Ensuring the Validity of Laboratory Data

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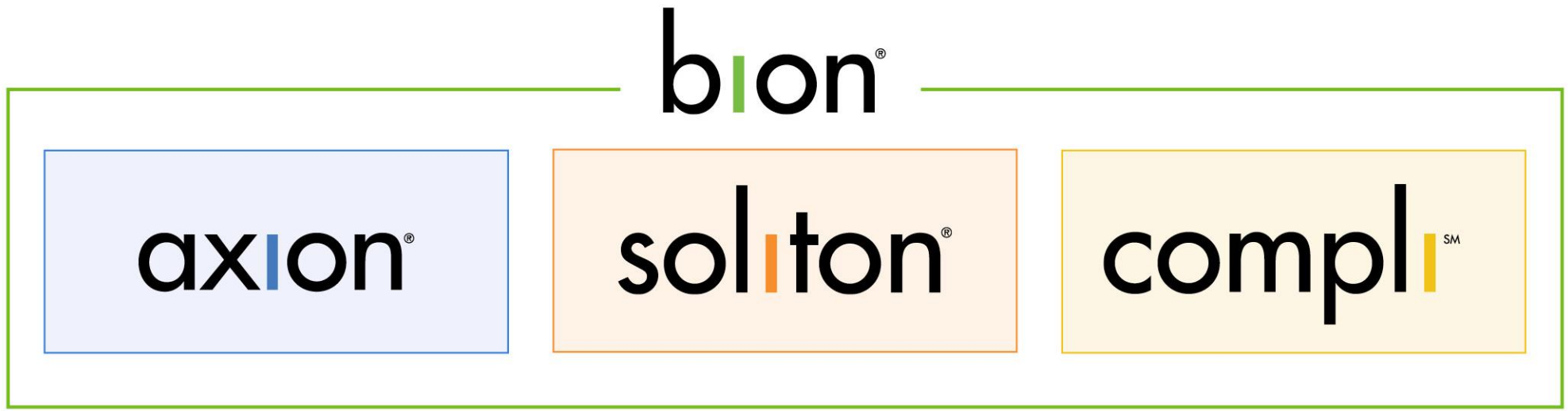

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“We think your instrument is wrong!”

“That data *can’t* be right.”


peacock


Oh no! These facts and opinions look so similar.
Ah don't worry about it, happens all the time.
Bits of
MakeAGIF.com

How do Standards, Reference Materials, and Proficiency Testing Help Us Differentiate between *Fact* and *Fiction*

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How do we ensure the validity of our data?

- Standards and Certified Reference Materials
  - Calibration and Validation of Instrumentation

- Samples of Known Values
  - Proficiency Programs
  - Matrix relevant reference materials

