

# Supplementary Materials for

## New Genetically Determined Markers of the Functional State of the Cardiovascular System

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Figure S5.1 — Scatterplot of (a) systolic blood pressure (b) diastolic blood pressure and (c) age acceleration depends on age in different groups of polymorphic variant of the *MMP9* gene. Each point on the graph corresponds to a study participant.

Figure S5.2 — Histograms of age distribution depending on the presence/absence of hypertension and polymorphic variant of the *MMP9* gene. Green indicates the control - the absence of hypertension. Red - the presence of hypertension. The conditional boundary of division into groups of young and old is 60 years.

Figure S5.3 — The presence of hypertension in the study group of individuals depending on the sex and genotypes of the polymorphism *rs17576* of the *MMP9* gene; differences were assessed using a corrected p-value ( $p$ ) < 0.05 ( $\chi^2$  test, post-hoc pairwise  $\chi^2$  test Benjamini–Hochberg FDR correction).

Figure S6.1 — Value of age in the study group of individuals depending on the genotypes of the polymorphism *rs17576* of the *MMP9* gene.

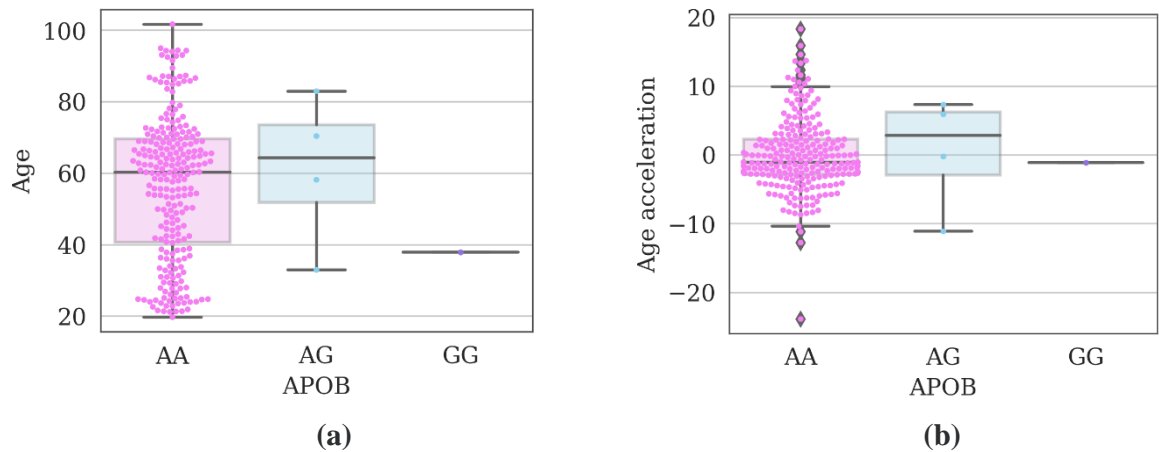
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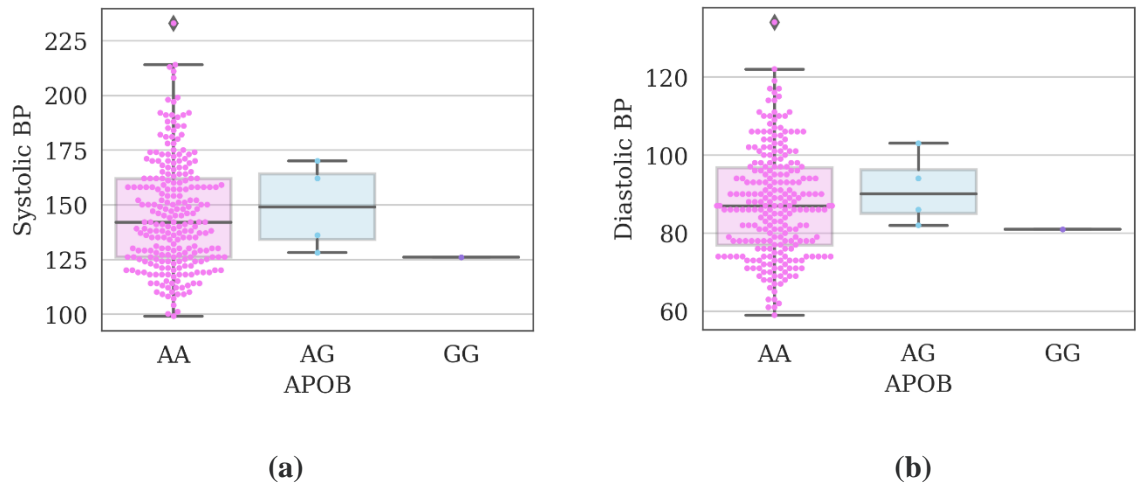
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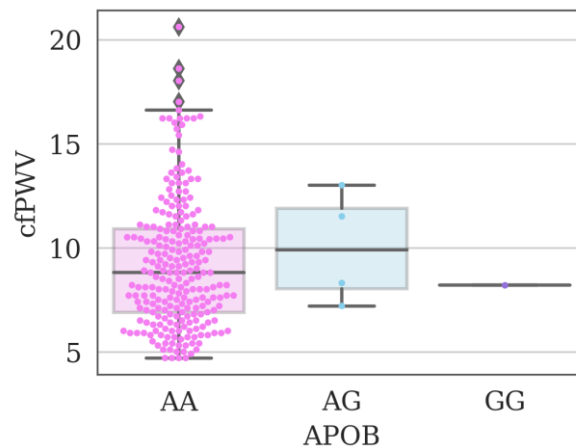
## Apo B



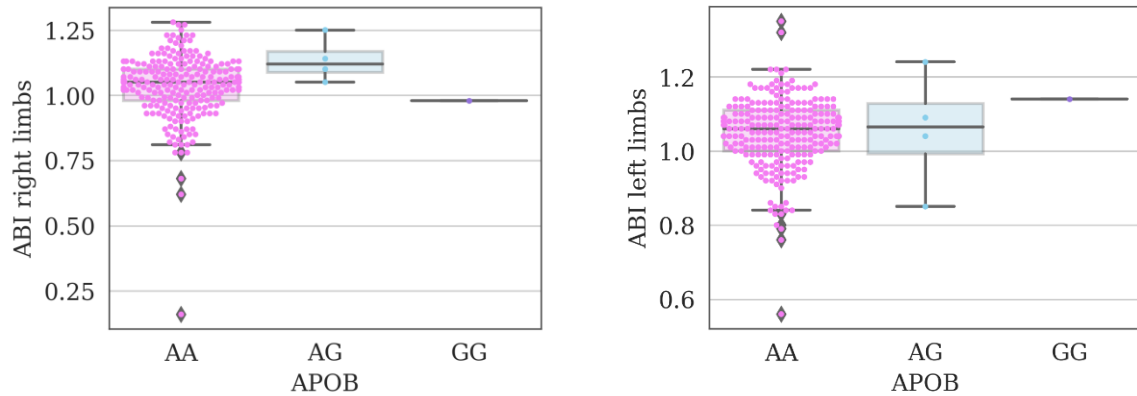
**Figure S1.1 — Age (a) and acceleration value of biological age calculated by the PhenoAge model (b) in the study group of individuals depending on the genotypes of the polymorphism *rs5742904* of the *ApoB* gene.** No significant differences at a corrected p-value ( $p < 0.05$ ) (Kruskal–Wallis test).



