

QUANSYS BIOSCIENCES

Life Sciences Case Studies

PRESENTATION OUTLINE

- Simon Frasier University
- Oregon Health Sciences University
- Utah State University
- University of California, Riverside
- Enfer Scientific

QUANSYS BIOSCIENCES

CASE STUDY # 1

SFU

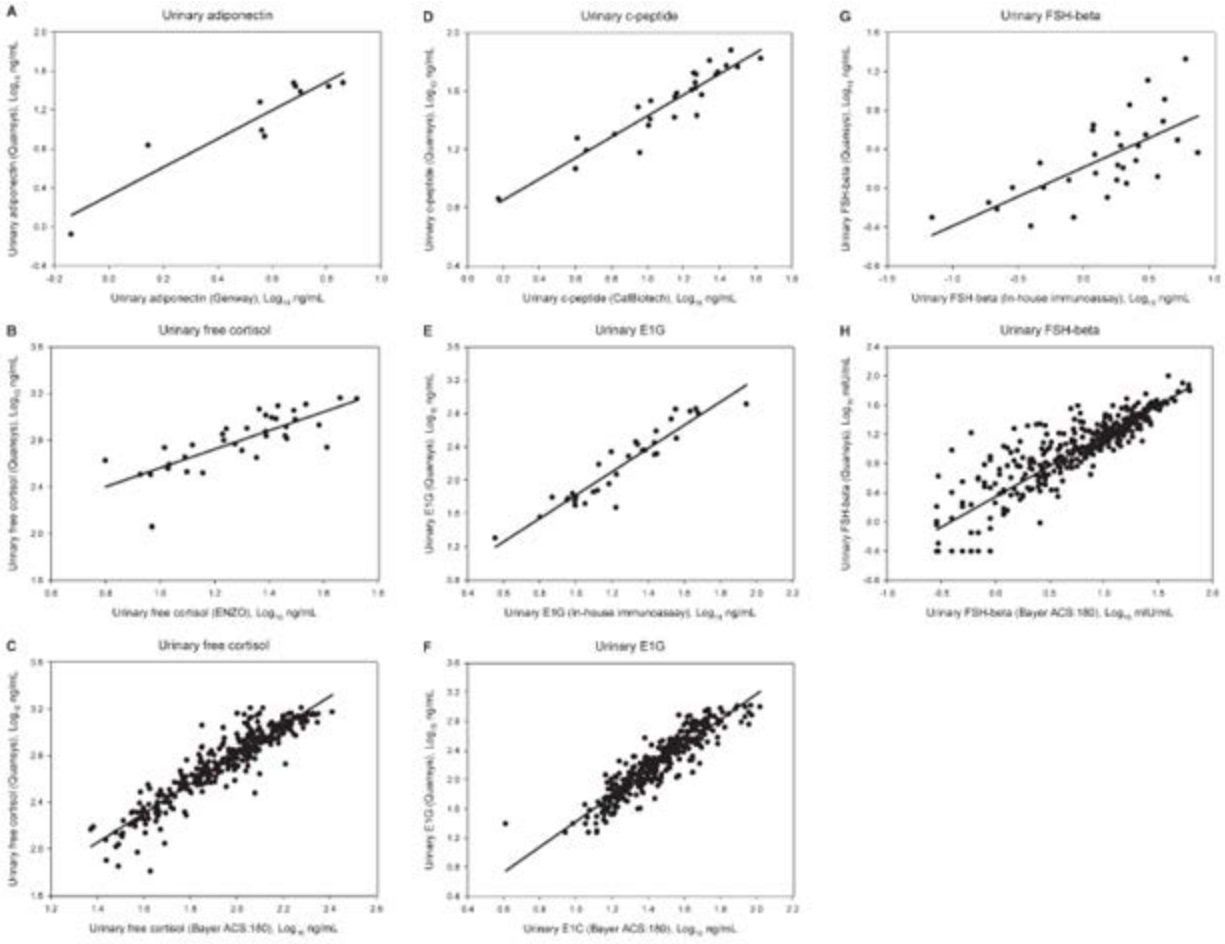
- Case Study **demonstrates custom development and manufacture**
  - Simon Fraser University, BC, Canada
  - Female Reproductive Health: Urine samples from Guatemala
  - Adiponectin, Cortisol, E1G, FSHb, HCGb, and C-Peptide
  - Three sandwich ELISAs and three competitive assays in one well
  - Testing in parallel to Bayer ACS:180 Clinical Analyzer
    - Pearson Correlation Coefficient: (≥0.75)
  - Am J Hum Biol. 2012 Jan-Feb;24(1):81-6. doi: 002/ajhb. 21229. Epub 2011 Nov 28.