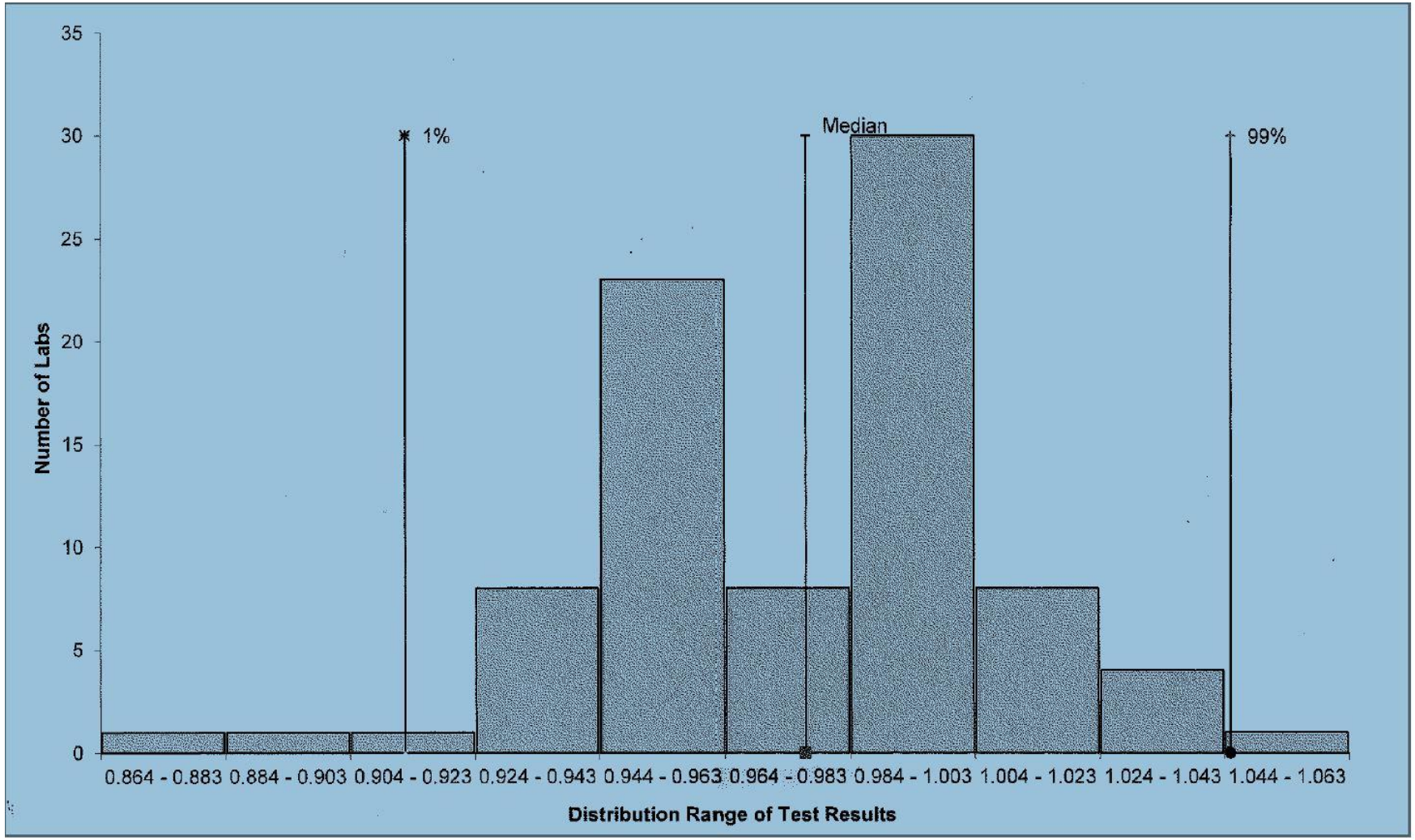
Standards

- Calibration
  - HPLC
  - IC
  - Sulfur Analyzer
  - GC (Refer to D5501 for requirements)
- Validation
  - Karl Fischer
  - Acidity
  - Total Solids
  - GC (Refer to D5501 for requirements)
  - Wet Chem Methods

