SUPPLEMENTAL FIGURE LEGENDS

Supplemental Fig. S1: Comparison on alpha diversity indices of seminal microbiome of normozoospermia and male-factor infertile patients. (A-D) Alpha diversity analysis with indicated indices in normozoospermia and male-factor infertile patients.

Supplementary Fig. S2: Comparison on beta diversity indices of seminal microbiome of normozoospermia and male-factor infertile patients. (A-F) Principal component (A, C and E) analysis of the seminal microbiome in **normozoospermia and male-factor infertile patients**. (B, D and F) Beta diversity analysis with indicated indices in the two groups of patients.

Supplemental Fig. S3: Comparison on alpha diversity indices of seminal microbiome of normozoospermia and male-factor infertile patients with varying levels of DEFB119. (A-D) Alpha diversity analysis with indicated indices in in the seminal microbiome of G1 (normozoospermia, normal DEFB119, n=30), G2 (male-infertility, normal DEFB119, n=52) and G3 (male-infertility, elevated DEFB119, n=5).
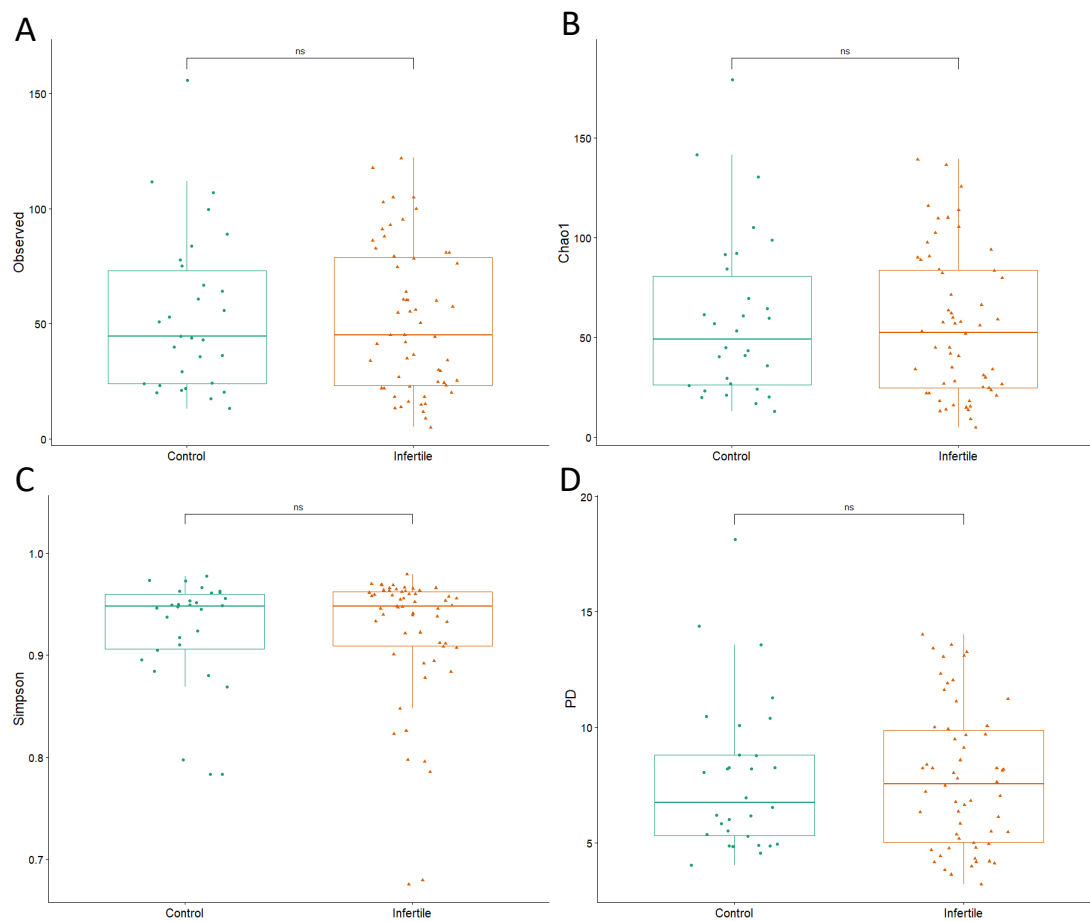
Supplemental Fig. S4: Comparison on beta diversity indices of seminal microbiome of normozoospermia and male-factor infertile patients with varying levels of DEFB119. (A-F) Principal component (A, C and E) analysis and (B, D and F) beta diversity analysis with indicated indices in the G1-3 groups.

