

HPLC Pigment Analyses:

Progress Report and Performance Statistics
September 2006 to April 2007

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Progress report

- 5250 samples anticipated (Sept 06 to Sept 07)
- 3063 samples anticipated as of Apr 15
- 2652 samples actually received
- 98% of sample received are complete



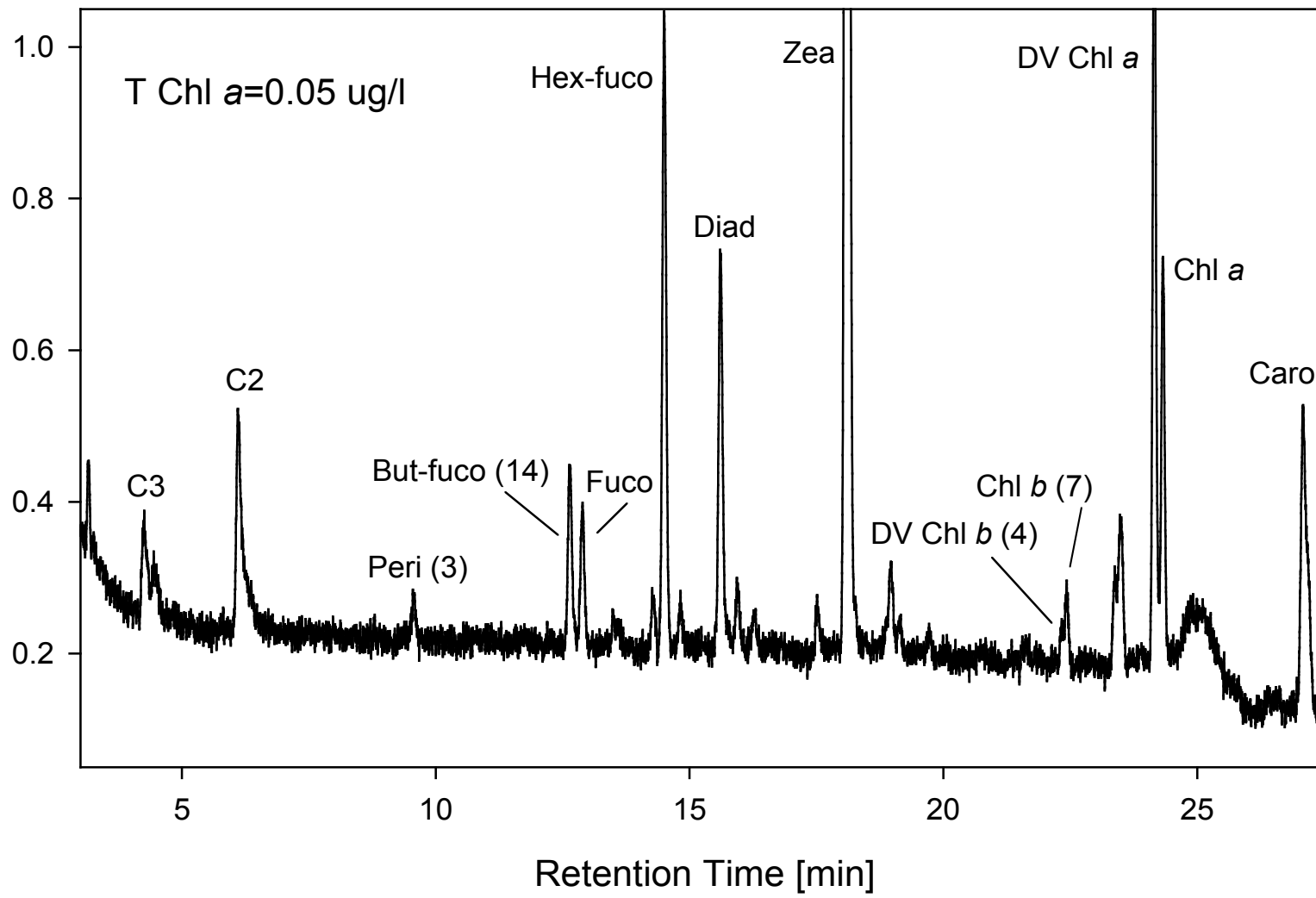
Sample scheduling: Scenarios to avoid

- ❑ We don't receive 5250 samples
- ❑ We receive more than 5250
- ❑ We have down time
- ❑ We have down time followed by a deluge

