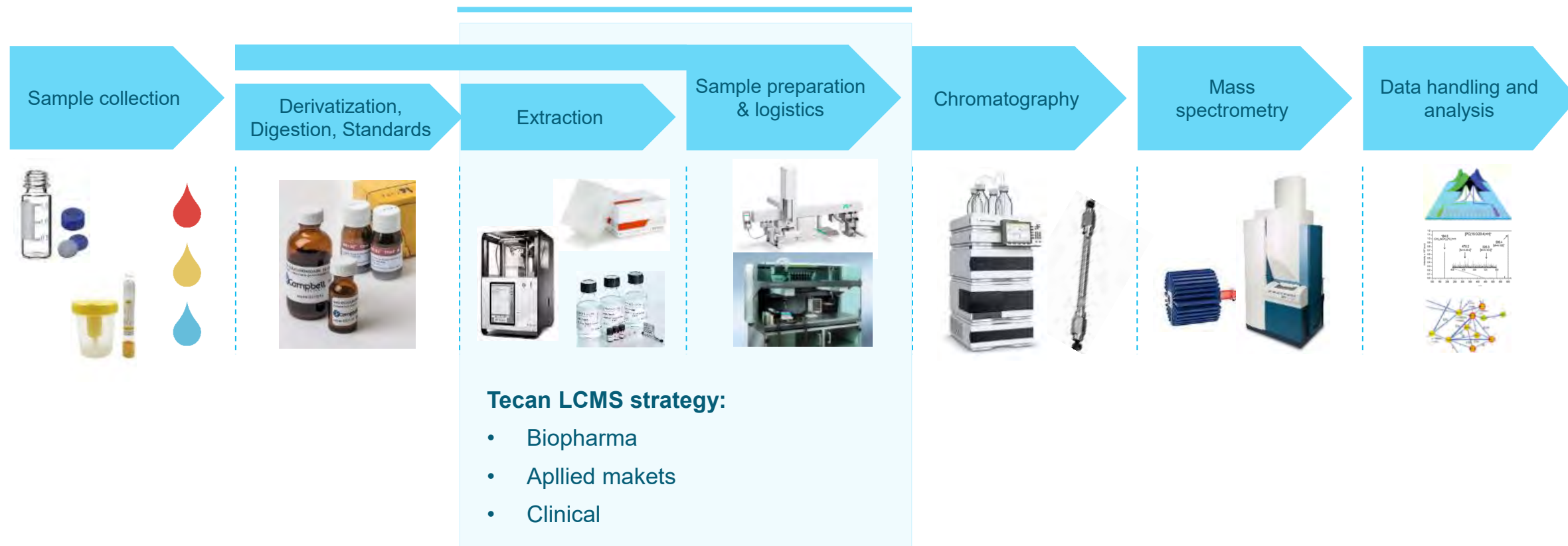
Solutions for protein analysis including multimode readers and label-free analysis



# Our focus on MS sample preparation

WITHIN LCMS, WE WILL CONTINUE TO EXPAND IN EXTRACTION AND SAMPLE PREPARATION SEGMENTS WITH APPLICATION SPECIFIC OFFERING

## TECAN FOCUS



# Tecan's offering for MS sample preparation today

OEM offering

## 1 AUTOMATION SOLUTIONS



SPE, LLE and Dilute & Shoot automation solutions

## 2 BENCHTOP INSTRUMENTS



RESOLVEX® M10



RESOLVEX® A200



D300e Digital  
Dispenser

## 3 SPE CONSUMABLES (potentially MS kits)



CEREX®



NBE™

## 4 MODULAR SYSTEMS



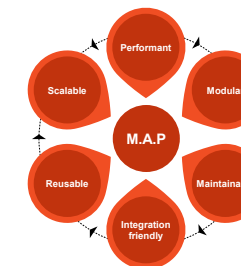
Cavro® MagniFlex based robotic systems

## 5 COMPONENTS



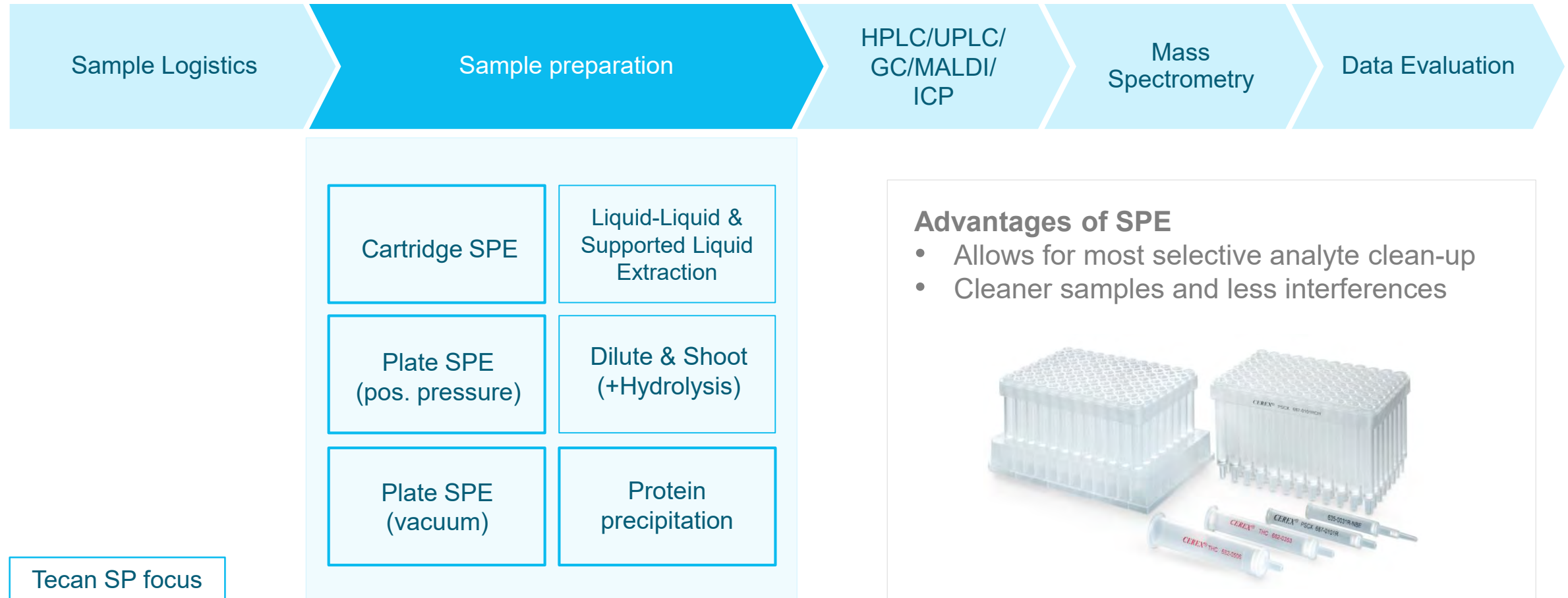
Solenoid valves, needle wash pump, etc.

## 6 SOFTWARE TOOLS



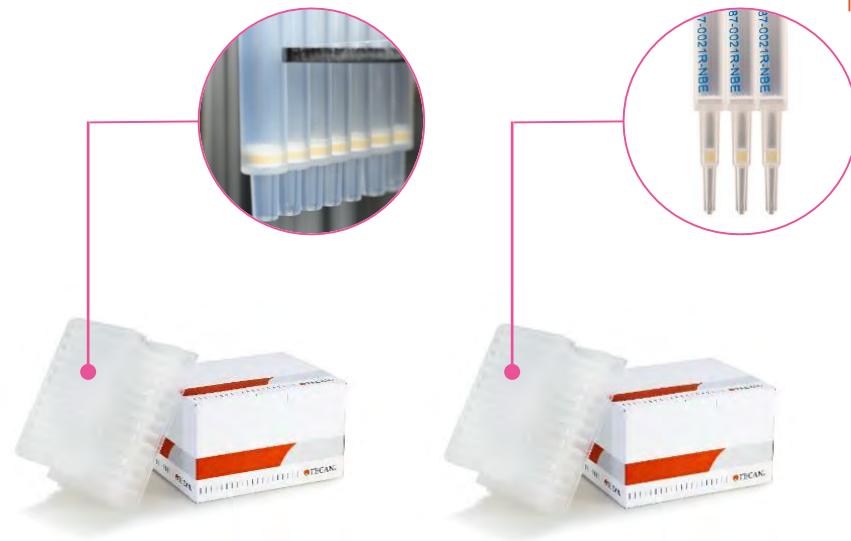
M.A.P., CNS, Introspect, etc.

# Sample prep for MS uses various different workflows



# Tecan SP product portfolio covers the full sample preparation workflow for mass spectrometry

## CONSUMABLES



CEREX®

NBE™

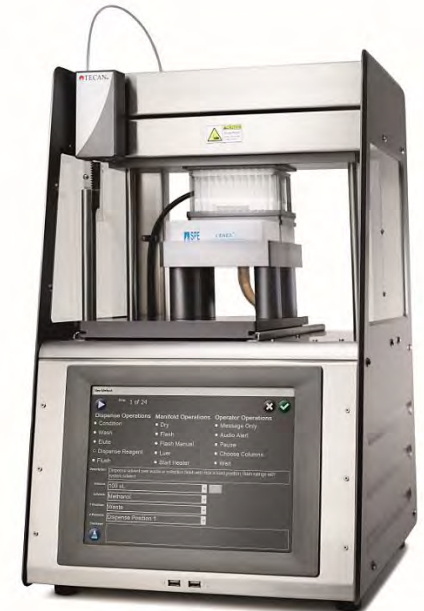
## INSTRUMENTS



RESOLVEX® M10



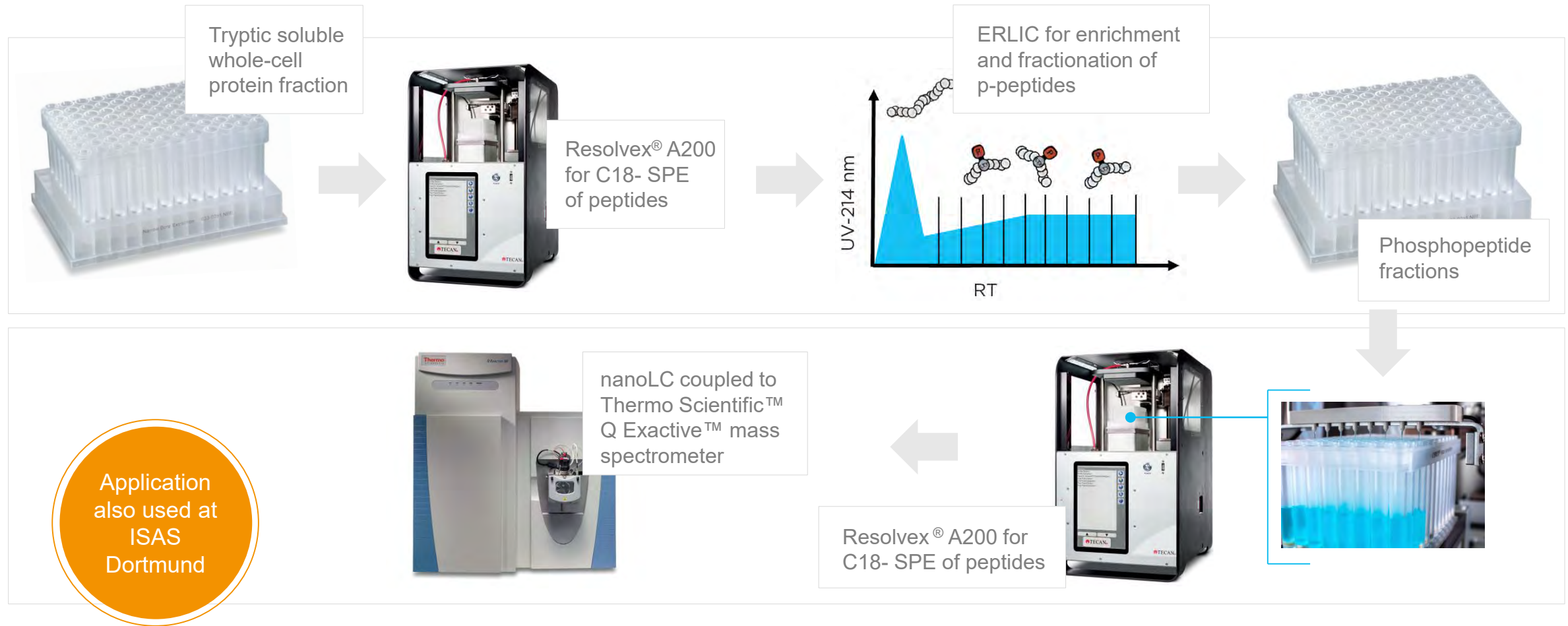
RESOLVEX® A200



RESOLVEX® A100



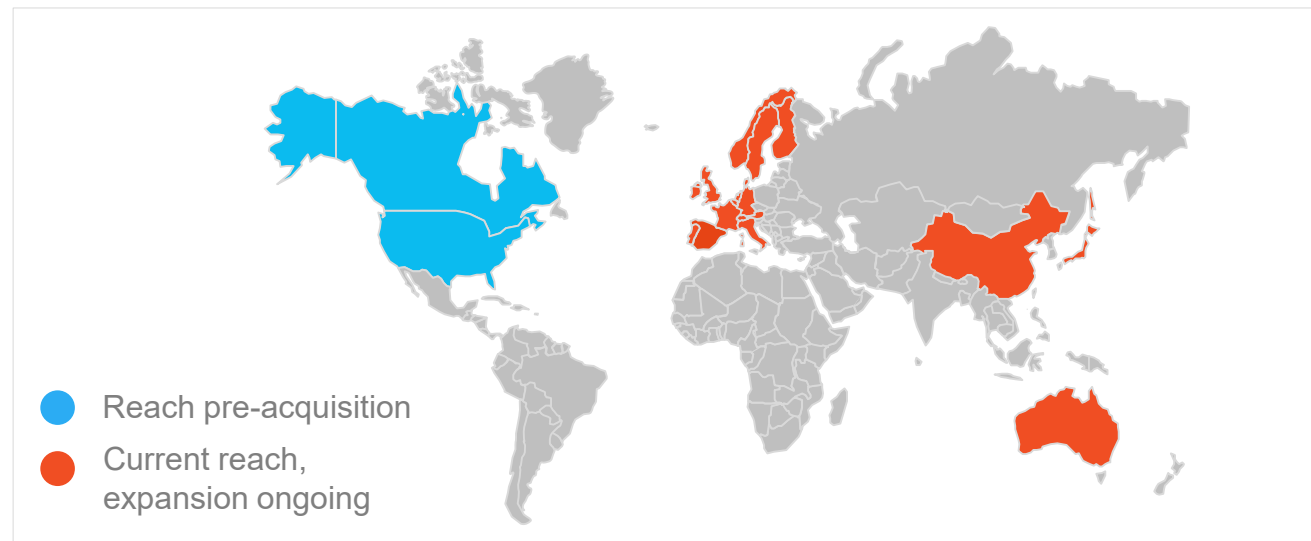
# For the phosphoproteomics workflow, Resolvex® A200 reduces the lab-time from 1.5 days down to 3 – 4 hours



# Tecan SP achievements

Through SPEware acquisition in 2016, Tecan has become a one-stop shop for mass spectrometry sample preparation

- Sales grew faster than the market
- Expanded to EU and Asia based on existing sales channels
- Launched Resolvex<sup>®</sup> A200, complementing automation offering
- Adding recurring sales to Tecan's consumables portfolio
- Achieved ISO 13485 certification with no findings



# Lean Manufacturing and QC implemented

- More molding operations insourced, enabling better production control
- Operational efficiency substantially improved through lean converted manufacturing and further insourcing of molding

## BEFORE



## AFTER

### Assembly



### Column QC



# Transition from Research to Diagnostics

TECAN HAS A UNIQUE POSITION TO BRIDGE FROM RESEARCH TO DIAGNOSTICS SETTINGS

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Business

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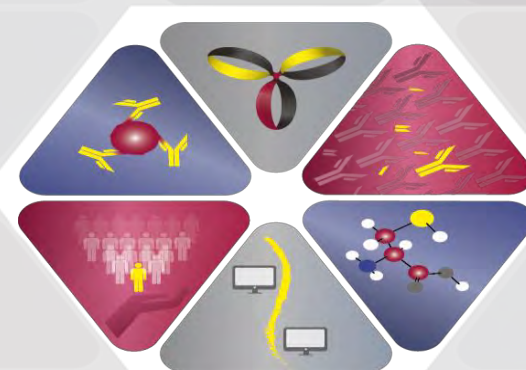






# The Future of Monoclonal Gammopathy Patient Management: The importance of precision in laboratory medicine

Dr. Stephen Harding  
Chief Scientific Officer



Protein diagnostics.  
Smart solutions.

Committed to improving patients lives worldwide through education,  
collaboration and innovation.