Supplementary Fig. S5: Bacterial groups distinguishing normozoospermia and male infertility patients with varying levels of DEFB119. (A) **Differential abundance analysis with Wilcox test** showing the relative abundance of genera that distinguish in samples with elevated level of DEFB119 (G3) from those with normal levels (G1 & 2). * $p<0.05$.
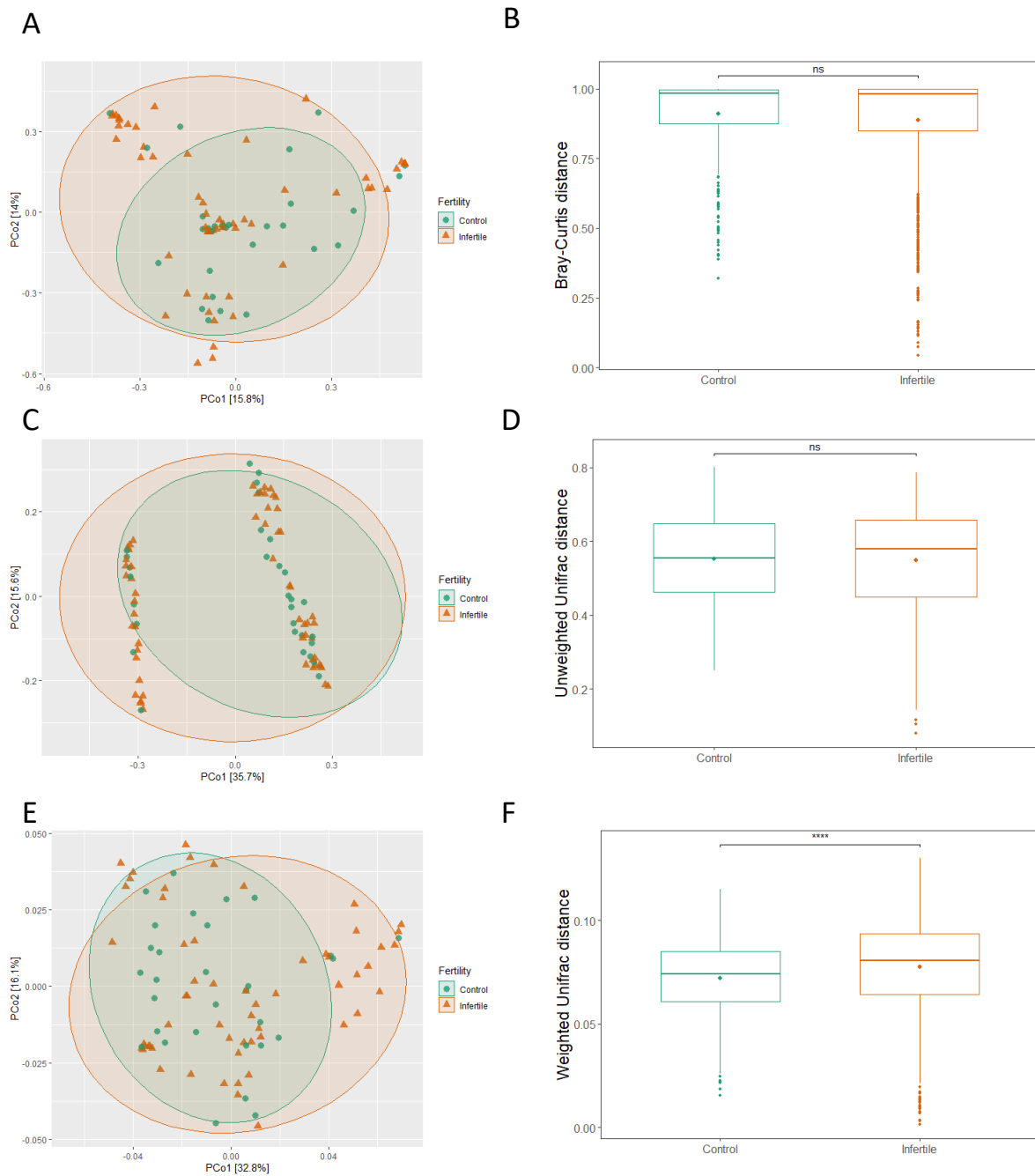
Supplementary Fig. S6: Correlation of DEFB119 with spermiogram parameters in normozoospermia and male-factor infertile patients. Correlation analysis examining the