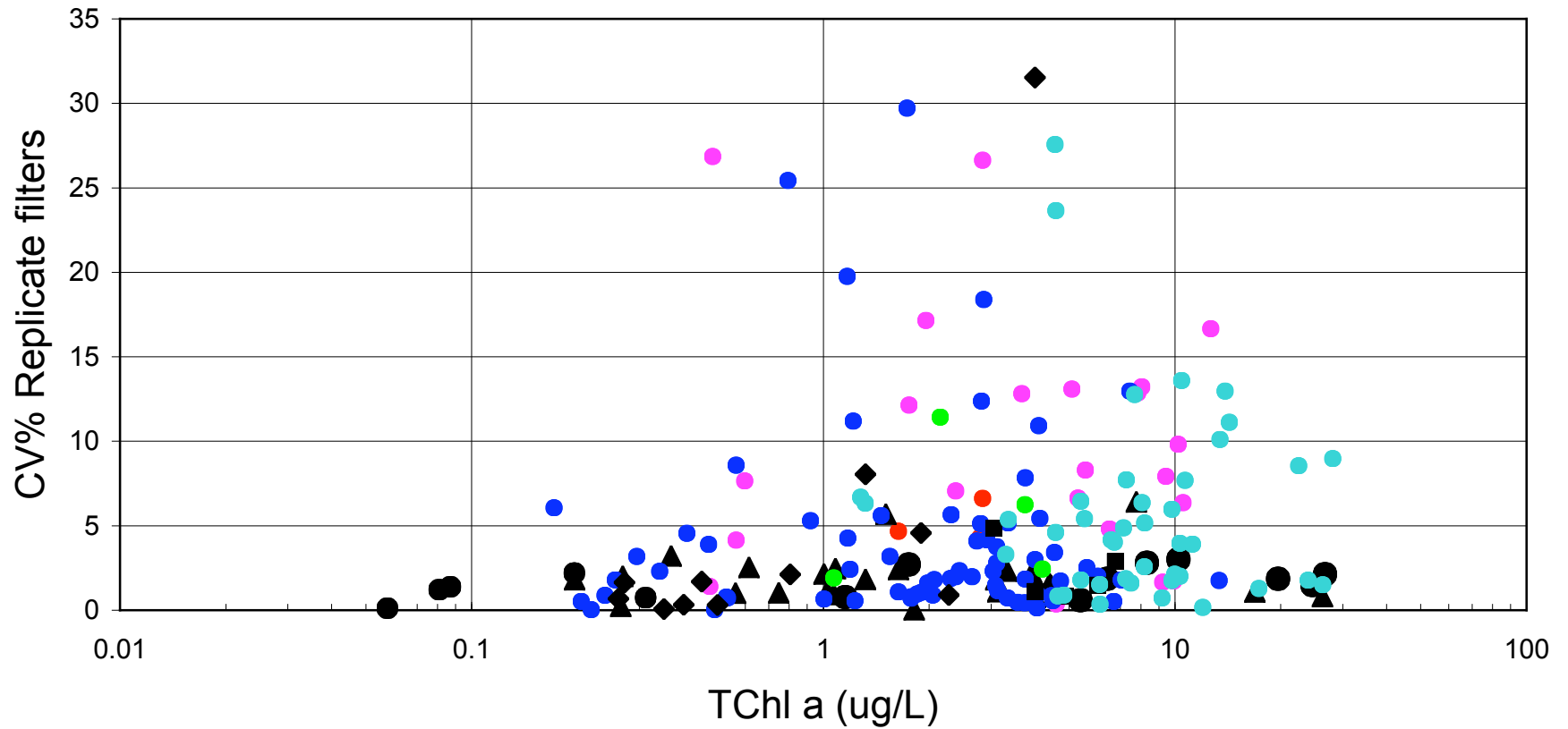


Quality Assurance data in your reports

- Analytical precision
 - TChl $a = 0.4\%$
 - Primary Pigments = 3%
- Effective LOQ
- Duplicate filter precision