# What makes The Binding Site unique

## Successfully commercialising

- Exceptional track record & outlook
- Growing installed base, high entry barriers
- Strong and motivated management team



## Opening and growing markets

- Growing niche segments
- Market leadership
- Opening broader markets

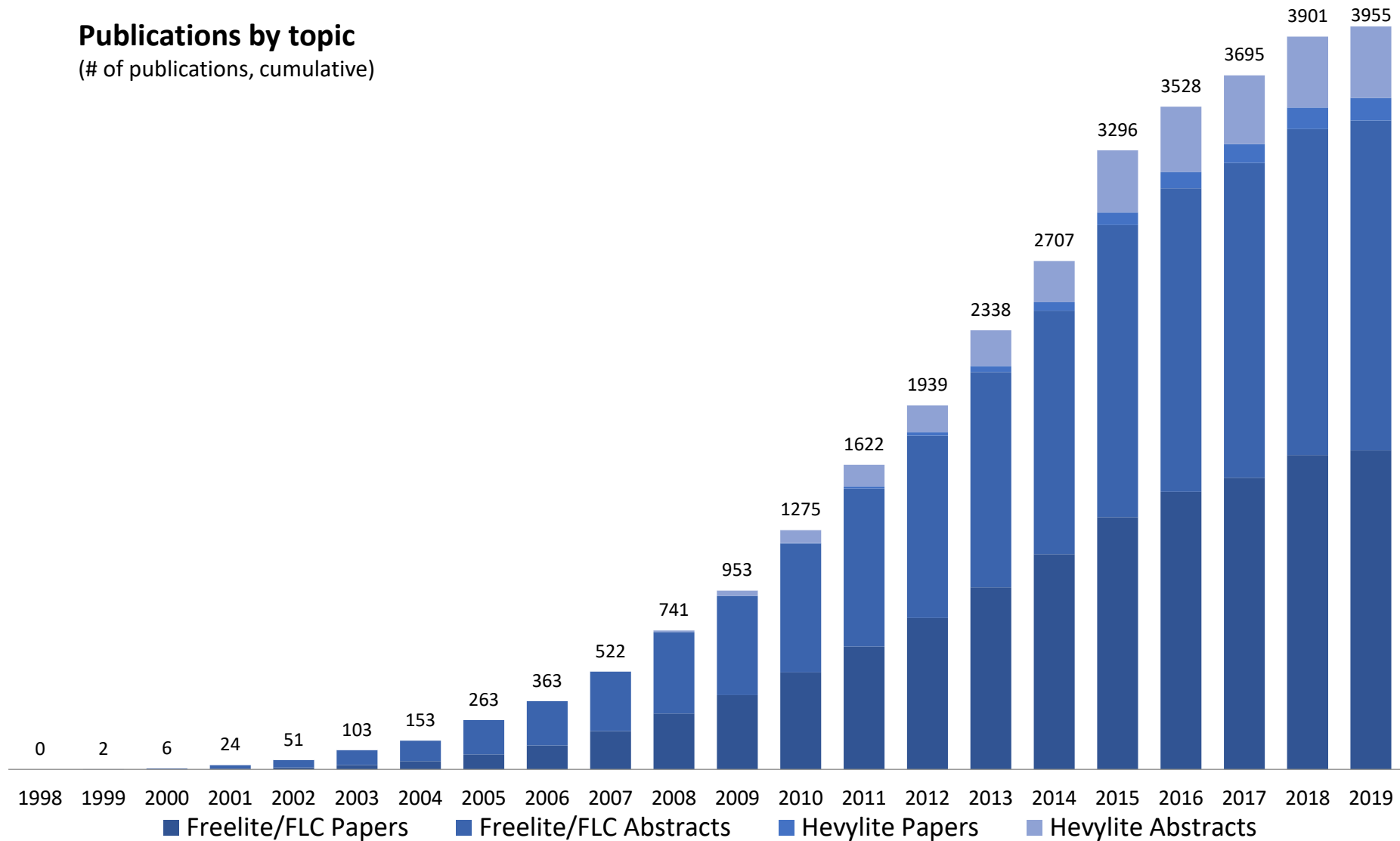


## Unparalleled science

- Setting global reference standards
- Deep scientific research...
- ...generating strategic opportunities

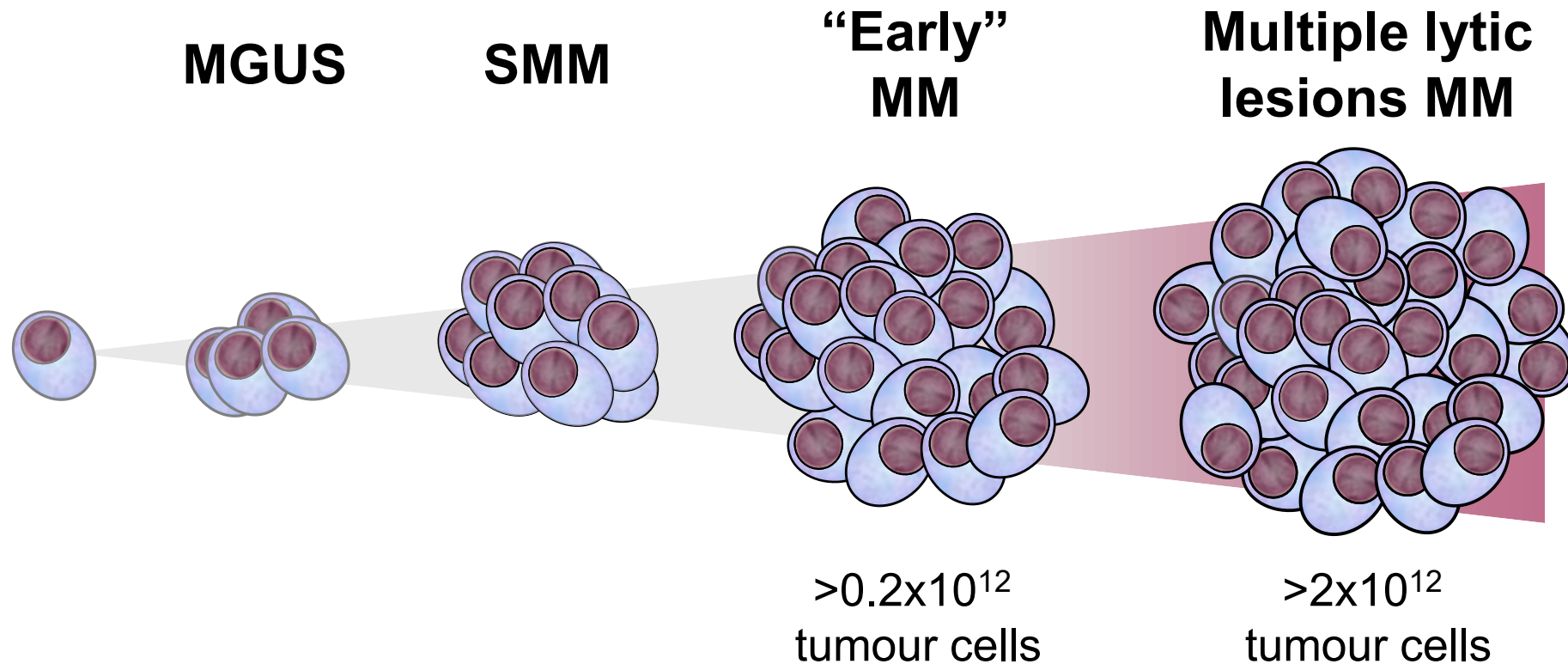


# Long-standing record of collaborative scientific research

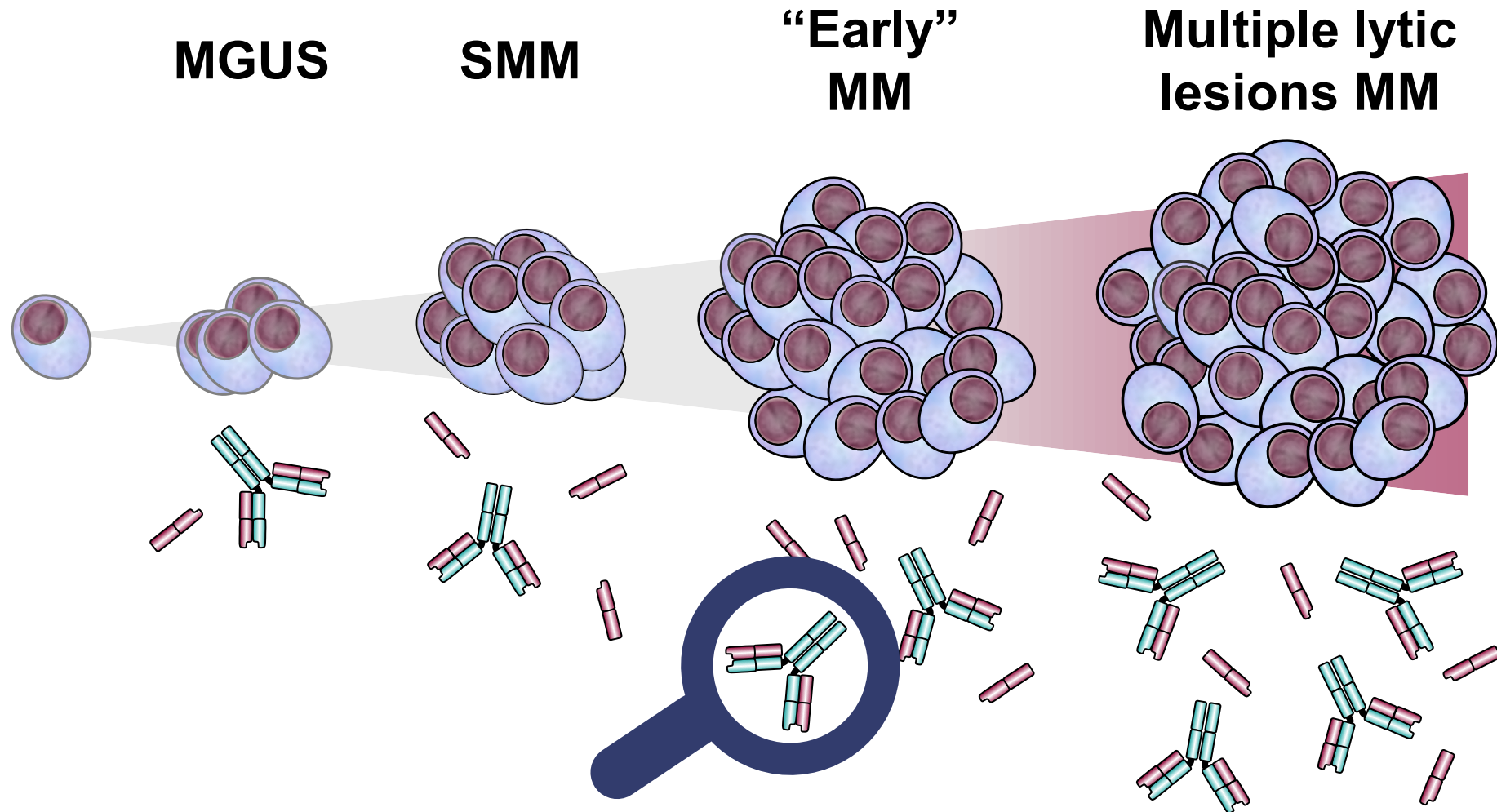




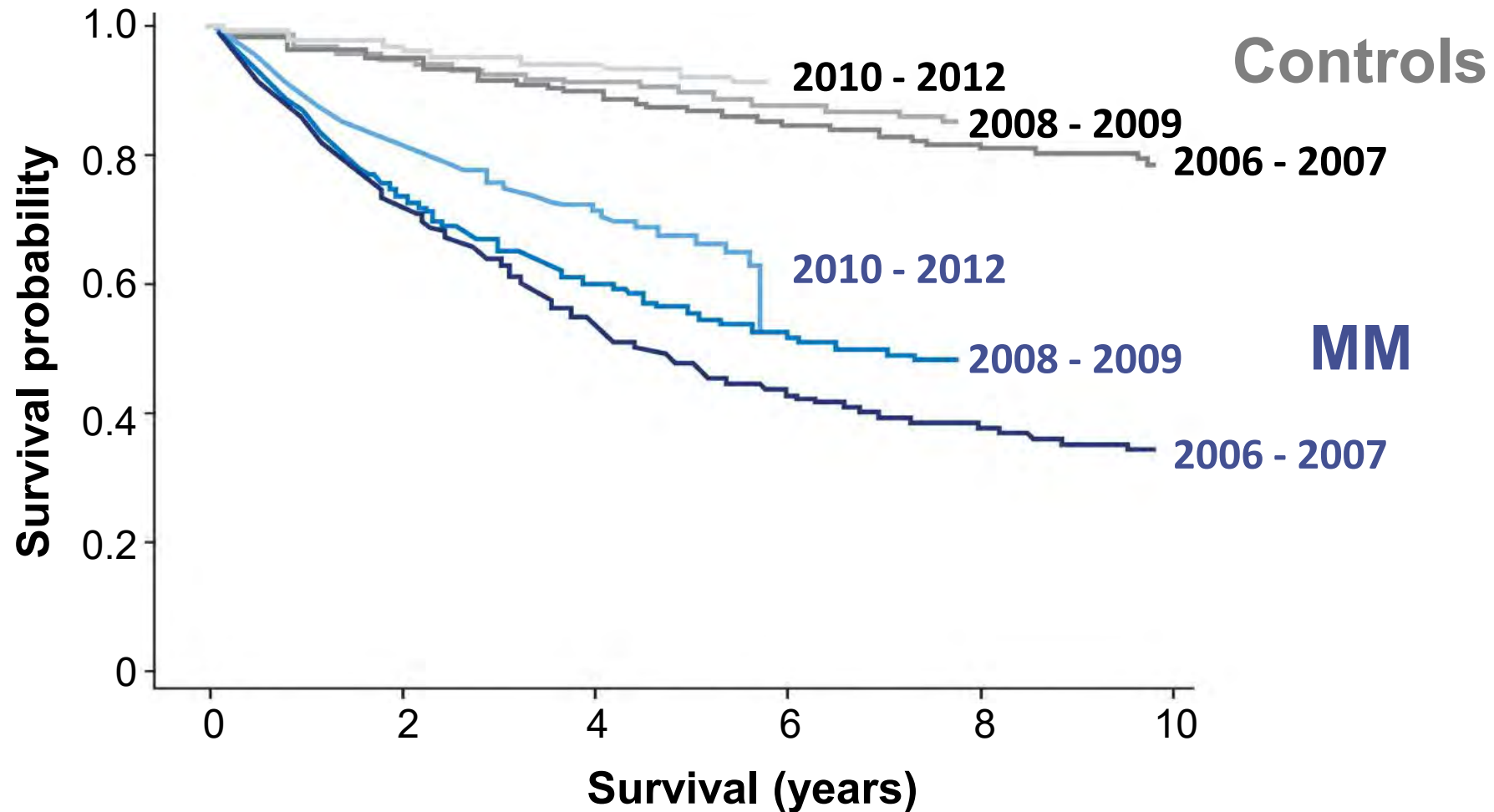
# Evolution to multiple myeloma



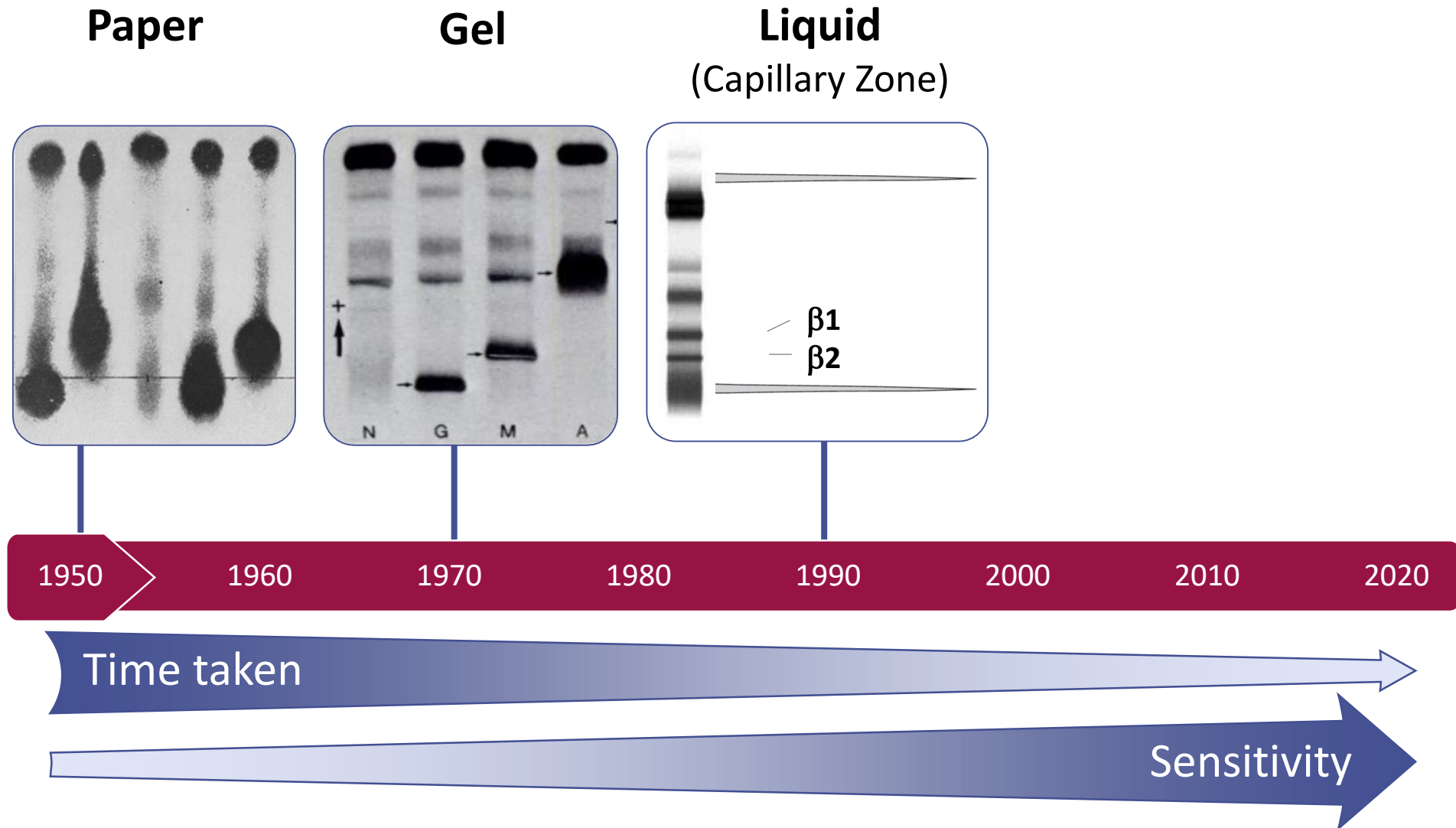
# Evolution to multiple myeloma



# MM survival, by year of diagnosis



# Evolution of electrophoresis

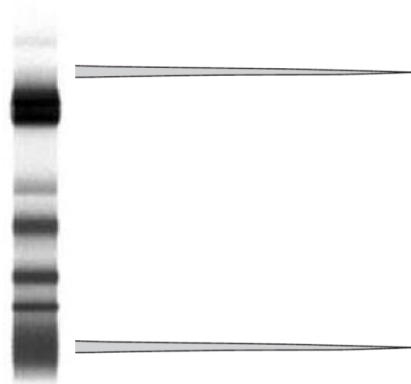




# Limit of Detection / Limit of Quantitation

	LoD	LoQ
SPE	1000 mg/L	1-3000mg/L
IFE	50-100mg/L	N/A

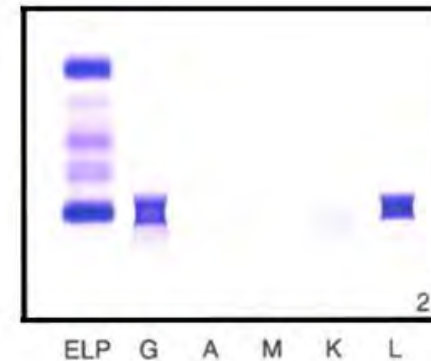
## SPE/CZE



Sensitivity: 1000 mg/L  
(CV>30%)