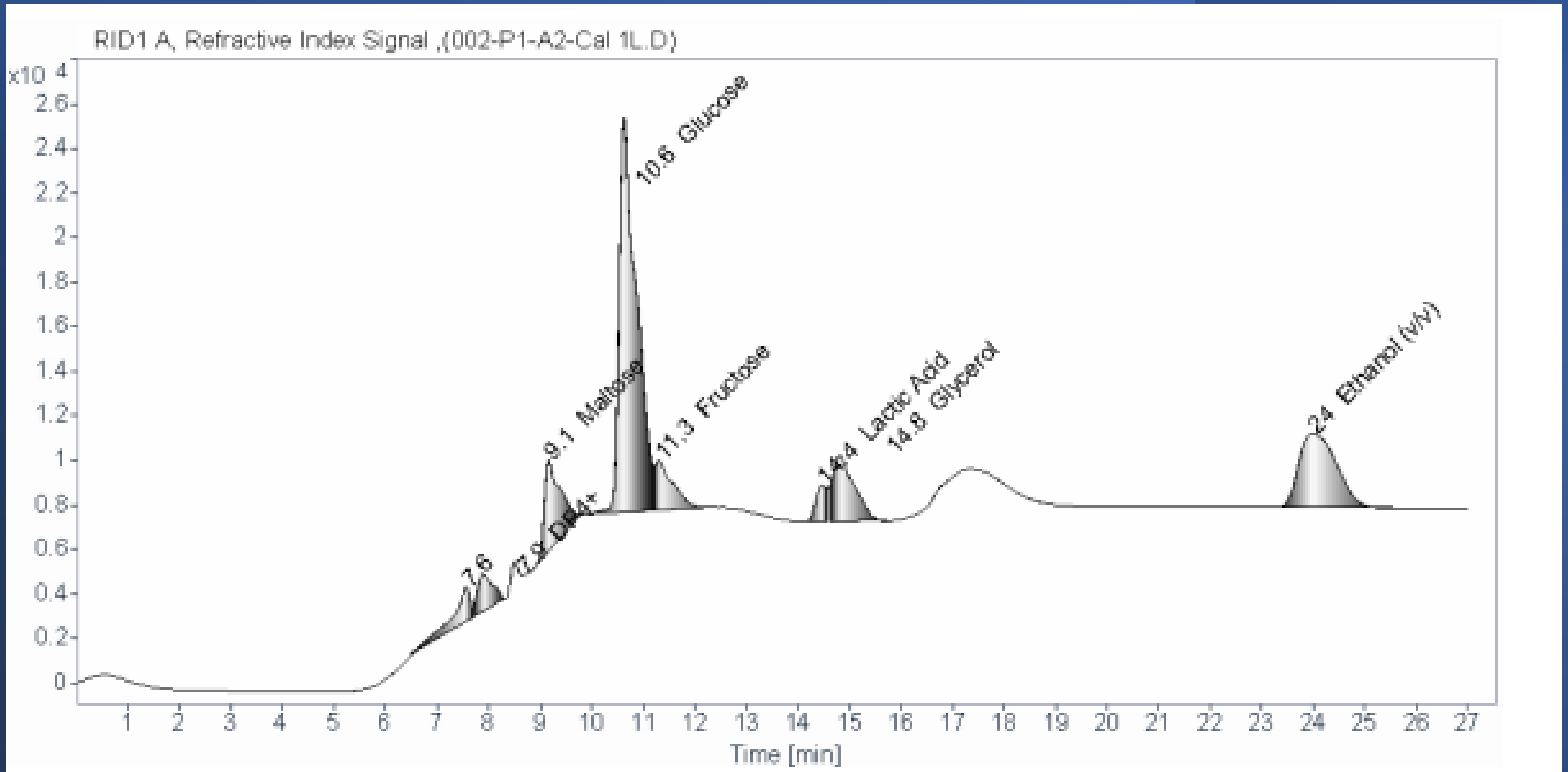
Proficiency Testing

- Blind Samples tested at a certain frequency throughout the year
- Prove accurate results between instruments and/or lab analysts
- Report showing your lab results with personal ID
  - How do I compare to the mean
  - How do I compare to the known values

How do we ensure the validity of our data?