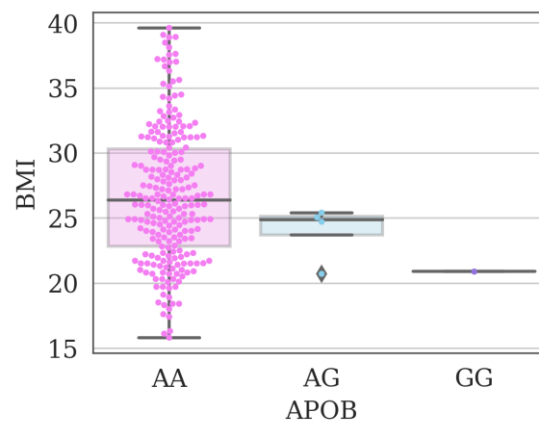
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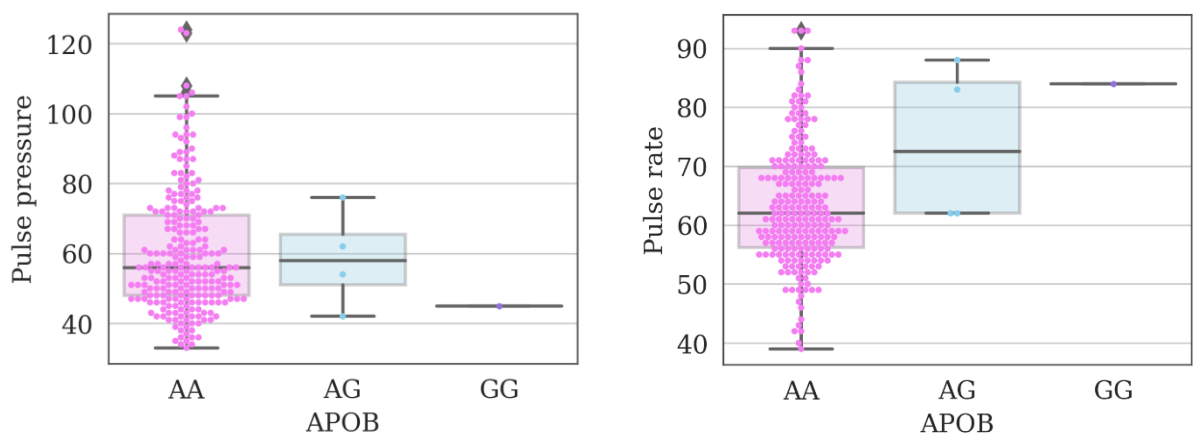
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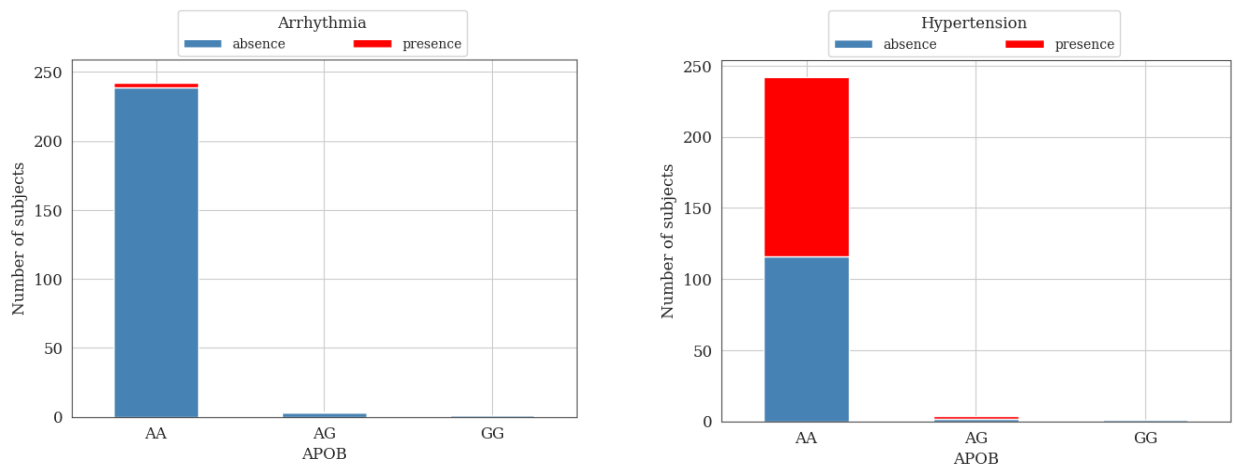
**Figure S1.4 — Boxplot of ABI right and left limbs for *APOB* groups.** No significant differences at a corrected p-value ( $p < 0.05$ ) (Kruskal–Wallis test).



**Figure S1.5 — Body mass index (BMI) values in the study group of individuals depending on the genotypes of polymorphism *rs5742904* of the *ApoB* gene.** No significant differences at a corrected p-value ( $p < 0.05$ ) (Kruskal–Wallis test).

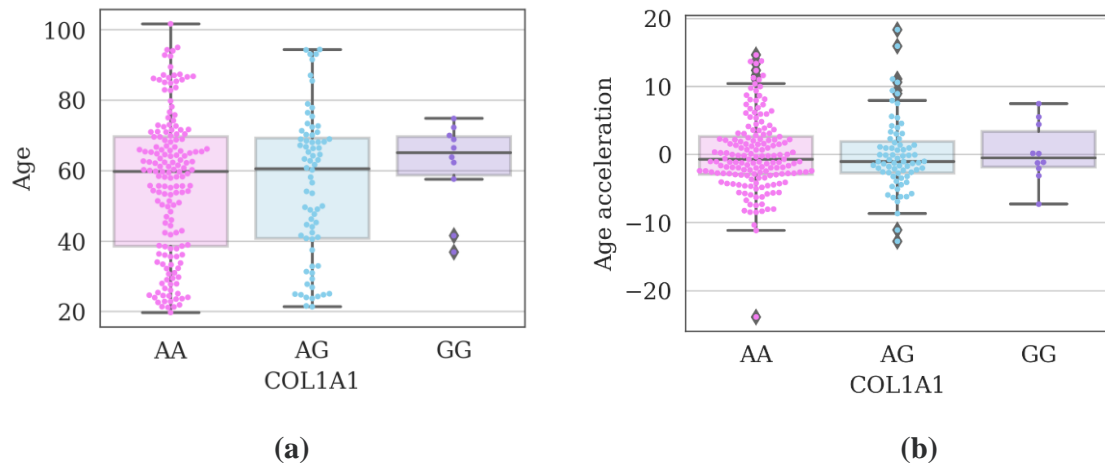


**Figure S1.6 — Boxplot of Pulse pressure and Pulse rate for *APOB* groups.** No significant differences at a corrected p-value ( $p < 0.05$ ) (Kruskal–Wallis test).

