IL-1β Detection in Osteoarthritis
Direct Detection Assay

Osteoarthritis (OA) is the progressive degeneration of the synovial joints. This chronic condition results in joint pain worsened by weight-bearing activities that detriment the patient's function and quality of life. In the course of immunologic and inflammatory responses, cytokines are hormone-like polypeptides secreted during the process. For OA, interleukin-1β (IL-1β) is a 17 kDa prototypical proinflammatory cytokine believed to play a critical role in disease pathogenesis and progression. Elevated levels of IL-1β are found to elevate cartilage catabolism and suppress cartilage anabolism.
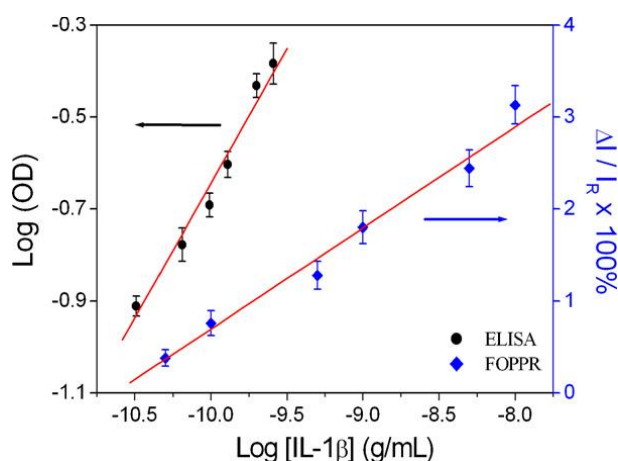

Fig. 1 Standard curves for IL-1β with the FOPPR™ (blue) and ELISA (black) methods.
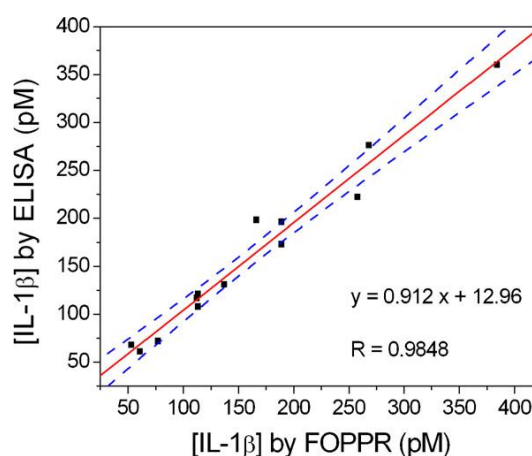

Fig. 2 Correlation between FOPPR™ and ELISA.

Fig. 1 compares the detection of IL-1β with the FOPPR™ and ELISA methods. The FOPPR™ Direct Detection Assay offers a limit of detection (LOD) of 21 pg/mL (1.2 pM) while the sandwich ELISA method offers a LOD of 22 pg/mL (1.3 pM). Furthermore, as shown in Fig. 2, FOPPR™ results are highly correlated with the gold standard of immunoassay with a correlation coefficient of 0.9848. The FOPPR™ Direct Detection Assay demonstrates similar LOD for IL-1β to the sandwich ELISA method while offers a shorter analysis time and eliminates the need for laborious procedures.

Reference:
[1] Chiang et al. *Biosensors and Bioelectronics* 2010, 26, 1036-1042.