This folder contains the MATLAB file used for generating the main text and supplementary figures.

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| --- | --- |
| **File Name** | **Figure** |
| Scatter\_parameter\_Revised\_HNSCC\_modeling.m | Fig. 2 of the main text |
| HNSCC\_Immune\_Desert\_Modelling.m | Fig.3 of the main text |
| HNSCC\_Fibro\_Desert\_Modelling.m | Fig.4 of the main text |
| HNSCC\_Immune\_Rich\_Modelling.m | Fig.5 of the main text, Fig. S2, and Fig. S4 of the supplementary file |
| ICI\_response\_Imm-Rich\_HNSCC\_Modeling | Fig 5 of the main text. |
| HNSCC\_Fibro\_Rich\_Modelling.m | Fig.6 of the main text |
| HNSCC\_IL2\_Modelling.m | Fig.7 of the main text |
| LIF\_OPN\_HNSCC\_Modelling.m | Fig.8 of the main text |
| IL8\_HNSCC\_Modelling.m | Fig.9 of the main text |
| LAC\_HNSCC\_Modelling.m | Fig10 of the main text |
| Scatter\_Res\_Compr\_HNSCC\_modeling.m | Fig. S1 of the supplementary file |
| T\_Helper\_CAF\_Immune\_rich\_SUP\_HNSCC\_modeling.m | Fig. S3 of the supplementary file |
| CAF\_Immune\_Acc\_Fibro\_Rich\_SUP\_HNSCC\_modeling.m | Fig. S5 of the supplementary file |
| IL2\_T\_SUP\_HNSCC\_modeling.m | Fig. S6 of the supplementary file |
| LIF\_Knockout\_SUP\_HNSCC\_modeling | Fig. S7 of the supplementary file |
| Sensitivity\_HNSCC\_modeling.m | Fig. S8 of the supplementary file |

**Additional files:** The table below lists the additional MATLAB files (Other than the figure generating files) that serve as the dependencies to some or all of the figure files

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| **File Name** | **Description** | **Associated Figure files** |
| HNSCC\_mod.m | MATLAB implementation of the proposed model with constant resource supply rate | ALL |
| HNSCC\_parameters.m | Nominal parameters for immune/fibrotic TME Subtypes | All except  1. HNSCC\_Immune\_Desert\_Modelling.m  2.HNSCC\_Fibro\_Desert\_Modelling.m  3. HNSCC\_IL2\_Modelling.m  4. IL2\_T\_SUP\_HNSCC\_modeling.m |
| HNSCC\_parameters\_immune\_desert\_modelling.m | Nominal parameters for Fibrotic only TME subtype | HNSCC\_Immune\_Desert\_Modelling.m |
| HNSCC\_parameters\_fibro\_desert\_modelling.m | Nominal parameters for Immune/non-fibrotic TME subtype | 1. HNSCC\_Immune\_Desert\_Modelling.m  2. IL8\_HNSCC\_Modelling.m |
| HNSCC\_parameters\_IL2.m | Nominal parameters for IL-2-treatable fibrotic only TME subtype. | 1. HNSCC\_IL2\_Modelling.m  2. IL2\_T\_SUP\_HNSCC\_modeling.m |
| HNSCC\_parameters\_OPN.m | Nominal parameters for OPN-treatable fibro-dominated TME subtype | LIF\_OPN\_HNSCC\_Modelling.m |
| Scatter\_Res\_Compr\_HNSCC\_modeling.m | MATLAB implementation of the proposed model with resource competition | 1. Scatter\_Res\_Compr\_HNSCC\_modeling.m  2. T\_Helper\_CAF\_Immune\_rich\_SUP\_HNSCC\_modeling.m |