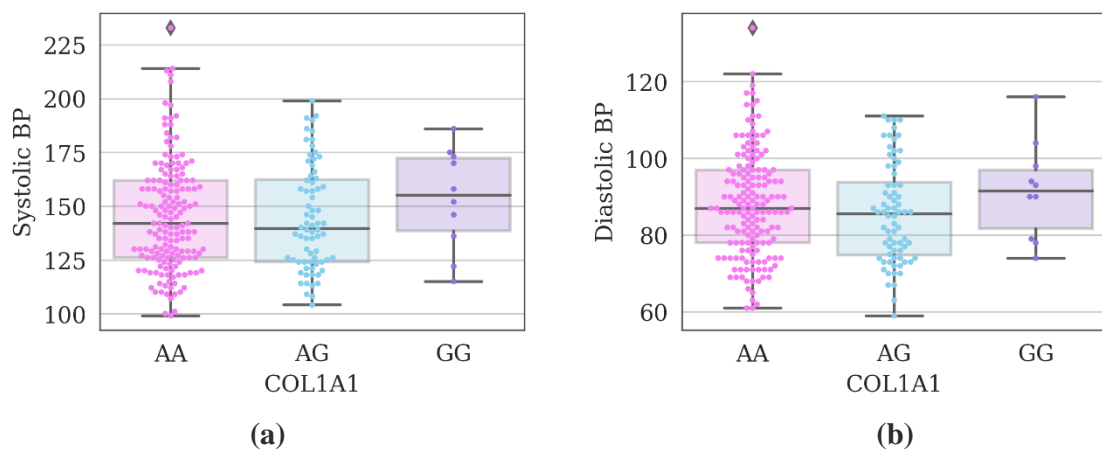


**Figure S1.7— Number of subjects (count of participants) depends on *APOB* for Arrhythmia and for Hypertension absence/presence.** No significant differences at a corrected p-value ( $p < 0.05$  ( $\chi^2$  test)).

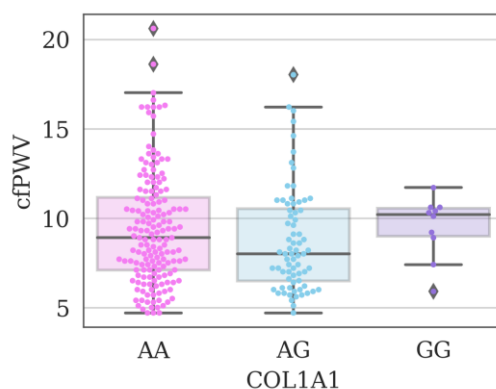
## COL1A1



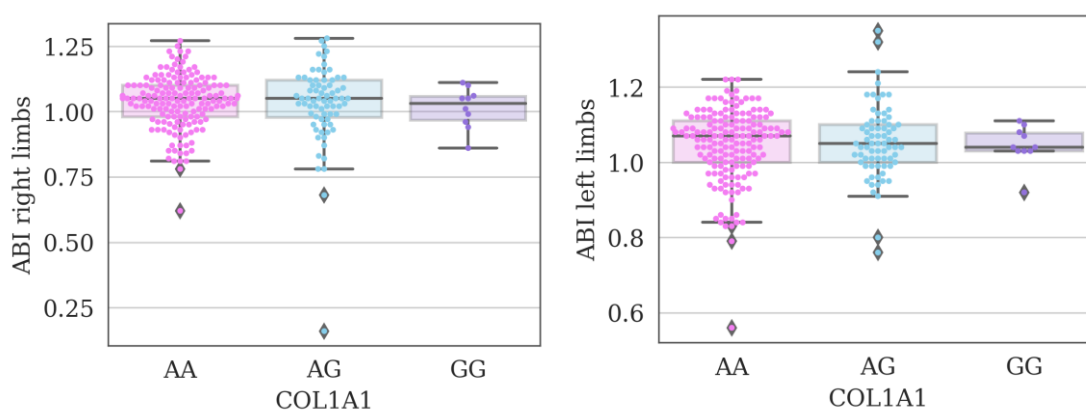
**Figure S2.1 — Age (a) and acceleration value of biological age calculated by the PhenoAge model (b) in the study group of individuals depending on the genotypes of the polymorphism *rs1107946* of the *COL1A1* gene.** No significant differences at a corrected p-value ( $p < 0.05$  (Kruskal–Wallis test)).



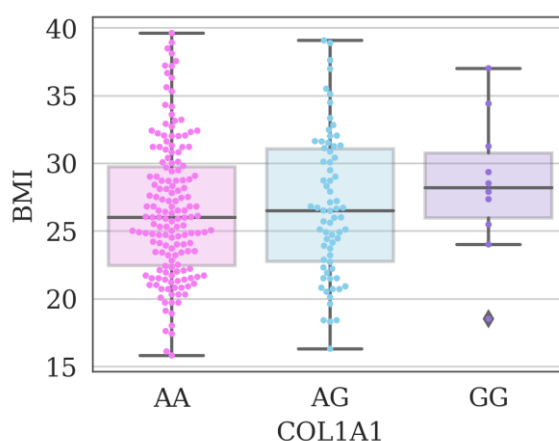
**Figure S2.2 — Indicators of systolic (a) and diastolic (b) blood pressure (BP) in the study group of individuals, depending on the genotypes of polymorphism *rs1107946* of the *COL1A1* gene.** No significant differences at a corrected p-value ( $p < 0.05$  (Kruskal–Wallis test)).



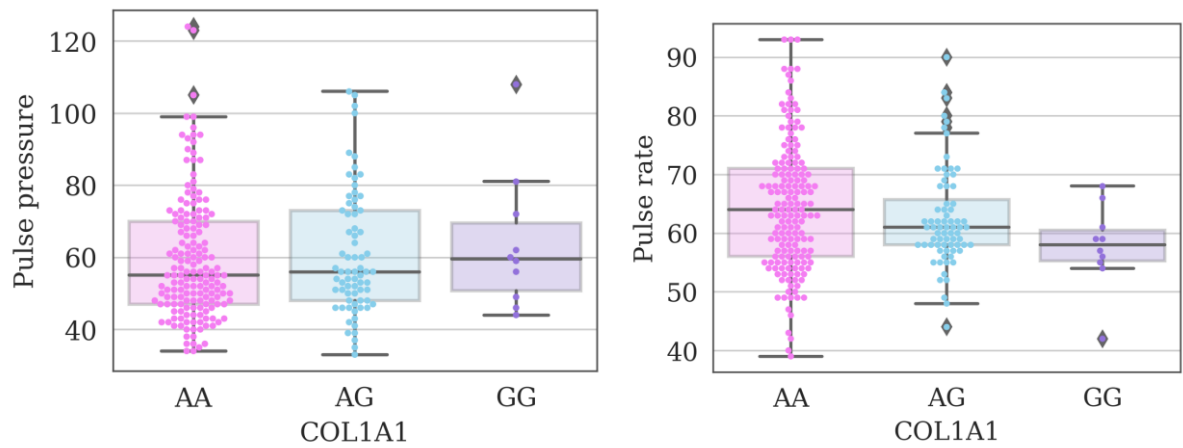
**Figure S2.3** — Value of carotid-femoral pulse wave velocity (cfPWV) in the study group of individuals, depending on the genotypes of polymorphism *rs1107946* of the *COL1A1* gene. No significant differences at a corrected p-value ( $p < 0.05$  (Kruskal–Wallis test)).



