

# nanoFEATURES

## A MATLAB APPLICATION TO CHARACTERIZE NANOPARTICLES IMAGED WITH SUPER- RESOLUTION MICROSCOPY

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# NANOPARTICLES



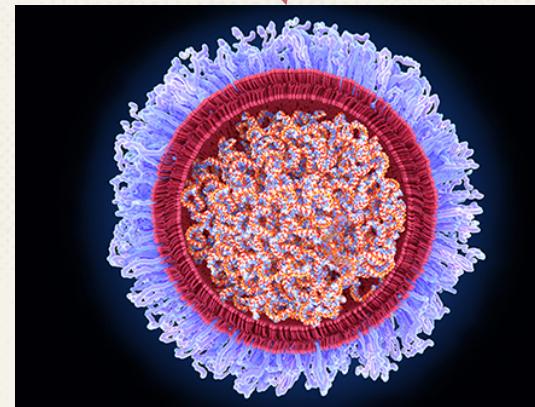
About Cancer ▾    Cancer Types ▾    Research ▾    Grants & Training ▾

[Home](#) > [News & Events](#) > [Cancer Currents Blog](#) > Can mRNA Vaccines Help Treat Cancer?

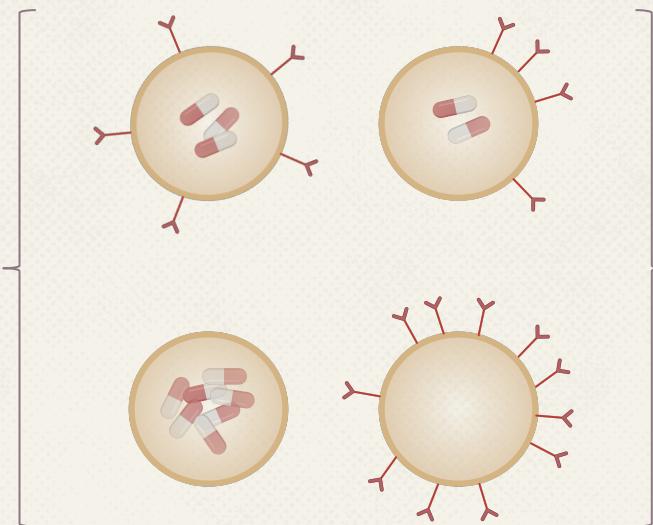
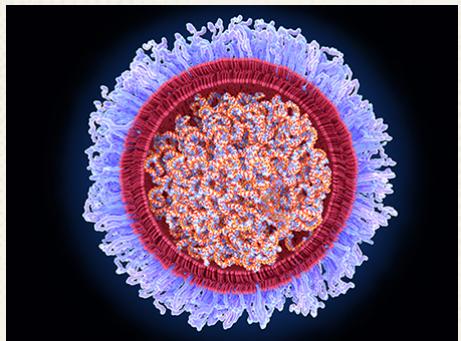
## Can mRNA Vaccines Help Treat Cancer?

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January 20, 2022, by Edward Winstead