QUANSYS BIOSCIENCES

CASE STUDY # 1

SFU

- Correlation between two methodologies



QUANSYS BIOSCIENCES

CASE STUDY # 1

SFU

- Assay Performance: Sensitivity and Reproducibility

	Quansys Multiplex			Traditional ELISAs		
	Sensitivity	Intra-Assay CV	Inter-Assay CV	Sensitivity	Intra-Assay CV	Inter-Assay CV
Adiponectin	0.023 ng/ml	10%	6.90%	0.156 ng/ml	4.4%	6.2%
Free Cortisol	0.343 ng/ml	7.30%	8.50%	0.057 ng/ml	10.5%	13.4%
C-Peptide	0.090 ng/ml	9.30%	7.70%	2 ng/ml	3.9%	8.5%
E1G	0.252 ng/ml	9.70%	8.20%	1.45 ng/ml	7.9%	8.5%
FSHb	0.017 ng/ml	7.20%	7.30%	0.143 ng/ml	3.8%	6.5%
HCGb	0.035 ng/ml	7.10%	7.50%	0.003 ng/ml	3.5%	5.8%

- Summary: “This multiplex technology provides a more economic, rapid, and ecologically sound alternative to individual assays for studies requiring the measurement of multiple biomarkers per biospecimen.”

QUANSYS BIOSCIENCES

CASE STUDY # 2

- Case Study **demonstrates advantages to other multiplex panels**
  - Quansys and Aushon (plate based)
  - RayBiotech (slide based)
  - Milliplex (bead based)
- Oregon Health Sciences University (OHSU), Portland, OR
- Samples from inner and middle ear tissues from mice.
- Evaluated assays: IL-1a, IL-1b, and IL-6, TNFa, GMCSF and IL-10.
- Hear Res. 2011 May;275(1-2):1-7. Epub 2010 Dec 7
- Evaluated:
  - Sensitivity
  - Linearity
  - Concordance to R&D Systems ELISAs
  - Cost effectiveness
  - RT-PCR correlation (SA Biosciences)

CASE STUDY # 2

OREGON HEALTH & SCIENCE UNIVERSITY OHSU

- Array Performance:

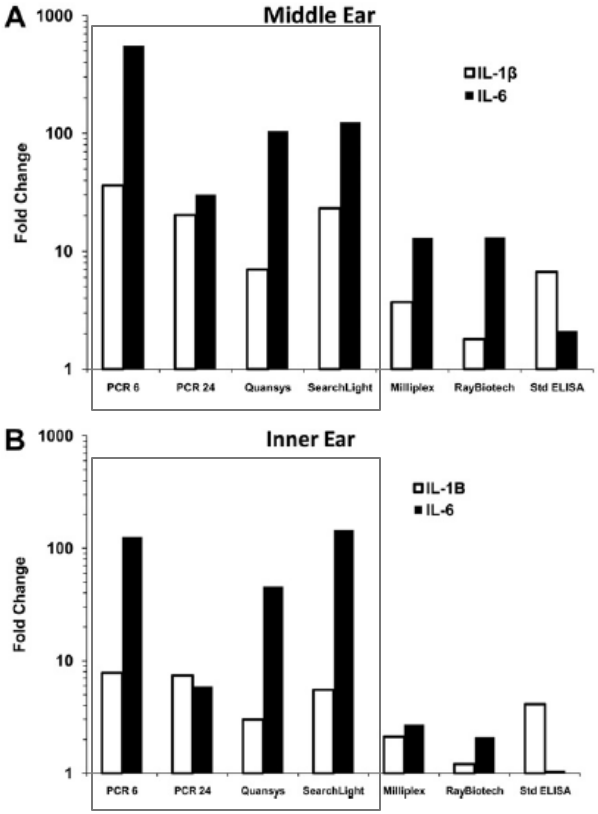
Test	Quansys	Aushon	Milliplex	RayBiotech
Sensitivity	“greatest sensitivity”	“greatest sensitivity”	“lower sensitivity”	“lower sensitivity”
Linearity	“reliably measured”	-	-	-
R&D ELISA Concordance	“greater sensitivity”	“more sensitive”	“more sensitive”	“more sensitive”
RT-PCR	“matched closely”	“matched closely”	-	-
Cost Effectiveness	“Cost Effective”	-	-	-