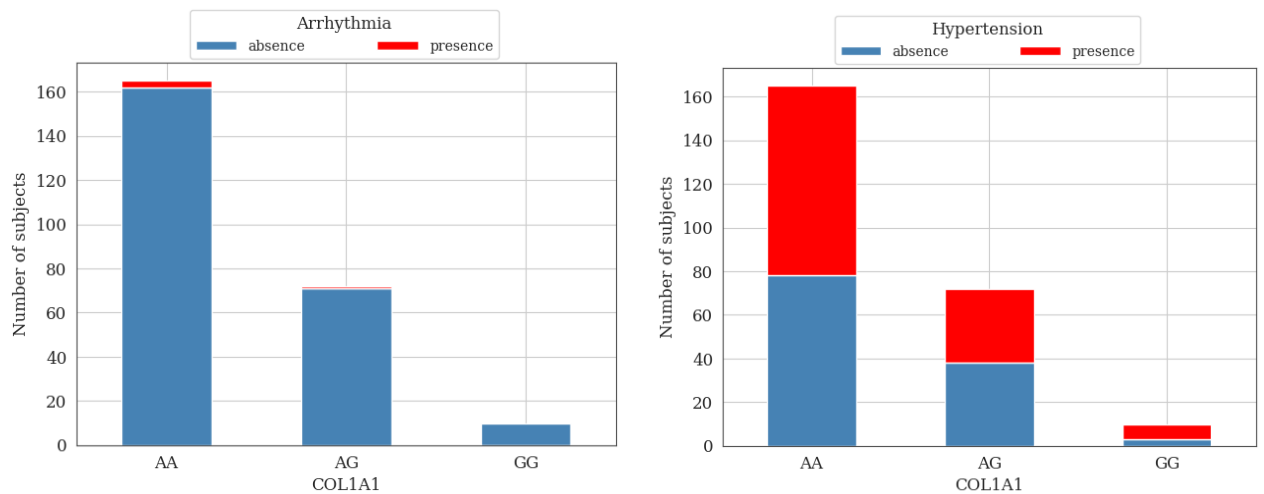
**Figure S2.4** — Boxplot of ABI right and left limbs for *COL1A1* groups. No significant differences at a corrected p-value ( $p < 0.05$  (Kruskal–Wallis test)).



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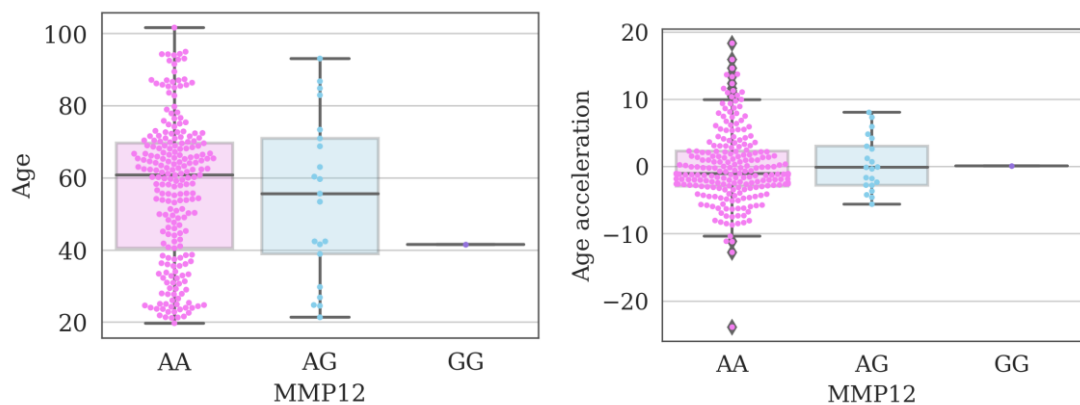


**Figure S2.6 — Boxplot of Pulse pressure and Pulse rate for *COL1A1* groups.** No significant differences at a corrected p-value ( $p$ ) < 0.05 (Kruskal–Wallis test).

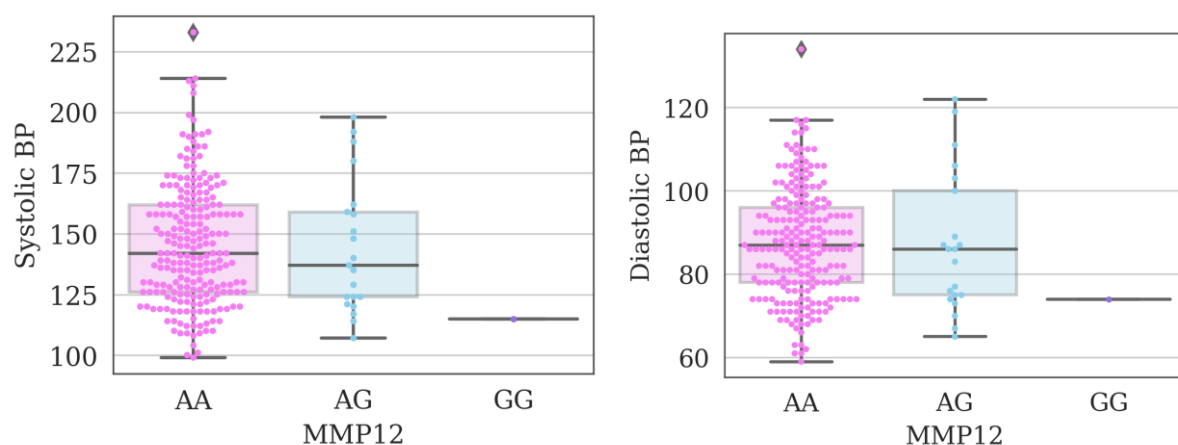


**Figure S2.7— Number of subjects (count of participants) depends on *COL1A1* for Arrhythmia and for Hypertension absence/presence.** No significant differences at a corrected p-value ( $p$ ) < 0.05 ( $\chi^2$  test).

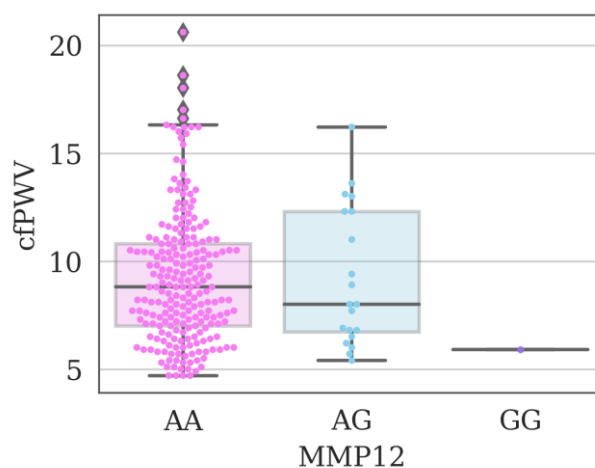
## MMP12



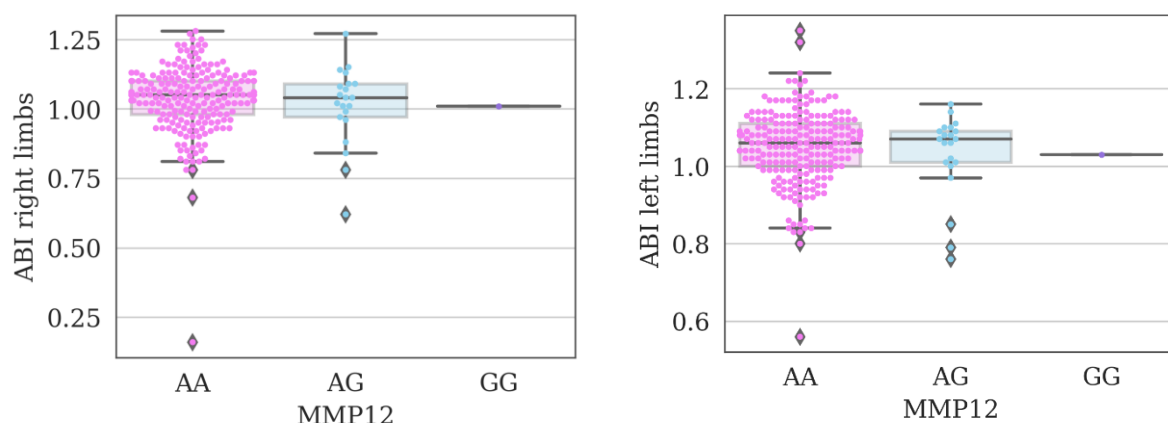
**Figure S3.1 — Age and acceleration value of biological age calculated by the PhenoAge model in the study group of individuals depending on the genotypes of the polymorphism *rs652438* of the *MMP12* gene.** No significant differences at a corrected p-value ( $p$ ) < 0.05 (Kruskal–Wallis test).



