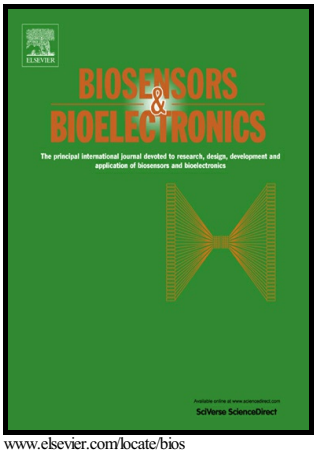

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Rapid Capture and Labeling of Cells on Single Domain Antibodies-Functionalized Flow Cell

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Abstract

Current techniques to characterize leukocyte subgroups in blood require long sample preparation times and sizable sample volumes. A simplified method for leukocyte characterization using smaller blood volumes would thus be useful in diagnostic settings. Here we describe a flow system comprised of two functionalized graphene oxide (GO) surfaces that allow the capture of distinct leukocyte populations from small volumes blood using camelid single-domain antibodyfragments (VHHs) as capture agents. We used site-specifically labeled leukocytes to detect and identify cells exposed to fungal challenge. Combining the chemical and optical properties of GO with the versatility of the VHH scaffold in the context of a flow system provides a quick and efficient method for the capture and characterization of functional leukocytes.

Keywords: single domain antibody, graphene oxide, sortase, enzymatic labeling, cell detection, leukocytes

[1] These two authors contributed equally to this work