Filter Precision as a Function of [TChl *a*]



AVG All = 4.7%

AVG among PIs = 4.3%

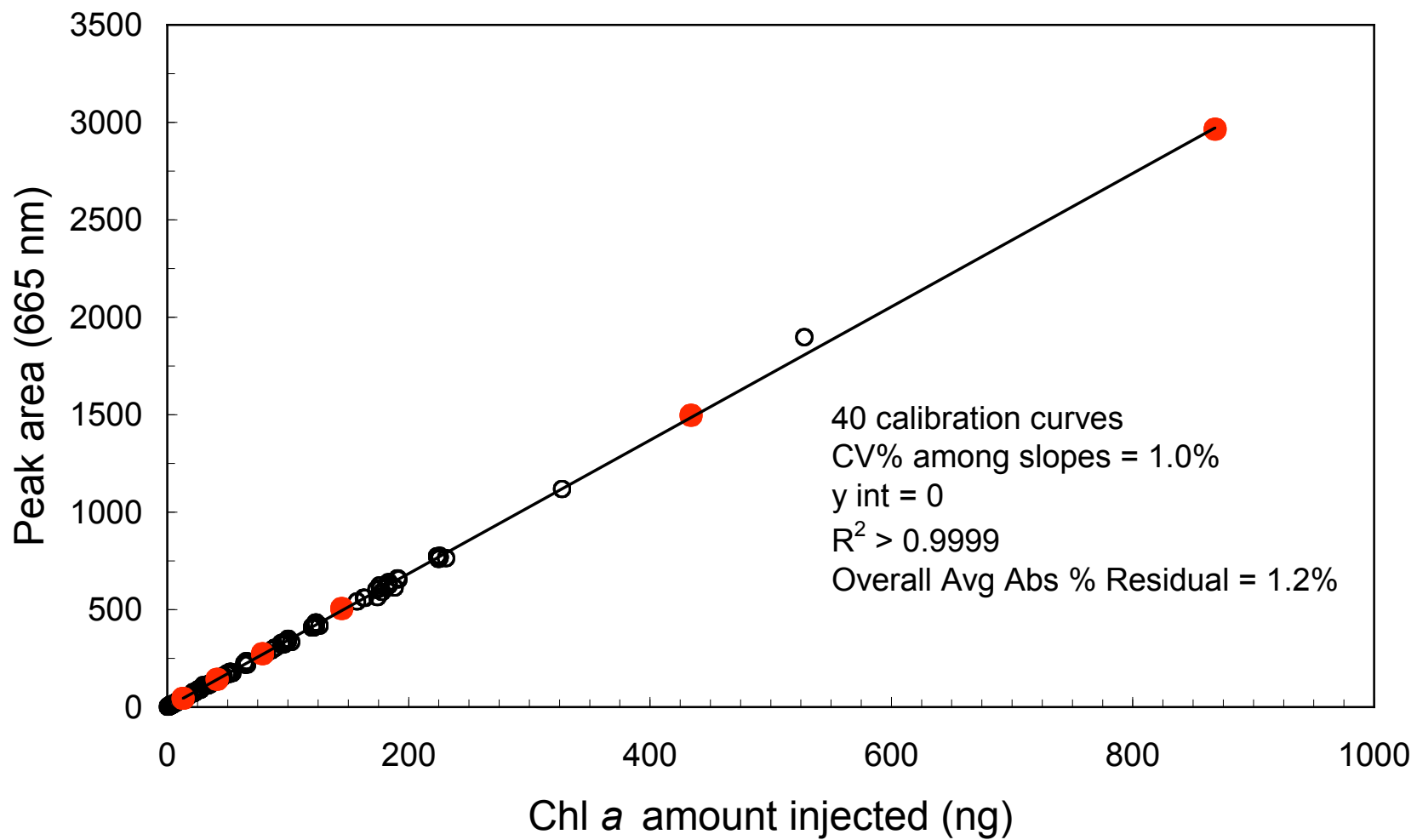
Range among PIs = 1.1 to 10%



Accuracy of the Primary Chl *a* calibration standard

	AVG APD*	WL*
HPL has inter-calibrated with 13 other laboratories	1.4%	3.1%
*APD = Absolute % difference		
*WL = warning limits = 95% confidence limits		

HPLC Calibration Curves (a Summary)