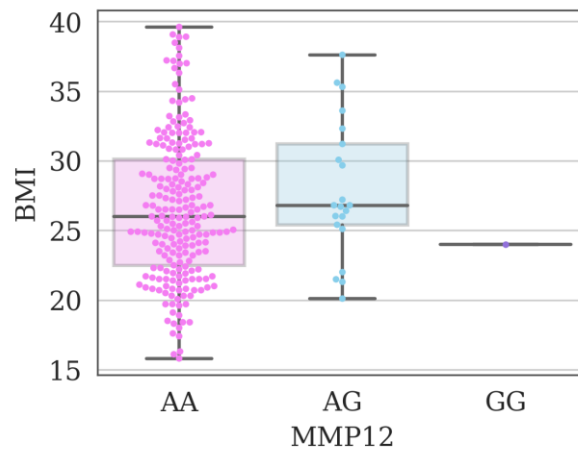
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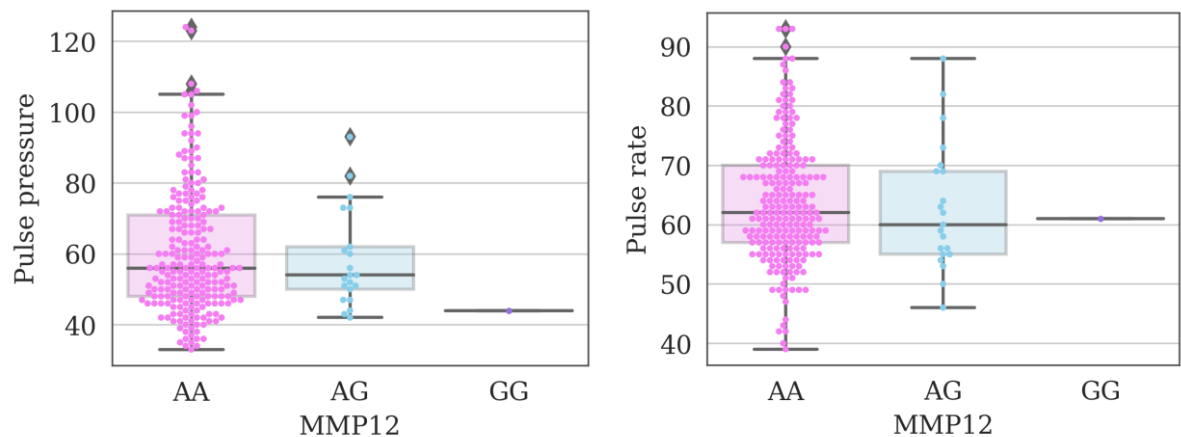
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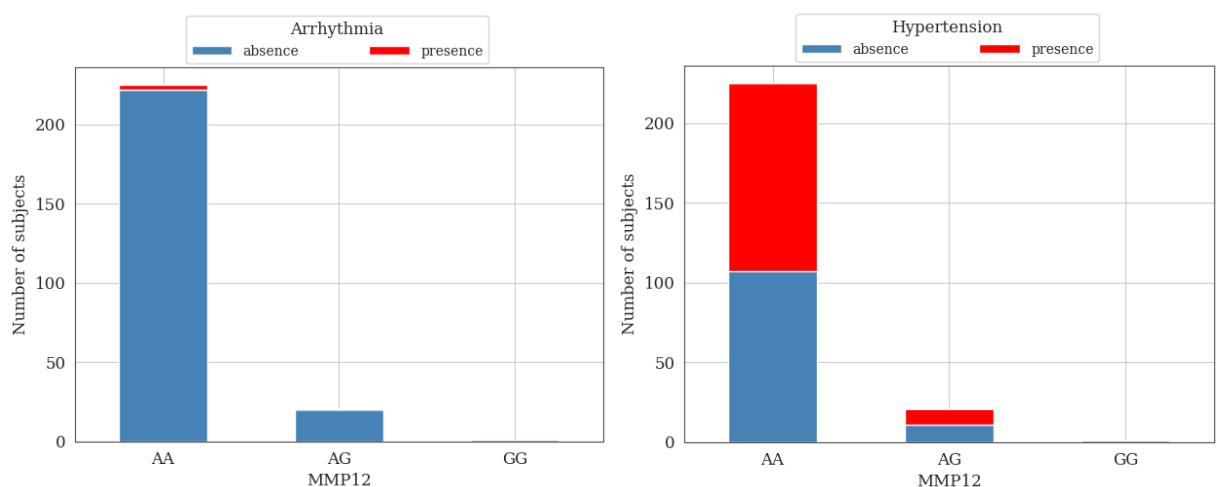
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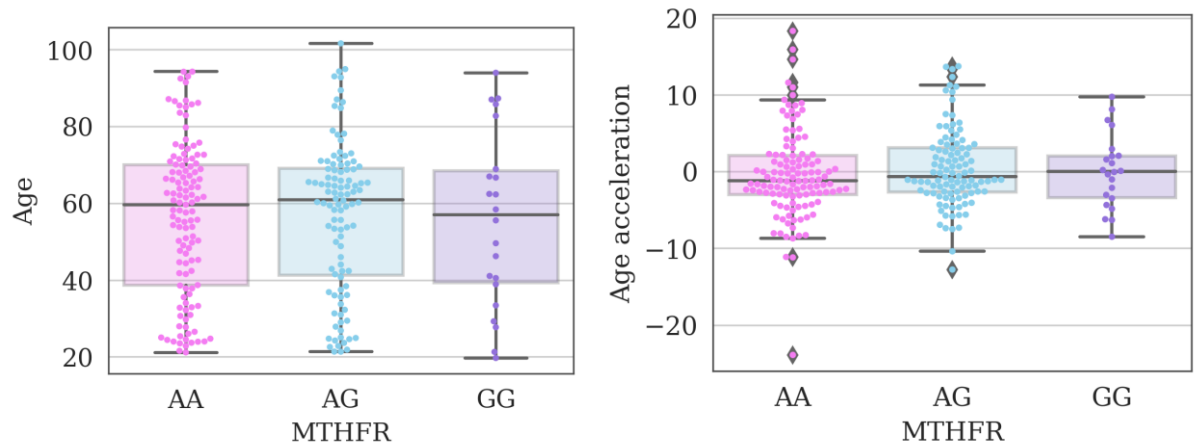