Co-migration

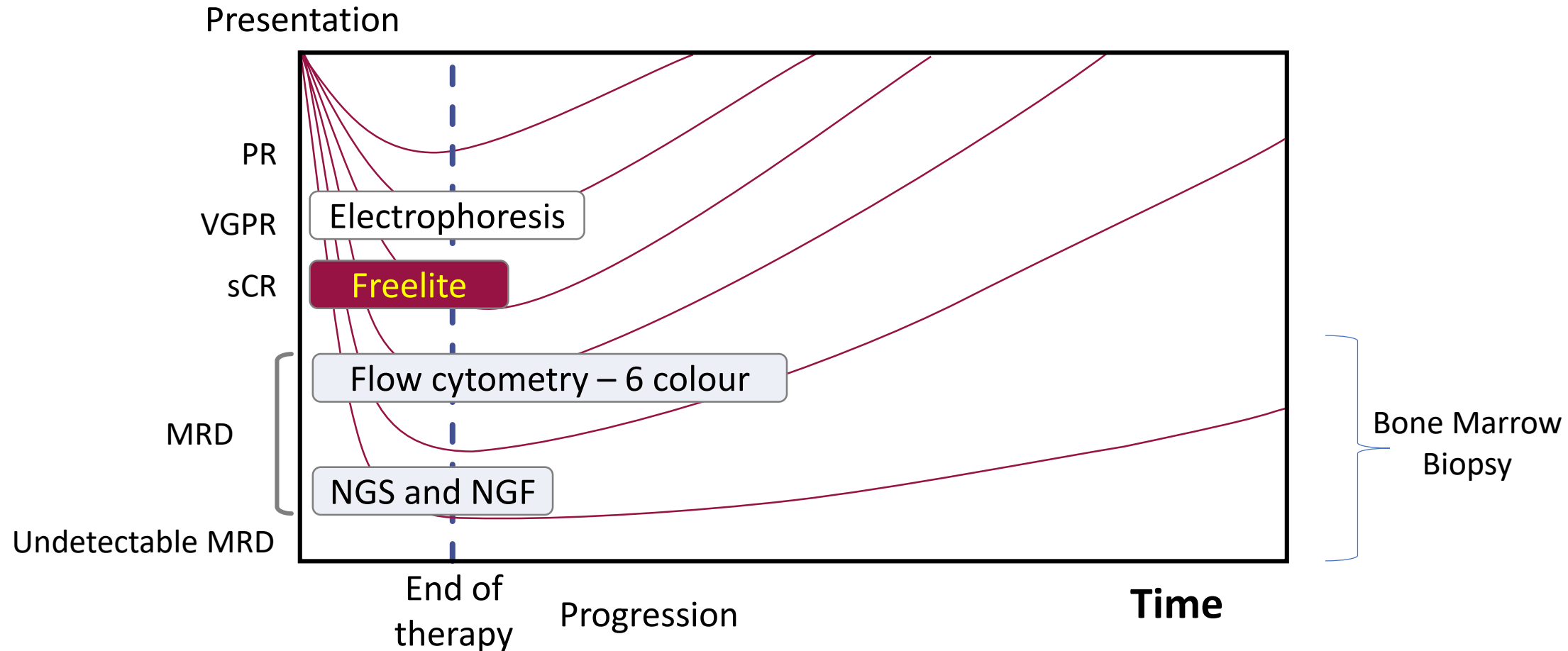
## IFE



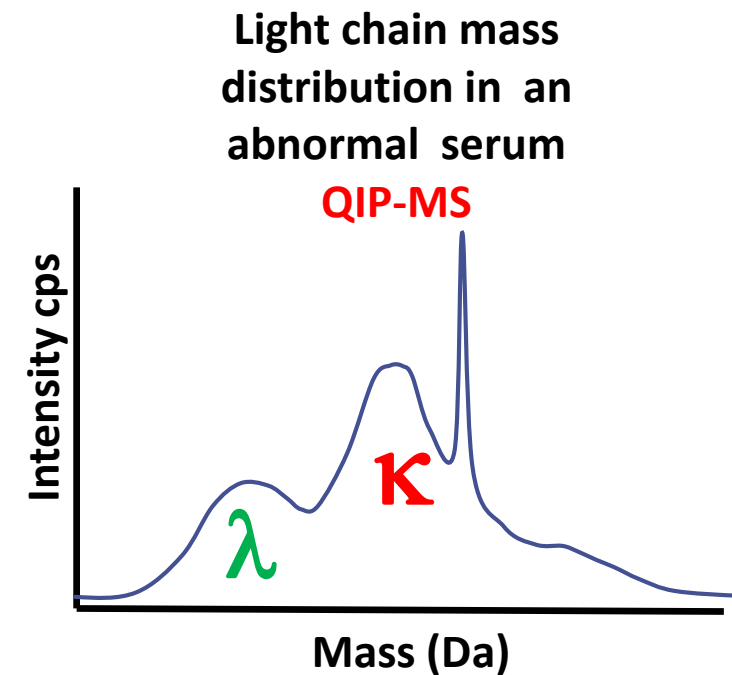
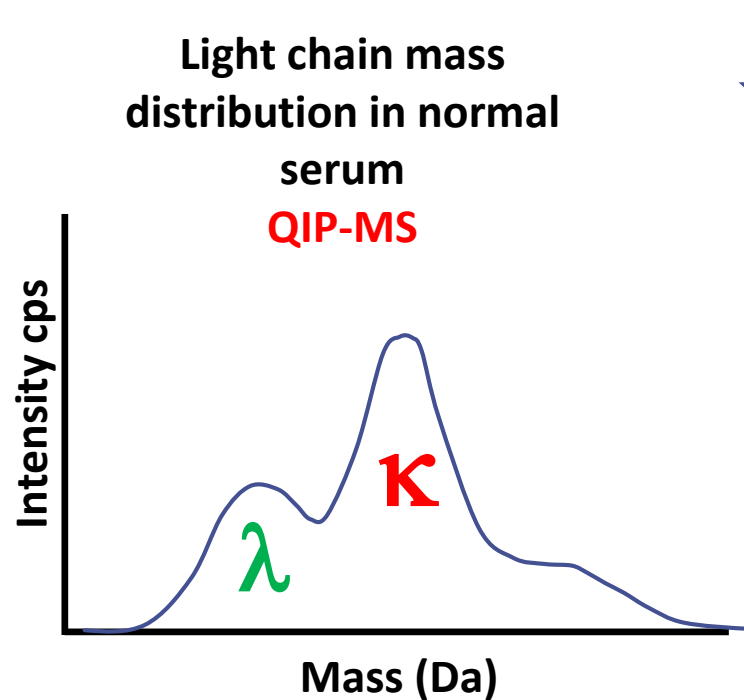
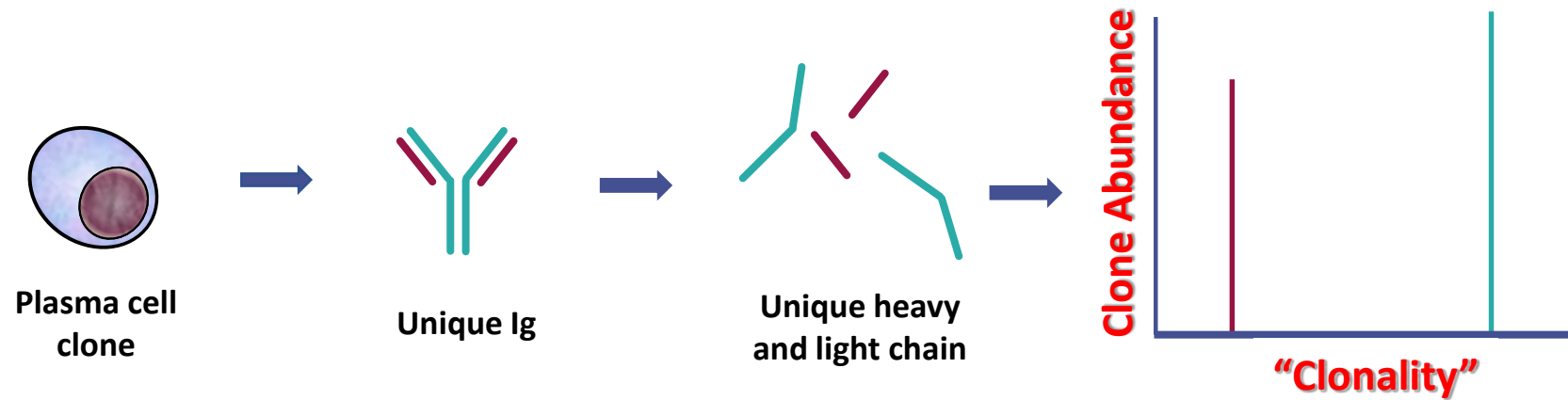
Sensitivity: 100 mg/L

Non-quantitative

# Laboratory methods to assess depth of response

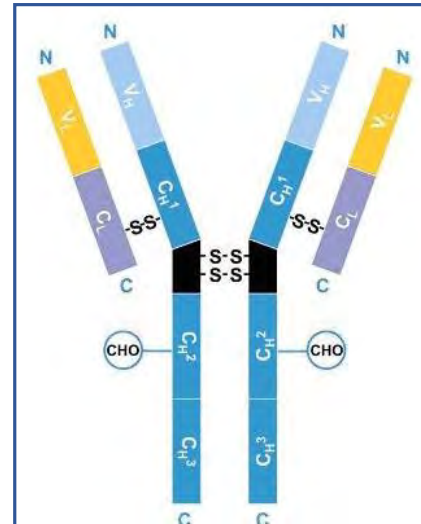
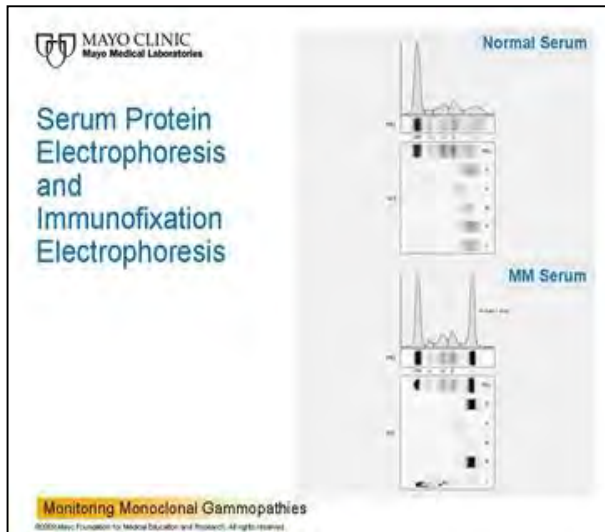


# The basic paradigm



# How does mass spectrometry-based detection of M-proteins improve sensitivity?

Charge  
Separation  
**1 Dimension**



VS.

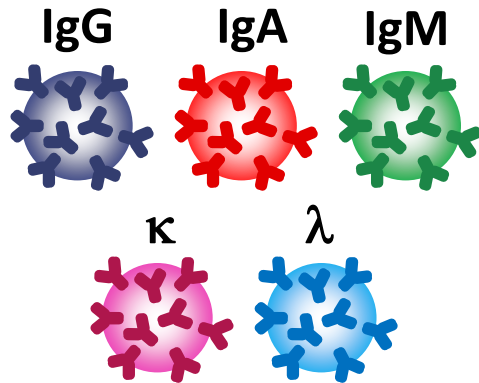
Precipitation/  
Mass/Charge  
Separation  
**3 Dimensions**



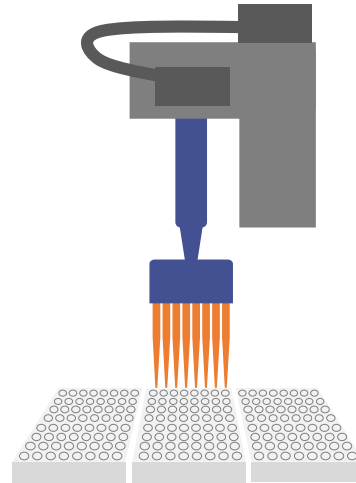


# The Binding Site solution

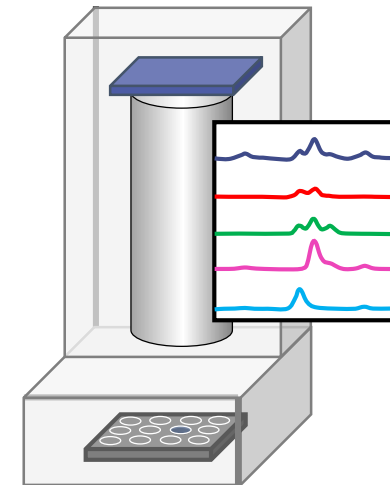
Isotype-specific  
beads



Liquid  
handler



MALDI  
mass spectrometry



Integrated Clinical  
Analyser

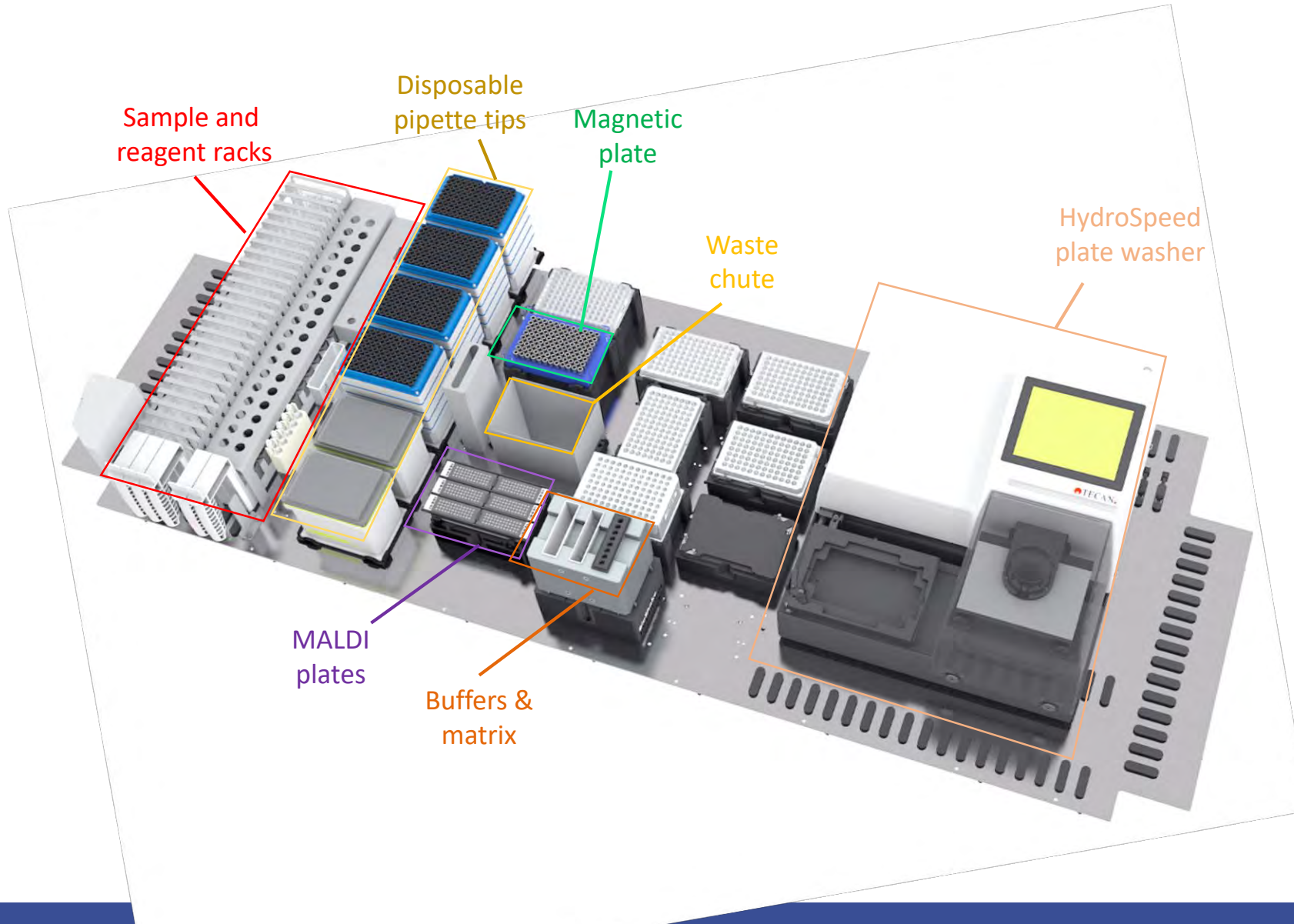
# Liquid Handling and Automation



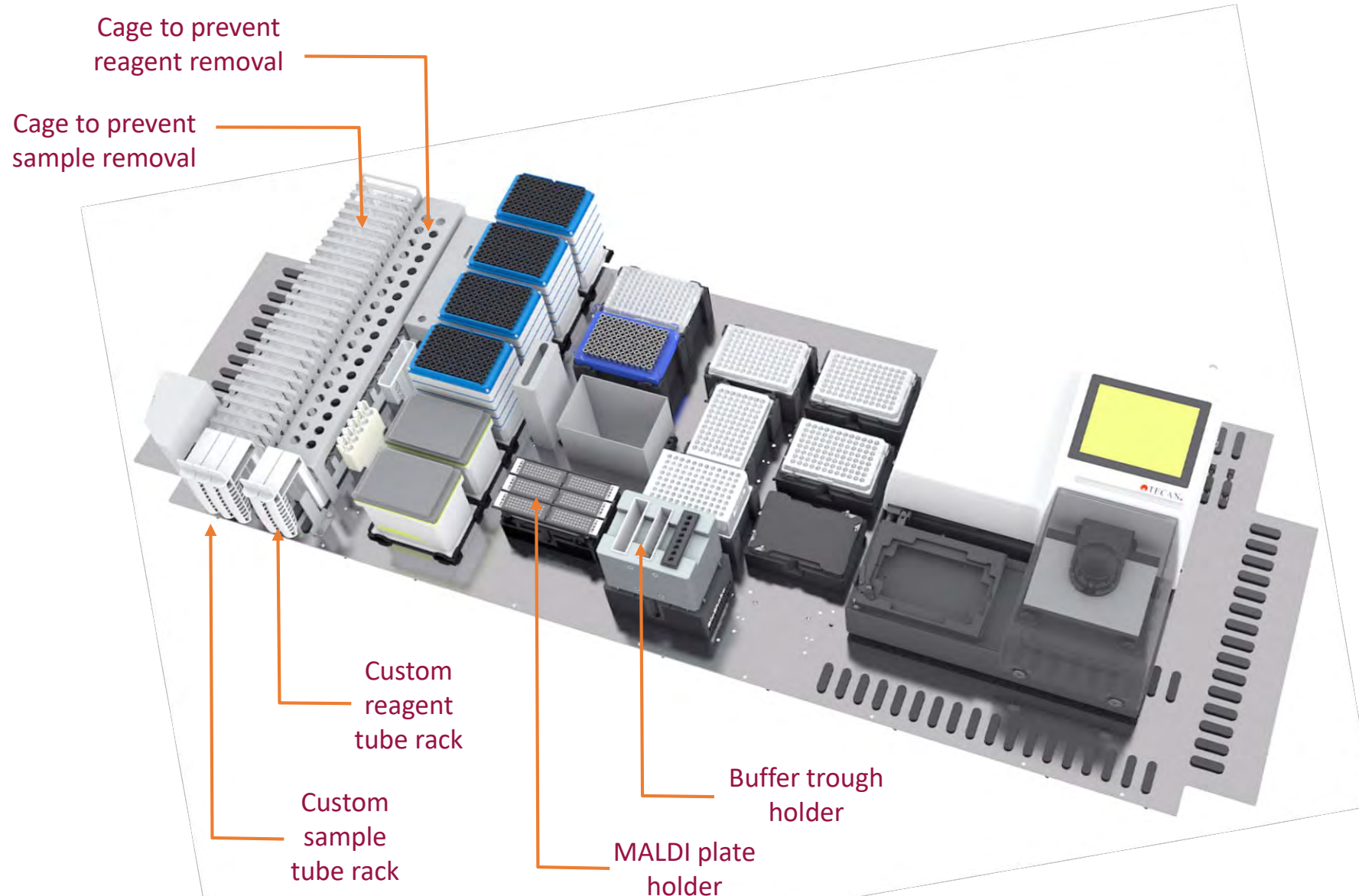
- **Customized** Fluent 780 - from Tecan
- Final product will be branded with a new system name trademarked to Binding site