QUANSYS BIOSCIENCES

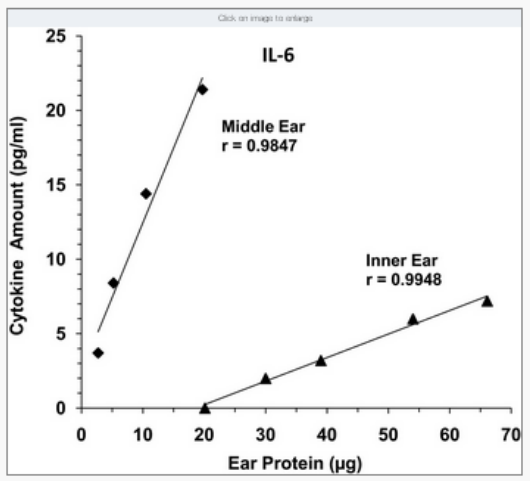
CASE STUDY # 2

OREGON HEALTH & SCIENCE UNIVERSITY

- RT-PCR correlation



- Linearity at low range of IL-6 for Quansys



QUANSYS BIOSCIENCES

CASE STUDY # 2

- Conclusions

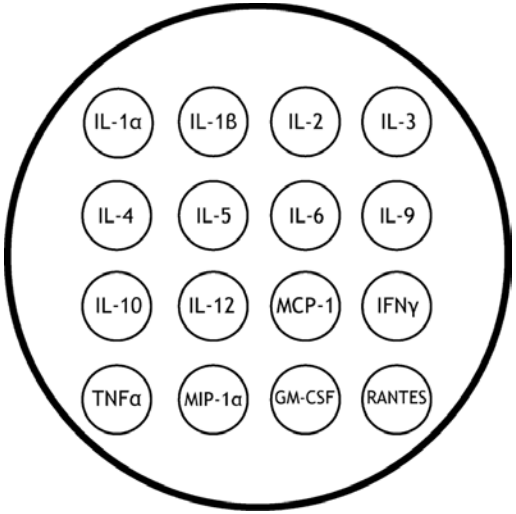
  “Thus, the multiplex ELISA procedures appear suitable and reliable for the study of hearing related proteins, providing accurate, quantitative, reproducible results with considerable improvement in sensitivity and economy.”

CASE STUDY # 3

- Case Study **demonstrates technical utility**

  - Performed at Institute for Antiviral Research at USU in Logan, Utah

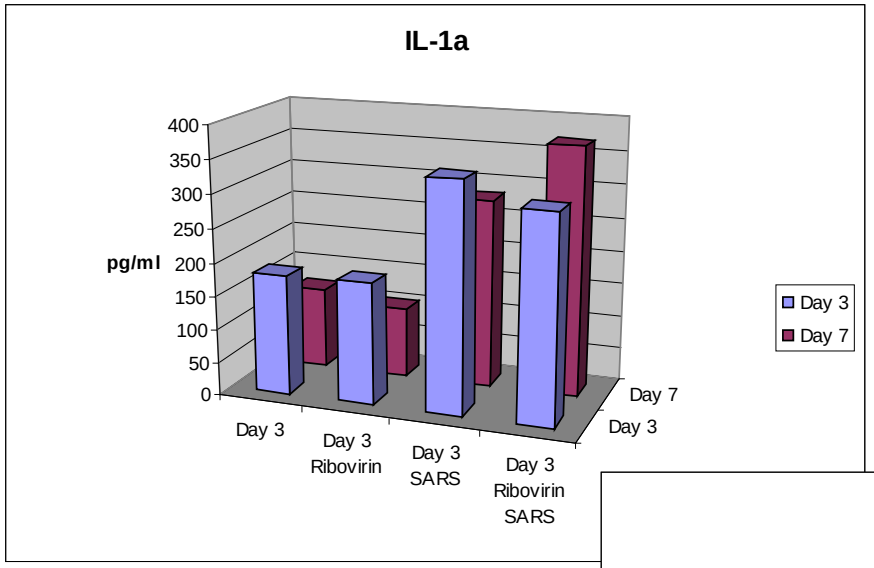
  - Ribavirin Treatment of SARS infected mice
    1-SARS, No Ribavirin
    2-SARS, Ribavirin
    3-Control, no SARS, no Ribavirin
    4-Control, Ribavirin

