

Abstract

There is mounting evidence that Rheumatoid Arthritis (RA) may originate at a mucosal surface: Microbial dysbiosis occurs in new onset seropositive RA (Scher, *eLife* 2013); autoantibodies such as Rheumatoid Factor (RF) and Antibodies to Citrullinated Protein Antigens (ACPA), including Cyclic Citrullinated Peptide (CCP), are found at mucosal surfaces in individuals with and at risk for RA (Willis, *Arthritis & Rheumatology* 2013); and individuals at risk and with RA have IgA autoantibodies and expanded IgA plasmablasts in their circulation (Kinslow, *Arthritis & Rheumatology* 2016). Our unpublished data demonstrate ACPA positivity is also present in the feces of 30-50% of at-risk subjects regardless of serum ACPA status. Using previously published methods in which CCP3+ antibodies in sera are bound to the commercial ELISA and then uncoupled (Scherer, *Arthritis & Rheumatology* 2010), ACPA was purified from biospecimen's serum and re-confirmed by ELISA. We utilized pools of banked feces that contain a broad sampling of individuals as to capture a diversity of ACPA from these samples and applied purified serum ACPA. Our results found that ACPA purified from serum did recognize a small subset of bacteria, which suggest cross-reactivity between antigens that may arise from molecular mimicry. Furthermore, these results may provide insight into bacterial antigen candidates for future exploration into the beginning of the disease progression of RA in the mucosal surface.