# Liquid Handler - Deck overview

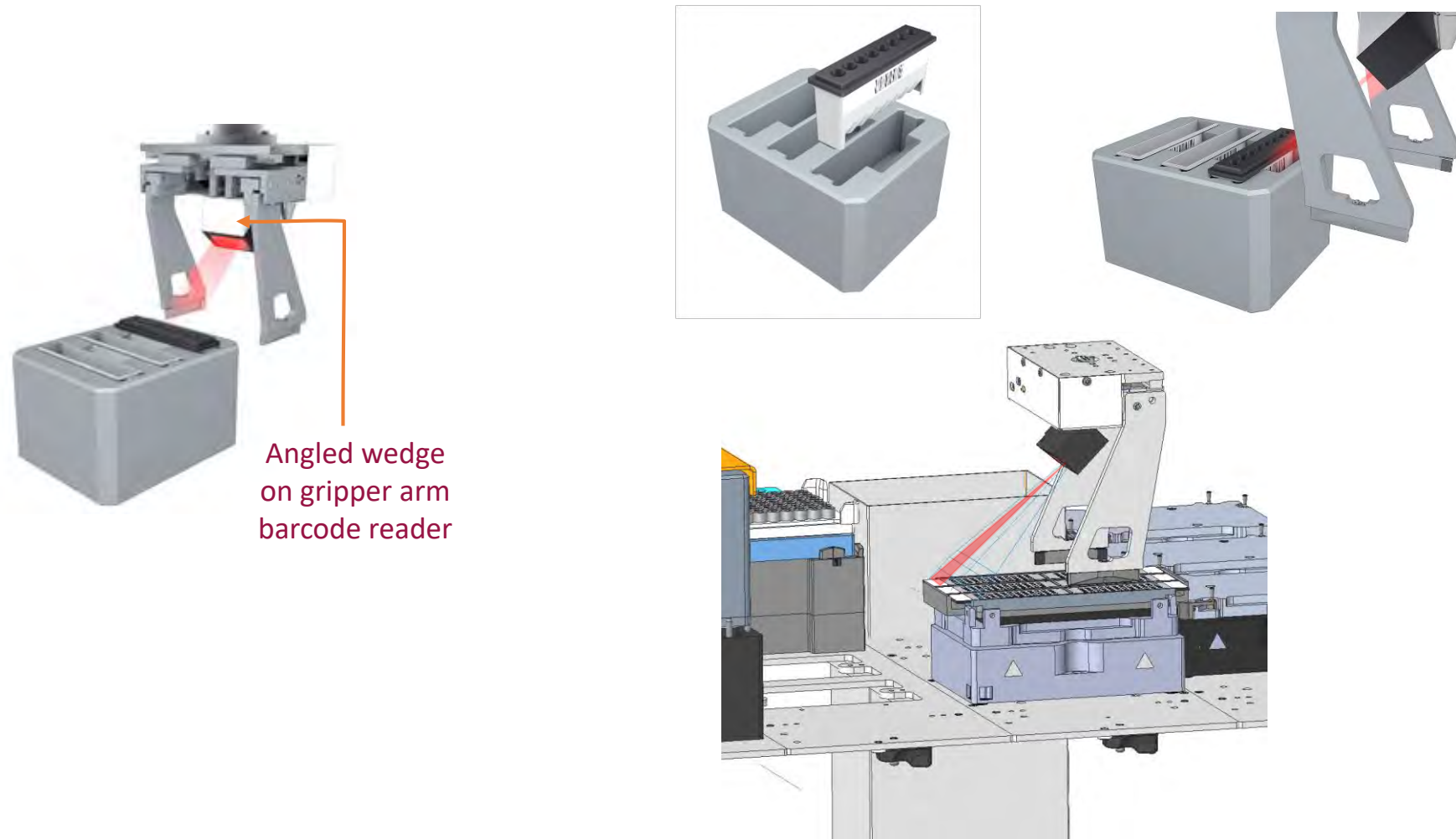


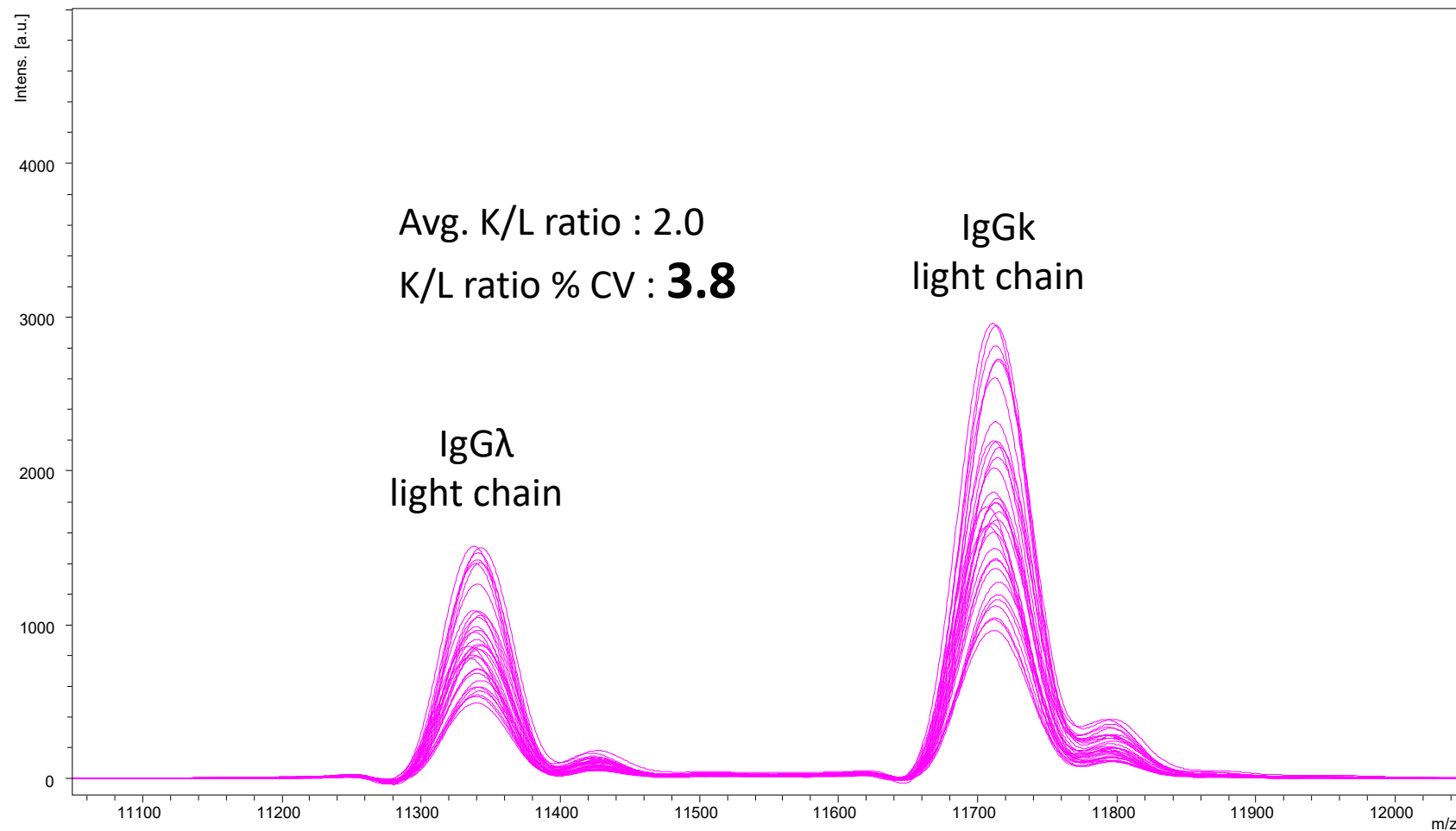
# Liquid Handler - Custom Designed Parts





# Liquid Handler - Custom Designed Parts



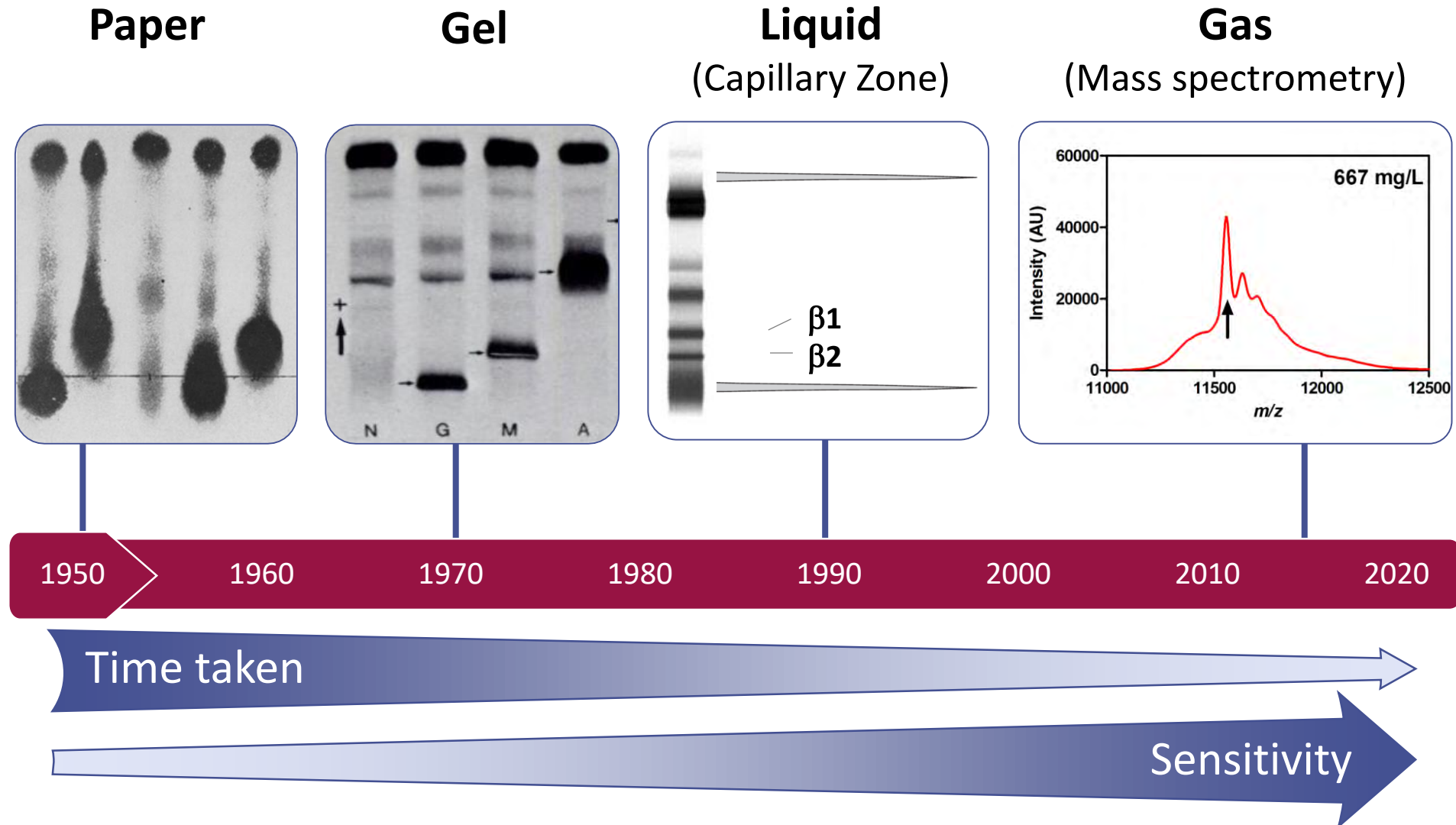


Avg. Lambda Intensity (Cts.)	L Intensity %CV	Avg. Kappa Intensity (Cts.)	K Intensity %CV	Avg. K/L ratio	Avg. %CV of K/L Ratio
933.97	32.86	1837.30	31.69	1.97	3.77

# Limit of Detection / Limit of Quantitation

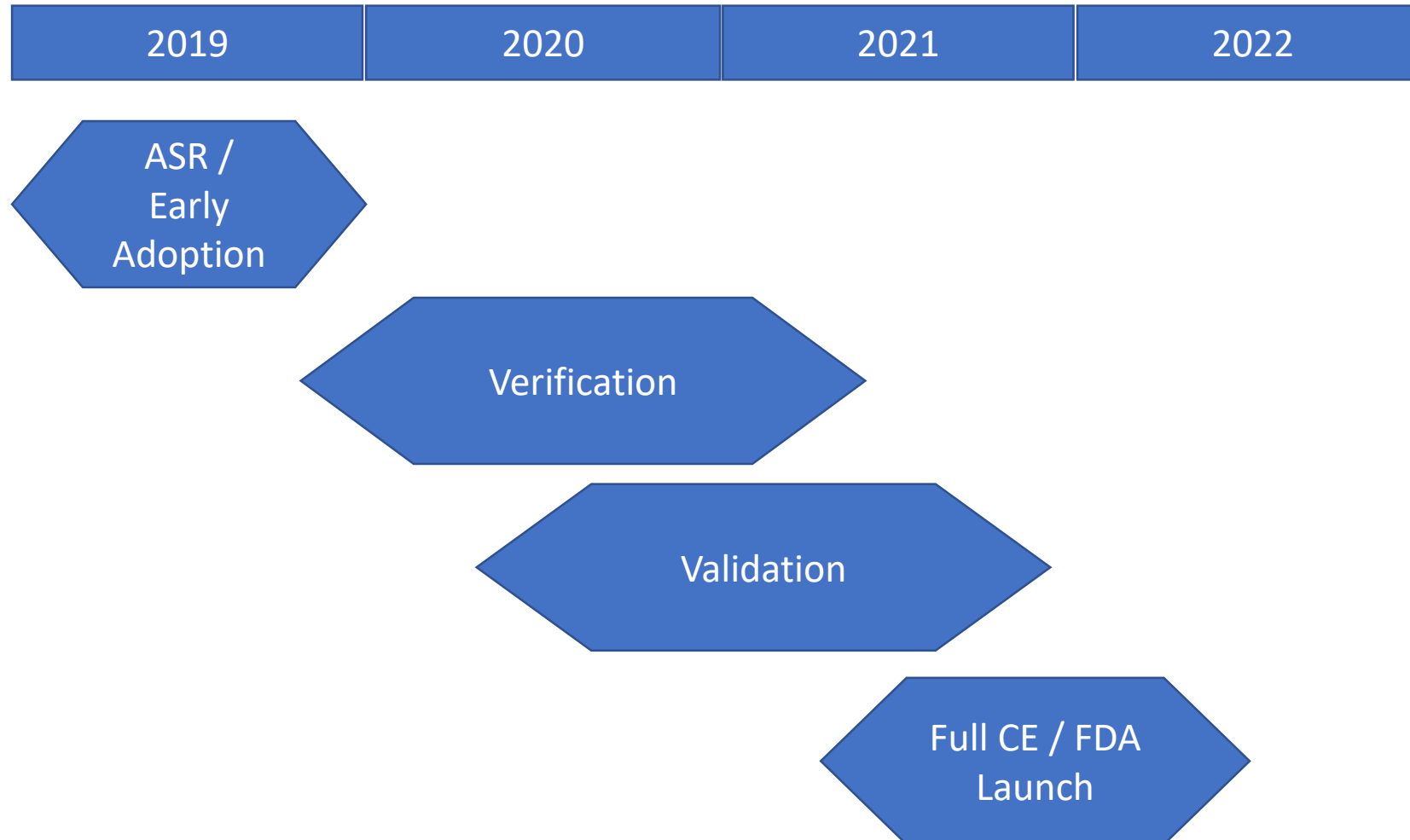
	LoD	LoQ
SPE	1000 mg/L	1-3000mg/L
IFE	50-100mg/L	N/A
IgG Mass Spec	1mg/L	24mg/L
IgA Mass Spec	1mg/L	8mg/L
IgM Mass Spec	1mg/L	8mg/L

# Evolution of electrophoresis





# Anticipated Timelines



# TBS / Tecan Collaboration

- Engaged in discussions at AACC 2017
- Superior engineering enabling primary tube to spot pipetting
- Collaborative approach to improving spot to spot precision for our assay
- Engaged technical and commercial team, focused on delivering TBS prototypes / systems against challenging timelines
- Monoclonal immunoglobulins the first in a suite of assays which will rely upon
  - Precision
  - Accuracy
  - Reproducibility



Coffee break.