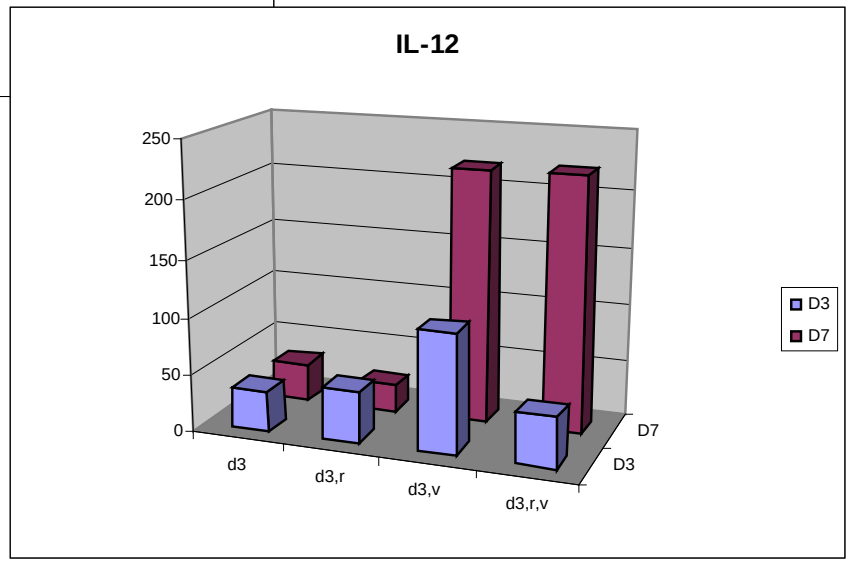


  - 7 day testing period with samples taken Day 3 and Day 7

  - Tested with Mouse Cytokine Screen, 16 cytokines

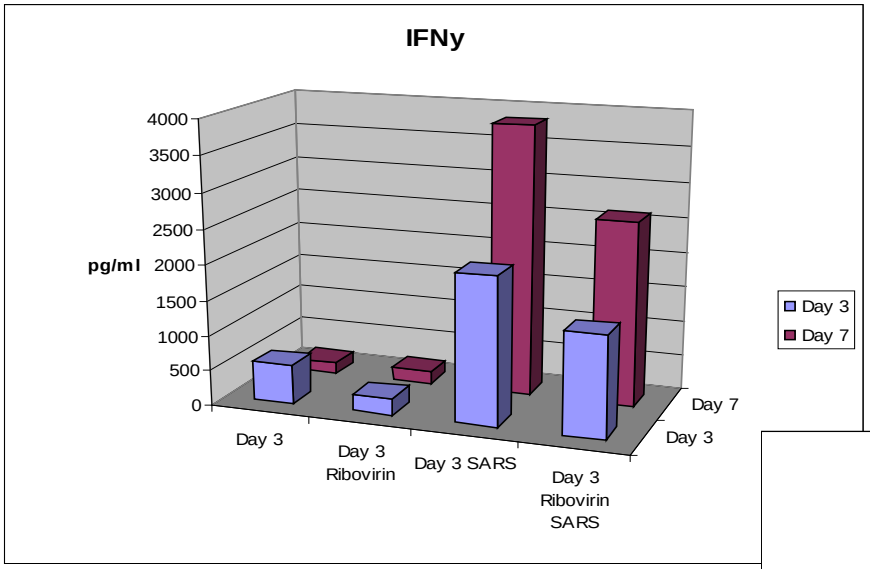
CASE STUDY # 3

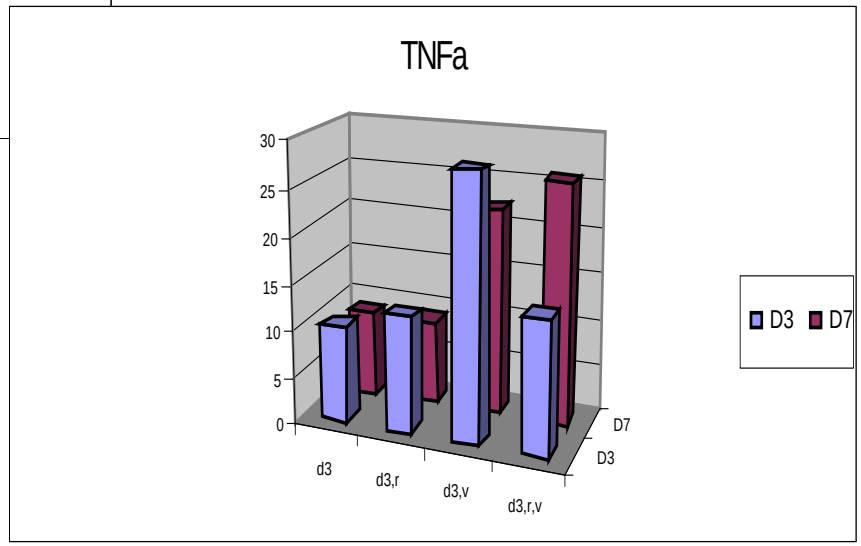




**Antiviral Res. 2006 Aug;71(1):53-63. Epub 2006 Mar 24

CASE STUDY # 3





**Antiviral Res. 2006 Aug;71(1):53-63. Epub 2006 Mar 24

CASE STUDY # 3

Summary:

I. Ribavirin not effective treatment for SARS

