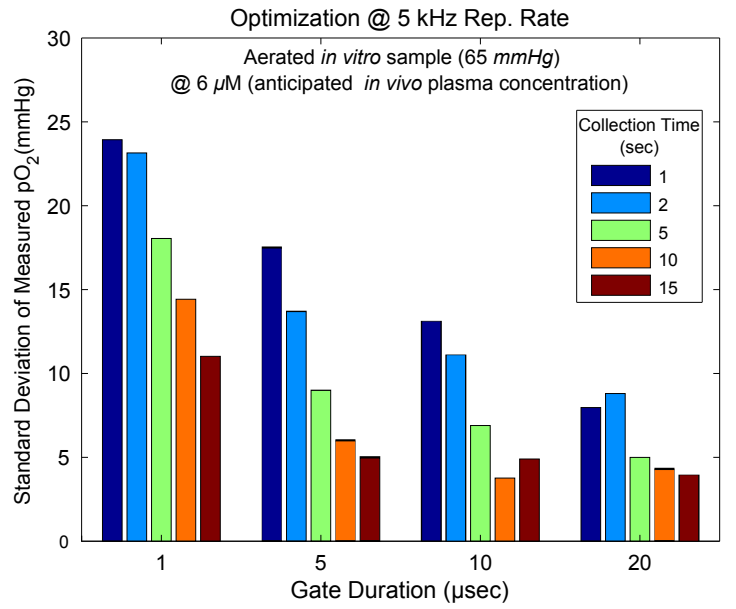
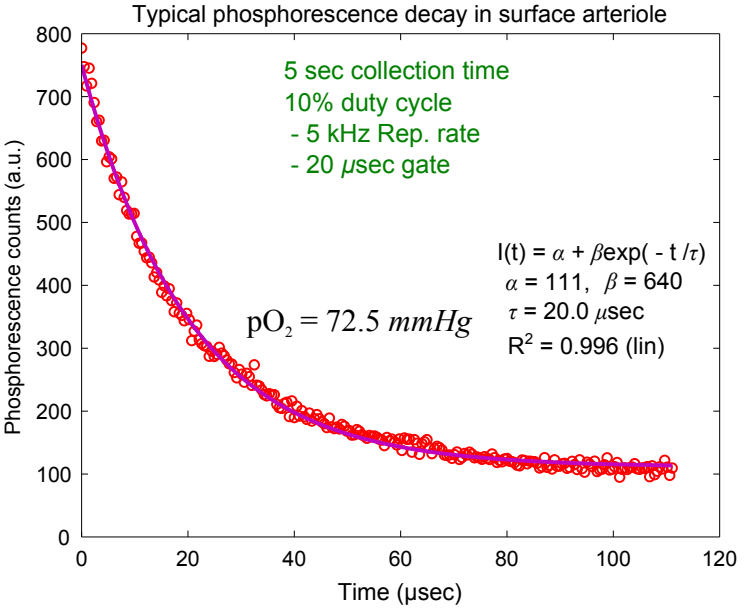
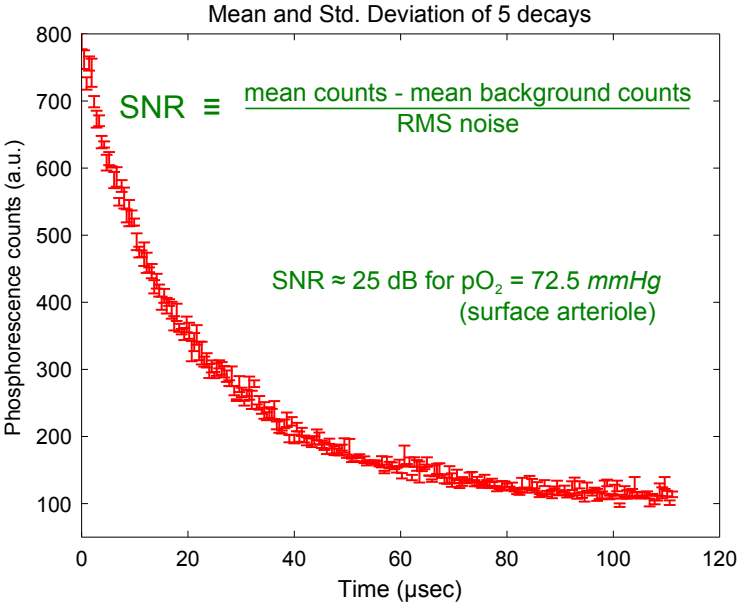

Optimization @ 5 kHz Rep. Rate
Aerated in vitro sample (65 mmHg)
@ 6 μM (anticipated in vivo plasma concentration)
Collection Time (sec)
1
2
5
10
15
Standard Deviation of Measured pO2(mmHg)
Gate Duration (μsec)
0
5
10
15
20
25
30
1
5
10
20


Typical phosphorescence decay in surface arteriole
5 sec collection time
10% duty cycle
- 5 kHz Rep. rate
- 20 μsec gate
I(t) = α + βexp(- t /τ)
α = 111, β = 640
τ = 20.0 μsec
R2 = 0.996 (lin)
pO2 = 72.5 mmHg
Phosphorescence counts (a.u.)
Time (μsec)
0
100
200
300
400
500
600
700
800
0
20
40
60
80
100
120


Mean and Std. Deviation of 5 decays
SNR ≡ mean counts - mean background counts / RMS noise
SNR ≈ 25 dB for pO2 = 72.5 mmHg
(surface arteriole)
Phosphorescence counts (a.u.)
Time (μsec)
100
200
300
400
500
600
700
800
0
20
40
60
80
100
120