

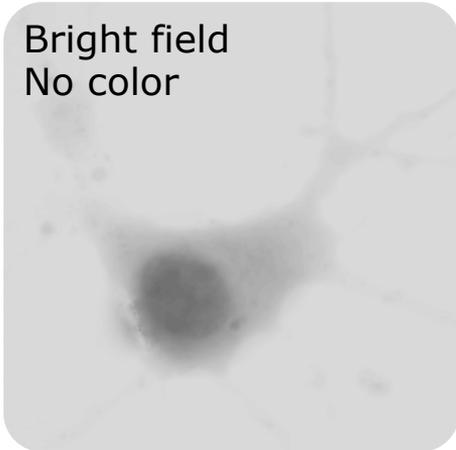
NANOLIVE

Looking inside life
Yann Cotte, PhD

A Revolution for
Live Cell Exploration

Present Microscopy

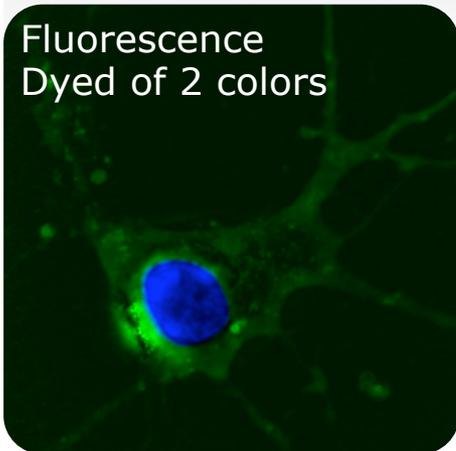
Bright field
No color



Nowadays due to the limitation of light it is impossible to see inside a living cell without damaging it.

...even with \$Million devices!

Fluorescence
Dyed of 2 colors



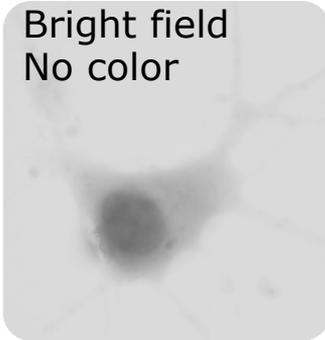
Complicated procedure

- ✗ Preparation 1-72h
- ✗ Invasive = dead cells
- ✗ Only 2D
- ✗ Monochrome, no contrast
- ✗ Low resolution

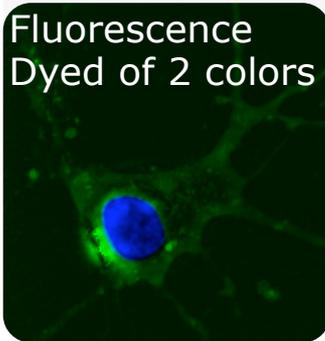


**Present
Microscopy**

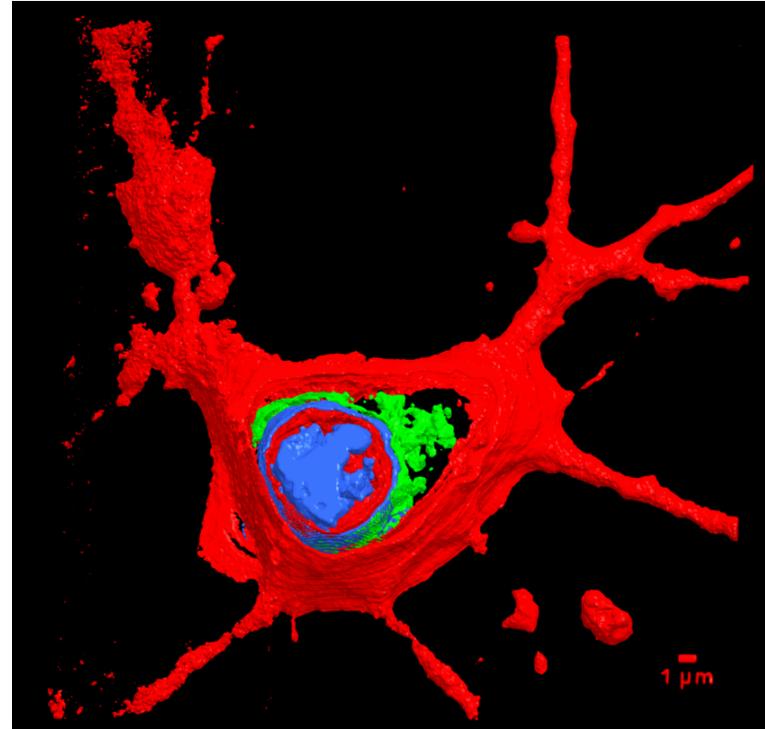
Bright field
No color



Fluorescence
Dyed of 2 colors



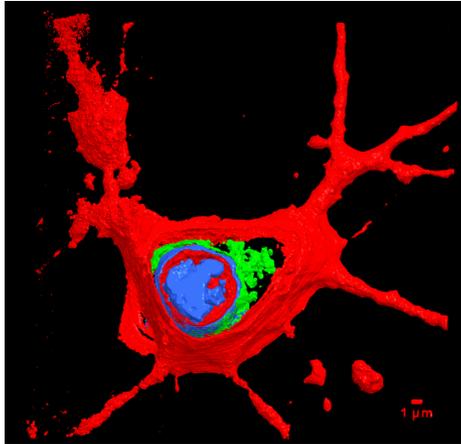
What if we could see inside a living cell?