Use of Ribavirin increased viral titers (data not shown)

II. Ribavirin simply slows down inflammatory response

Infected without treatment resulted in higher day 3 cytokine levels which decreased through day 7.

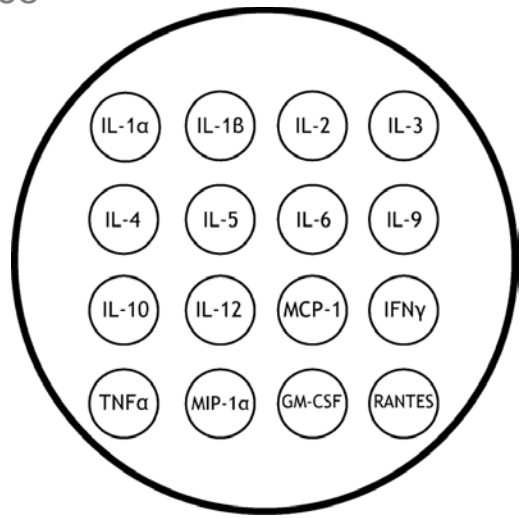
Ribavirin treated infections have reduced day 3 cytokine levels that increased through day 7.

QUANSYS BIOSCIENCES

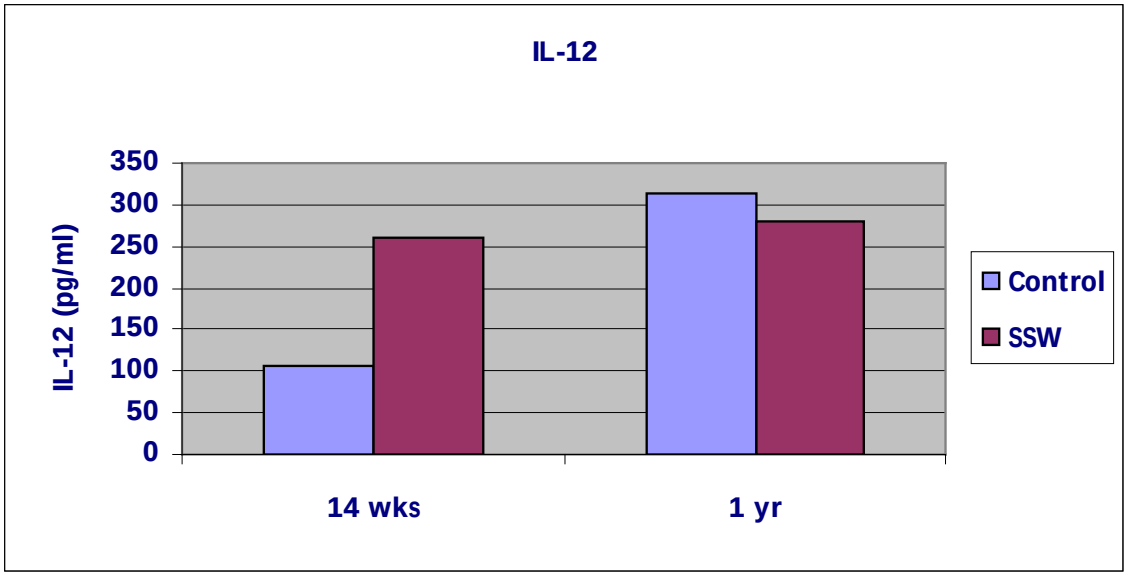
**Antiviral Res. 2006 Aug;71(1):53-63. Epub 2006 Mar 24