relationship between semen volume, indicated sperm parameters and DEFB119 level. * $p<0.05$,

** $p<0.01$, *** $p<0.001$.

Supplementary Table S1: Clinical characteristics of patients with normozoospermia and male-factor infertility. Data represent mean ± 95% confidence interval.

Supplemental Fig. S1: Comparison on alpha diversity indices of seminal microbiome of normozoospermia and male-factor infertile patients.
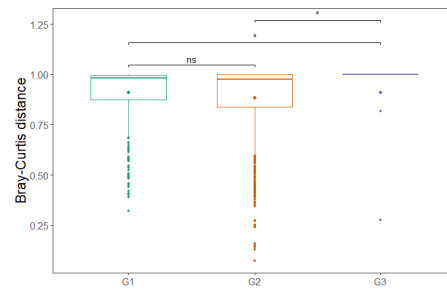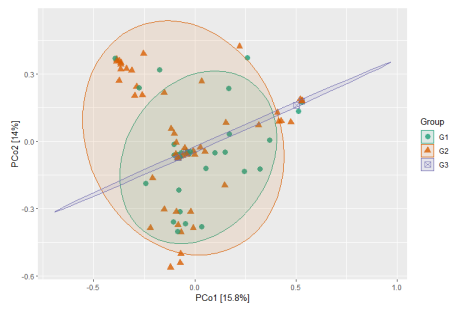