# Agenda Capital Markets Day 2019

Time	Duration	Topic	Presenter
8:45 – 10:00		<b>Empowering the Century of Biology</b> <b>Application focus: Genomics</b> Tecan's offering and strategy Customer presentation: Ambry Genetics	Achim von Leoprechting, CEO Klaus Lun, EVP, Head Life Sciences Business Joy Crandall, Director of Assay Automation
10:00 – 10:15	15 min	Coffee Break	
10:15 – 11:15		<b>Application focus: Cell &amp; Tissue Analysis</b> Tecan's offering and strategy <b>Application focus: Protein Analysis</b> Tecan's offering and strategy Customer presentation: The Binding Site	Klaus Lun, EVP, Head Life Sciences Business Klaus Lun, EVP, Head Life Sciences Business Stephen Harding, CSO
11:15 – 11:30	15 min	Coffee Break	
11:30 – 13:00		<b>Tecan's Enabling Competencies</b> Innovation for the Century of Biology Operational Efficiency as the foundation <b>Focus topic: Partnering Business</b> <b>Summary &amp; Close</b>	Wael Yared, designated CTO and Head R&D Ulrich Kanter, Head Operations & IT (presented by Achim von Leoprechting, CEO) Achim von Leoprechting, CEO Achim von Leoprechting, CEO
		<b>Q&amp;A</b>	All







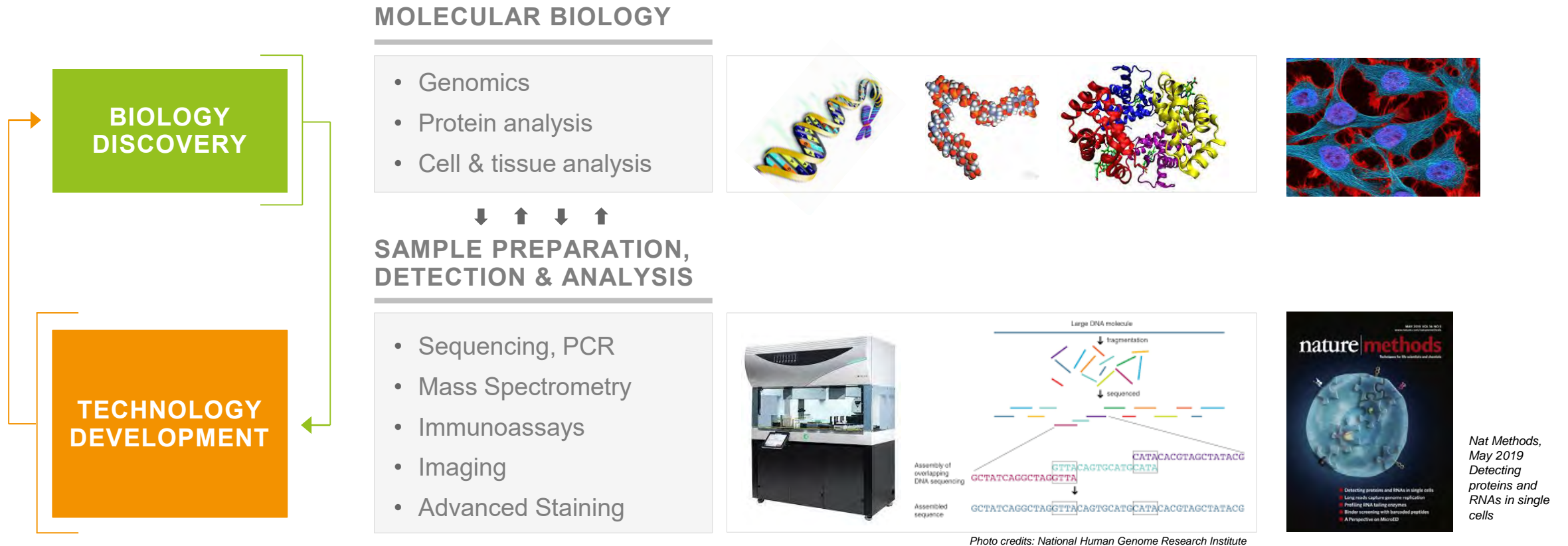
# Technology Opportunities in a Dynamic Landscape

**DR. WAEL YARED – DESIGNATED CTO & HEAD R&D**



# Technology Opportunities in a Dynamic Landscape

FROM DISCOVERY OF FUNDAMENTAL BIOLOGY TO BETTER DIAGNOSIS AND TREATMENT OF DISEASES



Self-reinforcing cycles of scientific discovery and technology development leading to improved understanding, diagnosis and treatment of disease

# Technology Opportunities in a Dynamic Landscape

FROM DISCOVERY OF FUNDAMENTAL BIOLOGY TO BETTER DIAGNOSIS AND TREATMENT OF DISEASES

RECOMBINANT  
DNA-BASED  
THERAPIES

PROTEIN  
CHARACTERIZATION  
TECHNOLOGY



Kozłowski et al., NEJM (2011)

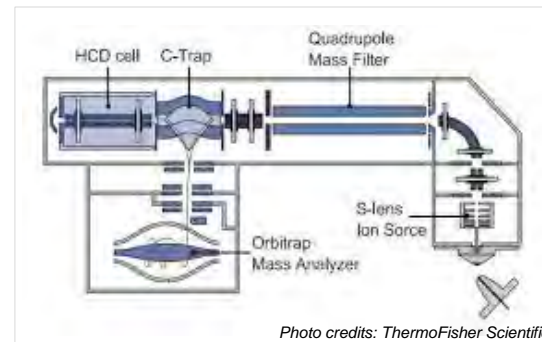
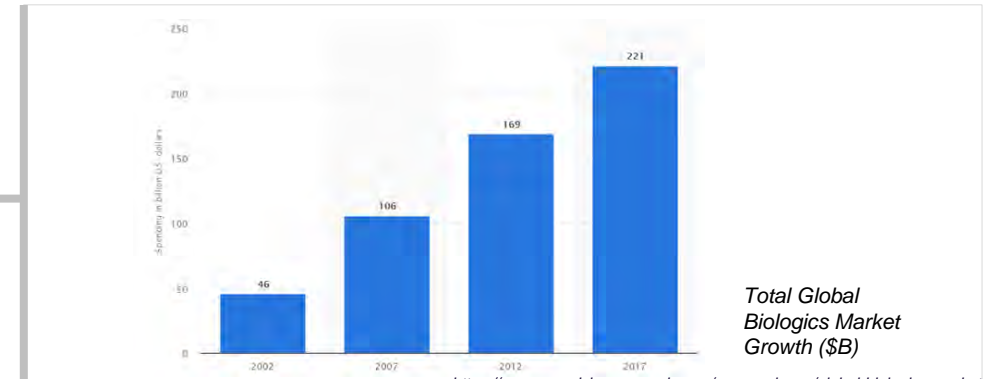
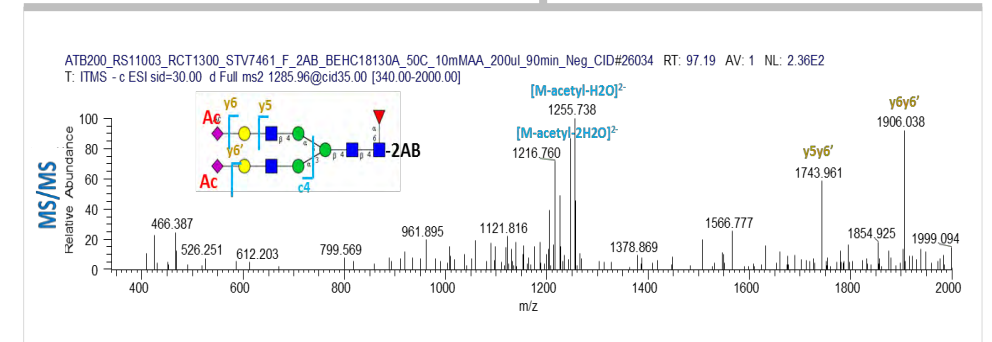


Photo credits: ThermoFisher Scientific



<https://www.grandviewresearch.com/press-release/global-biologics-market>



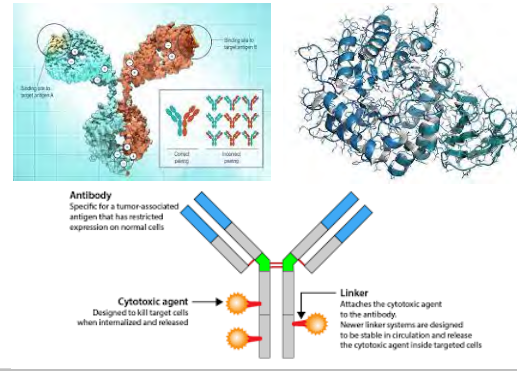


# Technology Opportunities in a Dynamic Landscape

FROM DISCOVERY OF FUNDAMENTAL BIOLOGY TO BETTER DIAGNOSIS AND TREATMENT OF DISEASES

RECOMBINANT  
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Kozlowski et al., NEJM (2011)

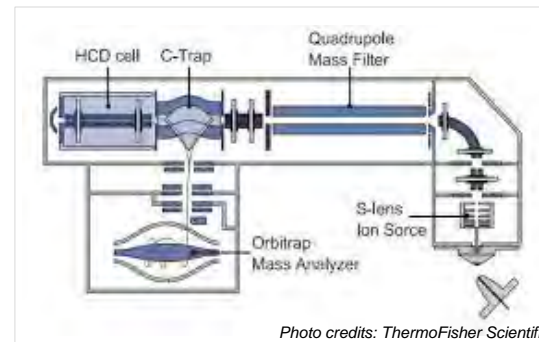
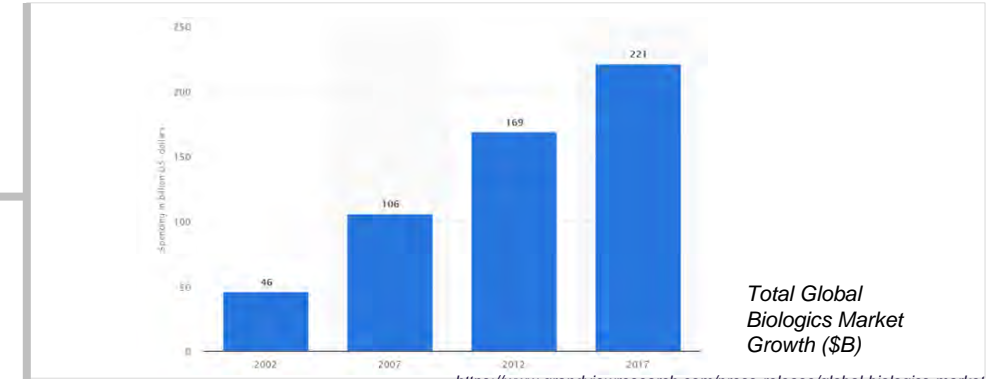
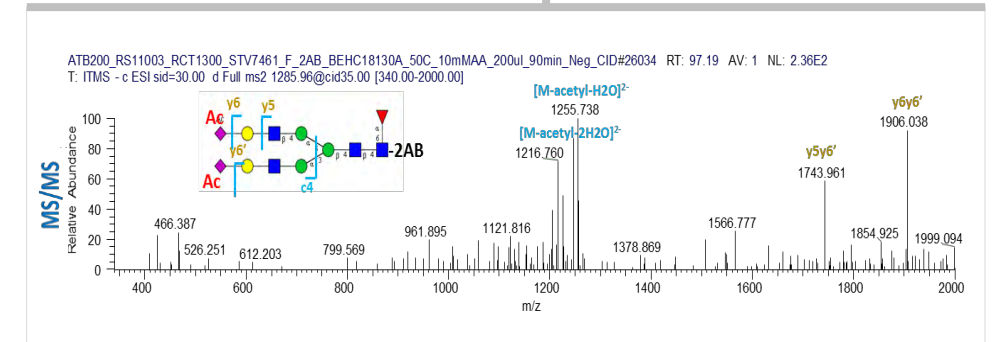


Photo credits: ThermoFisher Scientific



Total Global  
Biologics Market  
Growth (\$B)

<https://www.grandviewresearch.com/press-release/global-biologics-market>

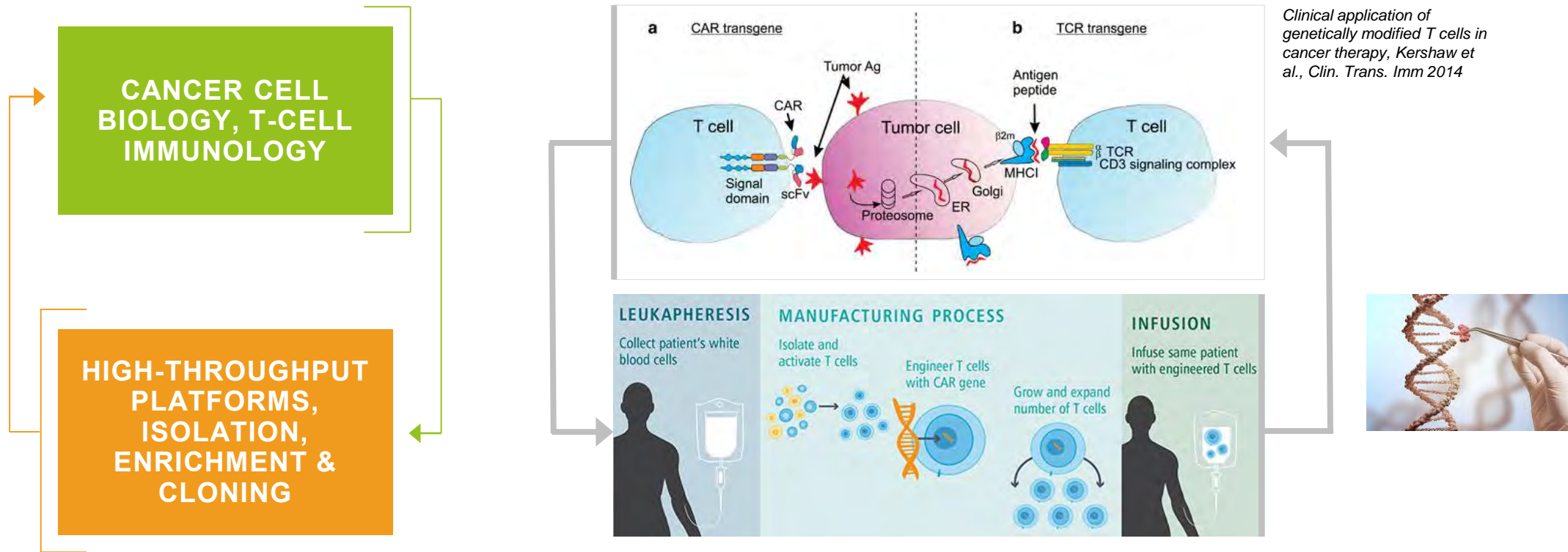


Cyclical growth for the last 30 years with increasing intensity



# Technology Opportunities in a Dynamic Landscape

FROM DISCOVERY OF FUNDAMENTAL BIOLOGY TO BETTER DIAGNOSIS AND TREATMENT OF DISEASES



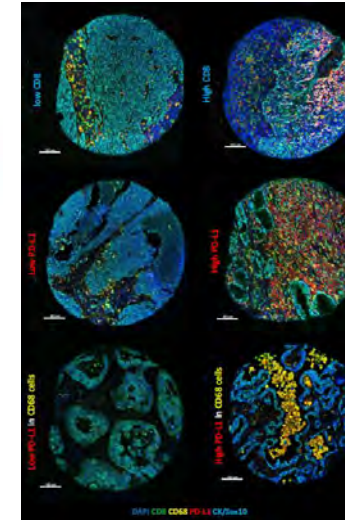
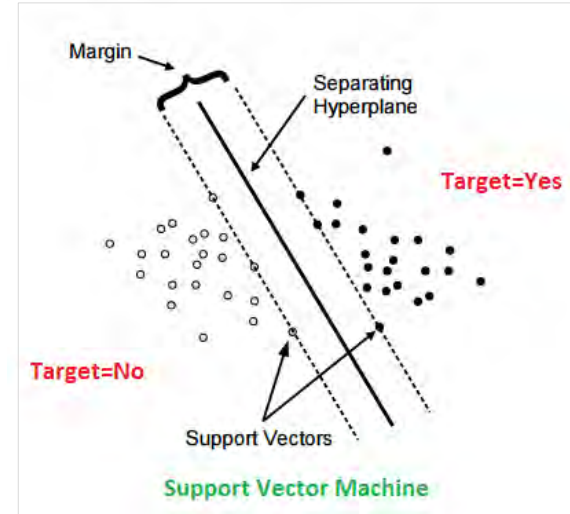
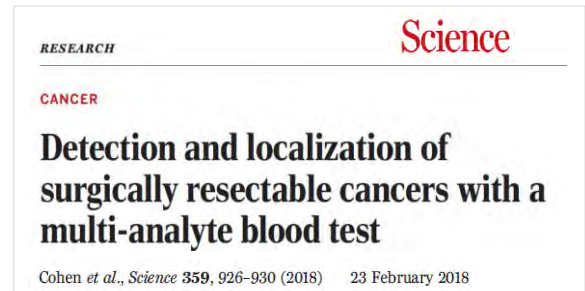
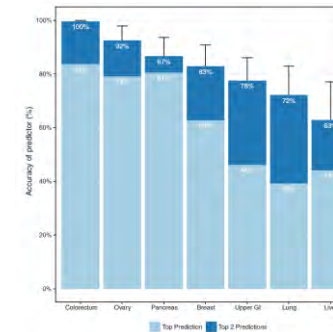
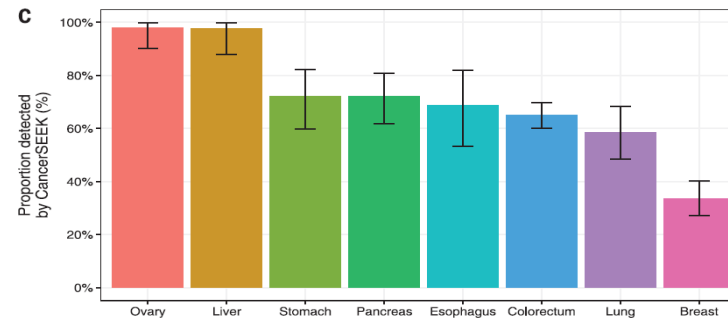
Research, diagnosis and therapy yearly breakthroughs

# Technology Opportunities in a Dynamic Landscape

FROM DISCOVERY OF FUNDAMENTAL BIOLOGY TO BETTER DIAGNOSIS AND TREATMENT OF DISEASES

CANCER GENETICS  
BIOMARKER  
DISCOVERY

MULTI-OMICS,  
PREDICTIVE  
ANALYTICS, TISSUE  
STAINING, IMAGE  
ANALYSIS



Quantitative measurement of expression of CD8, CD68 and PD-L1 in a novel multiplex assay format in non-small cell lung cancer (NSCLC) patients treated with PD-1 pathway blockade, Rimm *et al.*, 2017

# Tecan Competencies Empowering the Century of Biology

FROM DISCOVERY OF FUNDAMENTAL BIOLOGY TO BETTER DIAGNOSIS AND TREATMENT OF DISEASES

## What do these dynamic end markets then require?

- True understanding of the underlying science and user workflows
- Active probing of underserved needs
- State of the art skills, processes and infrastructure
- Nimble, adaptive response to user requirements

**Modular architectures and development disciplines  
Innovative skillsets & business engagements**

## TECAN'S ENABLING COMPETENCIES

- Applications and Workflows
- Robotics and Automation
- Software and Informatics
- Detection and Imaging
- Precision Handling of Liquids
- Reagents and Consumables

### **All built on a robust foundation of:**

- Product Development and Systems Integration Expertise
- Quality Management System
- Regulatory Expertise
- Efficient Operations





A top-down view of several hands of different skin tones working together to assemble white puzzle pieces on a rustic wooden table. A black pen and a notebook are visible in the upper left corner. A semi-transparent white box with black text is centered over the puzzle pieces.

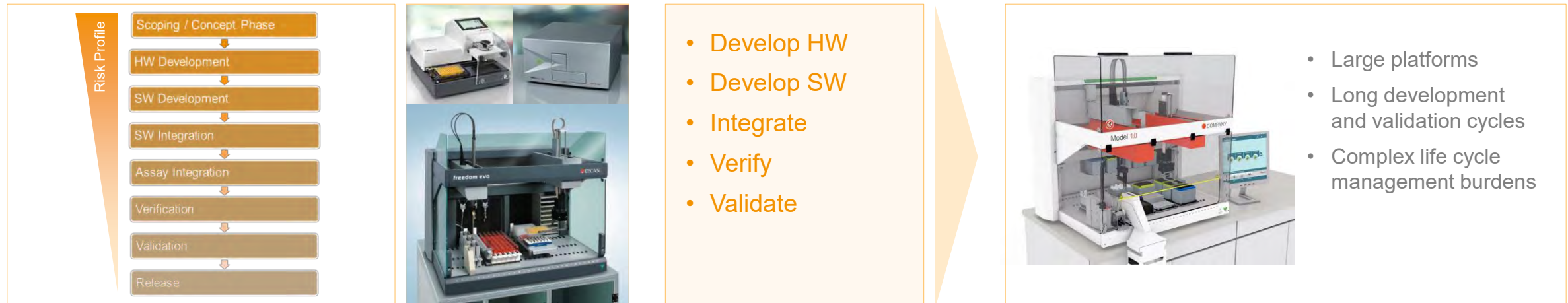
What are the benefits of increased modularity?