CASE STUDY # 4

- Case Study **demonstrates technical utility**
  - Effects of Second Hand Smoke in Atherogenesis
  - Performed at UC Riverside and UC San Francisco
  - Isolated 2 mouse populations
    1. Control
    2. 6 hrs/day (10 min smoke with 5 min breaks)- 5 days a week
  - Tested for TH1/TH2 cytokine expression (IL-12, IL-4, INF gamma)
  - Tested with Mouse Cytokine Screen, 16 cytokines

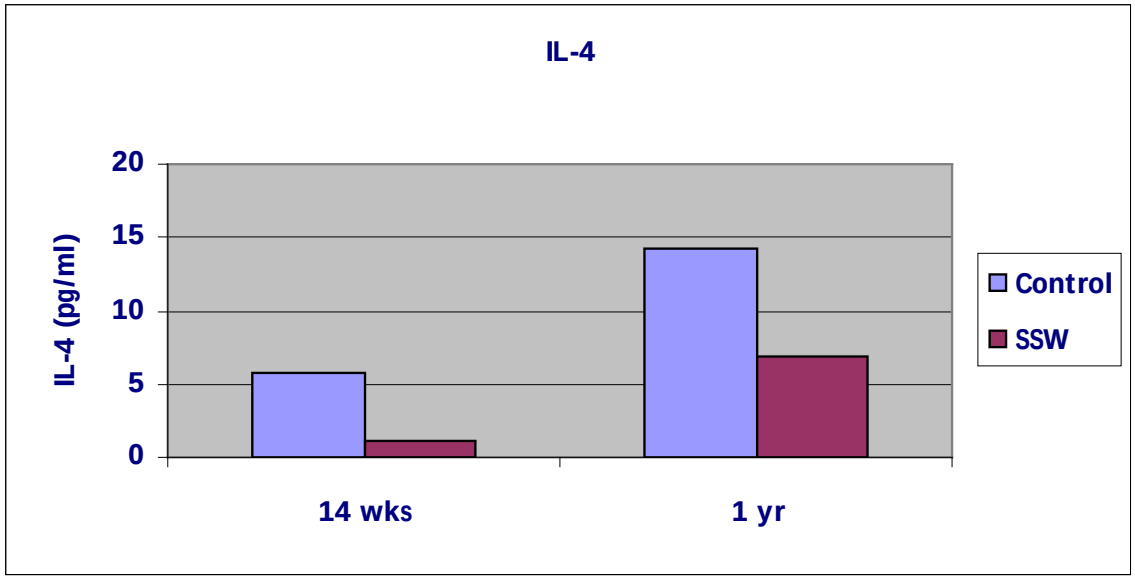


CASE STUDY # 4



- IL-12 promotes TH1 response
- IL-12 higher at 14 wks than control showing proinflammatory response