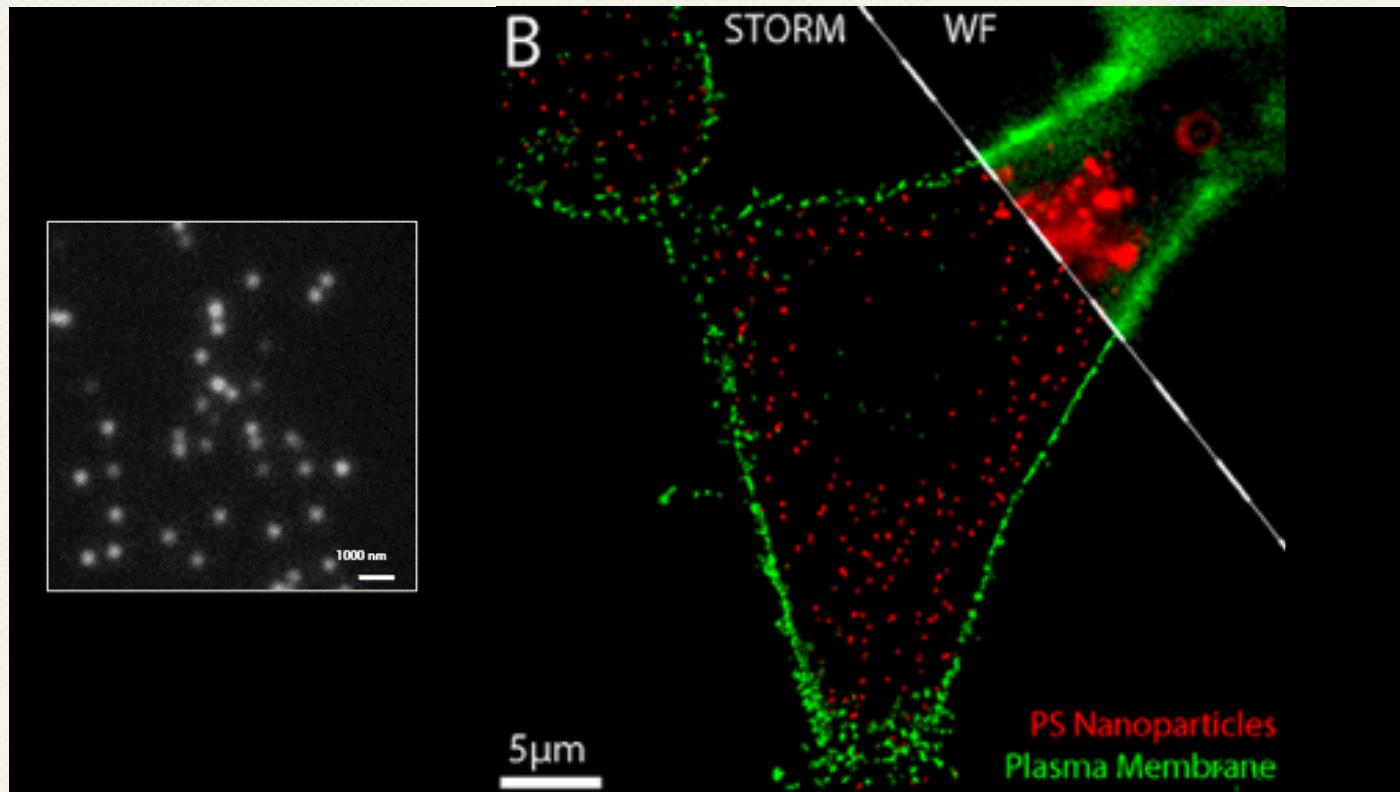


## NANOPARTICLE HETEROGENEITY

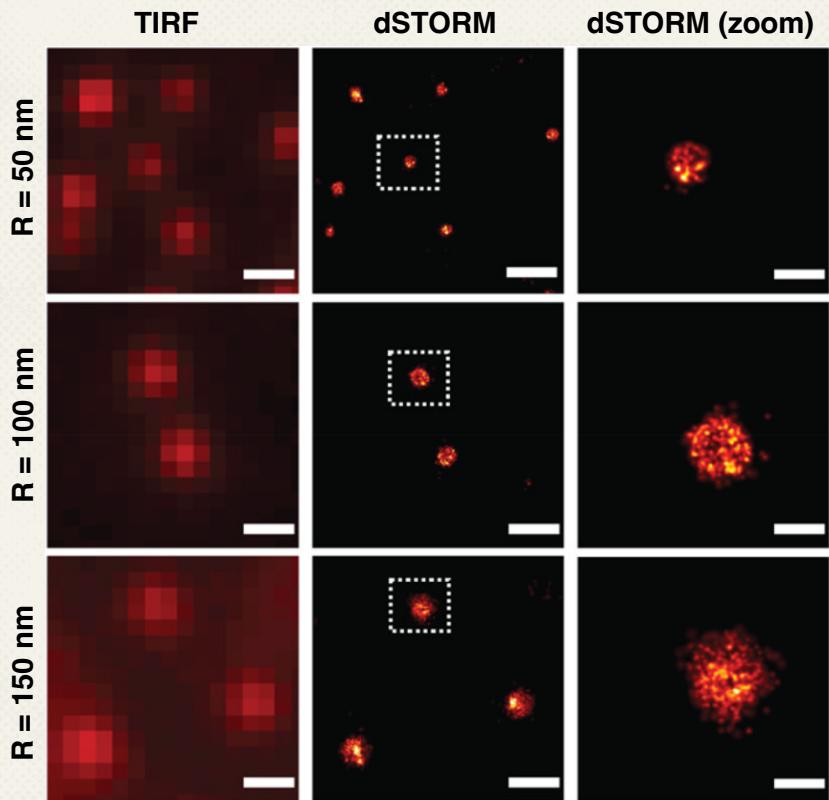


**Specialized techniques** to understand and optimize nanoparticles

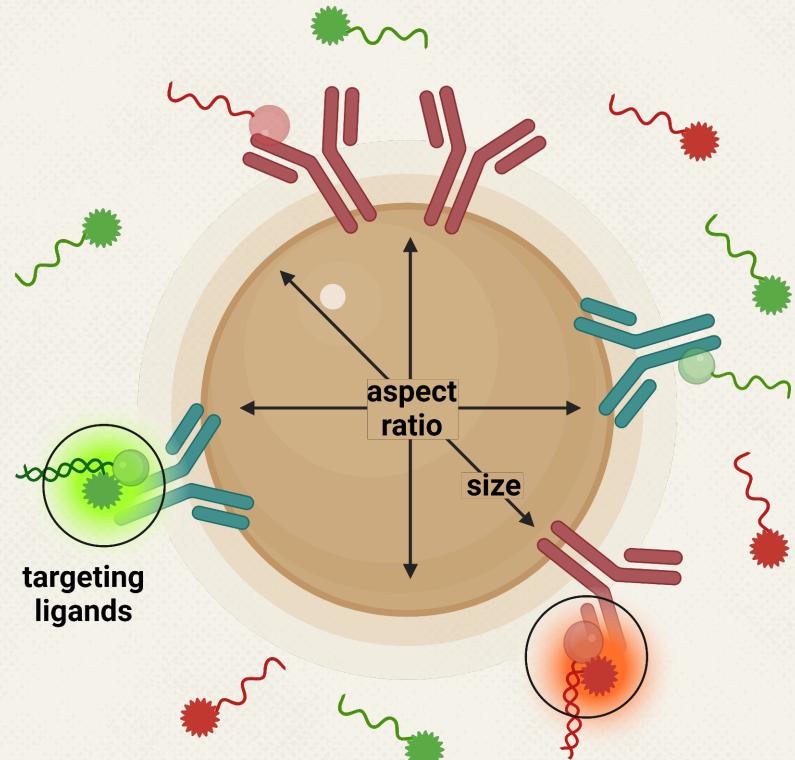
# SUPER-RESOLUTION MICROSCOPY



# SUPER-RESOLUTION MICROSCOPY FEATURES



Laura Woythe et al., 2022



# SUPER-RESOLUTION MICROSCOPY DATA



1.txt - Notepad															
File	Edit	Format	View	Help	Channel	Name	X	Y	Xc	Yc	Height	Area	Width	Phi	Ax
647	8001.2	1036.2	8001.2	1036.2	2933.04614		65887.	00781			325.41644				
647	15757.3	1000.7	15757.3	1000.7	6462.49365		135579.	25000			386.64102				
647	1741.7	1015.7	1741.7	1015.7	2737.34961		17476.	75781			322.57114				
647	17046.2	1078.4	17046.2	1078.4	1208.69275		15737.	21680			365.89490				
647	994.7	1530.0	994.7	1530.0	2388.77563		16274.	13281			333.21265				
647	25906.6	1591.7	25906.6	1591.7	1473.38782		12124.	22746			366.20944				
647	957.1	2207.7	957.1	2207.7	2045.07227		20080.	49219			363.62479				
647	22198.2	2219.7	22198.2	2219.7	724.28741		43716.	96484			339.45850				
647	31888.4	2380.9	31888.4	2380.9	3996.98096		54165.	72656			332.37830				
647	38259.3	2466.5	38259.3	2466.5	3117.89233		16748.	50195			295.88141				
647	17109.1	2700.9	17109.1	2700.9	768.37134		4494.	94141			308.77112				
647	30923.5	3067.3	30923.5	3067.3	2700.47754		29039.	89453			302.60730				
647	35278.2	3151.4	35278.2	3151.4	1621.22876		11139.	44336			282.00803				
647	32388.7	3462.9	32388.7	3462.9	783.28522		6099.	33984			356.23917				
647	5252.1	3721.1	5252.1	3721.1	724.90070		4707.	70313			335.33102				