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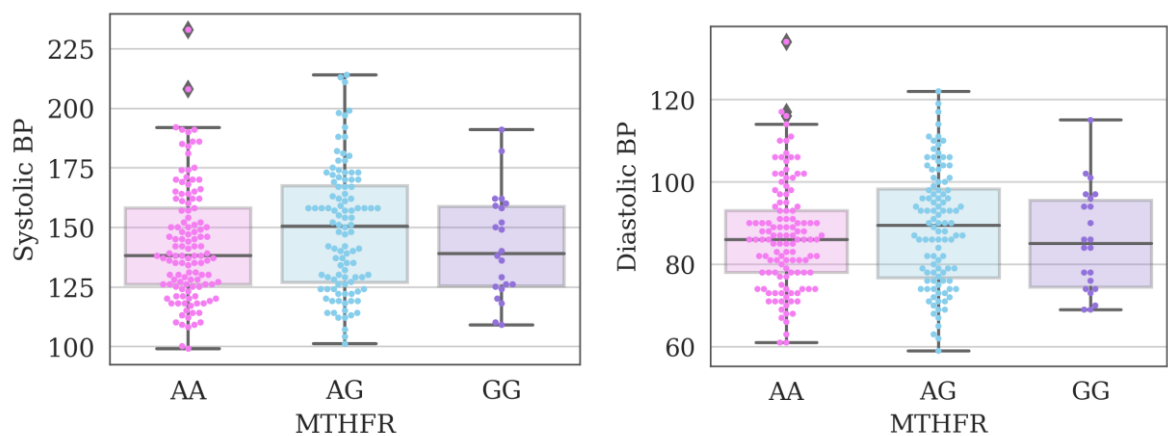


**Figure S3.7— Number of subjects (count of participants) depends on *MMP12* for Arrhythmia and for Hypertension absence/presence.** No significant differences at a corrected p-value ( $p$ ) < 0.05 ( $\chi^2$  test).

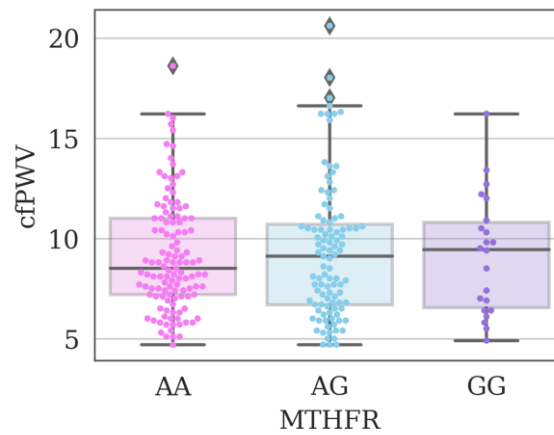
# MTHFR



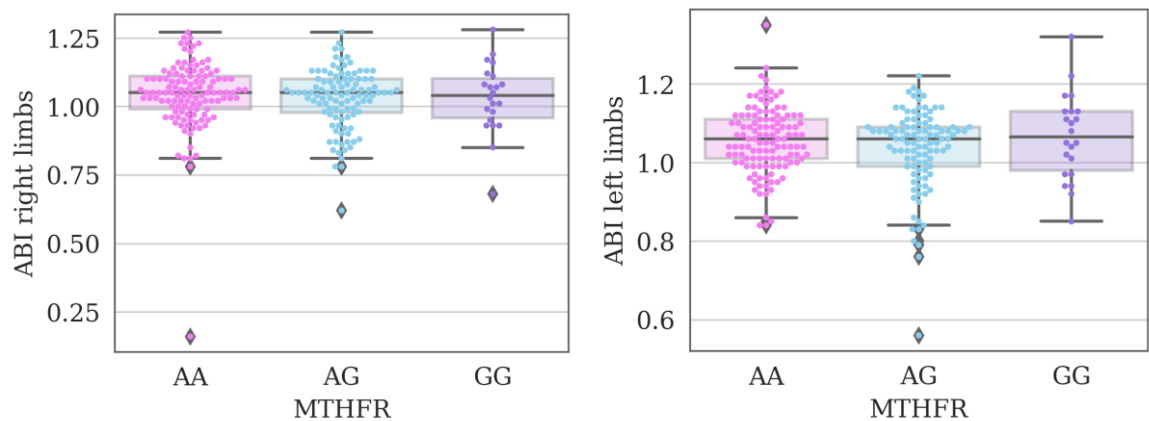
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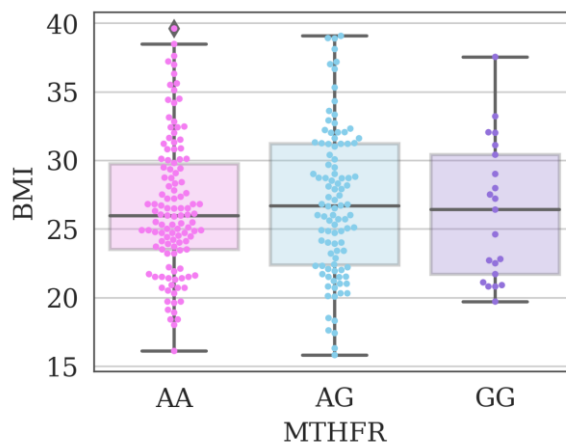
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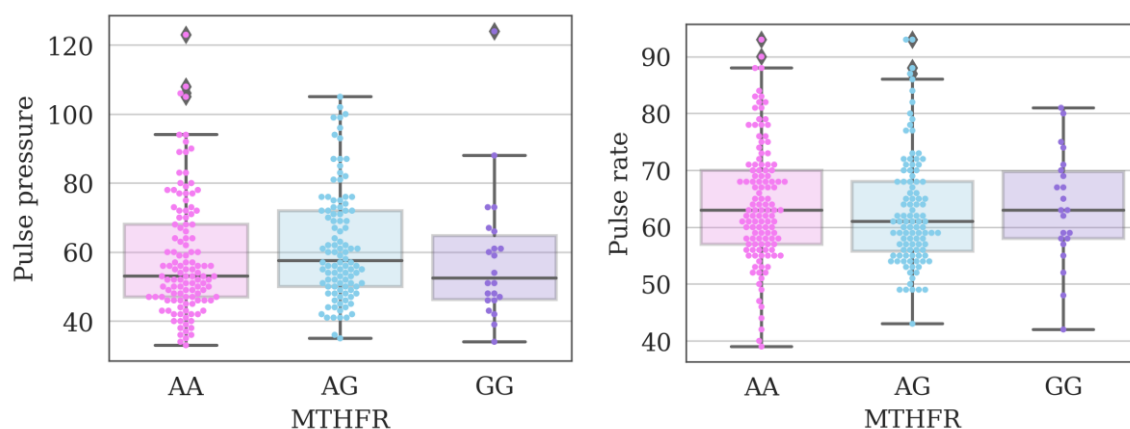
**Figure S4.3** — Value of carotid-femoral pulse wave velocity (cfPWV) in the study group of individuals, depending on the genotypes of polymorphism *rs1801131* of the *MTHFR* gene. No significant differences at a corrected p-value ( $p$ ) < 0.05 (Kruskal–Wallis test).



