



Introduction to GlycanTune™ Total Feeds

September 2015

Introducing Gibco™ GlycanTune™ A+, B+, C+ Total Feeds

complete feeds to dial in the glycosylation profile targeted

What are they?

Complete feeds that:

- Match original EfficientFeed™ A+, B+, C+ supplements
- Include glycan shifting components
- pH neutral
- chemically defined
- animal origin-free

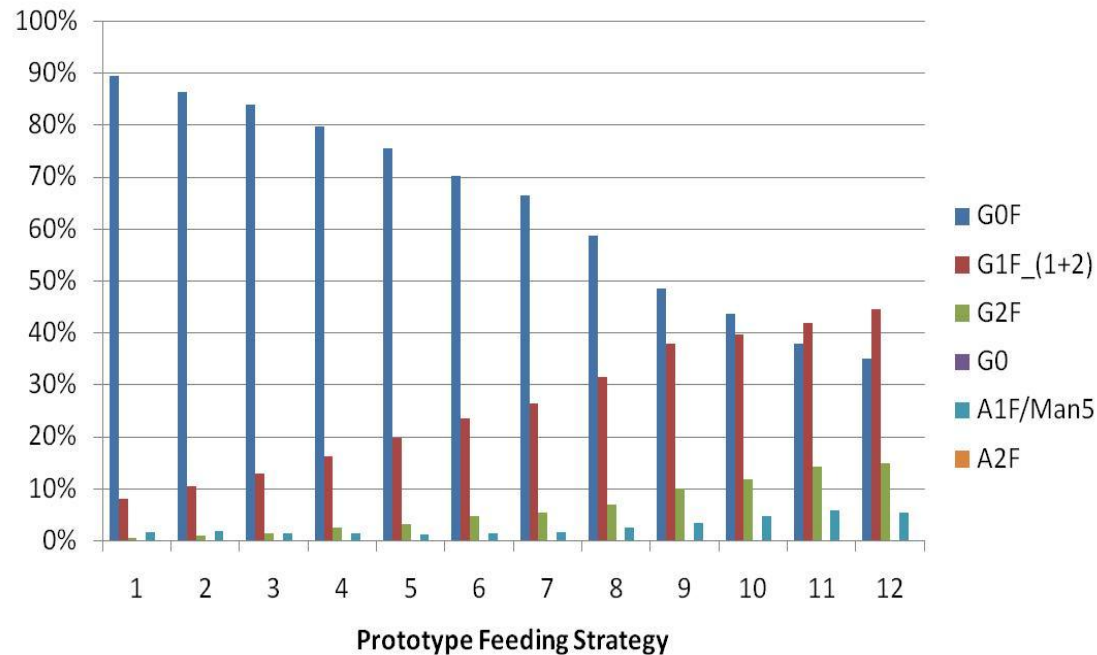


What do they do?

- Shifts glycan profile to more G1, G2 from G0
- 2x-3x flexibility to reduce feeding volume or add more
- Reconstitute easily with just add water reconstitution
- Store at room temperature up to 30 days post hydration

All the benefits of super-concentrating EfficientFeed+ products with the advantage of glycan targeting added

How can GlycanTune™ Total Feeds dial in a glycan profile?



- Original EfficientFeed+ product only used at the left end of the spectrum
- GlycanTune™ Total Feed only used at the right end of the spectrum
- %G0F was modulated from 90% to 45%
- Daily feed had minimal impact on titer