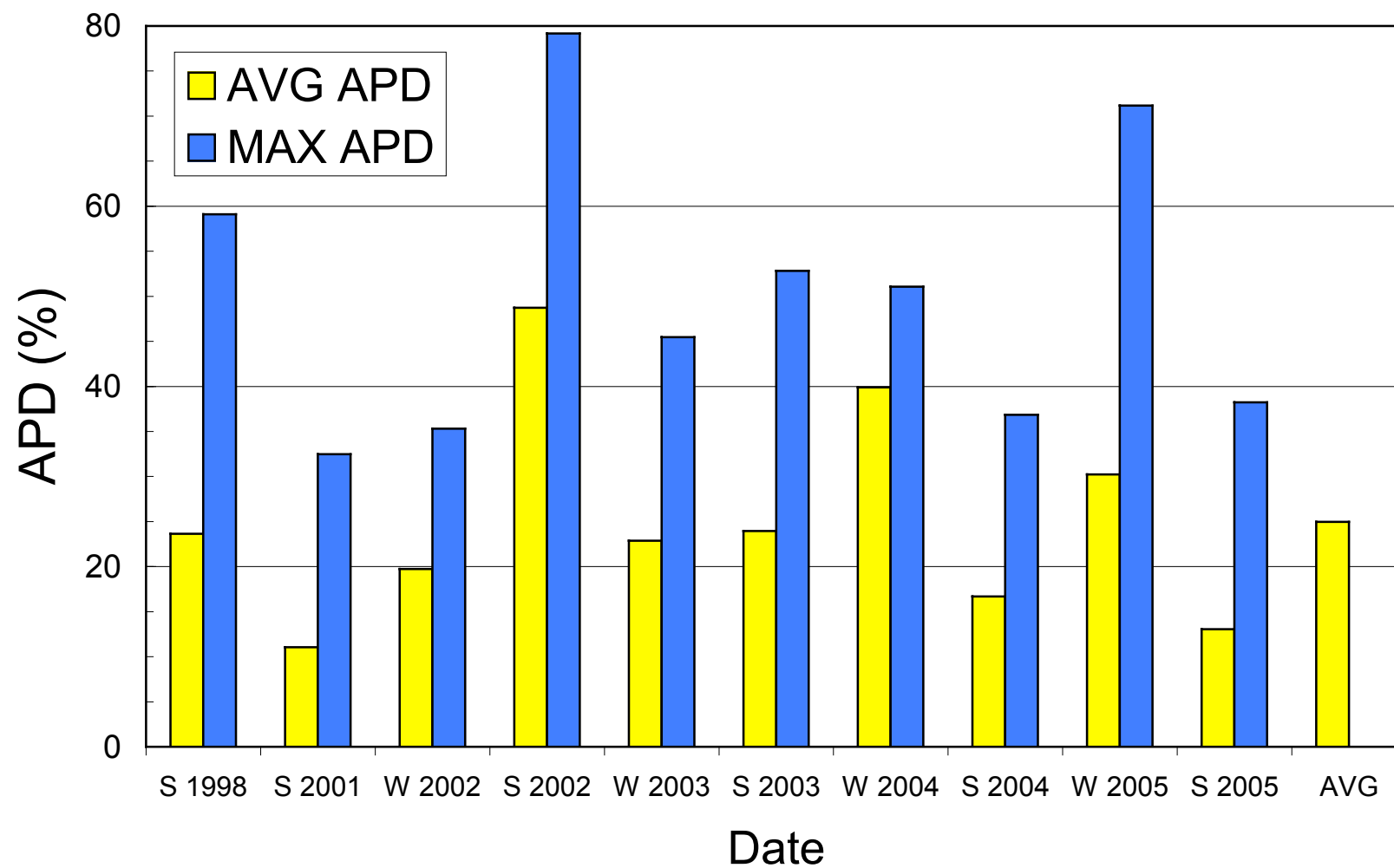




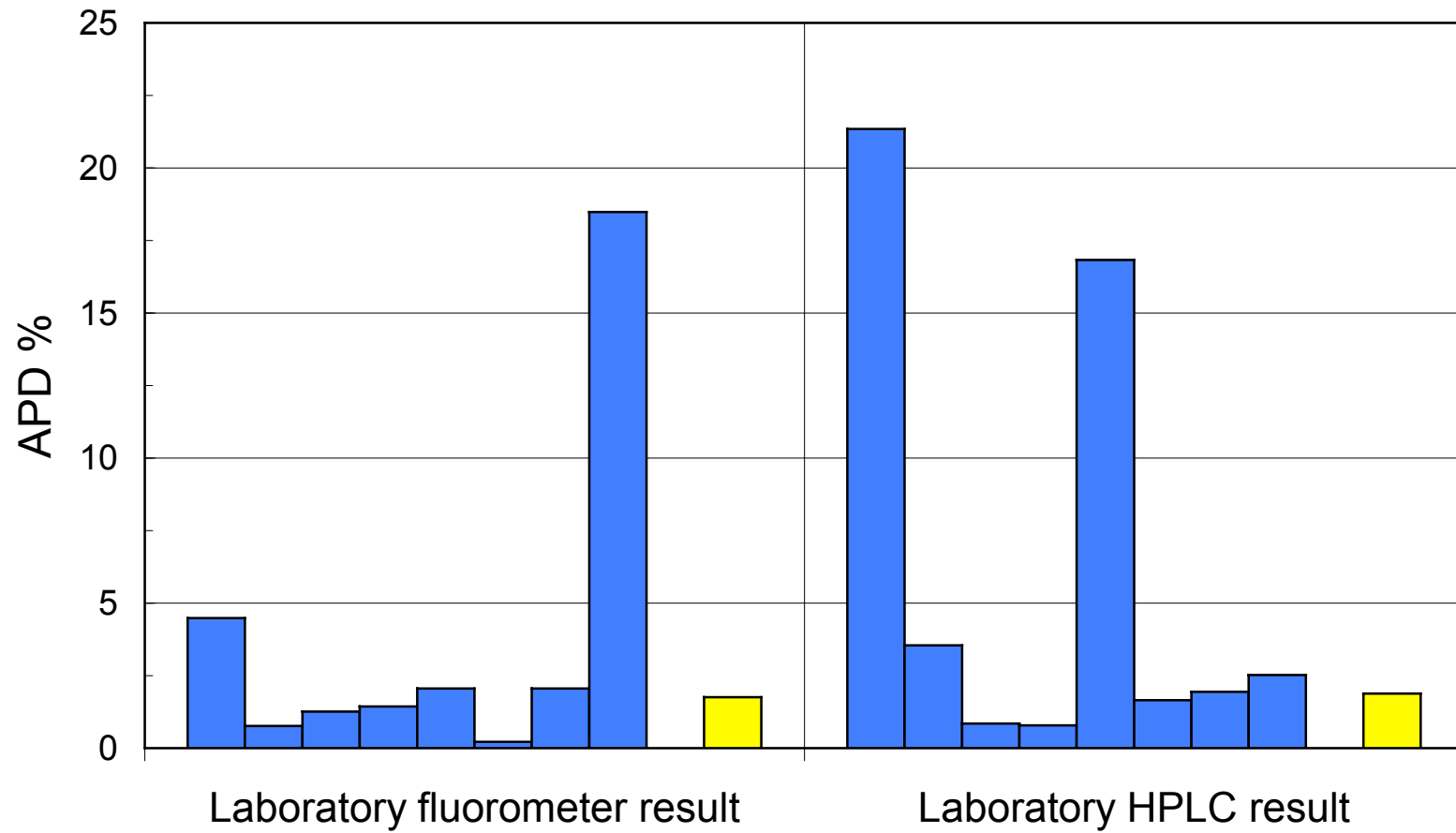
Chl *a* accuracy with field samples: A need for Inter-laboratory comparisons

