Supplementary Table 1

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| **Parameter** | **Notation (code)** | **Notation (equation)** | **Purpose** | **Control** |
| *GENERAL PARAMETERS* | | | | |
| Epsilon | ep | -- | Slows the decay/ growth of cells with abi treatment | 0.01 |
| Death rate (all cell pops) | death | dr | Death rate of all cells | 5e-04 |
| Competition matrix | A | aij | Cell population dynamics | Zhang et al pt1 or pt2 |
| Delta | delta | -- | Build competition matrix based on previous values | 0.05 |
| Growth rate | r | ri | Growth rate of all cell populations, change T-/- as a cost of resistant parameter | [0.278, 0.355, 0.665, 0.665]\*0.01 |
| Initial conditions | x0 | -- | Initial cell populations when starting treatment | [2600,3300,30,20,0]; |
| Death threshold | death\_threshold | -- | Marks TTP | 7500 |
| *ADAPTIVE ABIRATERONE SPECIFIC* | | | | |
| Carrying capacity of T-/- population | kON / kOFF | -- | Normal carrying capacity | [1.5\*x(2)+1000, 10000, 10000, 6000];  [0.5\*x(2)+10, 100, 10000, 6000]; |
| Abi on/off | Position | -- | Adaptive abiraterone treatment as a function of PSA | Abi turns on when PSA reaches 50% of the initial value pre-treatment and turns off when PSA reaches initial value |
| *DOCETAXEL TREATMENT SPECIFIC* | | | | |
| Docetaxel kill rate (i=1,2,3) | kill\_rate\_doce | ci | Sensitivity of T+/TP/T- cells to docetaxel | 1.5 |
| Docetaxel kill rate (i=4) | krD | ci | Resistance or sensitivity of T-/- cells to docetaxel | 0 |
| Docetaxel time on | t\_on | -- | Time doce treatment is on | 200 |