

## SUPPLEMENTARY MATERIAL

# Influence of inflammatory and renin-angiotensin system gene polymorphisms *ACE2* rs2285666, *IL1A* rs1800587, and *TNF* rs1800629 on COVID-19 severity and the persistence of symptoms in the post-COVID-19 phase: a cross-sectional study

Matheus Daudt-Lemos, Evelyn Maciel de Oliveira, Alice Ramos-Silva, Natalia Fonseca Rosário, Thays Araújo Gonçalves, Camila de Melo Carvalho Nascimento, Amanda Mendes do Valle, Lialyz Soares Pereira André, Fabio Aguiar-Alves, Jorge Paulo Strogoff de Matos, Jocemir Ronaldo Lugon, Jorge Reis Almeida, Thalia Medeiros, Fabiana Barzotto Kohlrausch, Andrea Alice Silva

DOI: 10.31744/einstein\_journal/2026A01503

**Table 1S.** Demographic and clinical characteristics of patients in the post-COVID-19 period

| Characteristics              | All<br>(n=107) |
|------------------------------|----------------|
| Age (years, mean±SD)         | 54.70±15.18    |
| Female, n (%)                | 79 (73.8)      |
| White (self-declared), n (%) | 42 (39.3)      |
| Comorbidities, n (%)         |                |
| Diabetes                     | 33 (30.8)      |
| Depression                   | 30 (28.0)      |
| Hypertension                 | 60 (56.1)      |
| Dyslipidemia                 | 51 (47.7)      |
| Post-COVID symptoms, n (%)   |                |
| Cough                        | 17 (15.9)      |
| Dyspnea                      | 18 (16.8)      |
| Shallow breathing            | 8 (7.5)        |
| Exertional fatigue           | 48 (44.9)      |

Data are presented as mean±SD (standard deviation) or number (%).

**Table 2S.** Haplotype frequencies of *IL10* and *UMOD* in the study population

| Haplotypes                                    | n (%)      |
|-----------------------------------------------|------------|
| <i>IL10</i> (rs1800871-rs1800896)             |            |
| C-G                                           | 73 (34.0)  |
| T-A                                           | 79 (36.2)  |
| T-G                                           | 64 (29.8)  |
| <i>UMOD</i> (rs12917707-rs13333226-rs4293393) |            |
| G-A-A                                         | 164 (73.2) |
| G-A-G                                         | 1 (0.4)    |
| G-G-A                                         | 12 (5.4)   |
| G-G-G                                         | 12 (5.4)   |
| T-G-G                                         | 35 (15.6)  |

Data are presented as numbers (%).

**Table 3S.** Distribution of *IL10* and *UMOD* haplotypes according to intensive care unit admission

| Haplotypes                                    | Non-ICU<br>n (%) | ICU<br>n (%) | p value |
|-----------------------------------------------|------------------|--------------|---------|
| <i>IL10</i> (rs1800871-rs1800896)             |                  |              | 0.719   |
| C-G                                           | 32 (35.6)        | 41 (32.5)    |         |
| T-A                                           | 34 (37.8)        | 45 (35.7)    |         |
| T-G                                           | 24 (26.7)        | 40 (31.7)    |         |
| <i>UMOD</i> (rs12917707-rs13333226-rs4293393) |                  |              | 0.316   |
| G-A-A                                         | 68 (69.4)        | 96 (76.2)    |         |
| G-A-G                                         | 1 (1.0)          | 0 (0.0)      |         |
| G-G-A                                         | 5 (5.1)          | 7 (5.6)      |         |
| G-G-G                                         | 5 (5.1)          | 8 (6.3)      |         |
| T-G-G                                         | 20 (20.4)        | 15 (11.9)    |         |

Data are presented as n (%). Comparison of haplotype frequencies between patients admitted and not admitted to the ICU, were performed using the  $\chi^2$  or Fisher's exact test. P-value <0.05 was considered statistically significant.  
ICU: intensive care unit.

**Table 4S.** *IL10* and *UMOD* haplotype frequencies according to the requirement for invasive mechanical ventilation

| Haplotypes                                    | Non-IVM<br>n (%) | IVM<br>n (%) | p value |
|-----------------------------------------------|------------------|--------------|---------|
| <i>IL10</i> (rs1800871-rs1800896)             |                  |              | 0.515   |
| C-G                                           | 45 (35.7)        | 27 (30.7)    |         |
| T-A                                           | 47 (37.3)        | 31 (35.2)    |         |
| T-G                                           | 34 (27.0)        | 30 (34.1)    |         |
| <i>UMOD</i> (rs12917707-rs13333226-rs4293393) |                  |              | 0.366   |
| G-A-A                                         | 96 (71.6)        | 66 (75.0)    |         |
| G-A-G                                         | 1 (0.7)          | 0 (0.0)      |         |
| G-G-A                                         | 5 (3.7)          | 7 (8.0)      |         |
| G-G-G                                         | 7 (5.2)          | 5 (5.7)      |         |
| T-G-G                                         | 25 (18.7)        | 10 (11.4)    |         |

Data are presented as n (%). Comparison of haplotype frequencies according to the requirement for invasive mechanical ventilation using the  $\chi^2$  or Fisher's exact tests. A p<0.05 was considered statistically significant.  
IVM: invasive mechanical ventilation.

**Table 5S.** Frequencies of *IL10* and *UMOD* haplotypes stratified by COVID-19 severity

| Haplotypes                                    | Mild<br>n (%) | Moderate<br>n (%) | Severe<br>n (%) | p value |
|-----------------------------------------------|---------------|-------------------|-----------------|---------|
| <i>IL10</i> (rs1800871-rs1800896)             |               |                   |                 | 0.085   |
| C-G                                           | 30 (40.5)     | 11 (30.6)         | 32 (30.2)       |         |
| T-A                                           | 31 (41.9)     | 11 (30.6)         | 37 (34.9)       |         |
| T-G                                           | 13 (17.6)     | 14 (38.9)         | 37 (34.9)       |         |
| <i>UMOD</i> (rs12917707-rs13333226-rs4293393) |               |                   |                 | 0.817   |
| G-A-A                                         | 6 (16.7)      | 25 (69.4)         | 79 (74.5)       |         |
| G-A-G                                         | 1 (1.2)       | 0 (0.0)           | 0 (0.0)         |         |
| G-G-A                                         | 3 (3.7)       | 2 (5.6)           | 7 (6.6)         |         |
| G-G-G                                         | 3 (3.7)       | 3 (8.3)           | 6 (5.7)         |         |
| T-G-G                                         | 15 (18.3)     | 6 (16.7)          | 14 (13.2)       |         |

Data are presented as numbers (%). Haplotype frequencies were compared among patients according to COVID-19 severity (mild, moderate, or severe/critical) using the  $\chi^2$  test or Fisher's exact tests. P-value <0.05 was considered statistically significant.