

## Annual Report 2021 - Highlights

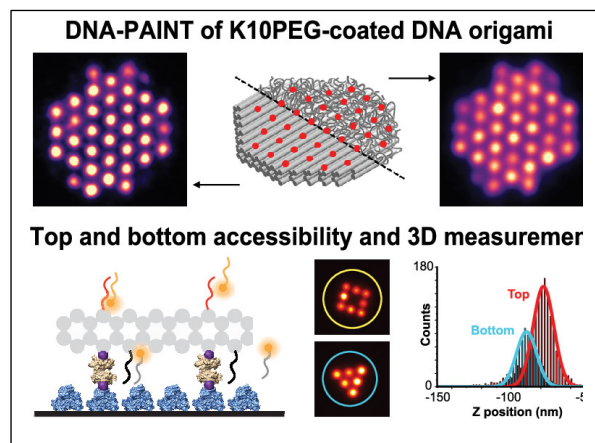
### Important events:

- We were finally able to meet in person again for a two-day CellPAT-retreat in September, held at Moesgaard Museum south of Aarhus
- Two new PhD students were hired at AU, completing the hiring plan for CellPAT
- The first fully CellPAT-funded PhD student, Marjan Omer, handed in her thesis in September 2021 (and defended it successfully in January 2022)
- Fiona Watt was appointed as the next director of EMBO and will start in January 2022. She will keep her lab at King's College London but plans to open a new lab within the cell biology and biophysics unit at EMBL in Heidelberg



### Research highlights:

The Kjems lab published a paper in PNAS that describes the development of an RNA aptamer with high specificity and selectivity for the Spike protein from SARS-CoV2. A trimeric form of the aptamer uses multivalent interactions to block viral infection in cell culture.



Alexandra Eklund and colleagues in the Jungmann lab developed a new technique to quantify strand accessibility in biostable DNA origamis with single-staple resolution. The depth-resolution available with this technique furthermore allows the readout of separate patterns on the upper and lower side of a DNA origami (see figure)

Steffen Thiel's group showed that the abundant blood protein ITIH4 inhibits proteases in the innate immune system via an unknown mechanism, thus shedding new light on the regulation of immune responses.

PhD students Marjan Omer (Kjems lab), Alexey Ferapontov (Degn lab) and Isabelle Baudrexel (Jungmann lab) have in a joint collaboration used RNA nanoscaffolds and DNA-PAINT to investigate how epitope multimerization affects activation of B-cell receptors (BCR). This interdisciplinary approach revealed that none of the current text book models for BCR activation explains what happens in nature.