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BLItz™ System Publications List

The following are a sampling of scientific articles that have relied on data from BLItz systems. We will continue to update this list on a regular basis and online at fortebio.com/references.html.

The Molecular Basis for Mucosal-associated Invariant T cell Recognition of MR1 Proteins

Lopez-Sagaseta, J, et al., Proc Natl Acad Sci U S A, 110(19), E1771-8, 2013

This study elucidates the structure of MAIT TRC (mucosal-associated invariant T-cell receptor) bound to bovine MR1 (MHC related-1 protein). The affinity of the F7 MAIT TCR for single bovine MR1 mutants expressing human residues was determined using the BLItz system and compared to the wild-type affinity. Recombinant 12xHIS tagged MR1 proteins were loaded onto Ni-NTA biosensors for these experiments.

Peptide Ligands for Pro-survival Protein Bfl-1 from Computationally Guided Library Screening

Dutta, S, Chen, T S, Keating, A E, ACS Chem Biol, 8(4), 778-88, 2013

The protein Bfl-1 is a pro-survival member of the Bcl-2 family implicated in a variety of cancers. A high affinity peptide that bound to Bfl-1 in preference to other pro-survival proteins was isolated, and mutational and structural analysis performed to identify positions important to preferential binding. The BLItz system was used to generate equilibrium and kinetic binding data for peptide-protein interactions. Biotinylated peptide was loaded onto Streptavidin biosensors for these measurements.

The Regulation of Apoptosis by the Downstream Regulatory Element Antagonist Modulator/Potassium Channel Interacting Protein 3 (DREAM/KChIP3) Through Interactions with Hexokinase I

Craig, T A, et al., Biochem Biophys Res Commun, 433(4), 508-12, 2013

The DREAM protein, which alters apoptosis in neuronal cells, was found to interact with brain hexokinase I in a calcium-dependent manner. The BLItz system was used to characterize binding of DREAM to hexokinase I. Biotinylated DREAM was loaded onto Streptavidin biosensors and incubated with hexokinase I in the presence of either calcium chloride or EGTA. Association and dissociation constants were determined.

Switchable Elastin-like Polypeptides that Respond to Chemical Inducers of Dimerization

Dhandhukia, J, et al., Biomacromolecules, 14(4), 976-85, 2013

A strategy for designing elastin-like polypeptides (ELPs) that respond to specific chemical substrates is presented. The authors engineered a construct (FKBP-ELP) consisting of an engineered protein polymer linked to a fusion protein that homodimerized upon binding of a bifunctional chemical inducer of dimerization (CID). Association/dissociation kinetics and the affinity constant for CID binding to FKBP-ELP were characterized on the BLItz system using biotinylated FKBP-ELP loaded onto Streptavidin biosensors.

Design of a Novel Cyclotide-Based CXCR4 Antagonist with Anti-Human Immunodeficiency Virus (HIV)-1 Activity

Aboye, T L, et al., J Med Chem, 55(23), 10729-34, 2012

The authors describe the design and synthesis of a novel cyclotide able to inhibit the G-protein-coupled receptor CXCR4, a potential target for inhibition of HIV replication. To assess stability in human serum, the BLItz system was used to determine association and dissociation rate constants of the cyclotide to human serum proteins.

Cyclic di-GMP Sensing via the Innate Immune Signaling Protein STING

Yin, Q, et al., Molecular Cell, 46(6), 735-745, 2012

The structural characteristics of STING (stimulator of interferon genes) cytosolic domain are investigated in this publication. The BLItz system was used to study binding between STING CBD (c-di-GMP binding domain) and IKK-like kinase TBK1. Biotinylated CBD was immobilized on Streptavidin biosensors and incubated with various concentrations of TBK1.

The Protein Zfand5 Binds and Stabilizes mRNAs with AU-rich Elements in Their 3 prime Untranslated Regions

He, G, et al., J Biological Chemistry, 287(30), 24967-24977, 2012

Identification of novel factors that are involved in regulating cytokine mRNA stability and capable of attenuating host inflammatory responses offers potentially important insights into the pathological basis of diverse inflammatory diseases, and could aid in the development of therapeutic strategies. This study reports that Zfand5 stabilizes class II ARE-mRNAs by binding directly to the ARE-mRNA and competing with tristetraprolin (TTP), a zinc finger-containing protein that destabilizes mRNAs with Class II AREs. The affinity constants for binding of Zfand5/ARE and TTP/ARE were determined using the BLItz system. Biotinylated ARE-RNA was immobilized on Streptavidin biosensors for these experiments.

Intrinsic Selectivity of Notch 1 for Delta-like 4 over Delta-like 1

Andrawes, M B, et al., Journal of Biological Chemistry, 288(35), 25477-25489, 2013

Notch transmembrane receptors play an essential role in cell signaling. The investigators devised a reporter assay that did not require the full length Notch1 receptor, and then compared its binding affinities to two Delta-like ligands (Dll1 and Dll4). The Notch molecules were biotinlyated and loaded onto Streptavidin biosensors for these experiments.

Monitoring the Kinetics of the pH Driven Transition of the Anthrax Toxin Prepore to the Pore by Biolayer Interferometry and Surface Plasmon Resonance

Naik, S, et al., Biochemistry, 52(37), 6335-47, 2013

In acidic conditions, a component of the anthrax toxin – the protective antigen undergoes a dramatic conformational change. The Octet and BLItz systems were used to monitor the kinetics of the transition, and the complexes immobilized to the biosensors were collected and prepared for electron microscopy. This experiment was enabled by binding the protective antigen to AR2G biosensors.

High-Level Expression of a Full-length Eph Receptor

Paavilainen, S, et al., Protein Expr Purif, 92(1), 112-8, 2013

The investigators developed an expression system for a full-length transmembrane signaling protein, erythropoietin-producing hepatoceullar receptor (Eph). The Blitz system was used to confirm the recombinant protein retained its activity and specificity. Protein A biosensors were loaded with Fc-tagged ephrin ligands.