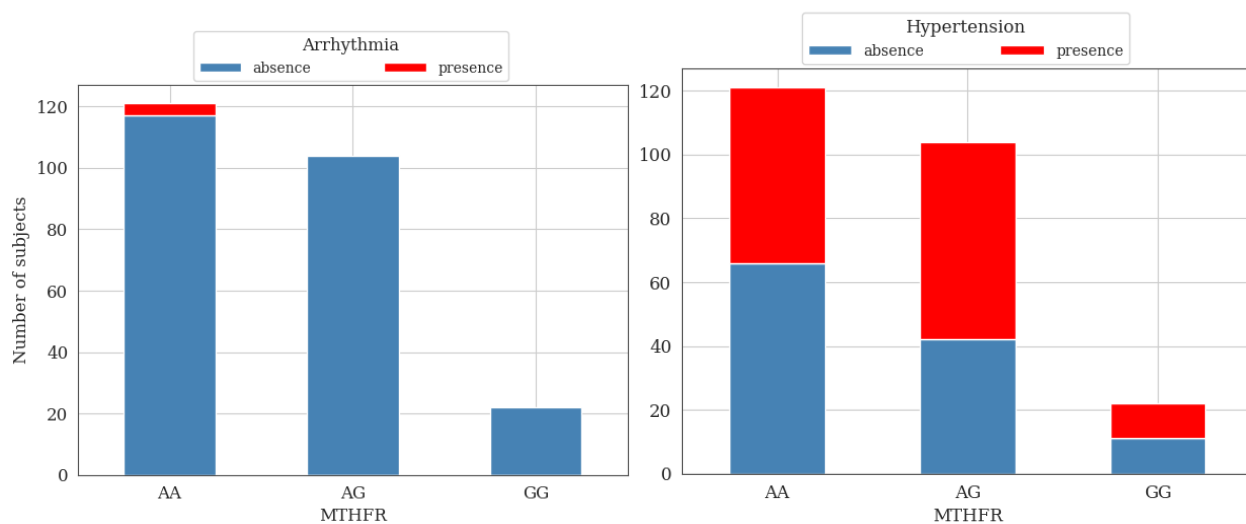
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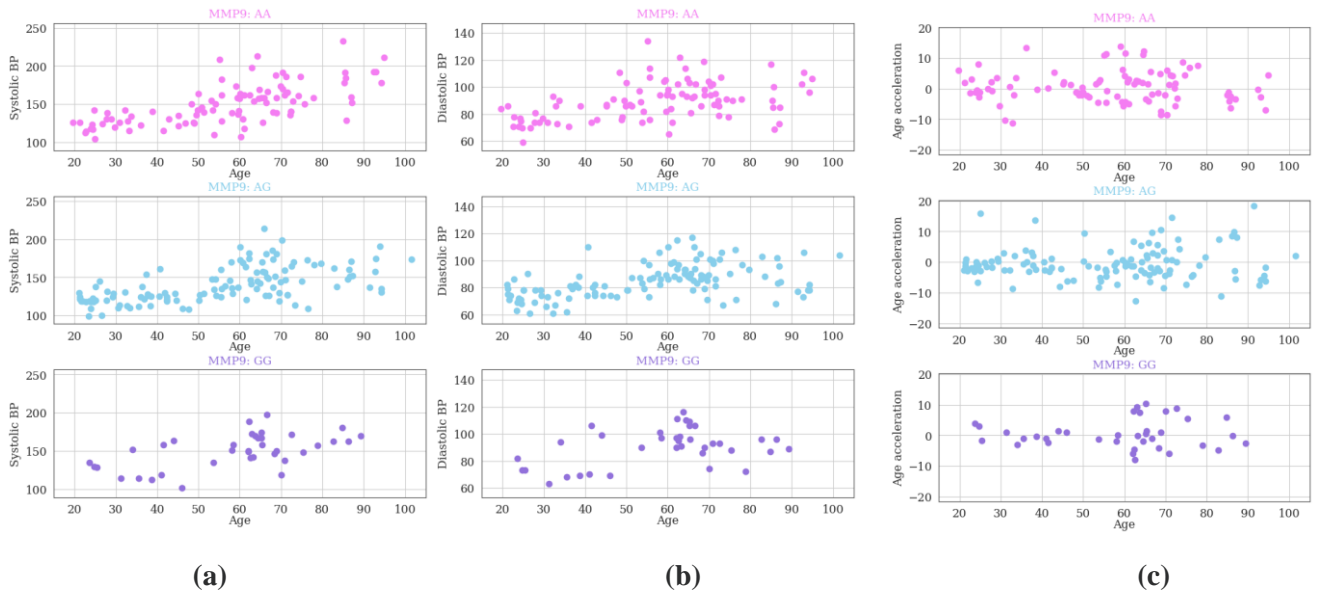


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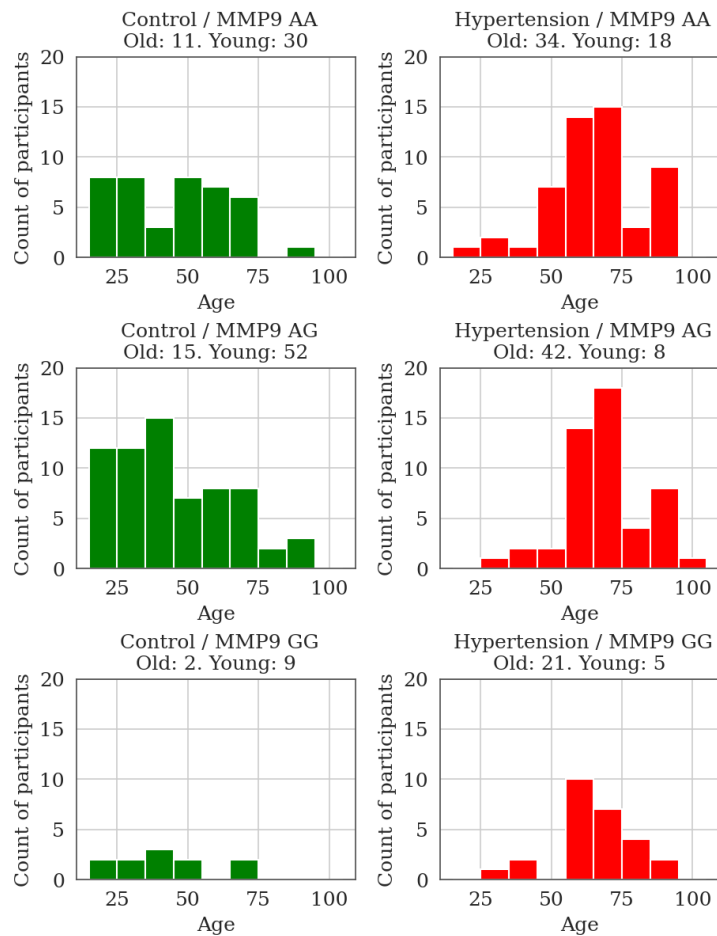


**Figure S4.7— Number of subjects (count of participants) depends on *MTHFR* for Arrhythmia and for Hypertension absence/presence.** No significant differences at a corrected p-value ( $p$ )  $< 0.05$  ( $\chi^2$  test).

