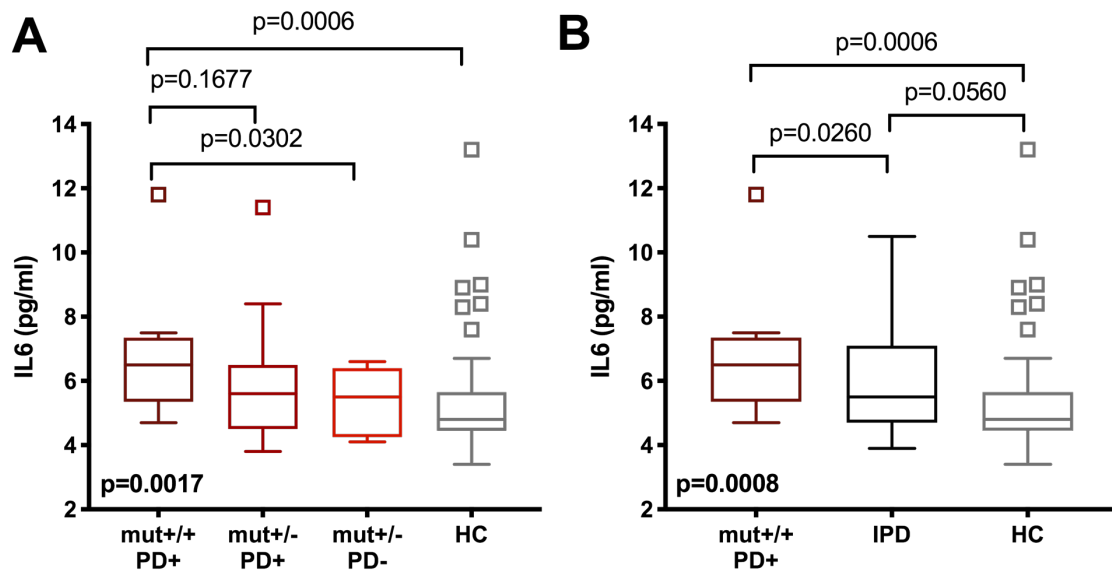
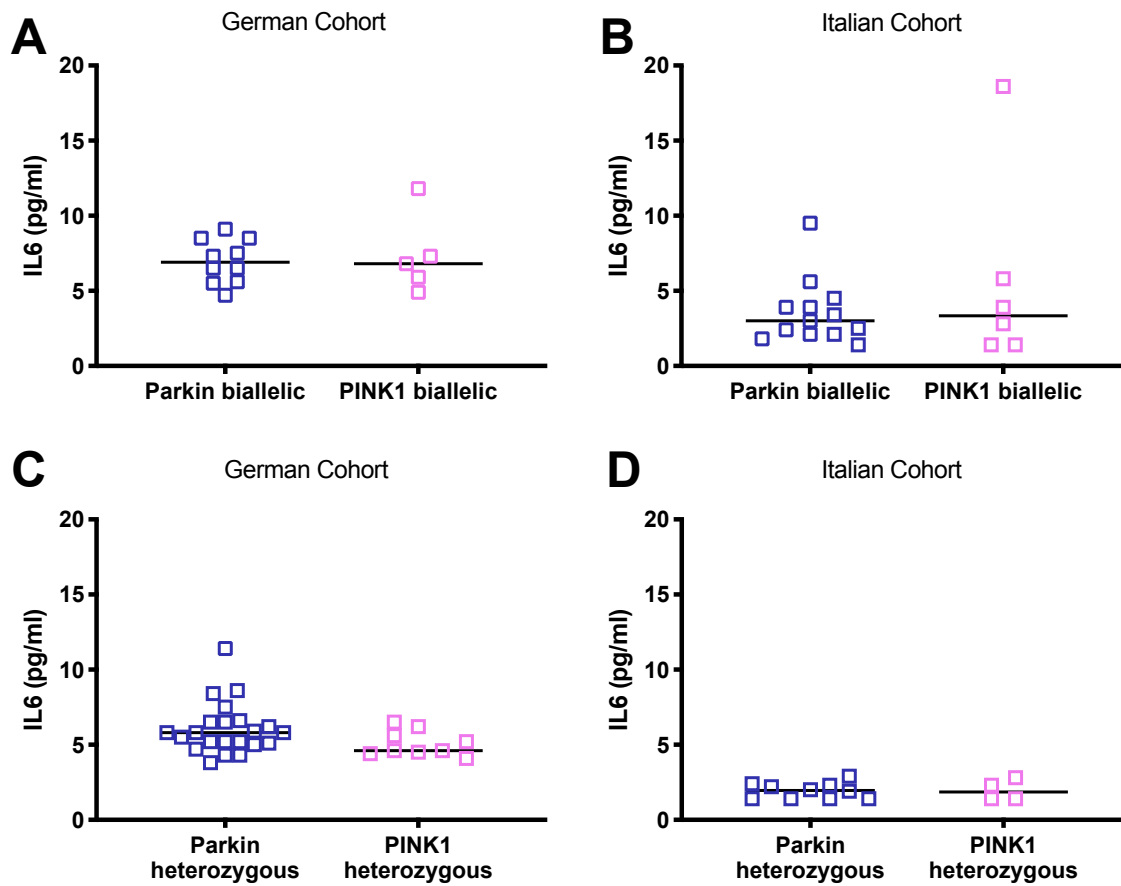
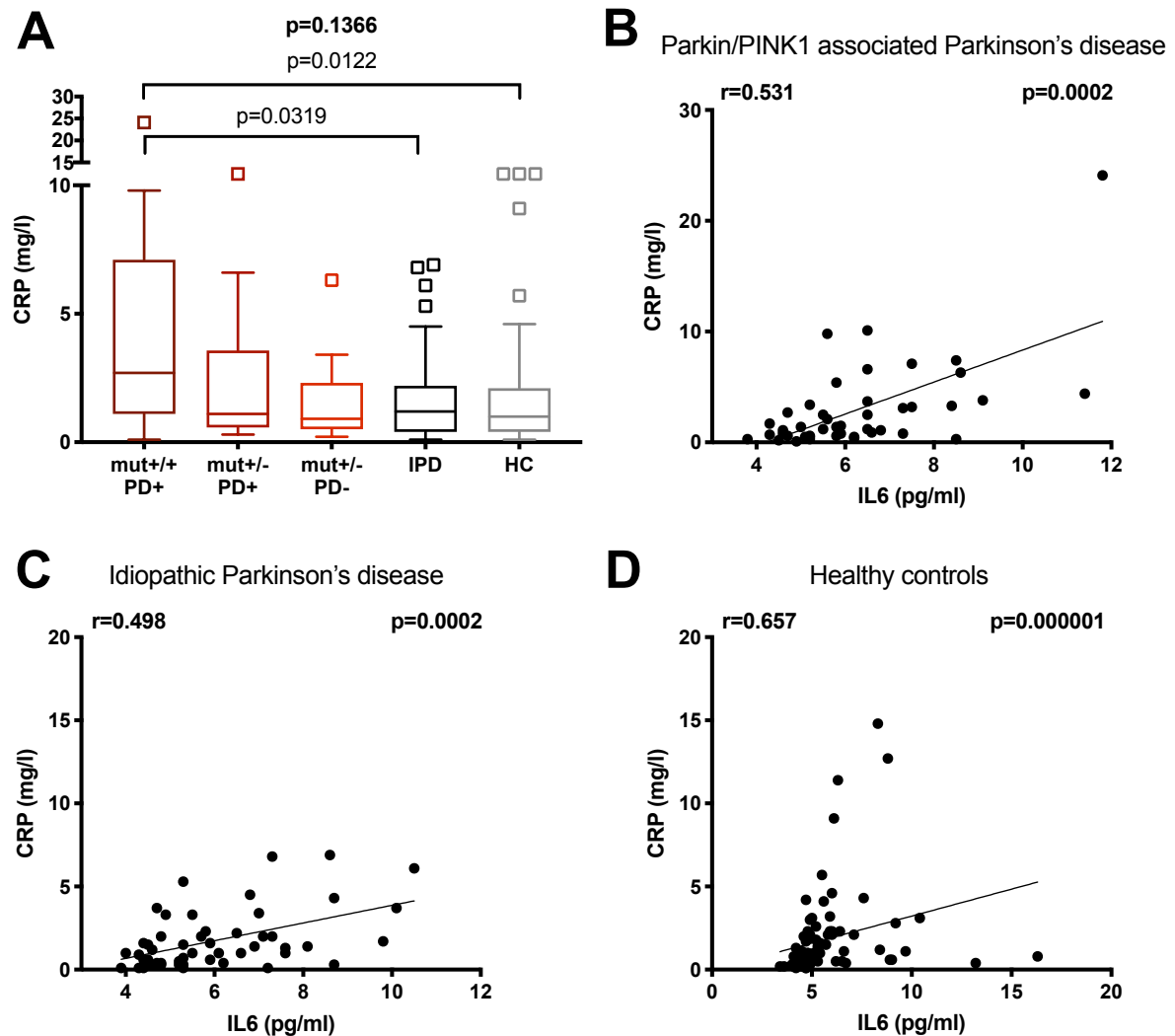