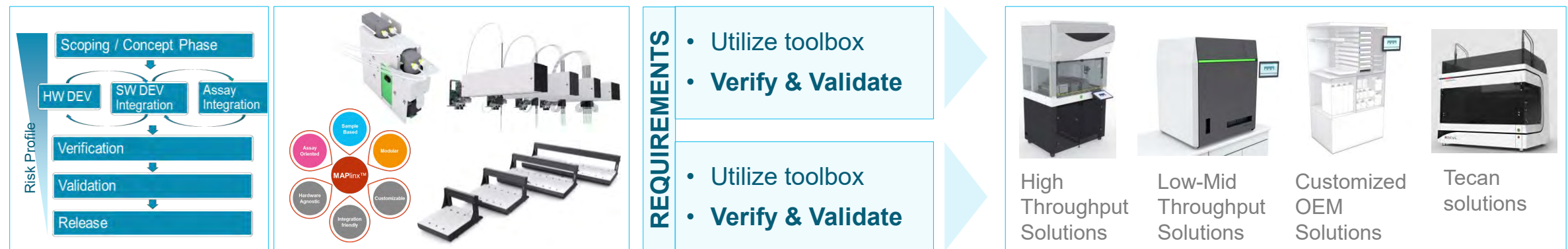


# Modularity – changing how we develop and deploy solutions

## TRADITIONAL PLATFORM DEVELOPMENT



## INNOVATIVE, MODULAR PLATFORM DEVELOPMENT



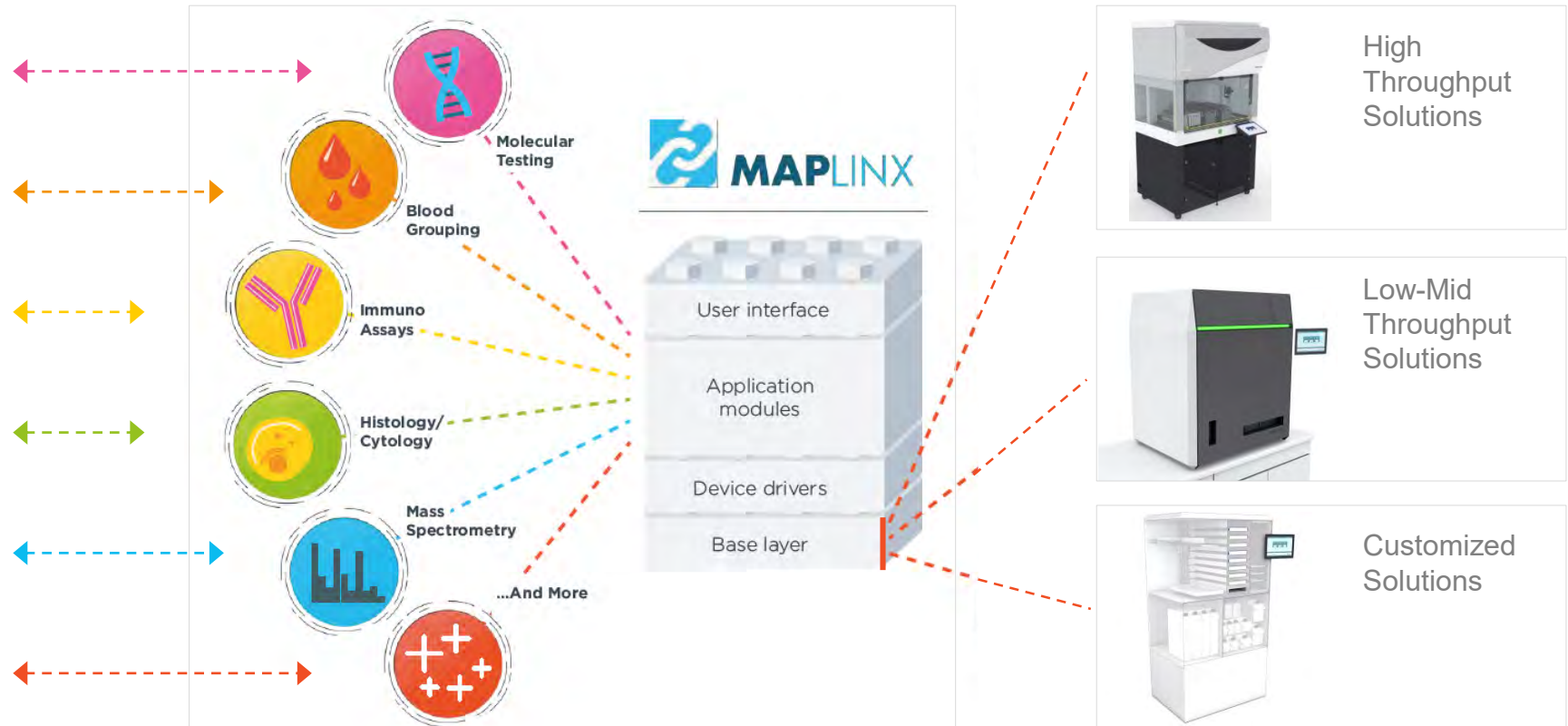
# A modular portfolio enables nimble response to market needs and more efficient commercialization

## APPLICATIONS

- Genomics
- Protein analysis
- Cell & tissue analysis

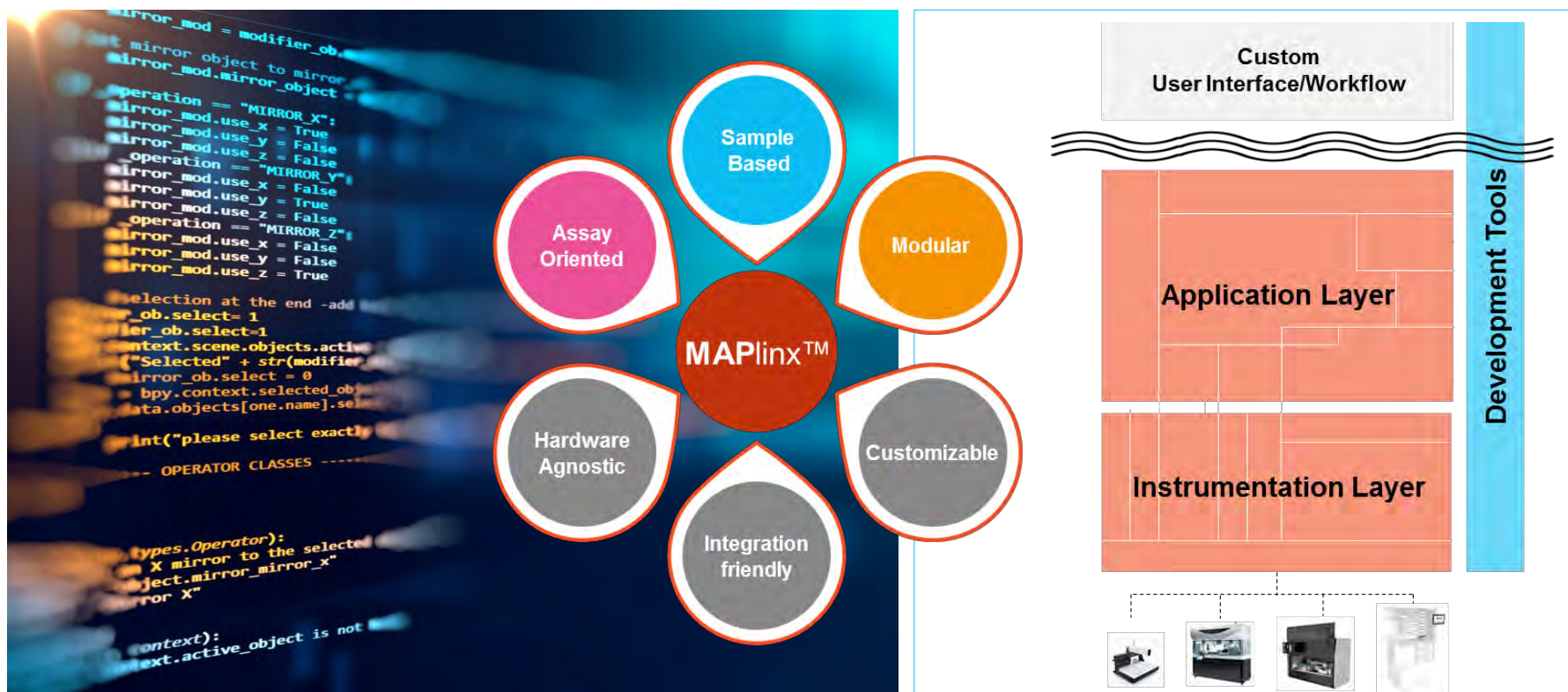
## DETECTION & ASSAY TECHNOLOGIES

- Sequencing
- PCR
- Mass Spectrometry
- Immunoassays
- Imaging
- Advanced Staining



# Software Modularity: MAPlinx™ Architecture and Development Tools

## EXCEPTIONAL MODULAR SOFTWARE FRAMEWORK WITH SAMPLE ORIENTED SCHEDULING



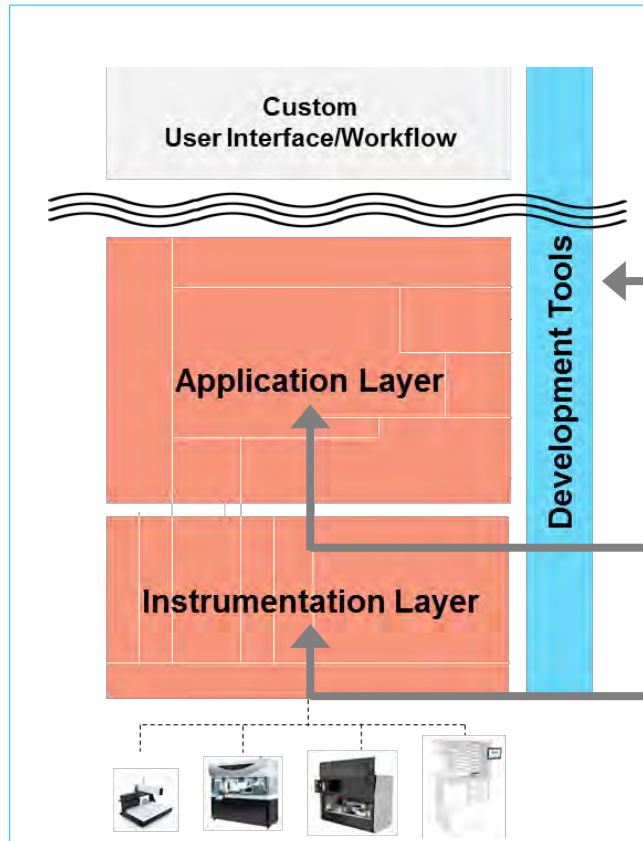
- Script custom workflows, UI's
- Add or modify assays without reprogramming

- High performance, tailor to needed functionality
- Easy to add/replace modules

- Hardware abstraction layer
- Flexible, broad device support

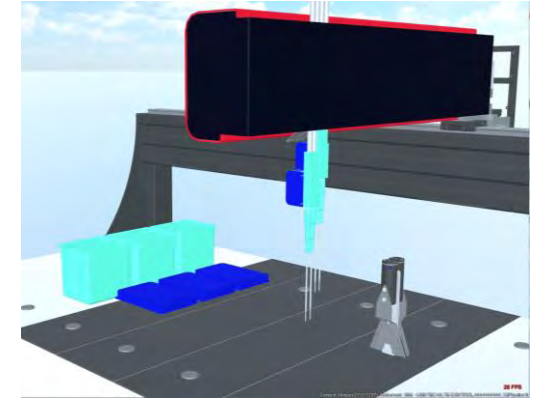
# Software Modularity:

## MAPlinx™ Architecture and Development Tools



### Development Environment and Tools:

- Enable custom development, internal or external
- Framework for rapid software development, even before hardware availability (3D SIM)
- Facilitates co-development with external partners and customers



### Continual buildup and deployment of expanded functionality

- Genomics assays and applications
- Molecular Diagnostics assays and applications
- Mass Spectrometry-based assays and applications



# Example of the modular approach at work...

## NGS LIBRARY PREPARATION WORKSTATION FOR ONCOLOGY APPLICATIONS

### HEALTHCARE USE

#### Better...

- understand
- diagnose
- and treat

Cancer

Infectious  
Diseases

Hereditary  
Diseases

Rare  
Diseases

and also  
applies to  
other  
markets

Metabolic  
Diseases

### APPLICATIONS

- Genomics
- Protein analysis
- Cell & tissue analysis

### DETECTION & ASSAY TECHNOLOGIES

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### TECAN'S ENABLING COMPETENCIES

- Applications and Workflows
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- Software and Informatics
- Detection and Imaging
- Precision Handling of Liquids
- Reagents and Consumables

#### All built on a robust foundation of:

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- Quality Management System
- Regulatory Expertise
- Efficient Operations

AND MANY MORE

# Hardware Modularity: Cavro® MagniFlex Based Solutions

- A true modular automation platform powered by the modular MAPlinx™ software architecture
- An evolution of the Xantus platform from SIAS, multi-site development project across Tecan

## ENTRY-LEVEL AUTOMATION FUNCTIONALITY

- Base-unit
- Flexible channel arm
- Liquid system
- Channel gripper

## INNOVATIVE PERFORMANCE MODULES

- Air dispense
- Multiple channels
- Broad dispense range
- Cost-effective

## APPLICATION-SPECIFIC CONFIGURATIONS

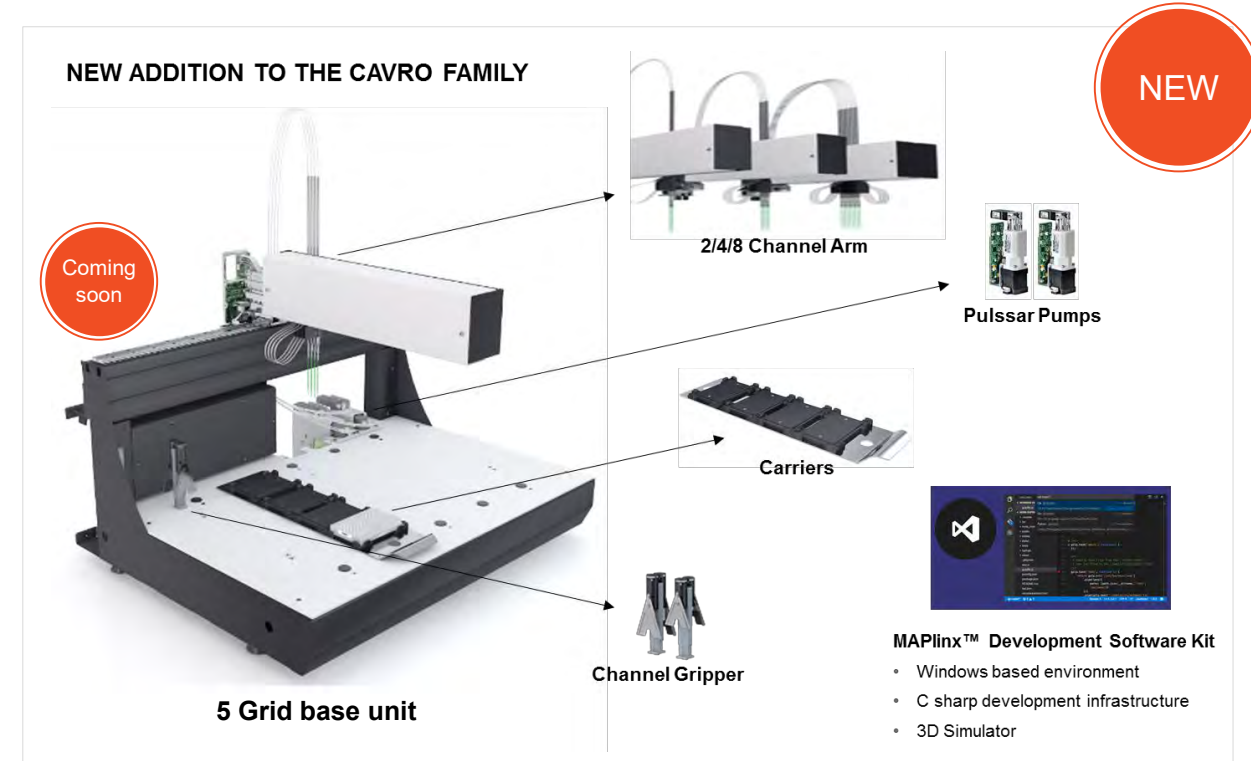
- Housing
- Filtration
- Stacking, integrated waste



# Hardware Modularity: Cavo<sup>®</sup> MagniFlex Based Solutions

## Multiple cycles of development, validation and deployment:

- Deployment of Cavo<sup>®</sup> MagniFlex basic automation solution
- A flexible, configurable starting point for component and platform projects with innovative performance features  
→ *benefit from economies of scale with a common platform*
- Aim towards end-application specific configurations for Tecan and OEM offerings



All synchronized with continuing roll-out of MAPlinx<sup>™</sup> modules



# Innovative Skillsets leading to new business engagements





# Introspect™ Software

## INCREASING LAB PRODUCTIVITY WITH UNPARALLELED INSIGHTS

- Connecting automation workstations through secure cloud-based reporting and analysis service
- Introspect dashboards provide real data on instrument uptime, consumables consumption and run success rates
- Even historical and archived instrument data can be uploaded
- One or more instruments, even across multiple locations, can be connected



# Introspect at a glance



## ANALYZE MULTIPLE INSTRUMENTS



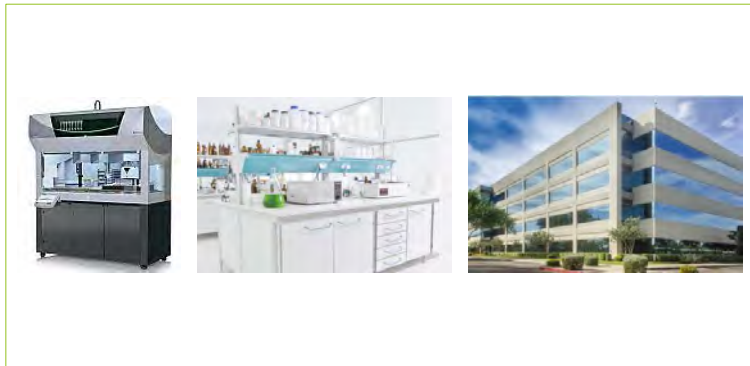
## ANALYZE ACROSS MULTIPLE SITES



## CUSTOMIZABLE FOR USERS



## VISUALIZE INSTRUMENT, LAB OR SITE



## DEFINE SPECIFIC KPI'S



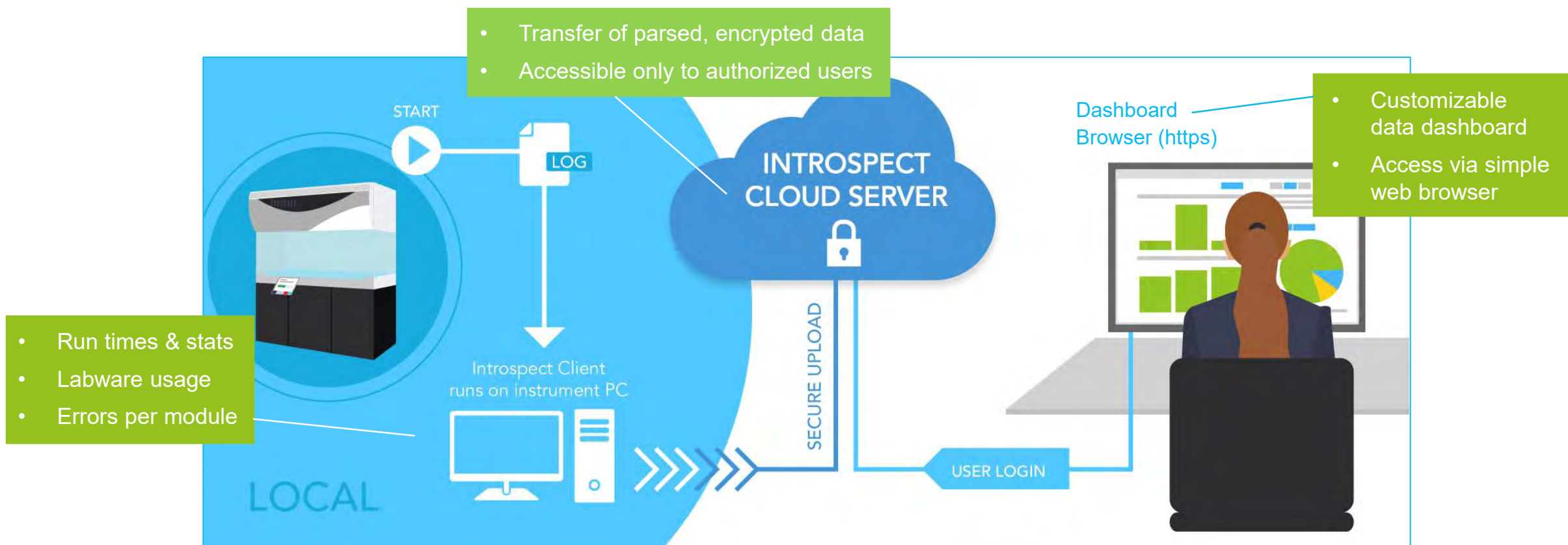
## SECURE, ENCRYPTED DATA



Introspect is an outstanding tool for gaining insight on utilization, productivity and consumables usage.



