Table S1, Generative model parameters. Radial position is defined as *r*=*L*1/(*L*1+*L*2) where *L*1 is the distance between the center of each punctum and the nuclear membrane, and *L*2 is the distance from the center of each punctum to the cell membrane. Therefore, *r* is positive if the punctum is outside of the nucleus and negative inside. α is the angle between the major axis of the cell and the vector from the center of cell to the center of a punctum. The generative model component that a given feature is used for is also shown (see Figure 3).

|  |  |  |
| --- | --- | --- |
| **Feature** | **Model Component** | **Description** |
| mx1 | sv | Average punctum size |
| mx2 | sv | Average punctum intensity |
| mx3 | sv | Size variance |
| mx4 | sv | Size and intensity covariance |
| mx5 | sv | Intensity variance |
| mx6 | nv | Number of puncta |
| mx7 | pp | Punctum position model β0 - intersect |
| mx8 | pp | Punctum position model β1- radial position |
| mx9 | pp | Punctum position model β2 - radial position2 |
| mx10 | pp | Punctum position model β3 - angular pos. 1 sin(α) |
| mx11 | pp | Punctum position model β4 - angular pos. 2 cos(α) |
| mx12 | pp | Punctum position model β5 - distance from microtubules |
| mx13 | pp | Punctum position model β6 - distance from microtubules2 |
| mx14 | pb | Background position model β0 - intersect |
| mx15 | pb | Background position model β1- radial position |
| mx16 | pb | Background position model β2 - radial position2 |
| mx17 | pb | Background position model β3 - angular pos. 1 sin(α) |
| mx18 | pb | Background position model β4 - angular pos. 2 cos(α) |
| mx19 | pb | Background position model β5 - distance from microtubules |
| mx20 | pb | Background position model β6 - distance from microtubules2 |
| mx21 | N/A | Total intensity of puncta |
| mx22 | ib | Total intensity of background |