Supplementary Figure 1: Interleukin 6 (IL6) levels in newly included individuals. Serum IL6 levels in participants from the German Cohort that have not been previously assessed (Sliter et al., 2018). **A.** Investigating the hypothesized assumed order (*Parkin/PINK1* biallelic (mut+/+ PD+, n=10) > *Parkin/PINK1* affected (mut+/- PD+, n=13) and unaffected (mut+/- PD-, n=5) heterozygotes > healthy controls (HC, n=57), *Parkin/PINK1* biallelic individuals exhibit elevated IL6 level compared to healthy controls. Moreover, there was a trend towards elevated IL6 levels in patients with PD due to biallelic *Parkin/PINK1* mutations compared to unaffected heterozygotes. **B.** *Parkin/PINK1* biallelic individuals exhibited a trend towards elevated IL6 levels compared to IPD patients, while IPD patients showed a trend towards higher IL6 levels than HC. Together, analyzing only the newly included individuals led to very similar results compared to the whole German Cohort. The assumed order among the different groups was tested with the Jonckheere-Terpstra test (exploratory p-value in bold, lower left corner). Pairwise differences between two groups were assessed using the Wilcoxon rank sum test (exploratory p-values, parentheses). Data is presented as box and whisker plots. The box extends from the 25th to the 75th percentile. The line in the middle of the box represents the median. Tukey whiskers are used.



