**Supplementary file 10. Definition of the notations and parameters of the mathematical model**

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|  | **Symbol** | **Meaning** |
| **General** |  | Lamina propria (=peribronchial area) |
|  | Side length of the units of the lattice |
|  | Neighbourhood of the site |
|  | Number of F and C cells belonging to |
|  | Number of F cells belonging to |
|  | Number of C cells belonging to |
|  | Number of F cells at the beginning of period |
|  | Number of C cells at the beginning of period |
| **Initial situation** |  | Initial density of C cells |
|  | Initial density of F cells |
|  | Initial number of C cells |
|  | Initial number of F cells |
| **Cell death** |  | Probability for a F cell to die |
|  | Basal probability for a C cell to die |
|  | Increased probability for a C cell to die |
| σ | Threshold number of neighbouring C cells, above which the probability of dying is increased from to |
| **Cell proliferation** |  | Probability for a F cell to divide |
|  | Basal probability for a C cell to divide |
|  | Increased probability for a C cell to divide |
| λ | Threshold number of neighbouring C cells of an empty s’ site belonging to M(s), above which the considered C cell does not divide. |
| **Cell displacement** |  | Probability for a F cell to go from s to s’ |
|  | Probability for a C cell to go from s to s’ |
|  | Function partially defining when , depending on |
|  | Function partially defining when , depending on |
|  | Value taken by to reflect a low attraction |
|  | Value taken by to reflect a low attraction |
| **Cell infiltration** |  | Probability for a F cell to get infiltrated at the beginning of a 3 minutes-period |
|  | Probability for a C cell to get infiltrated at the beginning of a 3 minutes-period |
|  | Probability for a F cell to get infiltrated during an exacerbation |
|  | Probability for a F cell to get infiltrated during an exacerbation |
|  | Number of F cells that are infiltrated during an exacerbation |
|  | Number of C cells that are infiltrated during an exacerbation |