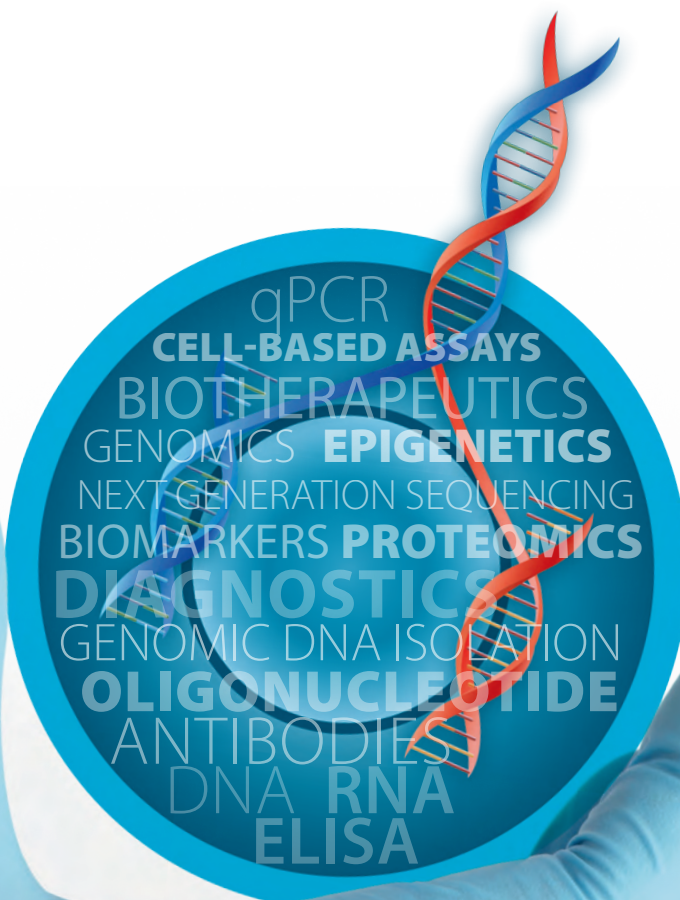




# Workflows for Biomolecules

Simplify • Apply • Verify • Advance

Enabling Your Verifiable Science Through Accurate Sample Preparation





# Life Science transforming

Translational science, applying research discoveries to address health needs, is built on the complex interconnected foundation provided by research in genomics, proteomics, drug discovery, metabolomics and much more. The requirements of translating the life science research building blocks to the clinic and ultimately to improving human health is multi-faceted and requires uncompromising attention to reproducible data, accurate and validated applications across all sample types.

With samples as diverse as Fresh Frozen Paraffin Embedded (FFPE) tissues, cell lysates, biological fluids and bio-therapeutics, researchers are faced with huge challenges in DNA, RNA or protein sample prep - extraction, enrichment,

purification, isolation or clean-up for a diversity of applications. At Gilson, our mission is to enable you to simplify your workflow, improve your data reproducibility and generate verifiable science so that you can advance the molecular mechanisms of many diseases and accelerate therapeutic treatments. From adaptable solutions for your biomolecular sample prep, manual processing to full automation, Gilson works with you to transform your sample prep productivity and help to accelerate the pace of your discoveries.

Cell-Based Assays  
Biomarkers  
Genomics  
Sample Preparation  
Diagnostics  
Protein Expression  
Next-generation Sequencing  
qPCR

# Gilson delivering solutions for you

For more than 60 years, Gilson has been actively partnering with the scientific community to develop flexible simplified solutions enabling accurate and reproducible sample prep. The TRILUTION LH, LC and micro software programs deliver operational flexibility providing you with the ability to adapt the Gilson system to your workflows and increase your lab productivity. The power behind Trilution software is in its intuitive interface for (1) flexible protocol set-up, (2) improved efficiency in method monitoring, and (3) traceability of results and method reports.

Our greatest reward is the loyalty of our customers and the trust they place in their reproducible results when using Gilson solutions.