Supplementary Fig. S2: Comparison on beta indices of seminal microbiome of normozoospermia and male-factor infertile patients.
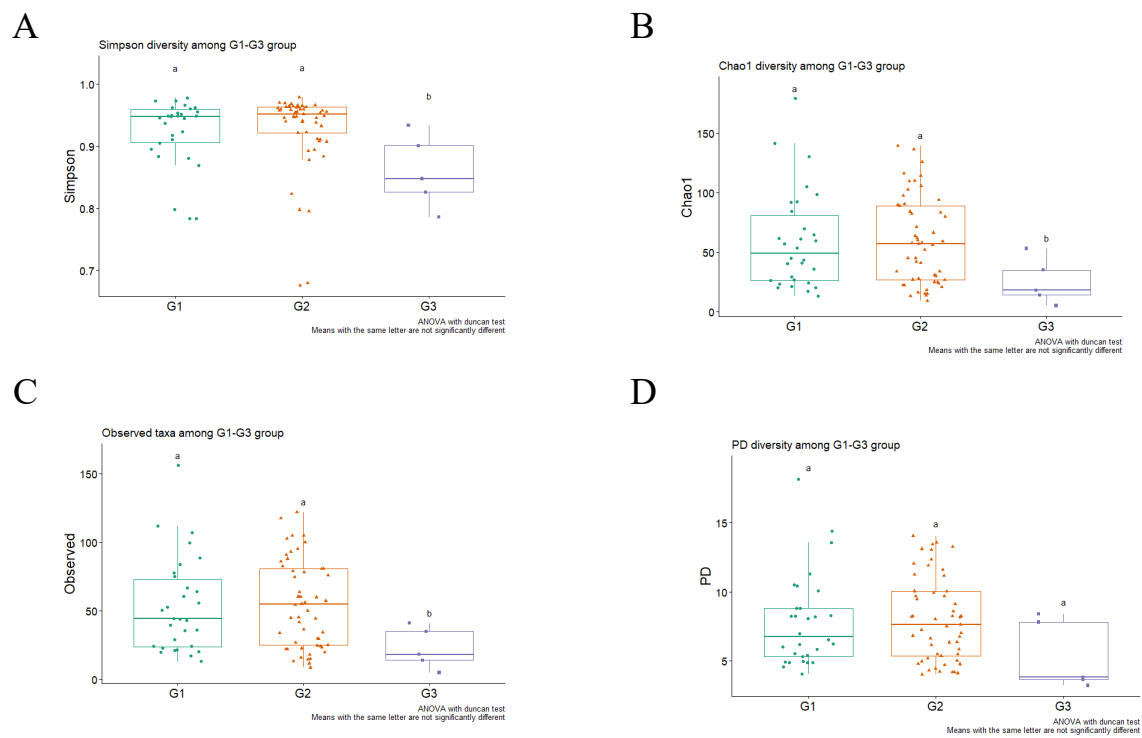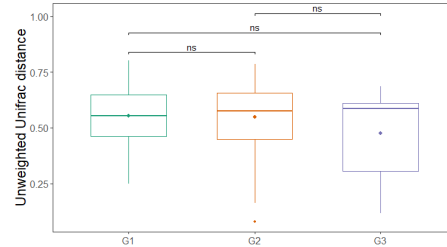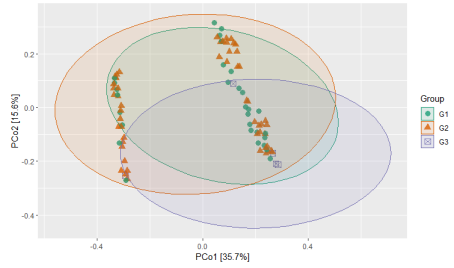
Supplemental Fig. S3: Comparison on alpha diversity indices of seminal microbiome of normozoospermia and male-factor infertile patients with varying levels of DEFB119.
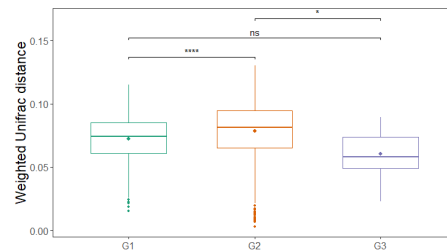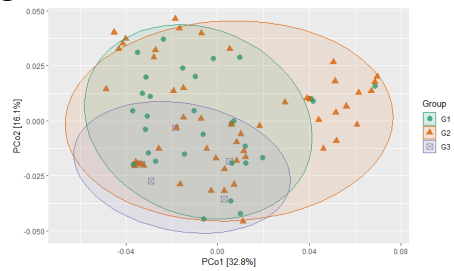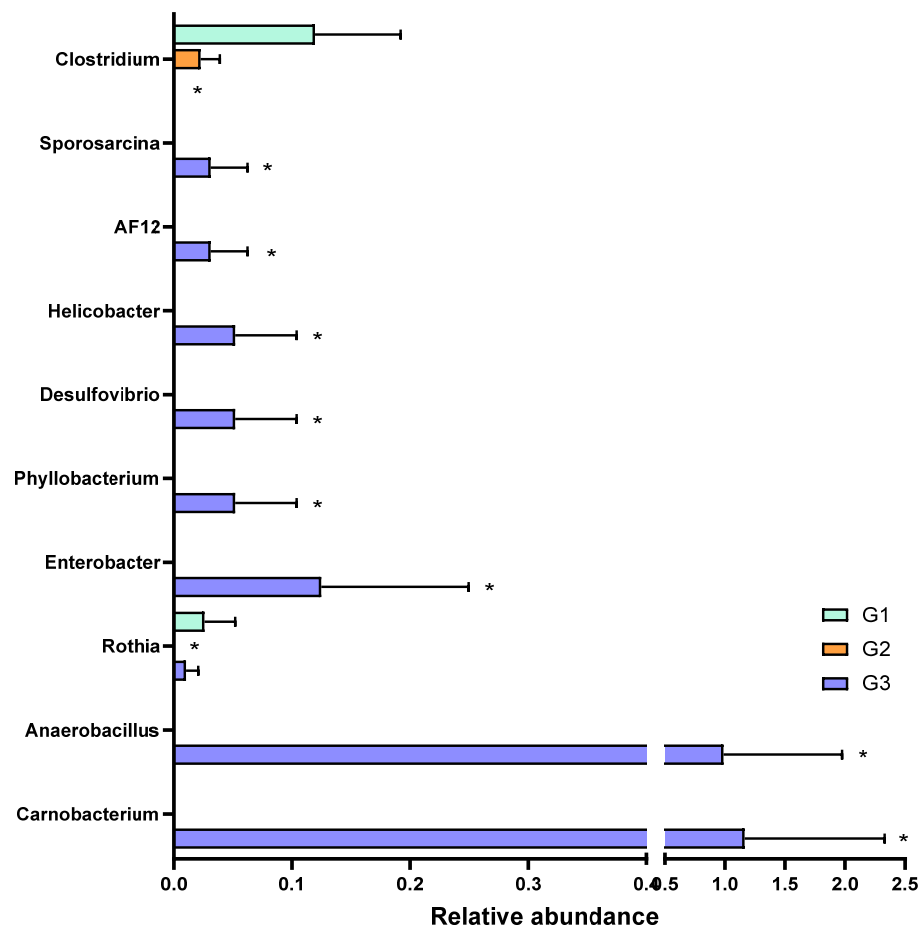
A