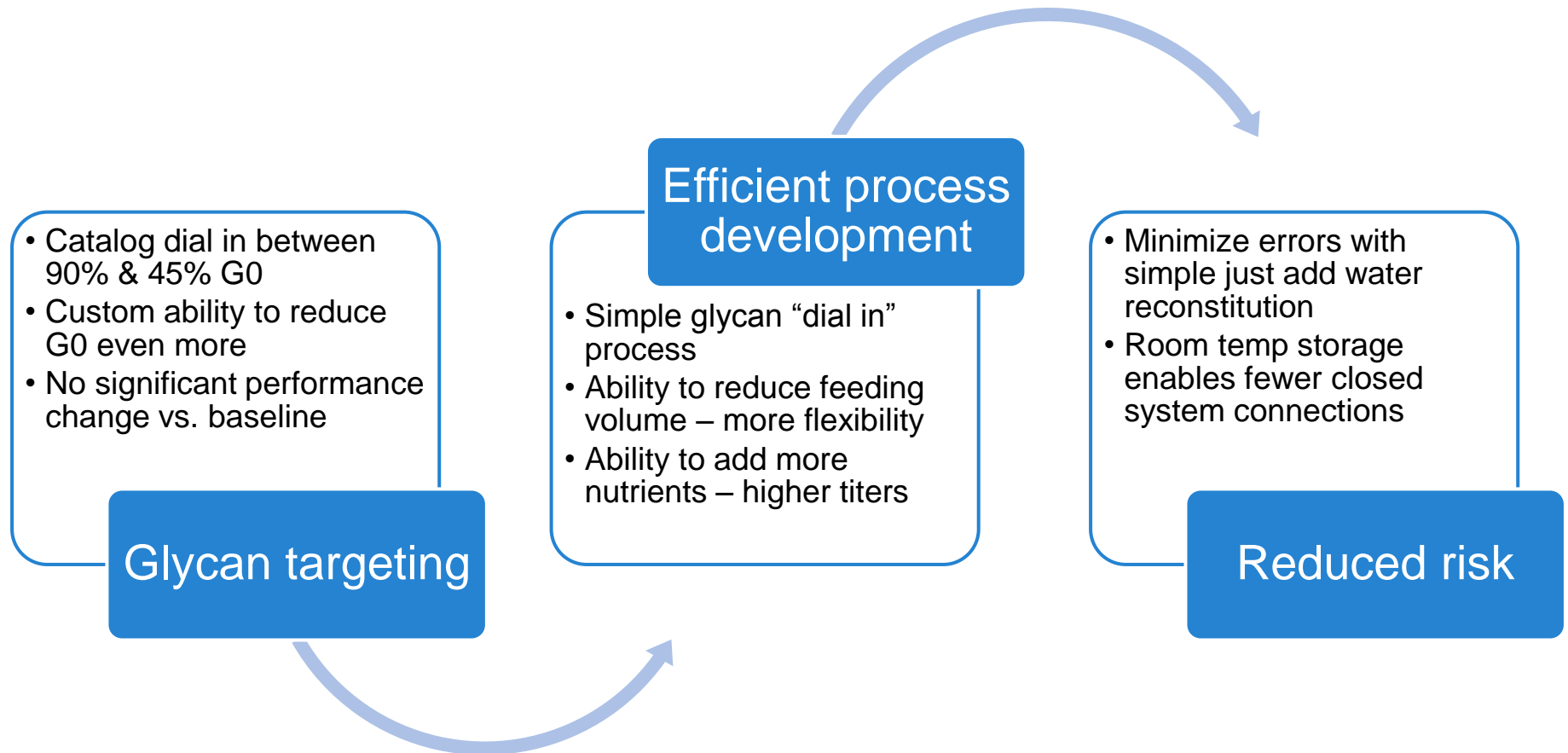
Do you have a target profile anywhere in this spectrum?

What do you get with GlycanTune™ Total Feeds?

Feature	Benefit	Alternatives
Ability to shift glycan profile with a complete feed	Shift from 90% G0 to as low as 45% G0 without significant loss of performance	No other complete feeding supplement alternatives available to shift glycans
Ability to super concentrate to add less volume or more feeding	Up to 20% improvement in bioreactor space utilization or increased titers possible with increased feeding	No feeding supplements other than EfficientFeed™+ supplements provide this super concentrating capability
Ability to store hydrated product at room temperature up to 30 days	Can leave covered bag of feeding supplement in bioreactor room to pump in needed amounts without additional connections required	Must establish this for any feeding supplements other than EfficientFeed+ supplements that are compatible with GlycanTune Total Feeds
Just add water, no pH adjustment hydration	Fewer steps helps reduce risk of errors	No alternatives other than EfficientFeed+ supplements offer this ease of use

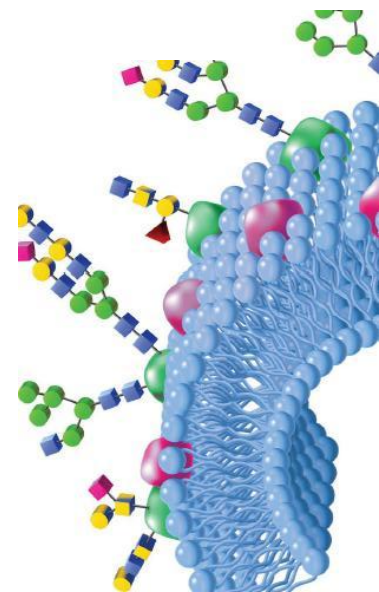
Product quality targeting with best flexibility & simplicity in use

Why test GlycanTune™ Total Feeds?