**Design and run the application your way...  
transforming your sample prep productivity**

• flexibility • efficiency • traceability

Correct execution of diverse application/protocols in the same run – just one click away!

**TRILUTION LH:** Automate sample clean-up with SPE for applications like cell culture analysis or metabolite analysis.

**TRILUTION LC:** Purify DNA, RNA, oligonucleotides, proteins, peptides on Gilson systems.

**TRILUTION micro:** Whether for gene expression profiling, analysis of disease-related genes or biomarker discovery, validation or screening, the qPCR Assistant makes it easy.





# Streamlining Sample Prep

Improving method efficiency through streamlining the manual sample prep process of the various assay kits and protocols you use while maintaining accuracy and data reproducibility is critical. With the flexible Gilson solutions you can minimize user variability and focus on reproducible results.

## ▶ Minimizing user variability of N-Glycan sample preparation using TRACKMAN and PIPETMAN M

Download the full application note: [http://www.gilson.com/Resources/Gilson\\_NGlycanToolkit\\_CL0211.pdf](http://www.gilson.com/Resources/Gilson_NGlycanToolkit_CL0211.pdf)

### Purpose:

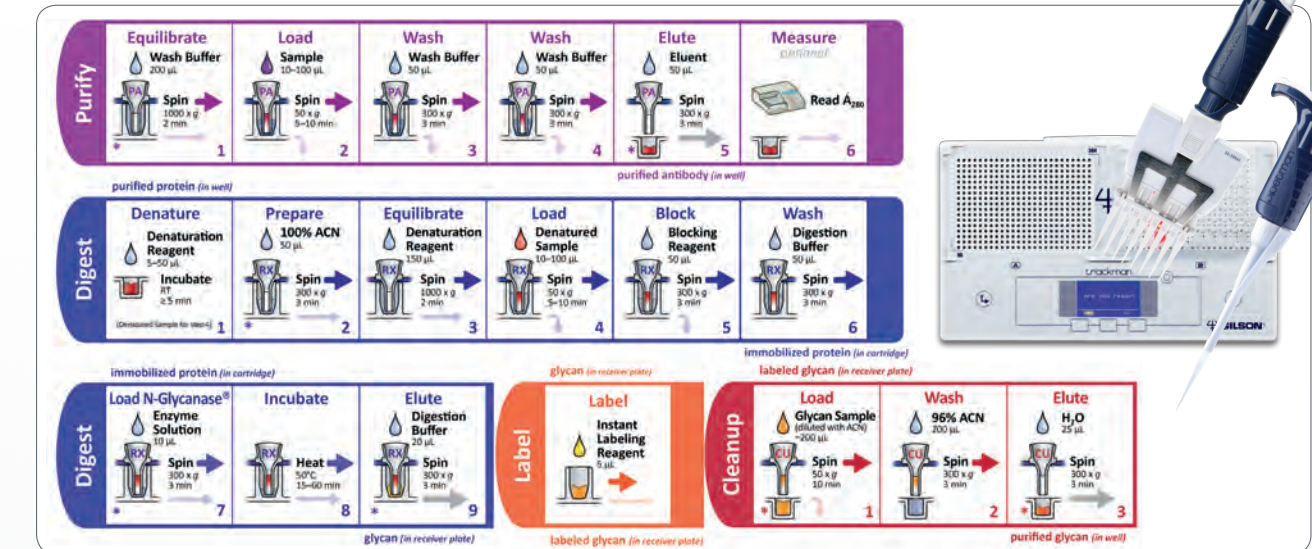
- Minimize user variability and reduce sample preparation to several hours rather than the traditional 3 days.
- Improve accuracy and reproducibility between samples while allowing for more efficient characterization of N-Glycans to be performed.

### Method:

Peak Number	Mean Retention Time (min.)	Standard Deviation	%CV
1	17.180	0.064	0.372
2a	19.681	0.060	0.304
2b	19.979	0.065	0.325
3	18.177	0.066	0.363
4	22.332	0.065	0.291
5	20.354	0.065	0.319
6	25.596	0.036	0.140

### Results:

- Sample preparation of N-Glycans using TRACKMAN and PIPETMAN M pipettes, in combination with a reputable N-Glycan preparation kit, resulted in a high degree of retention time reproducibility for the various N-Glycans. The sample preparation method was efficiently streamlined from days with the traditional method to just under 2.5 hours.