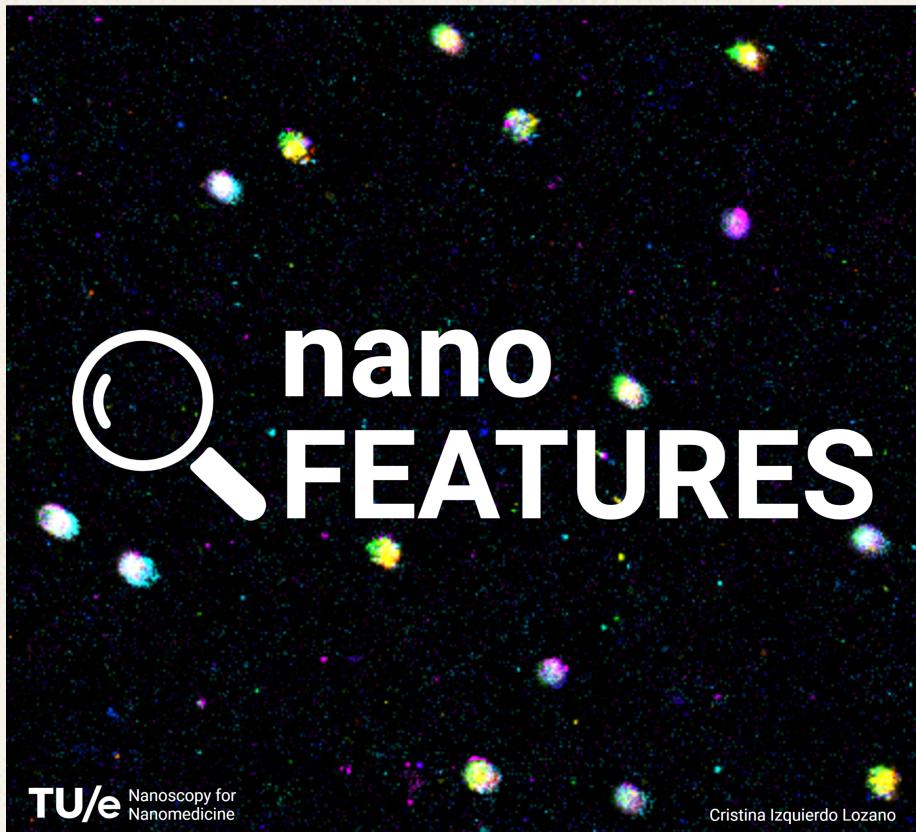


	A	B	C	D	E	F	G
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3	0,0,44758.343750,2150.556396,0.000000,1995.725098,73.719940						
4	0,0,44353.492188,4277.739746,0.000000,3085.677490,67.011948						
5	0,0,11450.175781,11001.585938,0.000000,559.729309,64.334930						
6	0,0,8801.014648,15948.735352,0.000000,2263.529297,186.173935						
7	0,0,39710.929688,19195.580078,0.000000,17138.640625,84.798096						
8	0,0,1346.488403,19468.812500,0.000000,1918.760254,64.422241						
9	0,0,40224.656155,10901.085800,0.000000,3189.492423,113.723606						