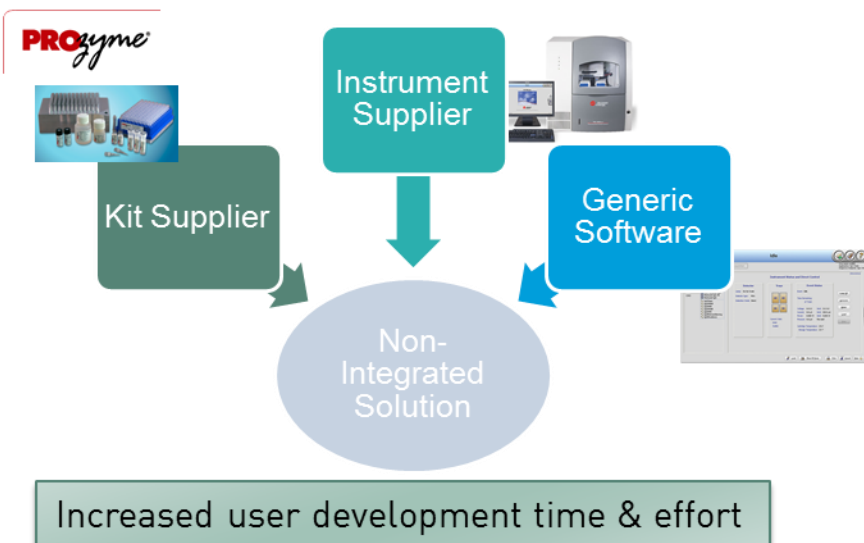


Add glycan targeting to an efficient process development

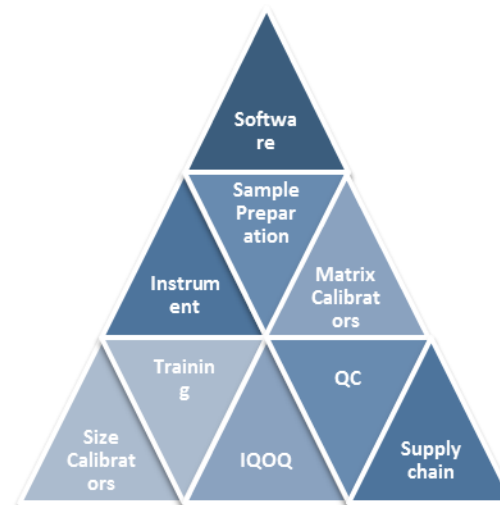
GlycanAssure™ Platform: For High Throughput
High Resolution Glycan Analysis