# Empowering Customer Insight!



Automated data flow and secure upload to the cloud allows easy access from anywhere.

# Introspect benefits

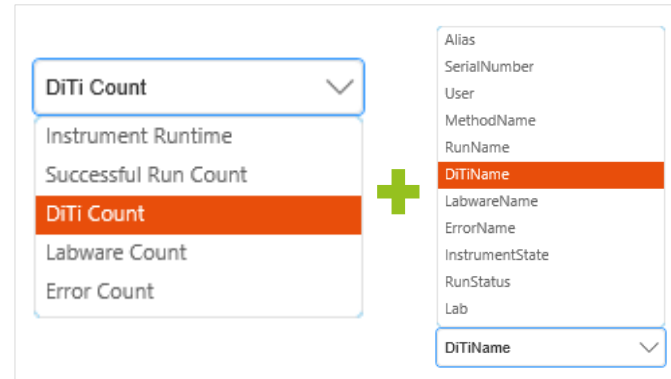
✓ **UNDERSTAND SYSTEM UTILIZATION**

✓ **INCREASE PRODUCTIVITY**

✓ **ATTAIN FASTER PRODUCTION AND LOWER COSTS**

✓ **UNDERSTAND CONSUMABLE USAGE AND COSTS**

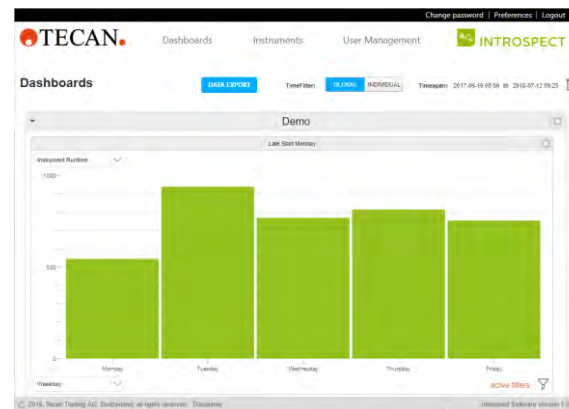
✓ **REAP THE BENEFITS OF AUTOMATED SOLUTIONS**



Customizable dashboard setup



Result of analyzed data



Review Runtime  
per day – detect less  
efficient weekdays



# Introspect benefits

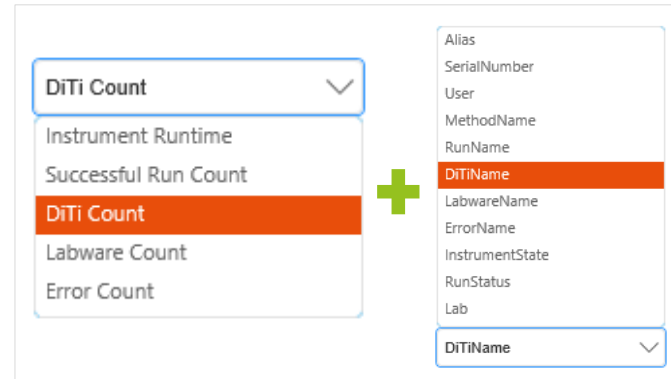
✓ **UNDERSTAND SYSTEM UTILIZATION**

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✓ **ATTAIN FASTER PRODUCTION AND LOWER COSTS**

✓ **UNDERSTAND CONSUMABLE USAGE AND COSTS**

✓ **REAP THE BENEFITS OF AUTOMATED SOLUTIONS**



Customizable dashboard setup



Result of analyzed data



See when during the day your instrument is being used

# Introspect benefits

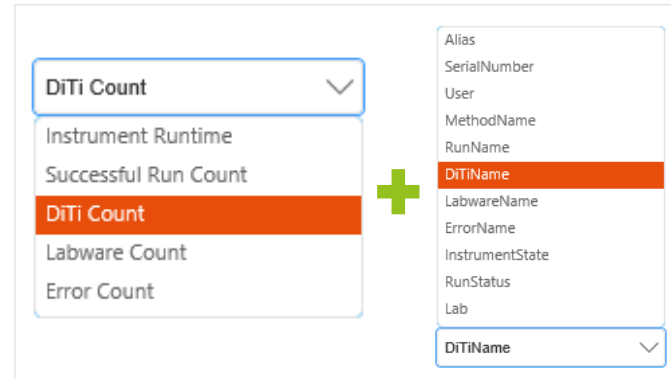
✓ **UNDERSTAND SYSTEM UTILIZATION**

✓ **INCREASE PRODUCTIVITY**

✓ **ATTAIN FASTER PRODUCTION AND LOWER COSTS**

✓ **UNDERSTAND CONSUMABLE USAGE AND COSTS**

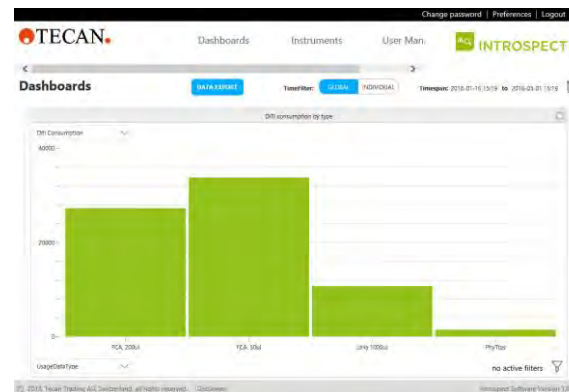
✓ **REAP THE BENEFITS OF AUTOMATED SOLUTIONS**



Customizable dashboard setup



Result of analyzed data



Review Labware Consumption by type

# Tecan Competencies Empowering the Century of Biology

FROM DISCOVERY OF NOVEL MEDICATIONS ALL THE WAY TO BETTER DIAGNOSIS OF DISEASES

## HEALTHCARE USE

### Better...

- understand
- diagnose
- and treat

Cancer

Infectious  
Diseases

Hereditary  
Diseases

Rare  
Diseases

and also  
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- Robotics and Automation
- Software and Informatics
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- Reagents and Consumables

### All built on a robust foundation of:

- Product Development and Systems Integration Expertise
- Quality Management System
- Regulatory Expertise
- Efficient Operations

# Empowering the Century of Biology.







# Operational Efficiency as the Foundation

**ULRICH KANTER, HEAD OPERATIONS & IT**  
Presented by Achim von Leoprechting, CEO



# Driving Operational Efficiency

## SIGNIFICANT IMPROVEMENTS IN OPERATIONAL EFFICIENCY IN RECENT YEARS

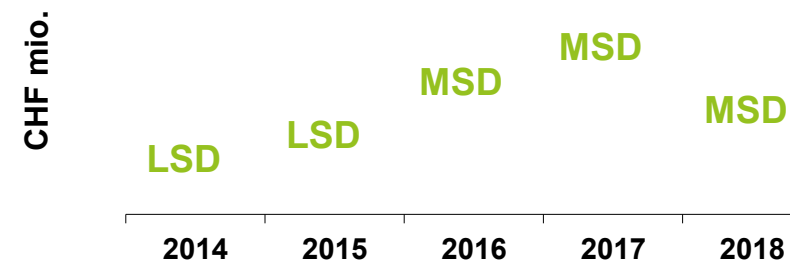
### GLOBAL SUPPLY CHAIN DRIVING MATERIAL COST SAVINGS

- Supplier relocation and consolidation
- Global alignment of procurement activities
- Significant material cost savings achieved between 2014-2018
- Activities to continue, but low-hanging fruits captured
- Cost improvements going forward increasingly shifting to design-to-cost benefits from modular product portfolio

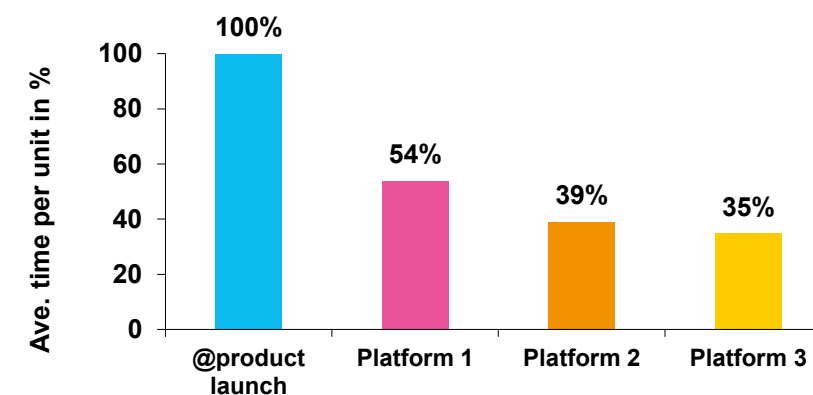
### LEAN PRODUCTION HAS ENABLED EFFICIENCY GAINS

- Ongoing conversion of all production lines to line-flow principle
- KanBan module assembly – ship to line
- Significant improvements in hours of labor time to produce each instrument

#### NET MATERIAL COST SAVINGS



#### REDUCTION OF PRODUCTION TIME



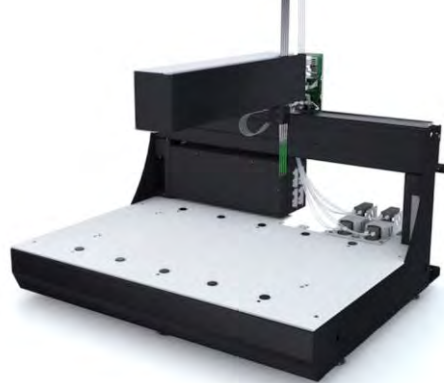
#### CASE STUDY: 3 MAJOR INSTRUMENT PLATFORMS

# M&A Case Study: Sias

## MAIN FOCUS OF ACQUISITION: CONSOLIDATION AND COST CASE



**Sias Xantus**



**Cost- and performance  
optimized Cavro® MagniFlex**

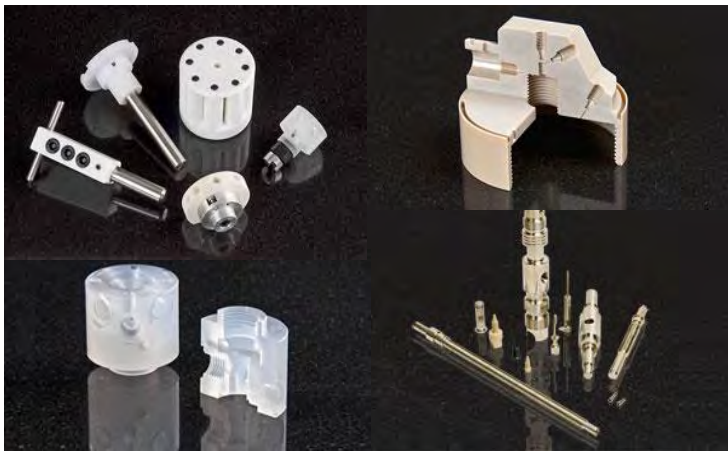
- Sias, a Swiss OEM supplier with complementary product portfolio, acquired in 2015
- Legally merged and fully integrated with Swiss manufacturing subsidiary at Tecan HQ in Maennedorf
- New accounts added to Partnering Business portfolio
- Synergies in R&D and operations realized
- Operational efficiency substantially improved through lean converted manufacturing and consolidated procurement
- Turned from break-even into a profitable business
- SIAS Xantus created the basis for Tecan's new cost- and performance optimized entry level platform Cavro® MagniFlex

# M&A Case Study: Long-term Supplier of Key Parts

MAIN FOCUS OF ACQUISITION: VERTICAL INTEGRATION BENEFITS AND COST CASE



- Acquisition of long-term supplier closed at end of May
- Vertically integration of critical precision-machined parts manufacturing
- Two manufacturing sites, one in California, USA, and a second site in Vietnam
- Tecan is the largest customer of this supplier, making up for a significant share of revenues
- Cost benefits by internalizing the supply are expected to enhance the operating profitability





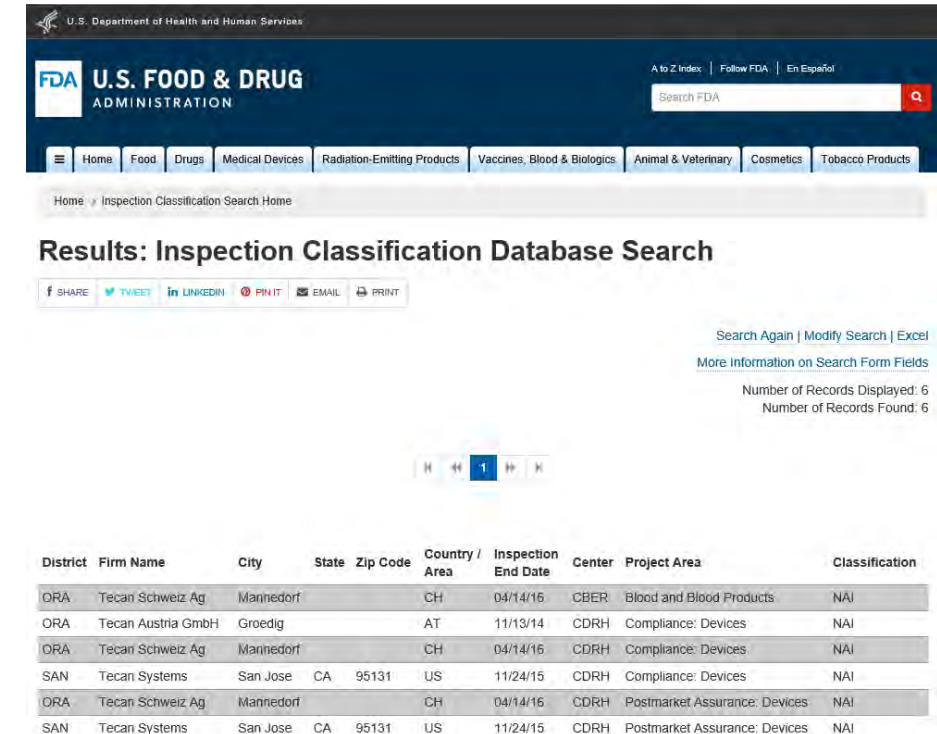
# Regulatory Expertise is a Key Differentiator

## REGULATORY COMPLIANCE IS A MUST

- Regular audits performed by international authorities
  - Main instrument production sites have been FDA inspected between 2014-2016, all with zero findings
- Instrument manufacturing in Maennedorf and IA production in Hamburg, Germany, MDSAP (Medical Device Single Audit Program) certified
- Extensive audits by customers at production sites, including leading IVD companies
- ISO 13485 and ISO 9001 certified production, sales and service sites

## SUPPORTING OUR CUSTOMERS

- Supporting customers with 510k and PMA applications for new diagnostic instruments
- Unique position helping customers to bridge from research to diagnostics settings
- Leading provider of FDA-listed Class 1 medical device liquid handling workstations



District	Firm Name	City	State	Zip Code	Country / Area	Inspection End Date	Center	Project Area	Classification
ORA	Tecan Schweiz Ag	Maennedorf			CH	04/14/16	CDER	Blood and Blood Products	NAI
ORA	Tecan Austria GmbH	Groedig			AT	11/13/14	CDRH	Compliance: Devices	NAI
ORA	Tecan Schweiz Ag	Maennedorf			CH	04/14/16	CDRH	Compliance: Devices	NAI
SAN	Tecan Systems	San Jose	CA	95131	US	11/24/15	CDRH	Compliance: Devices	NAI
ORA	Tecan Schweiz Ag	Maennedorf			CH	04/14/16	CDRH	Postmarket Assurance: Devices	NAI
SAN	Tecan Systems	San Jose	CA	95131	US	11/24/15	CDRH	Postmarket Assurance: Devices	NAI



# Tecan Partnering – The Tecan Advantage

**DR. ACHIM VON LEOPRECHTING**  
**CEO**



# Transition from Research to Diagnostics

TECAN HAS A UNIQUE POSITION TO BRIDGE FROM RESEARCH TO DIAGNOSTICS SETTINGS

LIFE SCIENCE RESEARCH



LAB DEVELOPED TESTS (LDT)



IN-VITRO DIAGNOSTICS

Life Sciences  
Business

Partnering  
Business

Empowered with Tecan.

Covering individual steps of a  
specific workflow

Sample-to-Result Solution

## EXAMPLES

- Next-Generation Sequencing (NGS)
- Mass Spectrometry
- Liquid Biopsies / Circulating Tumor Cells (Oncology / NIPT / Infectious Diseases)
- Tissue Pathology (IHC, ISH, NGS, MS)
- Ultra-Sensitive Biomarker Detection and many more...



