1) DNA polymer structure+dynamics moving towards Chromatin structure/dynamics

Techniques:
Fluorescence-Correlation Spectroscopy
Super-resolution (STED) microscopy
Microfluidics
Fluorescence correlation spectroscopy

+ scanning

\[ \langle r^2(t) \rangle \]

\[ 24 \mu m \]
Now adding super-resolution to measure chromatin Structure/dynamics
2) Communication between immune cells through cytokines

Techniques:
Wide field fluorescence microscopy
Two-photon microscopy (being constructed)
Microfluidics

$$\nabla^2 c - \xi^{-2} c = 0$$

$$\xi \sim \sqrt{D \tau} = \sqrt{\frac{D}{k_{on} N_{rcpt} n_{cell}}}$$
100% consumers

pSTAT5
IL2Ra
DAPI
DDAO
**Lymph node**

100 µm

\[ r (\text{cell diameter}) \]

\[ p\text{STAT5 autocorrelation} - G(r) \]

Wild type

IL-2 i.c. Boosted

Homeostasis

\[ j = 8.2 \pm 0.7 \text{ cd} \]

\[ j_{\text{WT}} = 11.4 \pm 0.7 \text{ cd} \]

\[ j_{\text{H}} = 9.5 \pm 0.2 \text{ cd} \]