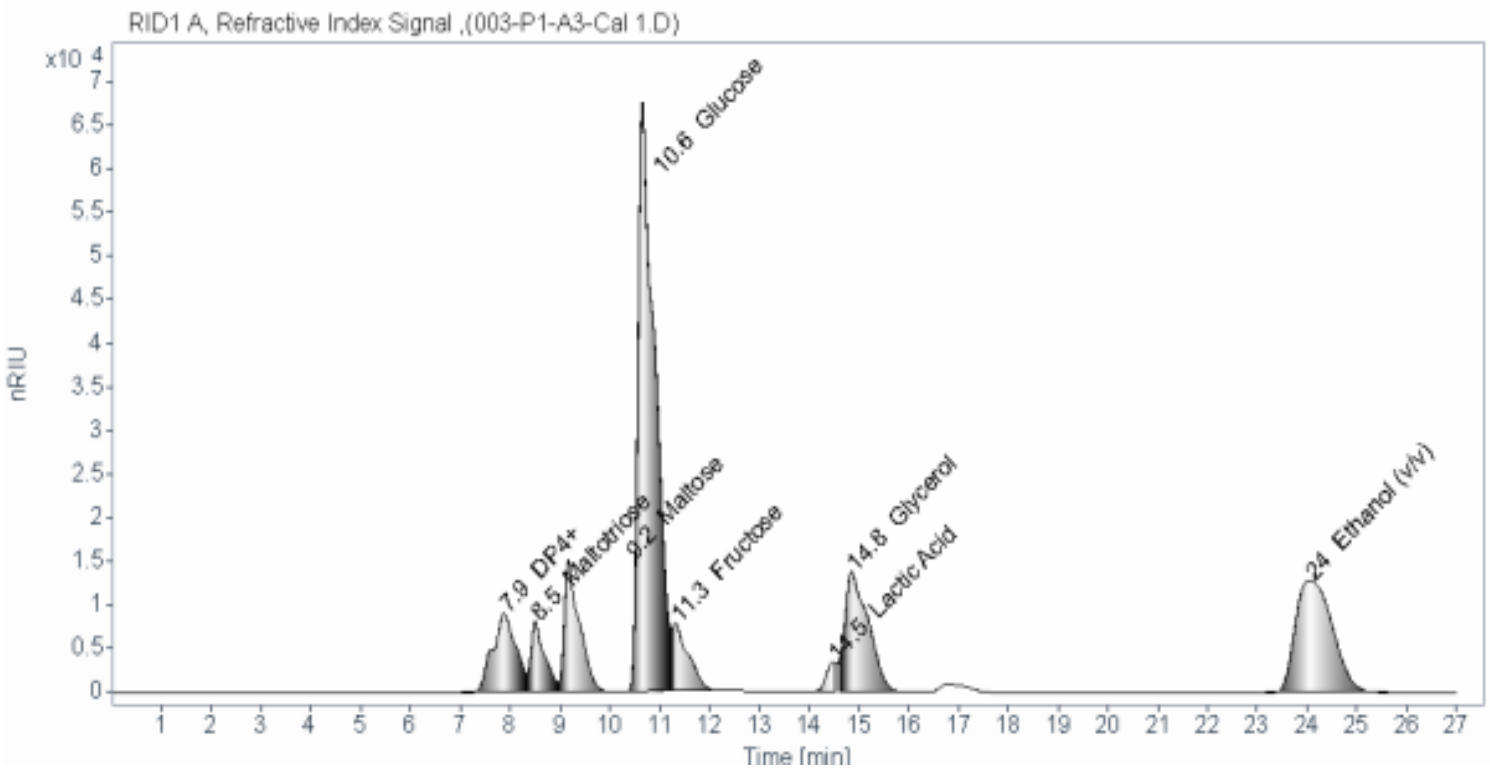
Troubleshooting


RID1 A, Refractive Index Signal ,(002-P1-A2-Cal 1L.D)
x10 4
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
7.6
9.1 Maltose
10.6 Glucose
11.3 Fructose
14.4 Lactic Acid
14.8 Glycerol
24 Ethanol (v/v)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
Time [min]

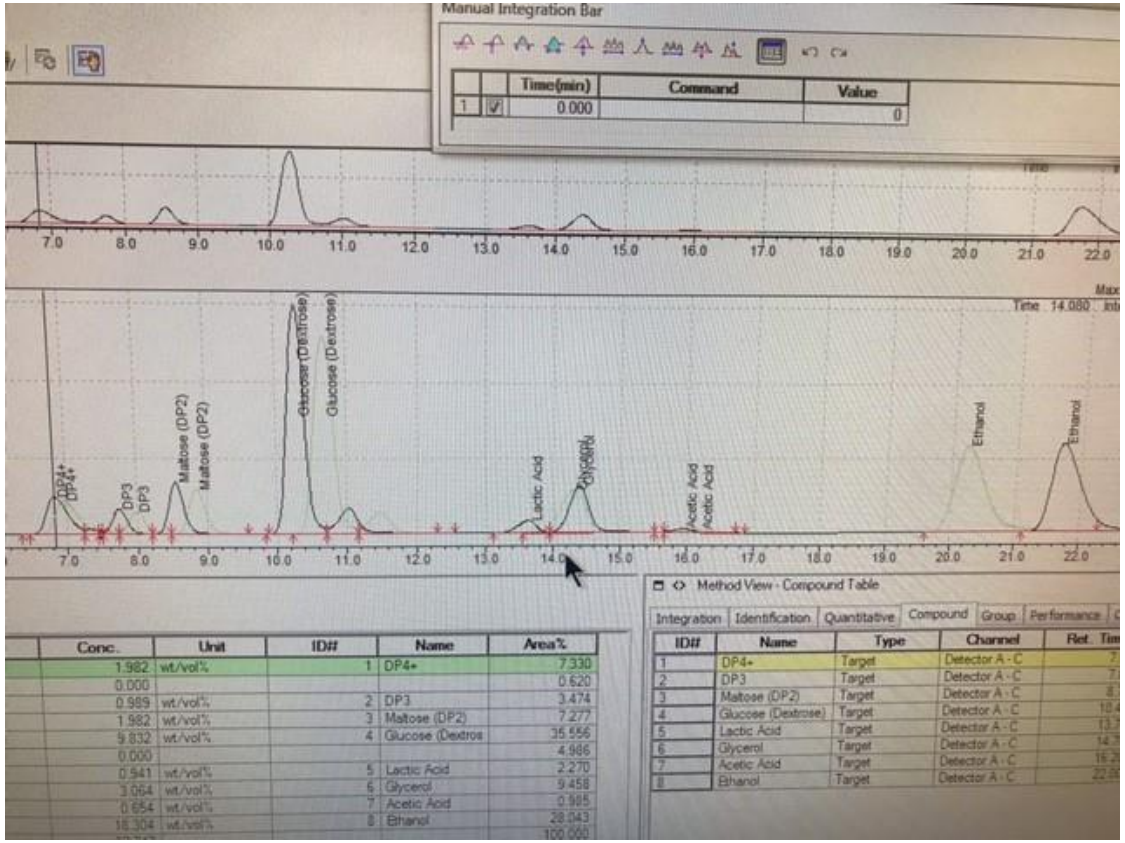
How did we Help?