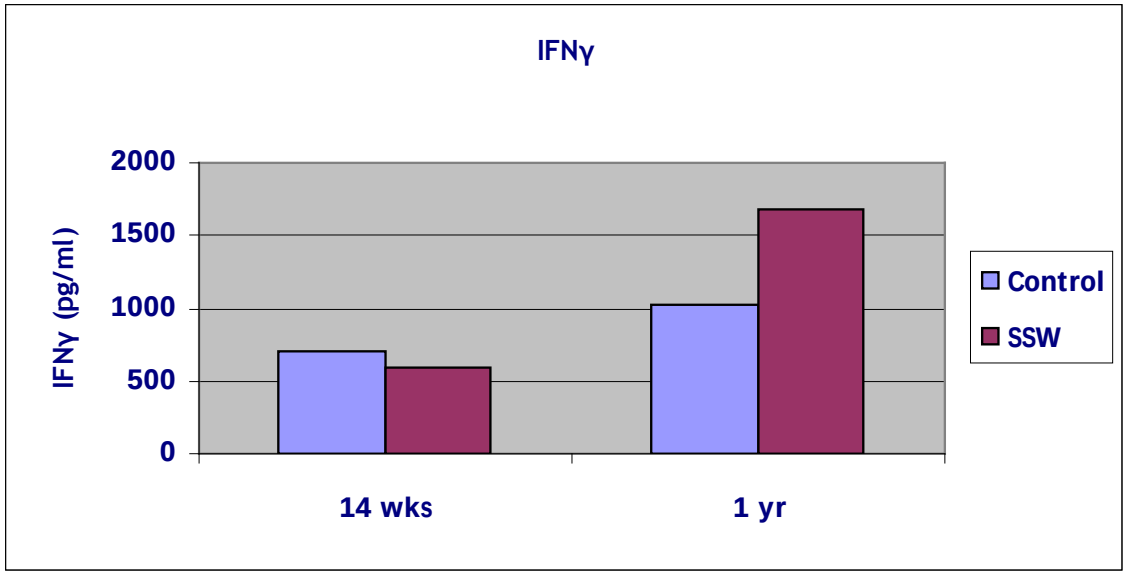
CASE STUDY # 4



- IL-4 promotes a TH2 response
- IL-4 much lower concentration than control
- From 14 weeks to 1 year, still a drastic decrease in IL-4 expression

QUANSYS BIOSCIENCES

CASE STUDY # 4



- IFNγ promotes a TH1 response
- IFNγ much higher after one year

CASE STUDY # 4

Summary:

I. A TH1 response was demonstrated by the increase of IL-12 at 14 weeks and IFNγ at 1 year.

II. IL-4 also showed an appropriate TH2 response by a decrease response at 14 weeks yet lacked the change at 1 year.

III. Perpetual inflammatory condition given by the continued decrease in IL-4 production and the constant increase levels of TH1 cytokines, IL-12 and IFNγ.

IV. Mice in the presence of second hand smoke show a constant state of pro-inflammation and lack the ability to transition from TH1 immunity to TH2 immunity.

QUANSYS BIOSCIENCES

**Cardiovasc Disord. 2007: 7:1. Yuan et al.

CASE STUDY # 5

- Performed at Enfer Group Ltd., Dublin, Ireland
- Tested 20 different proteins and peptides associated with Bovine TB
- Tested 1,489 negative samples and 522 positive samples
- Tested against single ELISAs assays (ESAT-6, CFP-20 and MPB83) and
- Tested against single lateral flow assay (MPB83)
- Custom development and printing from Quansys

**Clinical and Vaccine Immunology Dec 2008

CASE STUDY # 5

Test	TB (+)	Sensitivity (%)	TB(-)	Specificity (%)
ESAT-6	522	40.60	1489	86.60
CFP-1	522	82.60	1489	69.70
MPB83	522	78.50	1489	99.10
Anigen Lateral Flow	214	83.60	79	83.00
Enfer Multiplex	522	**93.10**	1489	**98.40**

**Clinical and Vaccine Immunology Dec 2008

CASE STUDY # 5

Summary:

I. Results allowed ENFER to find 13 markers of the original 20 with the highest diagnostic value for high throughput testing

II. Assay improved testing efficiency and costs

III. Assay allowed for rapid testing in centralized lab

**Clinical and Vaccine Immunology Dec 2008

Questions?

Please contact Quansys at
1-888-782-6797
or info@quansysbio.com

Thank You!

QUANSYS BIOSCIENCES