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# nanoFEATURES

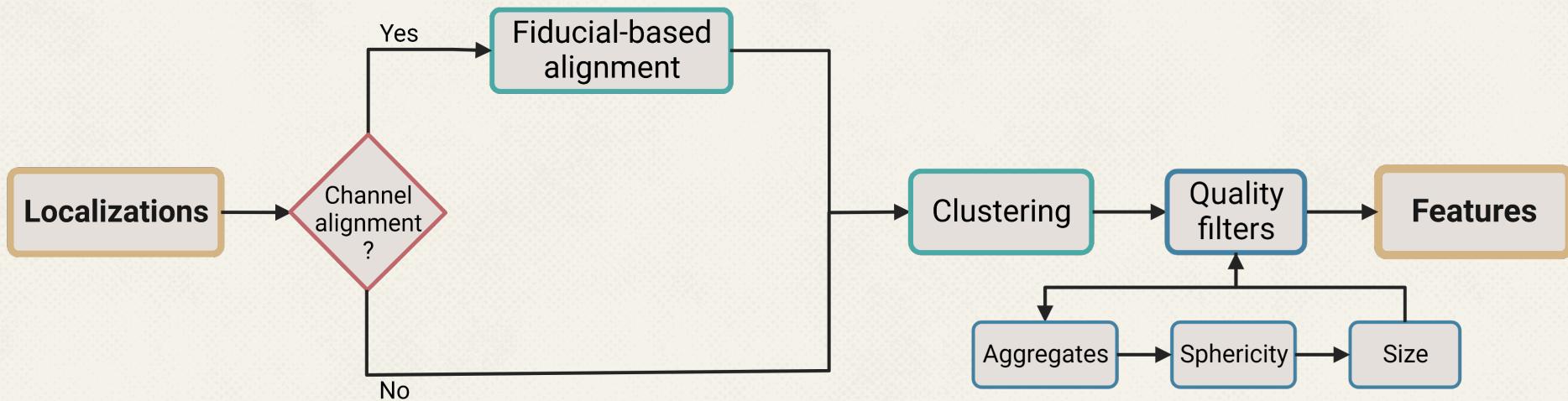
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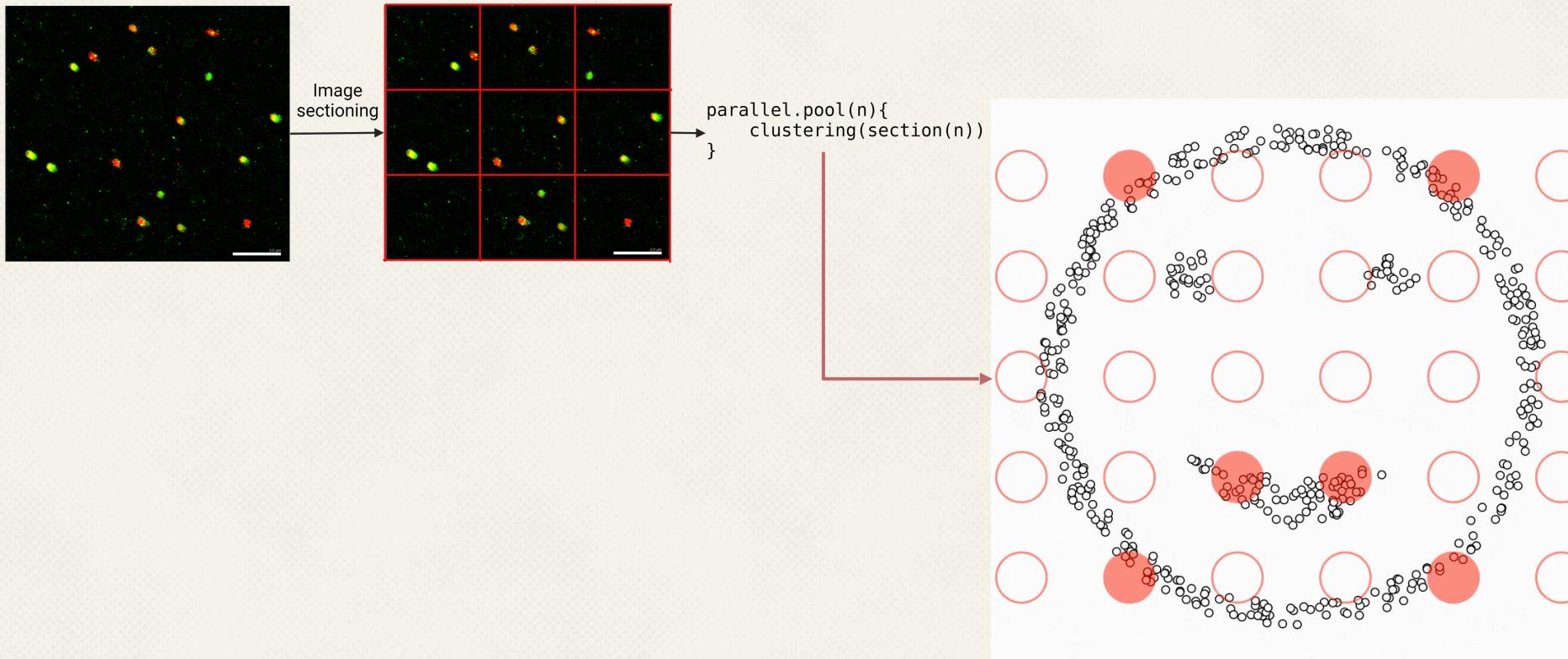
**GitHub**