Current Glycan Solutions & Thermo Fisher GlycanAssure™ Platform

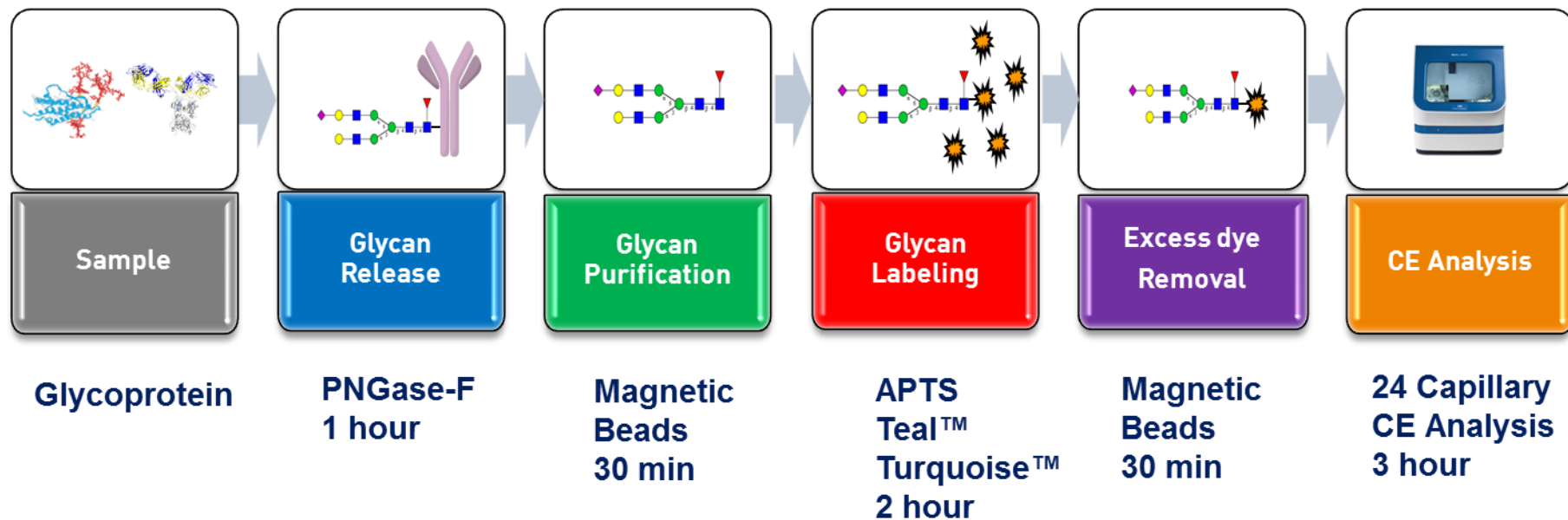


- Low throughput (days/96 samples)
- Labor Intensive workflow
- Use of Sod. cyanoborohydride/Vacuum centrifugation
- Generic software
- Multiple vendors
- Non-integrated solution
- Lack of support for final result
- High Cost (\$90) per sample
- No validation support for result/solution



- High throughput (8hr/96 samples)
- Easy magnetic bead based workflow
- Multiple dyes for glycan labeling
- No use of Sod. cyanoborohydride/Vacuum centrifugation
- Parallel analysis of 24 samples
- Fit for use “app” style software
- Single vendor
- Complete integrated solution
- Support across entire workflow
- Reduced Cost per sample
- Validation support for result/solution

GlycanAssure™ Workflow



- No vacuum centrifugation steps
- No use of Sodium cyanoborohydride

Hands on Time < 3hr

Time to Results: 7 - 9hrs* (96 samples)

*Depends on the dye used for labeling

Instrumentation for Glycan Analysis



Available in 8 and 24 capillary arrays

Applied Biosystems™ Multi cap 3500 CE

Robust, Industry Proven &

Low Maintenance

Parallel analysis of biomolecules

Capillary array

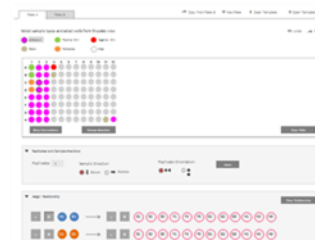


Dedicated Software for Glycan Analysis

Updated dashboard with new interactivity and project overview

Chevron guided step-by-step workflow

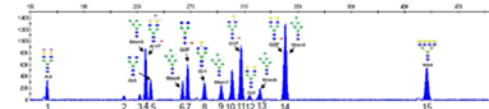
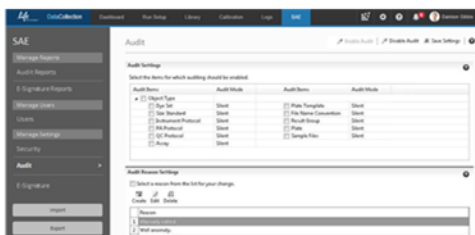
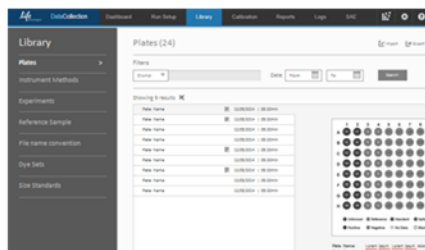
New tools minimize mouse clicks during setup