# From a Critical OEM Component to a Fully Integrated System

TECAN PARTNERING'S OFFERING COVERS THE WHOLE SPECTRUM OF OEM AUTOMATION

STANDARD AND CUSTOM  
OEM COMPONENTS



OEM SYSTEM DEVELOPMENTS BASED  
ON TECAN'S MODULAR TOOLBOX



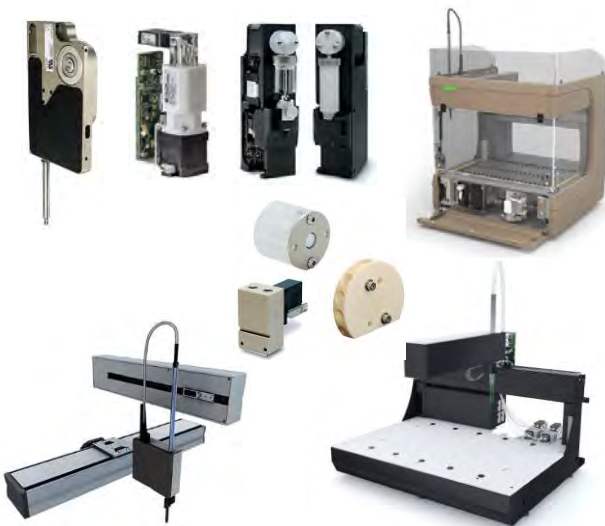
OEM SYSTEM DEVELOPMENTS  
FROM SCRATCH

Tecan Cavo®

Tecan Synergence™



Your engineering empowered



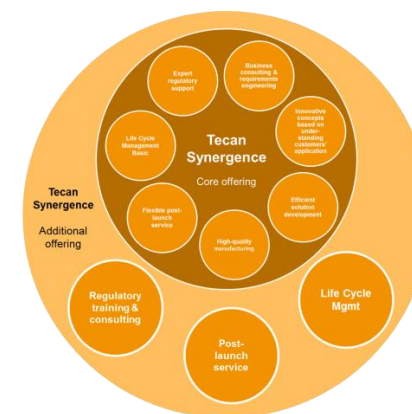
## Your OEM partner of choice

### ALWAYS THERE FOR YOU

- Tailored solutions to match customer's workflows
- In depth understanding of the key applications in IVD and life science
- Fully abreast of the changing regulatory landscape
- True partnership



Your vision empowered





# Tecan Cavo<sup>®</sup> – Your Engineering Empowered

## Pumps, Valves & Modules



- Flexible designs & custom solutions
- Every component is quality tested
- Designed & documented for regulated environments
- Superior technical support
- Industry expertise (40+ years)

## Configurable Robotics



## Built by Tecan, Used by Tecan



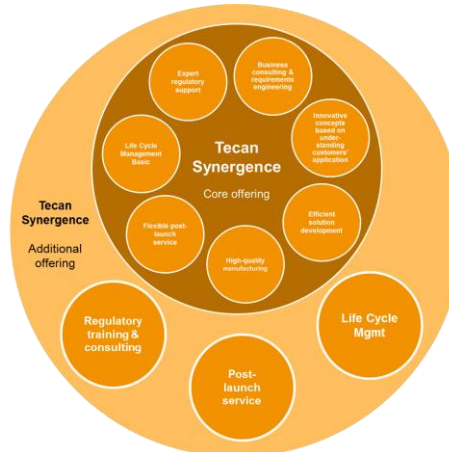
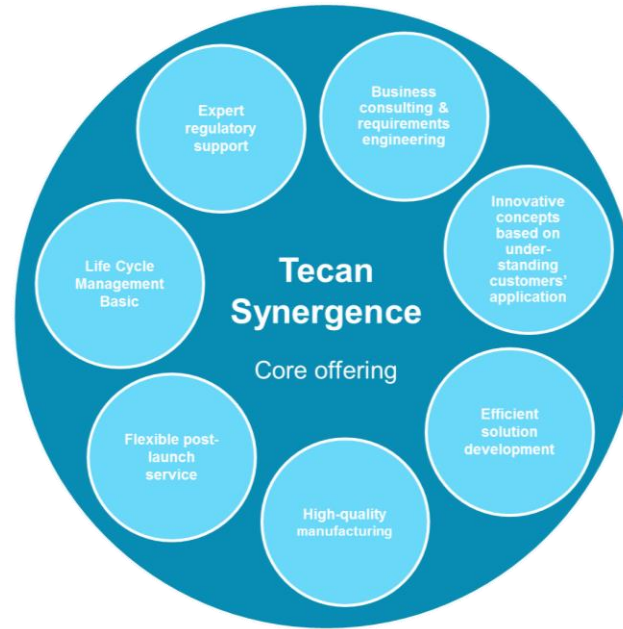
## Trusted by the Industry



And more...

# Tecan Partnering launches «Synergence» Brand

SYNERGISTIC PARTNERSHIP AND EXCELLENCE – YOUR VISION EMPOWERED



## CORE OFFERING

- Business consulting and requirements engineering
- Innovative concepts based on customer requirements
- Efficient solution development
- High-quality manufacturing
- Flexible in-market service & support
- Life-cycle management
- Expert regulatory support

## ADDITIONAL OFFERINGS

- Extended life-cycle management packages
- Total service packages
- Instrument refurbishment
- Training and consulting

# Partner of Choice to the IVD Industry

40+ ACTIVE INSTRUMENT ACCOUNTS, MULTIPLE DEVELOPMENTS IN PROGRESS

## IN REGULAR SUPPLY PHASE

35+ different instruments supplied

- From leading diagnostics companies, segment specialists to emerging players

Examples:



m2000sp for  
Abbott Molecular



Procleix Xpress  
for Grifols



Natch S for Sansure



Qwalys® 3 for Diagast



BD PrepStain™ Slide  
Processor for BD



Autrax for Liferiver

## INSTRUMENTS RAMPING UP



ORTHO VISION® Analyzer and ORTHO VISION®  
Max Analyzer for Ortho Clinical Diagnostics



Dako Omnis for  
Agilent Technologies



Sgx Clarity™ for  
Singulex



QUANTA Lyser® 3000  
for Inova Diagnostics



Amplidiag® Easy for  
Mobidiag

## UNDER DEVELOPMENT

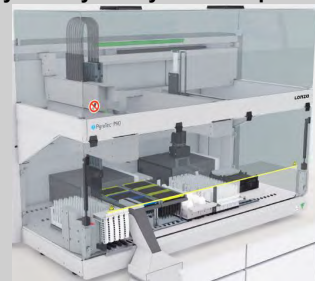
5+ projects under  
development

- From smaller to large  
potential

Examples:



New sample preparation platform in flow  
cytometry for Sysmex Corporation




Fully automated, plate-based robotic solution for  
endotoxin detection for Lonza

## INSTRUMENT PIPELINE

25+ concrete concepts in  
discussions

- Richest project funnel to date;  
Asia contribution significant
- Majority of opportunities in  
molecular, genomic and other  
fast growing applications
- Applications and technologies  
moving into the clinical space  
increasingly represented
- Customers looking to Tecan to  
optimize their total cost of  
ownership of integrated systems



A woman with long dark hair is holding a baby in her arms. The woman is looking down at the baby with a gentle expression. The baby is looking towards the camera. They are both wearing white clothing. The background is a bright, out-of-focus window with white curtains.

# To better understand, diagnose & treat diseases

**TECAN. EMPOWERING THE CENTURY OF BIOLOGY.**





# The Mission of Tecan and the Company's Employees

EMPOWERING THE CENTURY OF BIOLOGY – OUR PURPOSE

## HEALTHCARE USE

### Better...

- understand
- diagnose
- and treat

Cancer

Infectious  
Diseases

Hereditary  
Diseases

Rare  
Diseases

and also  
applies to  
other  
markets

Metabolic  
Diseases

AND MANY MORE

## APPLICATIONS

- Genomics
- Protein analysis
- Cell & tissue analysis

## DETECTION & ASSAY TECHNOLOGIES

- Sequencing
- PCR
- Mass Spectrometry
- Immunoassays
- Imaging
- Advanced Staining

## TECAN'S ENABLING COMPETENCIES

- Applications and Workflows
- Robotics and Automation
- Software and Informatics
- Detection and Imaging
- Precision Handling of Liquids
- Reagents and Consumables

### All built on a robust foundation of:

- Product Development and Systems Integration Expertise
- Quality Management System
- Regulatory Expertise
- Efficient Operations

# Tecan Supports the UN Sustainable Development Goals

OUR PRODUCTS AND SERVICES MAINLY SUPPORT SDG 3, BUT ALSO OTHERS

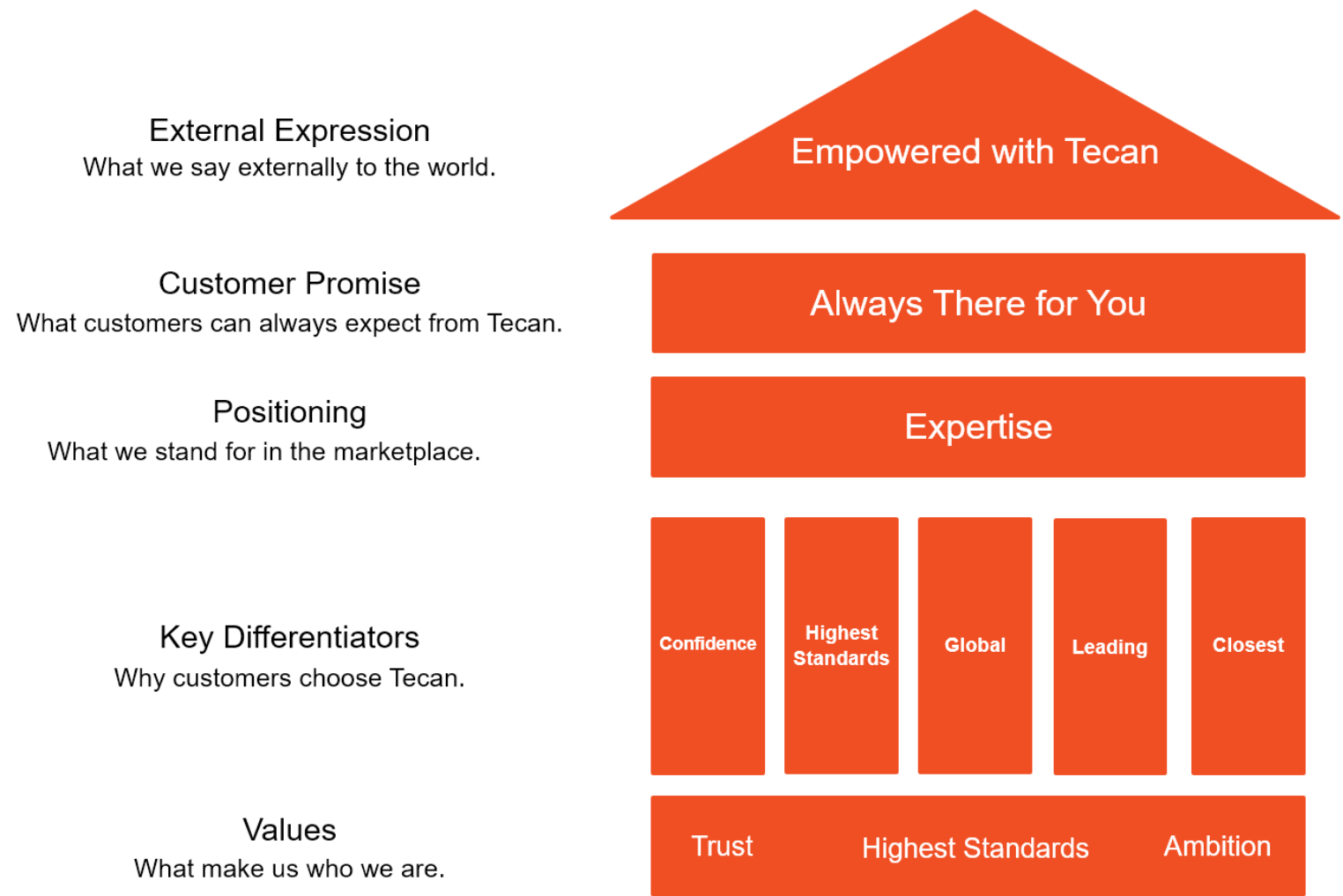
## SUSTAINABLE DEVELOPMENT GOALS



Source: United Nations; <https://www.un.org/sustainabledevelopment/news/communications-material/>

# The Basis for Our Culture: The Tecan Brand House

FOUNDATION IN A GROWING GLOBAL ORGANIZATION





# Financial Outlook

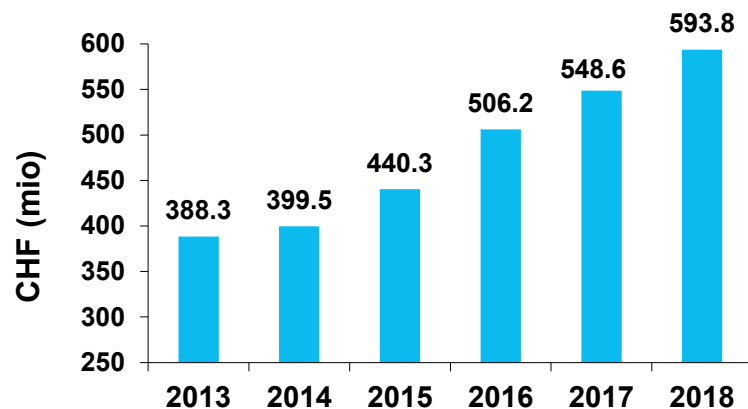




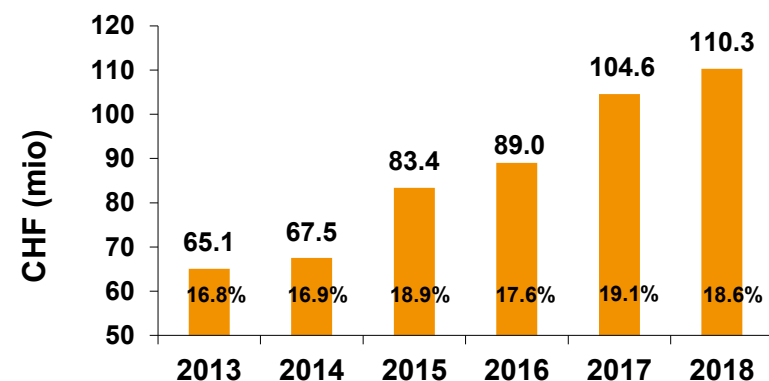
# Continuing Successful Financial Performance

ORGANICALLY OUTGROWING THE MARKET AVERAGE PLUS M&A, FURTHER INCREASING PROFITABILITY

## SALES DEVELOPMENT



## Operating Profit (EBITDA)



## DRIVERS FOR FUTURE SALES GROWTH

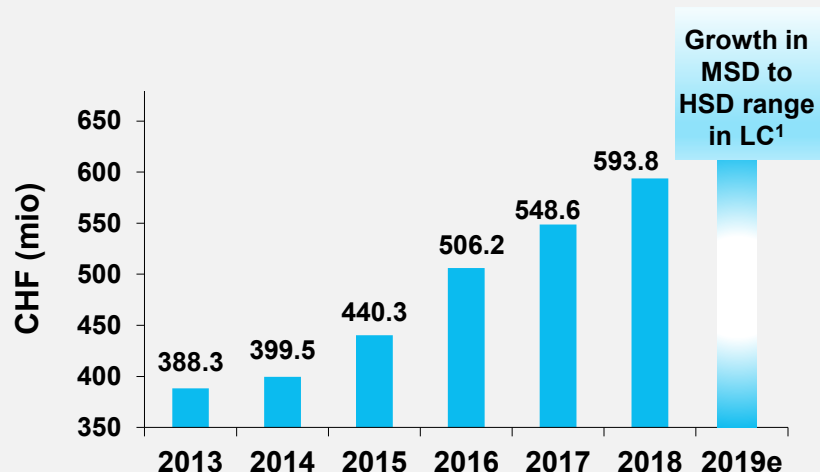
- Focus on key applications: Genomics, Cell Biology and Mass Spectrometry
- Expand solutions offering with dedicated systems, consumables and reagents
- Increased focus on after-sales market and digital offering
- Continued regional expansion, especially in China
- Further M&A transactions as key element of corporate strategy

## DRIVERS FOR FUTURE INCREASE IN PROFITABILITY

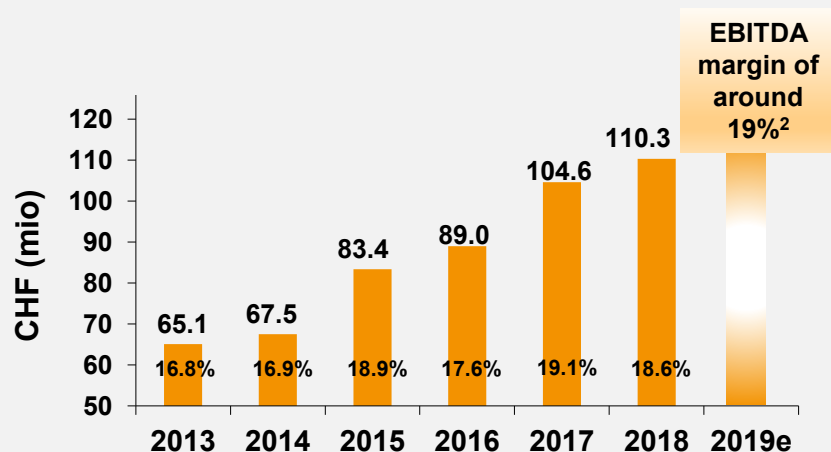
- Topline leverage
- Growing share of recurring revenues
- Increased efficiency in R&D (modular approach, design-to-cost)
- Increased operating efficiency (material cost, supply chain management, vertical integration)

# Confirming Financial Outlook for 2019

## SALES DEVELOPMENT



## REPORTED EBITDA AND MARGIN



<sup>1</sup> In local currencies (=LC); <sup>2</sup> Based on average FX rates of: 1.14 EUR/CHF and 0.99 USD/CHF

## SALES OUTLOOK

- Forecast for growth in local currencies in the mid- to high single-digit percentage range
- Recently closed acquisition of supplier expected to add sales in a low- to mid single-digit million Swiss franc amount
- Potential additional acquisitions not taken into account

## REPORTED EBITDA MARGIN OUTLOOK

- Integration costs and short term lower margins associated with the NuGEN acquisition will impact reported EBITDA margins (high single-digit million CHF amount expected)
- However, positive recurring impact of IFRS 16 to largely offset costs related to the NuGEN acquisition and CEO transition
- Reported EBITDA margin expected to expand to around 19% of sales



Q&A.



# Lunch, Demos, Tour

Time	Duration			
13:00-14:00	60 min	Lunch		
		Group 1	Group 2	Group 3
14:00-14:20	80 min	DreamPrep	Tour	MagniFlex
14:20-14:40		SparkCyto	DreamPrep	Tour
14:40-15:00		MagniFlex	SparkCyto	Dream Prep
15:00-15:20		Tour	MagniFlex	SparkCyto
15:30		End of event	End of event	End of event





# Empowering the Century of Biology.



# Safe Harbor Statement

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