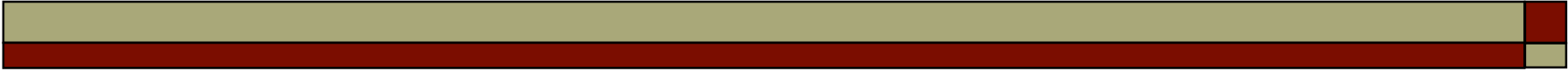
- No suitable *Standard Reference Materials*
- Average consensus concentration is proxy for truth
- Accuracy described by APD (%) relative to average consensus concentration
- Assumes all laboratories are capable of producing accurate results
- If assumption fails, average consensus concentration does not adequately represent “true” concentration

Fluorometer Chl *a* Inter-Laboratory comparisons (CBP)



TChl *a* accuracy (SIMBIOS Round-Robin)

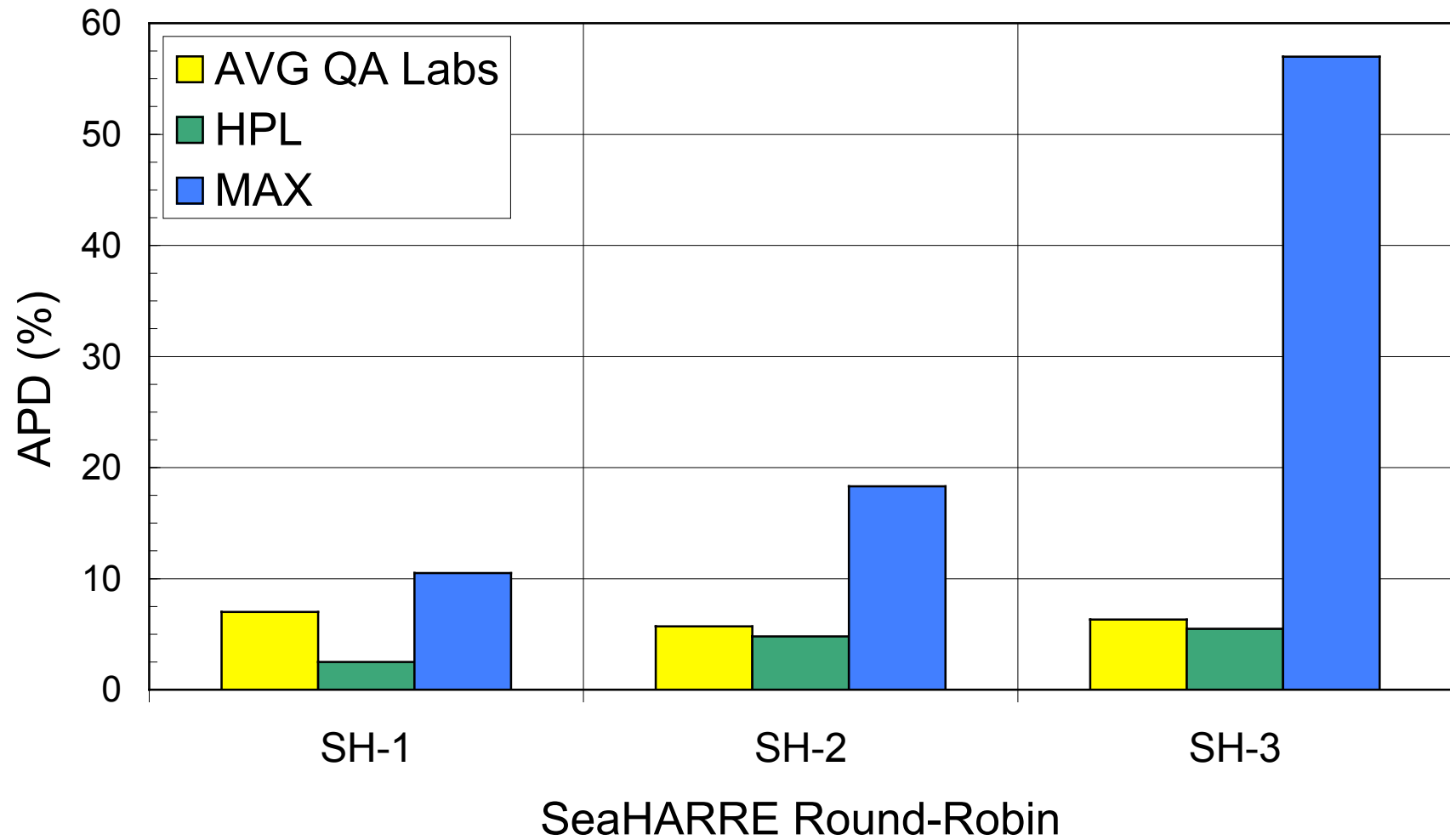


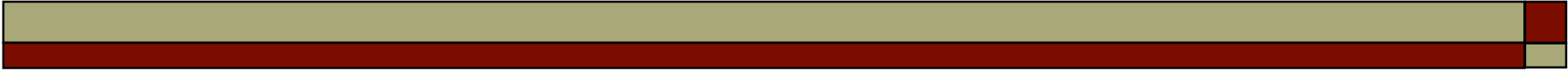


Performance metrics allow identification of QA average consensus concentration

- Injector precision
- Calibration variables
 - Avg. Abs. % residuals
 - Calibration statistics for dilution devices
- Chromatographic separation variables
 - Minimum resolution between quantified pigments
- Accuracy and precision (field samples & standards)

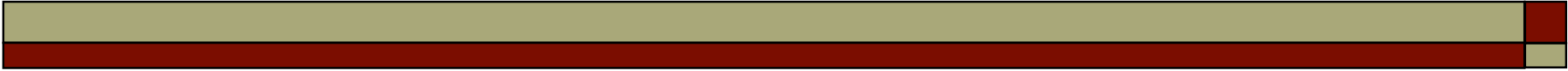
HPLC TChl a accuracy (QA average consensus)