### TRACKMAN®

Keeping you on track as you pipette from one microplate to another, TRACKMAN simplifies your work, improves your productivity, and helps avoid potential pipetting errors and cross-contamination.

- Eliminates cumbersome manual tracking
- Allows visual recognition of the exact step in the protocol
- Provides a seamless mechanism for training new biologists
- Can be used with both 96 and 384 well microplates

### PIPETMAN® M Single and Multichannel

Lightweight and motorized, the PIPETMAN M pipettes are a fusion between the renowned accuracy, precision, and robustness of the PIPETMAN Classic and easy-to-use functionality that simplifies work and ensures reproducible results.

- Requires no training to use immediately
- 4 essential pipetting modes that can be tailored to your protocol: Pipetting, repetitive, mix, and reverse
- Adjustable dispense speed reduces pipetting variability between users

# Maximizing Reproducible Biological Sample Prep

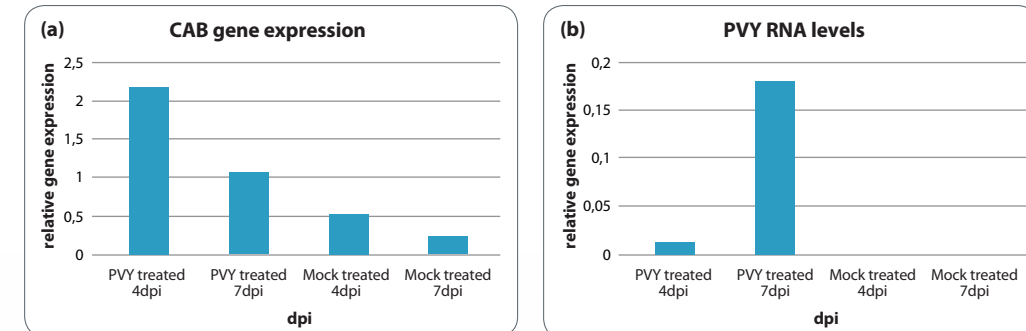
Routine pipetting tasks across a larger number of samples can often be inefficient, complex, time consuming, and expensive. These hurdles can lead to increased training requirements, preparation time, procedural errors and ultimately hold back the pace of your experiments. When preparing biological samples, you need an assistant you can trust and PIPETMAX is the ultimate lab assistant – focused on consistency.

## ▶ Maximize qPCR assay reproducibility using PIPETMAX

Download the full application note: <http://www.pipetmax.com/pcr/qcr/>

### Purpose:

- Maximize qPCR sample prep accuracy and eliminate inherent variability
- Enhance sample purity



▶ Sample Analysis with qPCR (a) Expression of CAB gene normalized to COX and EF1 in infected compared to non-infected (mock-inoculated plants) (b) levels of PVY RNA in samples.

Though it's a fundamental process that enables most life science research, the pipetting operations required to setup PCR can be quite monotonous for technicians conducting the process manually. This can lead to procedural errors and inconsistencies, not to mention decreased time and energy for researchers to make valuable and intellectual contributions to their research labs.

Automating your qPCR sample preparations, and other processes, can happen right out of the box. The intuitive qPCR assistant operates directly from the PIPETMAX touchscreen interface, allowing researchers to import sample information, configure reaction proportions, set up single or multiplex assays, and even export plate files for common thermocyclers. PIPETMAX does the

rest by generating pipetting protocols based on your configurations and performs them quickly and efficiently.

Once you've automated your qPCR sample preparation, you can add additional kits that allow PIPETMAX to perform other processes, such as Next Generation Sequencing, ELISA, nucleic acid cleanup and cell-based assays.

