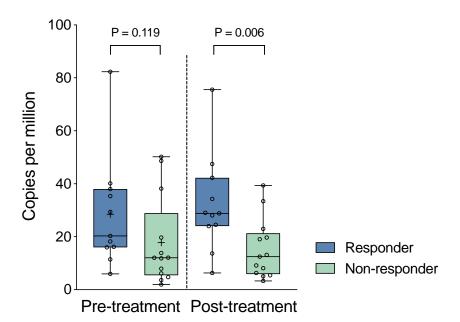
## **Supplementary Information**

## **Supplementary Figures**



**Supplementary Figure 1**. Comparison of microbial beta-glucuronidase levels (EC 3.2.1.31) by treatment response before and after treatment. Microbial beta-glucuronidase levels were analyzed based on treatment response, both before and after treatment. The box plot display the median, 25th to 75th percentiles, with whiskers extending from min to max. Statistical significance between groups was calculated using the Mann-Whitney U test.

## **Supplementary Tables**

**Supplementary Table 1**. Metadata, analysis groupings, and complete taxonomic and functional profiles for all samples. Data provided in MS Excel format.

**Supplementary Table 2**. Complete differential taxonomic results from LEfSe and Random Forest analyses, including all comparisons and statistics. Data provided in MS Excel format.

**Supplementary Table 3**. Complete differential functionla results from LEfSe and Random Forest analyses, including all comparisons and statistics. Data provided in MS Excel format.