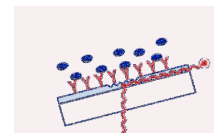


# DETERMINATION OF TNF $\alpha$ CONCENTRATION IN HUMAN SERUM

using OPTICAL WAVEGUIDE LIGHTMODE SPECTROSCOPY (OWLS) detection

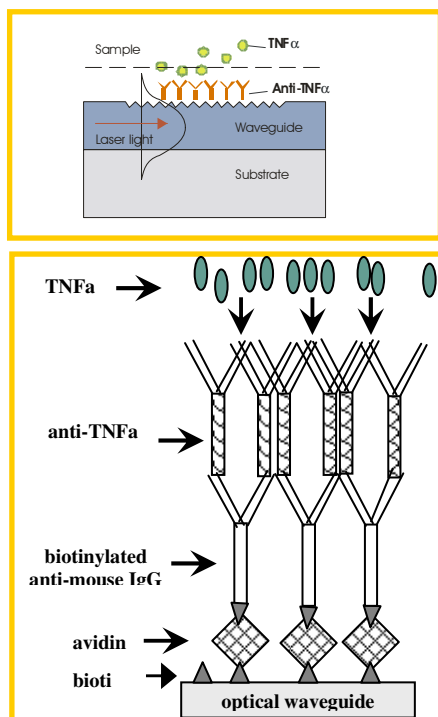


## Abstract

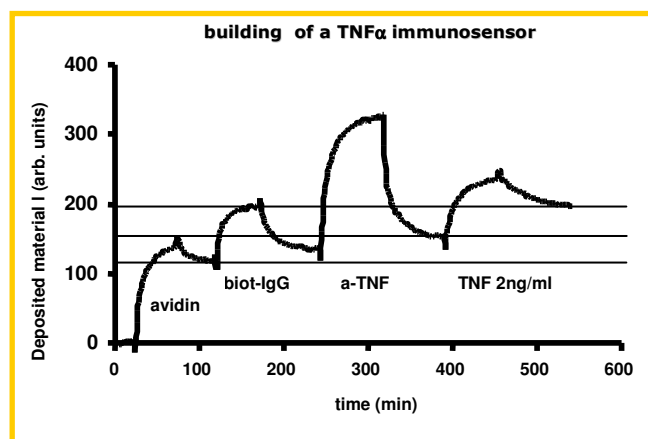
Immunosensors were constructed for rapid and label-free determination of TNF $\alpha$  concentrations in human serum samples.

## Application of OWLS sensors

as selective immun detectors of TNF $\alpha$



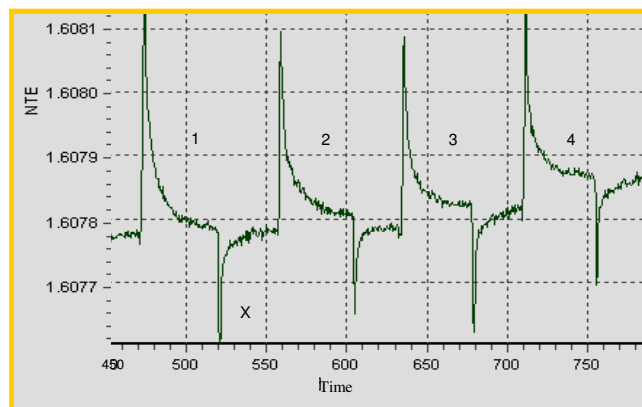
Stable, reusable sensors were produced by using biotin-avidin binding for immobilization of anti TNF antibodies



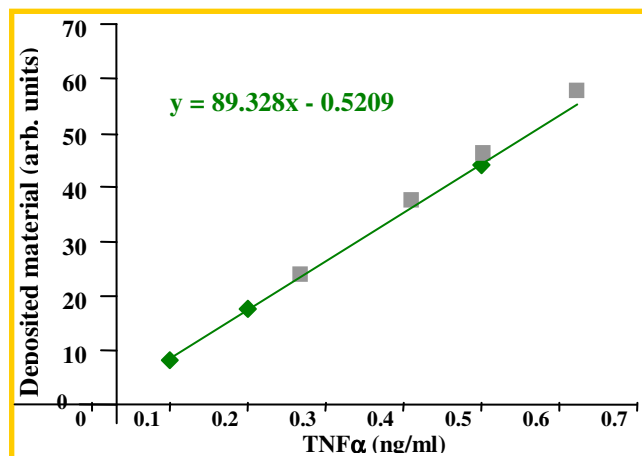
## Sample preparation

Proteins of Mr of 10 to 40 KDa of normal and TNF-free sera were isolated by molecular filtering (Amicon). 100 ml of samples were loaded onto the surface of sensitized sensors.

Reproducible assays were carried out on partially purified serum samples



OWLS records (changes in the effective refractive index) on the TNF $\alpha$  content in various human serum samples. 1: TNF-free control samples; 2, 3 and 4 : sera of different individuals



TNF $\alpha$  concentrations in the calibrating solution (  $\blacklozenge$  ) and in various samples of human sera (  $\blacksquare$  )

## Conclusion

Using appropriately sensitized immunosensors, TNF $\alpha$  can be safely detected in partially purified serum samples in a magnitude of 100 pg/ml

## References

- Vörös J. et al., Optical grating coupler biosensors. Biomaterials 23 (2002) 3699-3710.
- Barath et al., 2002. International Conf. of Cytokines in Medicine Oslo.
- [www.owls-sensors.com](http://www.owls-sensors.com)