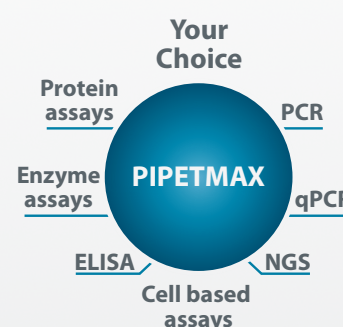
You can also add the PIPETMAX protocol builder software to create completely custom protocols and import them into PIPETMAX for solutions that are unique to your needs.

With PIPETMAX, the possibilities are endless.

### PIPETMAX™

Applications versatility - use any reagents, design, run and monitor your experiments on PIPETMAX

- MAXimize pace, accuracy and capabilities with the ultimate lab assistant
- MAXimize consistency in routine pipetting tasks
- MAXimize reproducibility and versatility across a range of biological assays



# Simplifying Purification and LC/MS Analysis

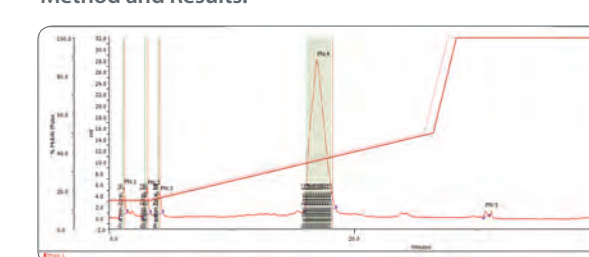
The various steps in large molecule purification requires accuracy and method reproducibility to ensure that you can generate the purity you require.

## ▶ Example Application: Oligonucleotide purification using automated SPE

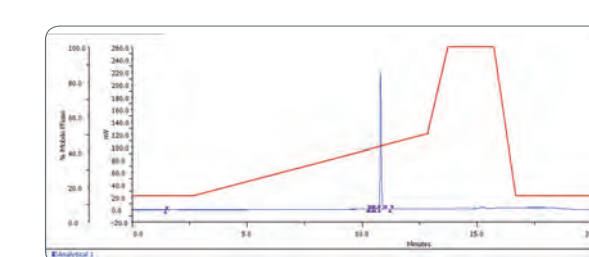
### Purpose:

- Complete workflow solution to purify full length oligos from truncated sequences, analyze and pool fractions
- Automated, final desalting steps
- Protocol flexibility can be configured using standard accessories to process samples from  $\mu$ L to L on a single platform

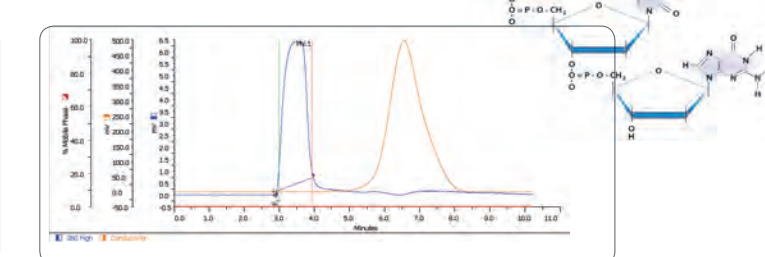
### Method and Results:



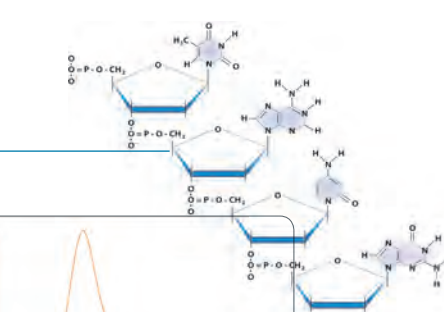
▶ Step 1: Oligonucleotide Ion-Exchange Purification Run



▶ Step 2: Automatic Fraction Analysis



▶ Step 3: Size-exclusion column to de-salt and pool fractions meeting purity specifications. Monitor conductivity and UV to ensure separation of purified oligonucleotide from the buffer salt.



