**Legend for Figures**

**Figure 1** – *Study Design and Methods*. This is a prospective non-interventional observational study carried out between March, 2017 and July, 2017 in Vitória, Espírito Santo, Brazil. A total of 140 patients with Autoimmune Disease patients (AID) including: Rheumatoid Arthritis (RA, n=38), Spondyloarthritis (SpA, n=51), Systemic Lupus Erythematosus (SLE, n=21) and Sjögren’s Syndrome (SS, n=30). A group Healthy Controls without diagnosis of autoimmune diseases (HC, n=21) was also included. All participants received the primary dose of 17DD-YF vaccine (Bio-Manguinhos-FIOCRUZ) during the 2017 Brazilian YF vaccination campaign. Detailed inclusion and exclusion criteria are provided in Methods. Blood samples were collected from each participant at distinct time points, including: D0; Day3-4; Day5-6; Day7; Day14-D28. Serum samples were used for laboratorial analysis, including: YF-specific neutralizing antibodies analysis by Plaque Reduction Neutralizing Test (PRNT), YF viral RNAnemia (YF-Viremia) detection by quantitative real time PCR (qRT-PCR) and Serum Immunological Biomarkers quantification by Luminex Bio-plex assay.

**Figure 2 –** *Timeline Kinetics of Serum Biomarkers in Patients with Autoimmune Disease Following Planned Primary 17DD-YF Vaccination.* Panoramic timeline kinetics of serum chemokines (CXCL8, CCL11, CCL3, CCL4, CCL2, CCL5, CXCL10), pro-inflammatory cytokines (IL-1β, IL-6, TNF-α, IL-12, IFN-γ, IL-15, IL-17), regulatory cytokines (IL-1Ra, IL-4, IL-5, IL-9, IL-10, IL-13), and growth factors (FGF-basic, PDGF, VEGF, G-CSF, GM-CSF, IL-2 and IL-7) in serum samples from Autoimmune Disease patients (AID, , n=140) and Healthy Controls (HC, , n=21). Measurements were carried out using the Luminex platform, according to manufacturer’s instructions as provided in Material and Methods. The results are expressed as median baseline fold changes at each time point along the kinetic follow-up (D3-4, D5-6, D7 and D14-28) according to the paired sample collected at D0. Data analysis was performed considering the baseline fold value = 1.0 as the reference for decrease (<1.0) or increase (>1.0) in biomarker levels along the kinetic timeline.

**Figure 3 –** *Timeline Kinetics of Serum Biomarkers in Patients with Autoimmune Disease According to the Neutralizing Antibody Status After Planned Primary 17DD-YF Vaccination.* Panoramic timeline kinetics of serum chemokines (CXCL8, CCL11, CCL3, CCL4, CCL2, CCL5, CXCL10), pro-inflammatory cytokines (IL-1β, IL-6, TNF-α, IL-12, IFN-γ, IL-15, IL-17), regulatory cytokines (IL-1Ra, IL-4, IL-5, IL-9, IL-10, IL-13), and growth factors (FGF-basic, PDGF, VEGF, G-CSF, GM-CSF, IL-2 and IL-7) in serum samples from Autoimmune Disease patients, categorized according to the PRNT status after primary 17DD-YF vaccination: AID/PRNT(-) (, n=32) and AID/PRNT(+) (, n=108). Measurements were carried out using the Luminex platform, according to manufacturer’s instructions as provided in Material and Methods. The results are expressed as median baseline fold changes at each time point along the kinetic follow-up (D3-4, D5-6, D7 and D14-28) according to the paired sample collected at D0. Data analysis was performed considering the baseline fold value = 1.0 as the reference for decrease (<1.0) or increase (>1.0) in biomarker levels along the kinetic timeline.