crizloz/nanoFeatures

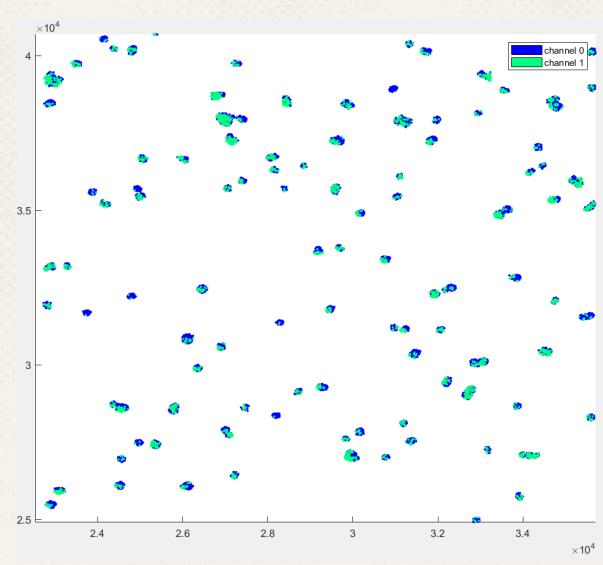
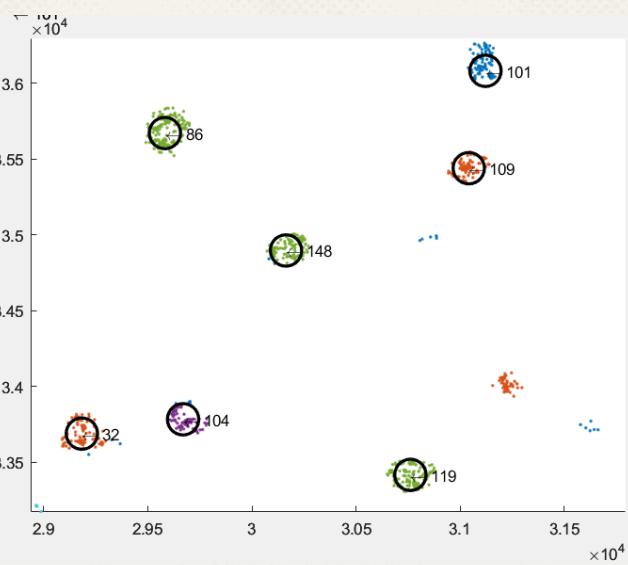
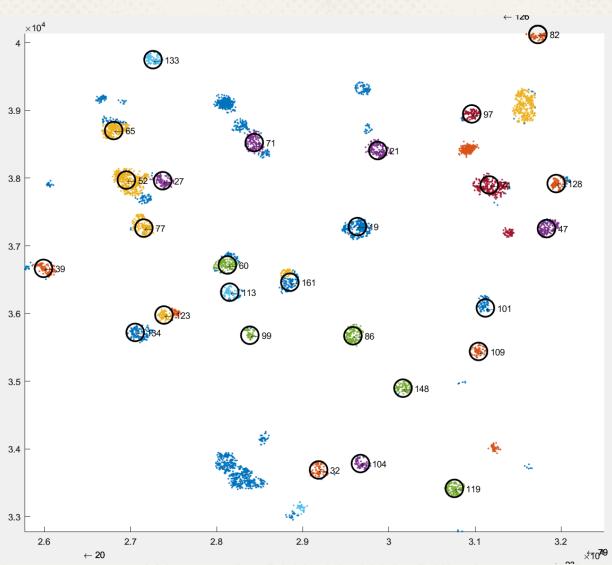
# WORKFLOW