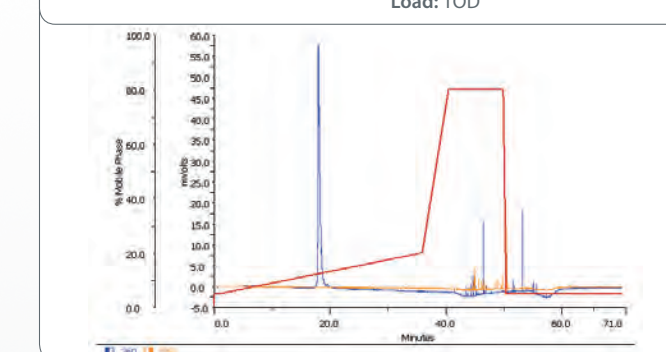
## ▶ Example Application: Purification of oligonucleotides and proteins using the PLC 2020

### Purpose:

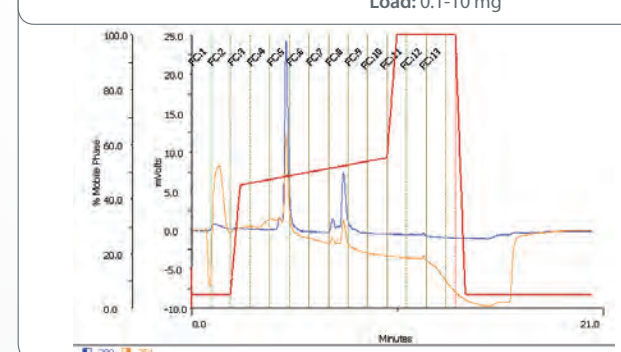
- Simplified, well resolved separation of oligonucleotides and proteins

### Method and Results:

Solvent A: 0.1M TEAA pH7 Triethyl Ammonium Acetate  
 Solvent B: ACN  
 Column: 250 x 4.6 mm C4



Sample: Oligo separation with fluorescence tag and non-fluorescence tag  
 Wavelength: 260 & 550 nm  
 Load: 10D



### PLC2020

Ideally suited for tailored throughput, the prep HPLC PLC2020 is intended to assist an individual or a small group of scientists.

- Compact footprint
- Performs various techniques: Normal Phase, affinity, ion exchange, size exclusion, Reverse Phase, and Flash
- Simplified, easy-to-use HPLC software
- Integrated touch-screen control
- USB ports for easy download/upload of methods and results

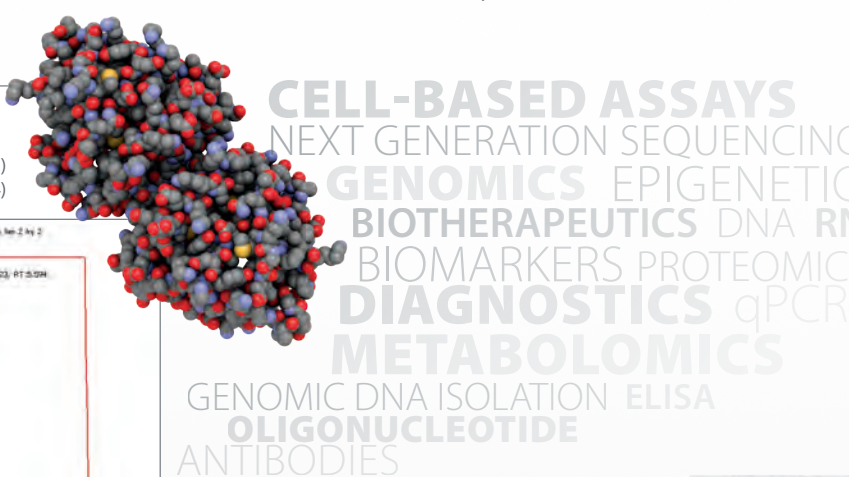
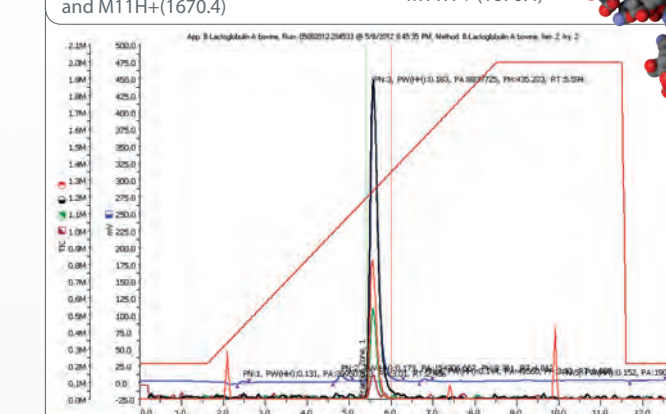