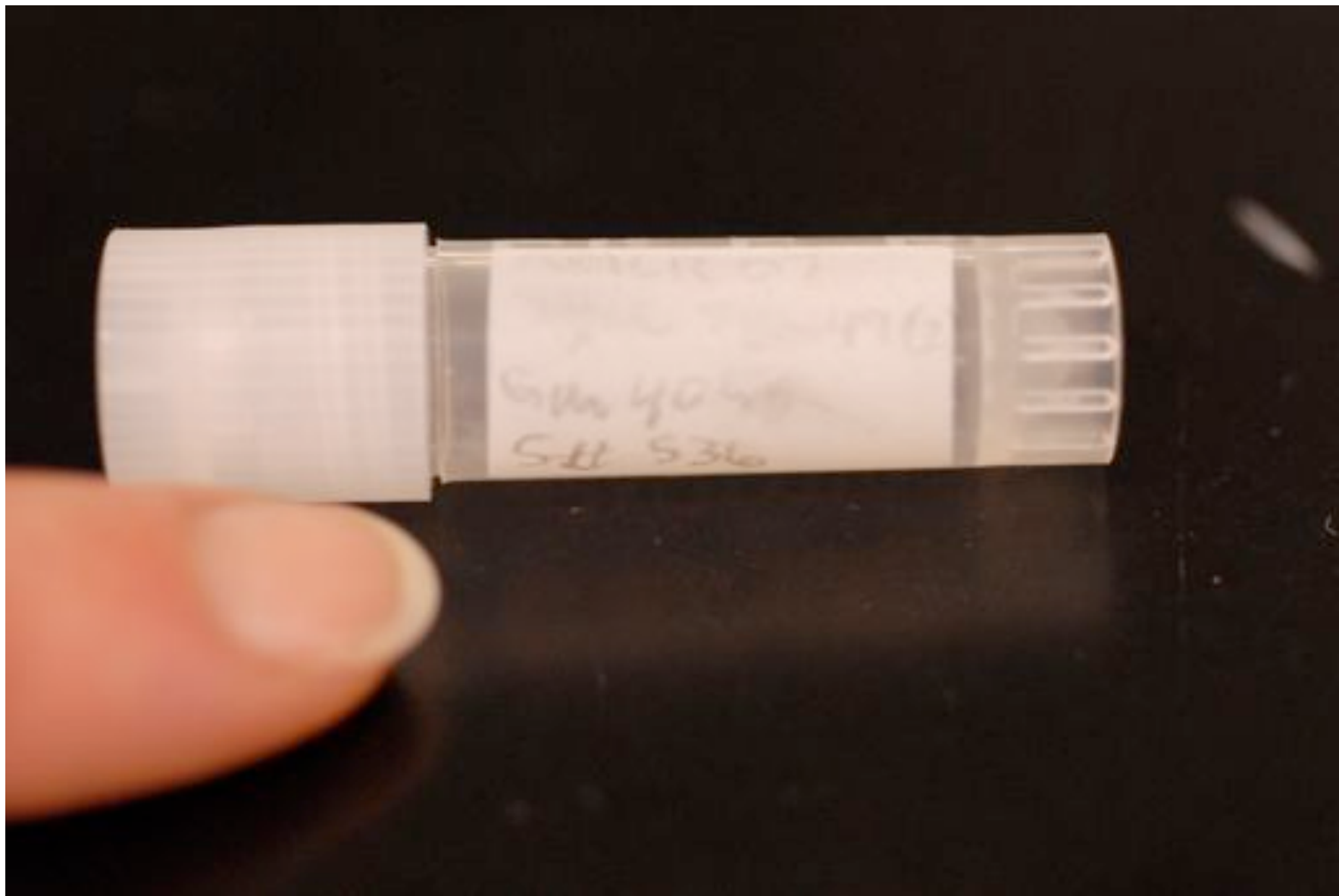
Daily Performance Statistics evaluate whether method is “in control”

- Pigment elution position
- Resolution between peaks
- Carryover between injections
- *Chl a calibration accuracy*
- *Accuracy and precision of re-pipette*
- *Analytical precision*
- *Internal standard precision*



Impending column failure: A Case Study (2-26-07)

- Out of control
 - Carryover from previous injection of concentrated standard
 - 2.8% (< 0.03% is more typical)
 - Resolution between critical pairs (Lut/Zea) dropped rapidly
 - 1.14 to 1.04
 - Chl *a* QC injection (outside control limits)
 - -3% to -8%



S11 S36
4040



Pencil?! Who uses pencil?

Is that 3625 or 3826??



Emerging from the -25°C freezer