**Figure 4 –** *Baseline Profile of Serum Biomarkers in Patients with Autoimmune Disease According to the Neutralizing Antibody Status After Planned Primary 17DD-YF Vaccination.* Baseline levels of serum chemokines (CXCL8, CCL11, CCL3, CCL4, CCL2, CCL5, CXCL10), pro-inflammatory cytokines (IL-1β, IL-6, TNF-α, IL-12, IFN-γ, IL-15, IL-17), regulatory cytokines (IL-1Ra, IL-4, IL-5, IL-9, IL-10, IL-13), and growth factors (FGF-basic, PDGF, VEGF, G-CSF, GM-CSF, IL-2 and IL-7) in serum samples from Autoimmune Disease patients, categorized according to the PRNT status after primary 17DD-YF vaccination: AID/PRNT(-) (, n=32) and AID/PRNT(+) (, n=108). Measurements were carried out using the Luminex platform, according to manufacturer’s instructions as provided in Material and Methods. The results are expressed as median levels (pg/mL) at baseline (D0) on boxplot charts. Comparative analysis between AID/PRNT(-) and AID/PRNT(+) was carried out by Mann-Whitney test and significant differences at p<0.05 underscored by connecting lines and highlight with gray background.

**Figure 5 –** *Serum Biomarker Signatures in Patients with Autoimmune Disease According to the Neutralizing Antibody Status After Planned Primary 17DD-YF Vaccination.* (A) Kinetics of serum biomarker signatures at distinct time points after primary 17DD-YF vaccination of Autoimmune Disease patients (AID, n=140, D3-4=, D5-6=, D7= and D14-28=) and Healthy Controls (HC, n=21, D3-4=, D5-6=, D7= and D14-28=). (B) Kinetics of serum biomarker signatures at distinct time points after primary 17DD-YF vaccination of Autoimmune Disease patients categorized according to the PRNT status after primary 17DD-YF vaccination: AID/PRNT(-) (n=32, D3-4=, D5-6=, D7= and D14-28=) and AID/PRNT(+) (n=108, D3-4=, D5-6=, D7= and D14-28=). The results are expressed as the proportion of subjects with increased biomarker levels (baseline fold change values >1). Data analysis was carried out considering the 50th percentile as the reference to identify the set of biomarkers with high proportion of subjects with levels above the global median cut-off along the kinetic timeline (gray scale rectangles).

**Figure 6 –** *Serum Biomarker Signatures After Planned Primary 17DD-YF Vaccination According to the Type of Autoimmune Disease.* Kinetics of serum biomarker signatures at distinct time points after primary 17DD-YF vaccination of Autoimmune Disease patients (D3-4=, D5-6=, D7= and D14-28=) categorized according to the type of Autoimmune Disease: Rheumatoid Arthritis (RA, n=38), Spondyloarthritis (SpA, n=51), Systemic Lupus Erythematosus (SLE, n=21) and Sjögren’s Syndrome (SS, n=30). The results are expressed as the proportion of subjects with increased biomarker levels (baseline fold change values >1). Data analysis was carried out considering the 50th percentile as the reference to identify the set of biomarkers with high proportion of subjects with levels above the global median cut-off along the kinetic timeline (gray scale rectangles).

**Figure 7 –***Heatmap Kinetic Profiles of Serum Biomarkers After Planned Primary 17DD-YF Vaccination According to the Neutralizing Antibody Status and Type of Autoimmune Disease*. Heatmaps were constructed considering the baseline fold change values at each time point along the kinetic follow-up (D3-4, D5-6, D7 and D14-28). This approach was employed to draw the overall change in the serum biomarkers profile after primary 17DD-YF vaccination of Autoimmune Disease patients (AID, n=140) and Healthy Controls (HC, n=21). Heatmaps were also assembled for subgroups of Autoimmune Disease patients considering the PRNT status after vaccination [AID/PRNT(-), n=32; AID/PRNT(+), n=108] and according to the type of autoimmune disease [Rheumatoid Arthritis (RA, n=38), Spondyloarthritis (SpA, n=51), Systemic Lupus Erythematosus (SLE, n=21) and Sjögren’s Syndrome (SS, n=30)]. Color keys were employed underscore the baseline fold value = 1.0 as the reference for unaltered levels (), the baseline fold value <1.0 for decreased levels () and the baseline fold value >1.0 for increased levels (), according to the paired sample collected at D0.