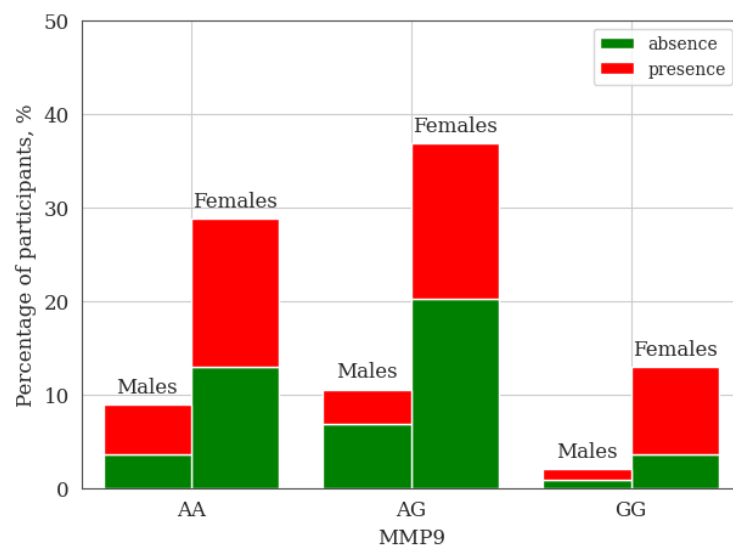
# MMP9



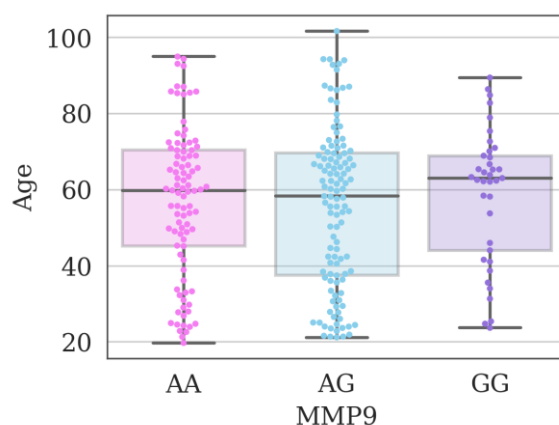
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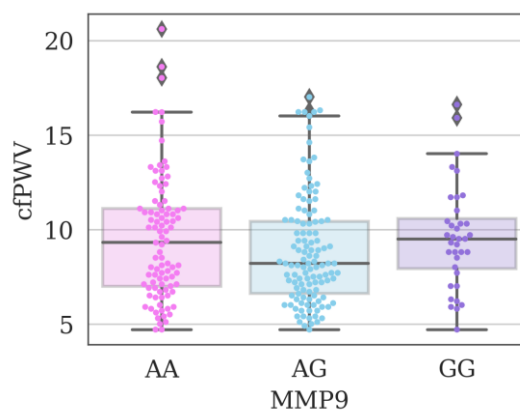
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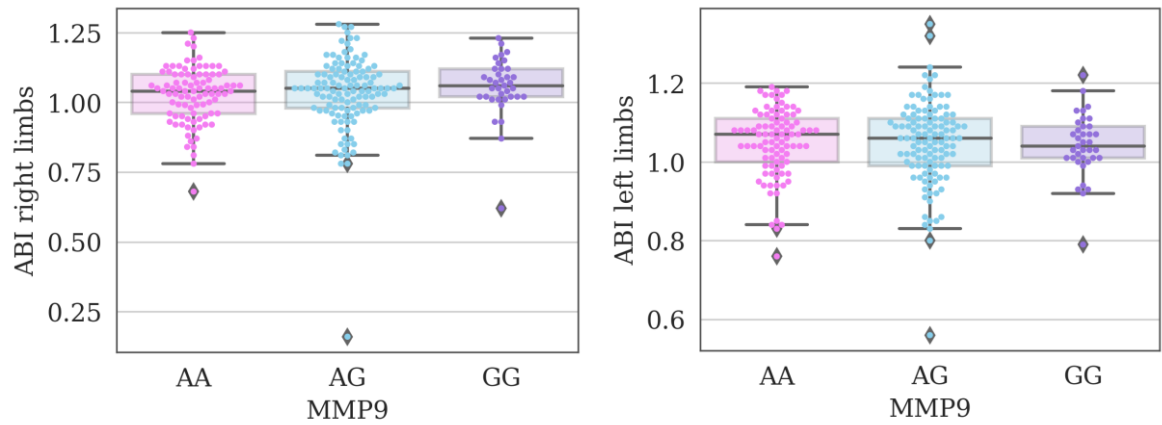
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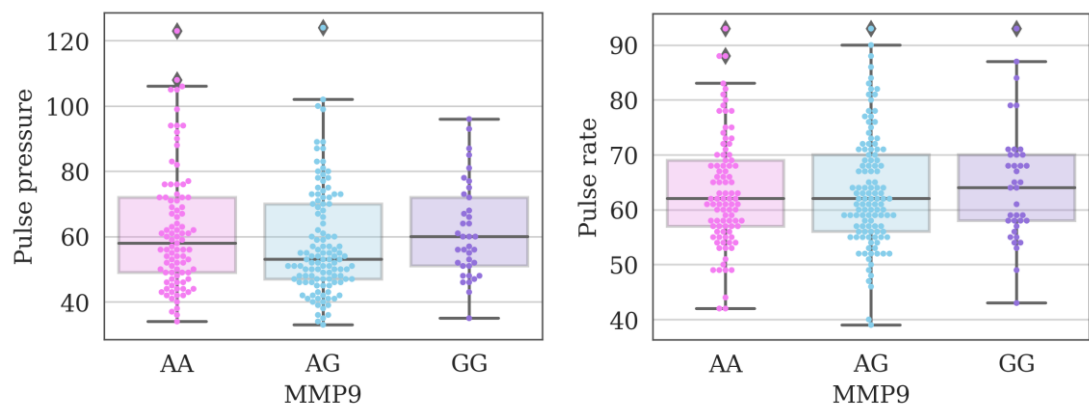
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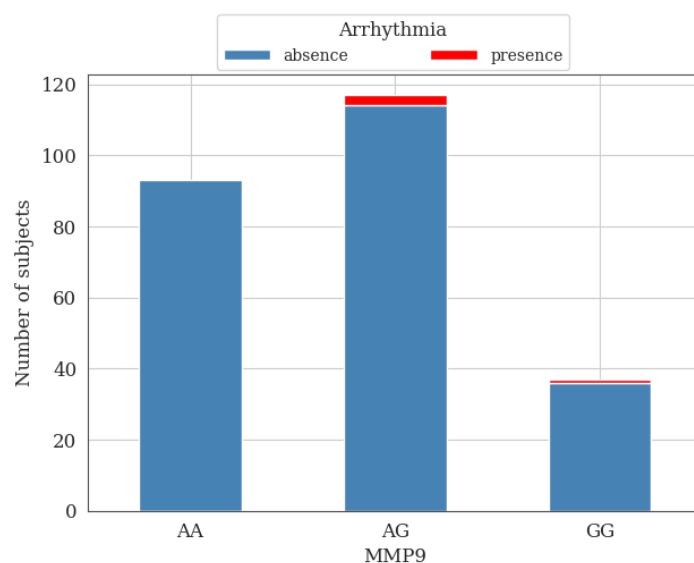
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**Figure S6.3 — Boxplot of ABI right and left limbs for *MMP9* groups.** No significant differences at a corrected p-value ( $p < 0.05$ ) (Kruskal–Wallis test).



**Figure S6.4 — Boxplot of Pulse pressure and Pulse rate for *MMP9* groups.** No significant differences at a corrected p-value ( $p < 0.05$ ) (Kruskal–Wallis test).



**Figure S6.5— Number of subjects (count of participants) depends on *MMP9* for Arrhythmia absence/presence.** No significant differences at a corrected p-value ( $p < 0.05$ ) ( $\chi^2$  test).