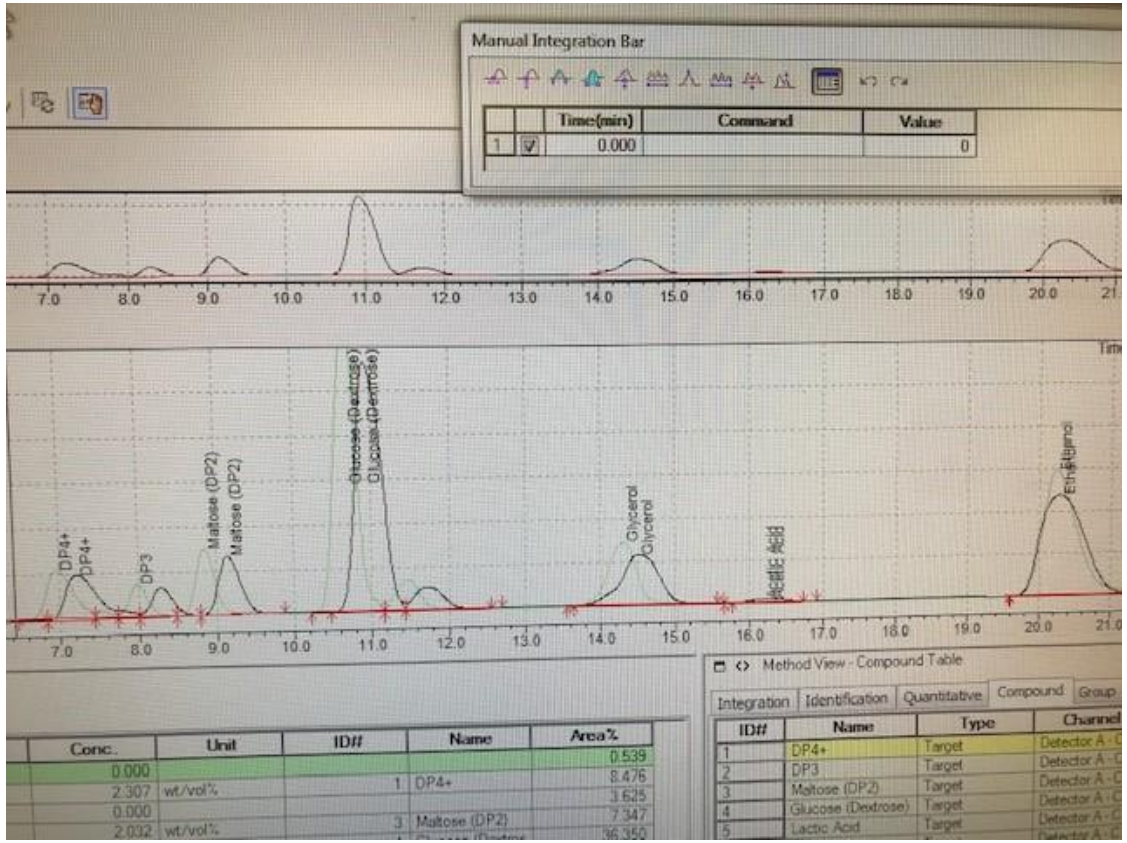
**Purge the Detector

**Run a Blank



Where did my Lactic Acid Peak Go?





How did we Help?

- Did any parameters change on your HPLC?
  - No—everything was the same
- Does the column need to be changed?
  - Changed the column….still had no lactic peak
- How about we check your mobile phase
  - Retention times were shifting
  - We have a winner!

Conclusions

- **Using standards and known value reference materials allow laboratory personnel to ensure the accuracy of data, laboratory instrumentation and methods**

- **Quality Controls in the laboratory help defend data and prove fact from fiction**