Supplementary Figure 2: *Parkin* and *PINK1* mutation carriers exhibit similar Interleukin 6 (IL6) levels. **A.** IL6 levels in patients with PD due to biallelic *Parkin* (n=10) and *PINK1* (n=5) mutations from the German Cohort. **B.** IL6 levels in biallelic *Parkin* (n=13) and *PINK1* (n=6) mutations carriers from the Italian Cohort. **C.** IL6 levels in heterozygous *Parkin* (n=22) and *PINK1* (n=9) mutation carriers (affected and unaffected) from the German Cohort. **D.** IL6 levels in symptomatic and asymptomatic heterozygous *Parkin* (n=10) and *PINK1* (n=4) mutation carriers from the Italian Cohort. Together, IL6 levels are similar if investigating *Parkin* and *PINK1* mutation carriers separately among all groups and cohorts. Lines represent the median.



Supplementary Figure 3: C-reactive protein (CRP) levels show a trend to be elevated in biallelic *Parkin/PINK1* mutation carriers and correlate with Interleukin 6 (IL6) levels. CRP levels in monogenic and idiopathic Parkinson's disease (IPD) patients and healthy controls (HC); **A.** There is a trend towards elevated CRP levels in biallelic *Parkin/PINK1* mutation carriers (mut+/+ PD+, n=15) compared to IPD patients (n=51) and a significant difference compared to healthy controls (n=85). *Parkin/PINK1* affected heterozygotes (mut+/- PD+, n=18); *Parkin/PINK1* unaffected heterozygotes (mut+/- PD-, n=13). Results from the German Cohort are shown. A similar distribution was observed in the Italian Cohort (Table 2). CRP levels correlate with IL6 levels in **B.** *Parkin/PINK1* biallelic and heterozygous mutation carriers (n=44), in **C.** IPD patients (n=51), as well as in **D.** Healthy controls. In A, group differences in general were explored via Kruskal-Wallis test (bold). Although the overall test was not significant, exploratory p-values regarding pairwise analysis, assessed by Wilcoxon rank sum test, are shown (parentheses). Data is presented as box and whisker plots. The box extends from the 25th to the 75th percentile. The line in the middle of the box represents the median. Tukey whiskers are used. In B, C, and D, a Spearman's correlation was calculated. The correlation coefficient is shown in the upper left, exploratory p-values are presented in the upper right corner.

Supplementary Table 1: Samples from study participants already included in the pilot study.

	German Cohort	All samples
<i>Parkin/PINK1</i> biallelic	5/15 (33%)	5/34 (15%)
<i>Parkin/PINK1</i> heterozygous affected	5/19 (26%)	5/24 (21%)
<i>Parkin/PINK1</i> heterozygous unaffected	8/15 (53%)	8/24 (33%)
Idiopathic Parkinson's disease	0/59 (0%)	0/64 (0%)
Healthy controls	27/90 (30%)	27/99 (27%)
All participants	45/198 (23%)	45/245 (18%)

A subset of the participants investigated in the recent study was already included in a pilot IL6 analysis in the context of Sliter *et al.*, 2018. In the former study, just samples from the Lübeck study site were included. For the recent study, the analysis took place in a different laboratory then in the pilot study.