**Supplementary Data**

**Table S1.** Diagnostic parameters of PCD patients.

|  |  |  |  |
| --- | --- | --- | --- |
| **Diagnostic parameters** | **n** | **CF** |  |
| Situs | 24 | Situs inversus  Situs solitus | 12  12 |
| HVMA | 21 | Immotile  Dyskinetic | 16  5 |
| TEM | 15 | IDA + ODA defect  ODA defect  IDA defect  Microtubule disorganization  IDA defect + microtubule disorganization  normal | 8  1  1  2  1  2 |
| IF | 11 | DNAH5  DNAH5 + DNALI2  DNAH5 + DNALI1  RSPH9 | 8  1  1  1 |
| Genetics | 16 | DNAH5  ARMC4  DNAAF3  DNAI2  DYX1C1  SPAG1  DNAI1  CCDC39  CCDC40  RSPH4A | 6  2  1  1  1  1  1  1  1  1 |

Abbreviations. n = number of subjects, HVMA = high-frequency video-microscopy analysis, TEM = transmission electron microscopy, IF = immunofluorescence

**Table S2.** Data of patients with cystic fibrosis on treatment with CFTR modulators.

|  |  |
| --- | --- |
| **Numbers of subjects** | **25** |
| CFTR modulator   * Ivacaftor * Lumacaftor/Ivacaftor * Tezacaftor/Ivacaftor * Tezacaftor/Ivacaftor/Elexacaftor | 9 (36%)  2  6  1  0 |

**Table S3.** Pulmonary bacterial colonization in patients with primary ciliary dyskinesia (PCD) and cystic fibrosis (CF).

|  |  |  |
| --- | --- | --- |
|  | **PCD** | **CF** |
| Number of subjects | 23 | 25 |
| Pathological bacterial colonization   * Aspergillus fumigatus * Burkholderia cenocepacia * Candida albicans * Candida tropicalis * Enterobacter cloacae * Escherichia coli * Haemophilus influenzae * Haemophilus parainfluenzae * Moraxella catarrhalis * Methicillin-resistant Staphylococcus aureus (MRSA) * Mycobacterium abscessus * Neisseria flavescens * Neisseria meningitidis * Pseudomonas aeruginosa * Proteus mirabilis * Rothia mucilaginosa * Staphylococcus aureus * Serratia marcescens * Streptococcus pneumoniae | 10 (43.48%)  0  0  1  0  0  0  5  1  1  0  0  2  1  1  0  1  5  1  2 | 20 (80%)  1  1  0  1  1  2  0  0  0  1  1  0  0  7  1  0  12  0  0 |

**Table S4.** Contents in plasma (µmol/L) and urine (µM or µM/mM creatinine) of metabolites of the L-Arg/NO pathway in patients with PCD or CF and in healthy controls (HC). Data are presented as median [25-75th interquartile range].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Plasma** | **PCD** | **CF** | **HC** | ***p* value** |
| Number of subjects | 22 | 24 | 14 |  |
| L-Arg | 77.14  [67.70 – 89.48] | 87.56  [72.65 – 116.86] | 83.45  [71.96 – 86.66] | 0.110 |
| h-Arg | 1.25  [0.93 – 1.70] | 1.40  [0.93 – 1.79] | 1.43  [1.10 – 1.67] | 0.606 |
| ADMA | 0.51  [0.36 – 0.55] | 0.53  [0.46 – 0.59] | 0.41  [0.36 – 0.52] | 0.886 |
| **Nitrite** | 23.90  [22.19 – 24.92] | 22.22  [21.45 – 23.62] | 21.02  [19.65 – 22.64] | \* 0.163  **# < 0.001**  **+ 0.038** |
| **Nitrate** | 63.26  [56.26 – 67.75] | 81.61  [73.88 – 100.86] | 86.96  [70.93 – 110.41] | **\* < 0.001**  **# 0.002**  + 0.999 |
| **Orn/Cit** | 45.25  [38.36 – 50.88] | 58.03  [44.38 – 64.53] | 42.17  [38.87 – 48.45] | \* 0.087  # 1.00  **+ 0.046** |
| L-Arg/ADMA | 166.72  [144.10 – 199.50] | 176.34  [136.98 – 222.85] | 172.15  [158.26 – 234.17] | 0.531 |
| **Urine** |  |  |  |  |
| Number of subjects | 24 | 25 | 14 |  |
| L-Arg | 33.17  [18.88 – 43.22] | 35.89  [25.68 – 61.10] | 32.27  [10.55 – 48.17] | 0.145 |
| hArg | 2.82  [1.12 – 6.58] | 2.10  [1.61 – 3.70] | 1.99  [1.10 – 2.72] | 0.734 |
| ADMA/Crea | 4.08  [3.21 – 5.26] | 4.29  [3.41 – 4.99] | 3.22  [2.57 – 3.65] | 0.077 |
| Nitrite/Crea | 0.20  [0.12 – 0.45] | 0.22  [0.15 – 0.34] | 0.23  [0.15 – 0.66] | 0.320 |
| **Nitrate/Crea** | 54.84  [44.57 – 82.64] | 93.80  [75.54 – 133.66] | 74.58  [57.04 – 103.02] | **\* 0.006**  # 1.000  + 0.185 |
| Orn/Cit | 42.63  [25.26 – 65.70] | 58.86  [34.26 – 73.9] | 49.77  [15.09 – 88.32] | 0.170 |
| UnoR | 311.70  [175.81 – 403.66] | 530.48  [268.08 – 655.81] | 204.78  [168.53 – 633.59] | 0.070 |

Statistics: Bold indicates statistical significance; \* = Significance PCD vs. CF; # = Significance PCD vs. HC; + = Significance CF vs. HC

Abbreviations. L-Arg, L-Arginine; hArg, Homoarginine, ADMA, asymmetric dimethylarginine; Crea = creatinine; Orn/Cit, Ornithine/Citrulline ratio; UnoR = Urinary nitrate/nitrite ratio

**Figure S5.** Correlation between L-Arginine (µM/mg sputum, y-axis) and Ornithine/Citrulline ratio (µM/mg sputum, x-axis) in sputum of patients with primary ciliary dyskinesia (PCD), cystic fibrosis (CF) and healthy control (HC). R = Pearson correlation coefficient.