# CLUSTERING



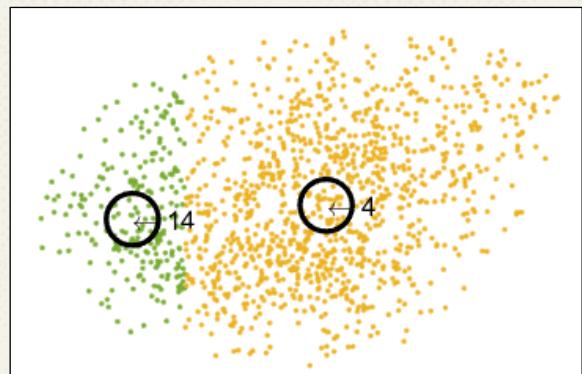
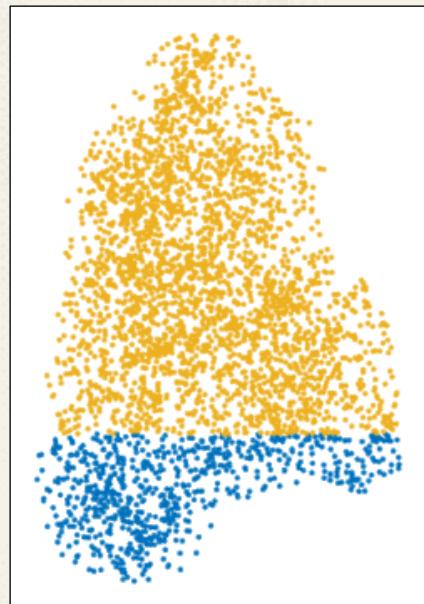
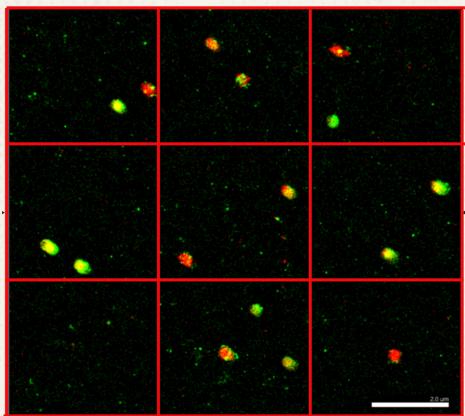
# FILTERING



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## SECTIONING AND CLUSTERING

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# nanoFEATURES

Filters   Parameters   Graphs

Input file:

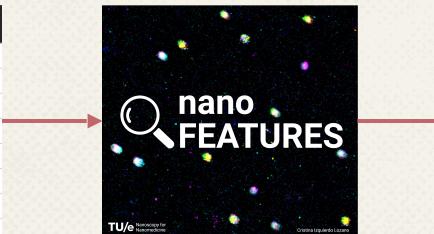
Input type:

Filters	Extra analysis
<input checked="" type="checkbox"/> Channel alignment	<input checked="" type="checkbox"/> Silhouette metric

# FEATURES

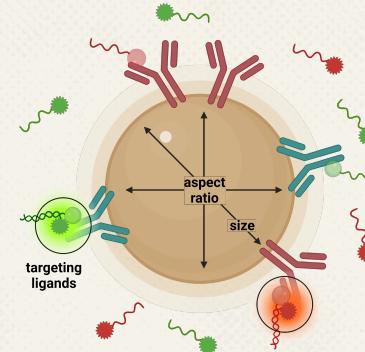
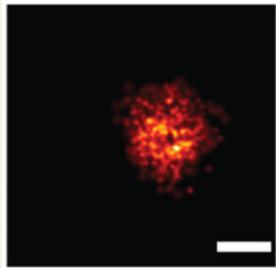
## Localization coordinates

	A	B	C	D	E	F	G
1	Channel,Frame,X (nm),Y (nm),Z (nm),Photons,Background						
2	0,0,6343.875000,1607.458740,0.000000,645.536194,63.212887						
3	0,0,44758.343750,2150.556396,0.000000,1995.725098,73.719940						
4	0,0,44353.492188,4277.739746,0.000000,3085.677490,67.011948						
5	0,0,11450.175781,11001.585938,0.000000,559.729309,64.334930						
6	0,0,8801.014648,15948.735352,0.000000,2263.529297,186.173935						
7	0,0,39710.929688,19195.580078,0.000000,17138.640625,84.798096						
8	0 0 1346 488403 19468 812500 0 000000 1918 760254 64 422241						



## Nanoparticle features

	A	B	C	D	E	F	G	H	I
1	Diameter,Aspect ratio,Cluster localizations,channel 1 localizations,channel 2 localizations								
2	109.450025197871,1.3633783823841,54,46,8								
3	125.212668946183,1.30187608316096,51,49,2								
4	130.301991418627,1.77293890957658,61,6,55								
5	142.260292680707,1.39525636357786,75,14,61								
6	95.8009865972326,1.34047598587036,71,65,6								
7	112.556859756327,1.32800086908654,62,60,2								



## AKNOWLEDGEMENTS

### Molecular Machine Learning



### Nanoscopy for Nanomedicine



 @n4nlab  
@molecularML