## ▶ Example Application: Purifying $\beta$ -Lactoglobulin protein using a Gilson LC/MS System

Download the full application note: [http://www.gilson.com/Resources/Gilson\\_ProteinLCMS\\_AB010313.pdf](http://www.gilson.com/Resources/Gilson_ProteinLCMS_AB010313.pdf)

### Method and Results:

Bovine-Lactoglobulin A  
 MW= 18,363.3  
 Peaks of interest for collection:  
 M9H+ (2041.3), M10H+(1837.3), and M11H+(1670.4)



### LC/MS Purification System

- Mass targeted purification system with TRILUTION® LC software's conditional logic collection has the ability to target, and effectively purify large molecules with molecular weights greater than 18 kDa by selecting to trigger on the multiple charge states.





# Solid Phase Extraction

## Solid Phase Extraction Solutions

Solid Phase Extraction (SPE) has become the technique of choice for sample clean-up and trace enrichment, providing: reproducibility, versatility, selectivity, speed, and low solvent usage.

Automated SPE instruments: GX-241 SPE, GX-271 ASPEC and GX-274 ASPEC. Combining Gilson's SPE instruments and SPE cartridges enable method flexibility and simple optimization of SPE, to provide more efficient and reproducible sample preparation.




### ► Example Application: Typical Large Molecule Purification Process

#### Sample Preparation ► Biomolecule Isolation and Impurity Removal

**Sample Type**  
DNA  
RNA  
Oligos  
Peptides  
Glycans  
mAbs  
IgG

**Desalting Cartridges**  
For: Solvent exchange by-product removal  
Use: ≤35 bases (oligo)  
Automation:  
GX-241 SPE  
GX-271 ASPEC  
GX-274 ASPEC




**Sample Type**  
DNA  
RNA  
Oligos  
Glycans

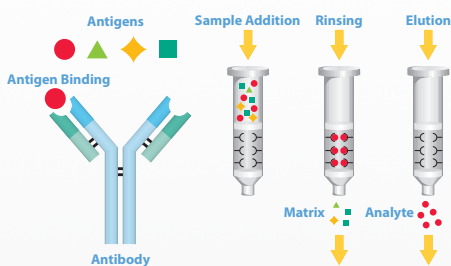
**Reverse Phase Cartridges (RPC)**  
For: Purification of large molecules as an alternative to HPLC for a similar purity  
Use: With reproducible separation, high loading capacity and accurate elution properties, you have low solvent consumption and reliable analysis. Gilson ASPEC solid phase extraction pre-capped cartridges are available in 1, 3, and 6 mL volumes.  
Automation:  
GX-241 SPE  
GX-271 ASPEC  
GX-274 ASPEC

**Sample Type**  
mAbs  
IgG  
Tagged recombinant proteins

**Affinity Cartridges**  
For: Selective purification from small to large volumes  
Use: 1 mL, 3 mL, 6 mL pre-capped cartridges and other sizes also available as specials  
Automation:  
GX-241 LH  
GX-271 LH  
GX-274 LH



### ► Affinity SPE can be performed on any automated Gilson SPE system



## Service and Support Trust: The Gilson Guarantee

Our worldwide support network is ready to assist you with training, application support and service. In addition to our 1-year warranty on all Gilson instrumentation, we offer a range of convenient service options, including on-site instrument service and pipette calibration to protect your investment. Whether you're a new lab or an established institution, we stand behind our products and by your side - helping you meet your toughest sample prep challenges and ready to serve you.