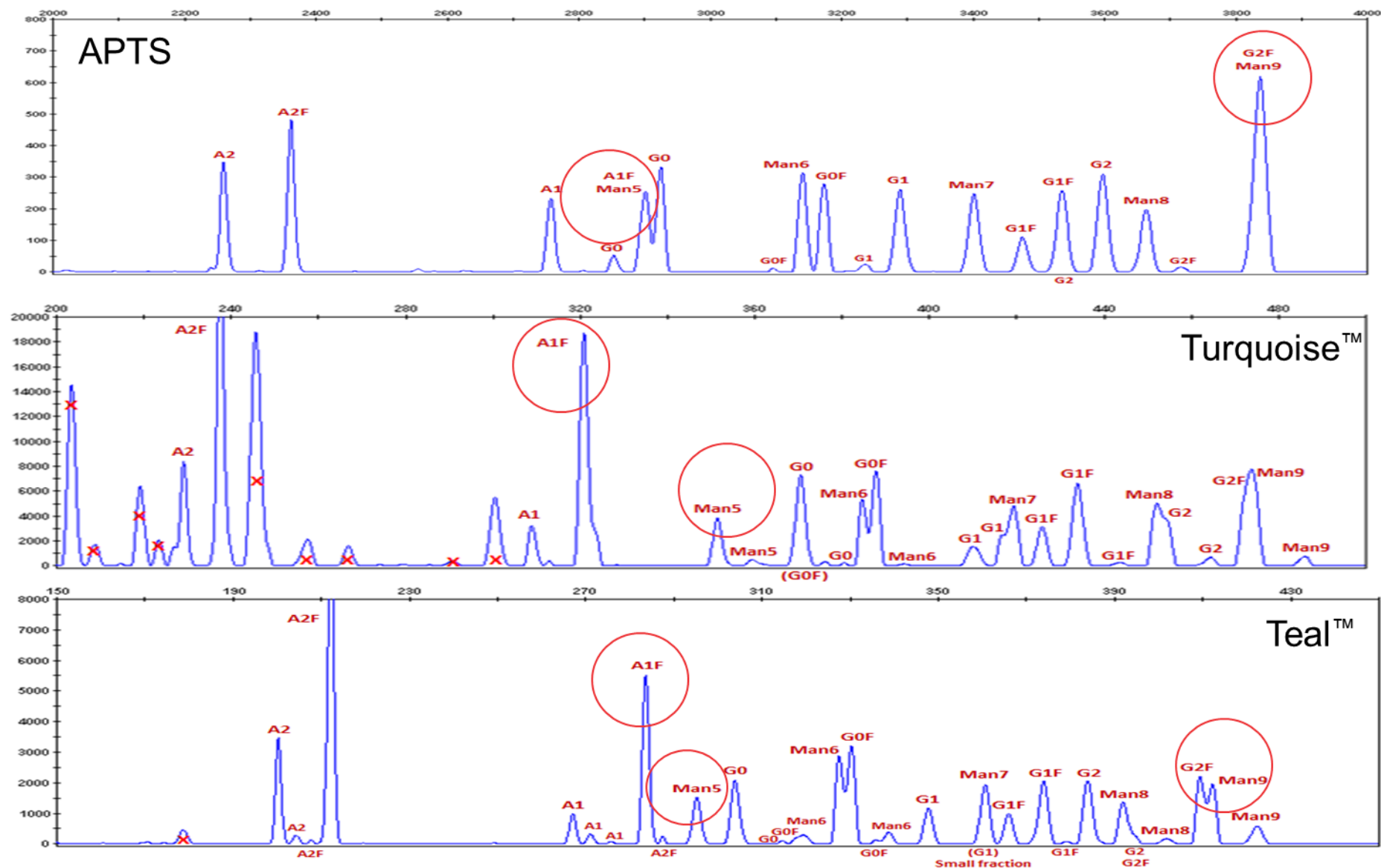
Library stores historical information for plates, methods- even reference samples

Full SAE suite helps 21 CFR part 11 compliance

CE specific algorithms robustly process and align data



Separation of Major Glycans



Key Features of GlycanAssure™ Platform

- **Easy sample prep**
 - Magnetic bead based sample prep
 - Less labor (Pipetting & Hands-on time)
 - No use of Sod. cyano borohydride
 - No vacuum centrifugation steps
- **Throughput**
 - Sample prep & analysis of 96 samples in a workday
- **Resolution**
 - Sialylated glycans
 - Structural isomers
 - -Fucose species
 - High Mannose species
- **Dye Labeling**
 - Multiple dyes with superior sensitivity
- **Sensitivity**
 - Analyze as little as 1ug of IgG
- **Low Cost**
 - Robust instrument and capillaries with low running cost
- **Integration**
 - Full sample prep, hardware, software & solution
- **Support**
 - Full FAS support in every stage of method implementation

Next steps

- Visit our booth or poster at BPI conference in Boston, October 27-29, 2015
- Can request glycan targeting support sooner via technical engagement
- Can request sampling as soon as available post BPI conference (restrictions apply)
- Let us know if you are interested in GlycanAssure™ testing system contact from technical experts

Be among the first to have the ability to dial in your glycan profile

Caution: For use as a raw material in further manufacturing applications

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