B

C

Supplemental Fig. S4: Comparison on beta diversity indices of seminal microbiome of normozoospermia and male-factor infertile patients with varying levels of DEFB119.

Supplemental Fig. S5: Bacterial groups distinguishing normozoospermia and male infertility patients with varying levels of DEFB119.

Supplemental Fig. S6: Correlation of DEFB119 with spermiogram parameters in normozoospermia and male-factor infertile patients.

	Normozoospermia (n=30)	Male-factor infertility (n=58)	p value
Age, year	36.63 (35.68 to 37.59)	35.81 (34.83 - 36.79)	0.21
Partner age, year	39.93 (36.64 to 43.22)	38.95 (37.25 - 40.65)	0.55
Spermiogram	--	--	
Semen volume, ml	2.94 (2.43 - 3.45)	2.76 (2.377 - 3.139)	0.51
Sperm concentration, millions/ml	65.17 (48.51 - 81.83)	35.28 (24.16 - 46.40)	<0.0001
Total motility, %	55.41 (52.17 - 58.65)	45.74 (42.27 - 49.20)	0.0015
Progressive motility, %	50.96 (47.63 - 54.30)	39.84 (35.77 - 43.92)	0.001
Morphology, %	7.57 (2.75 - 12.39)	2.13 (1.85 - 2.40)	<0.0001
Treatment	--	--	
Convention IVF, n	24	21	N.A.
ICSI, n	5	36	N.A.
Fertilization rate, %	76.39 (69.67 - 83.09)	68.72 (61.76 - 75.69)	0.34
Good quality embryo rate, %	47.18 (28.20 - 66.16)	62.60 (50.21 - 74.99)	0.18

Supplementary Table S1: Clinical characteristics of patients with normozoospermia and male-factor infertility.