- ✓ Without any sample preparation
- ✓ Without damaging the cell
- ✓ In 3D with Cell Tomography
- ✓ With a better resolution than present microscopes
- ✓ And identifying its parts in Color



What if we could see inside a living cell?



The cell would not be a mystery any more and we could interact with it live.

Why should we care?

Since the cell is the basis of all Life it would open a wealth of limitless possibilities!

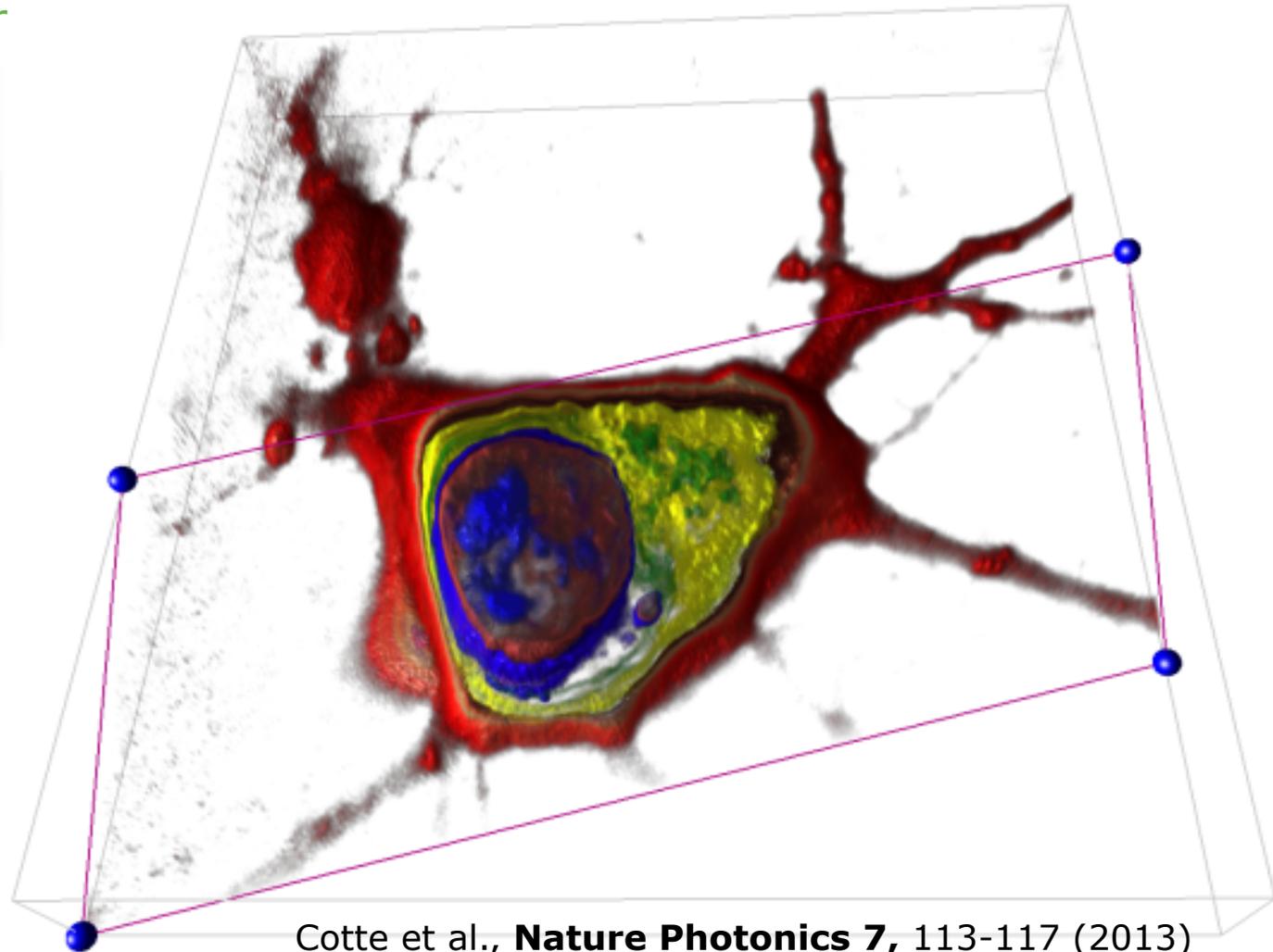


NANO LIVE

Looking inside life

NanoLive has done it!

3D Cell-Explorer



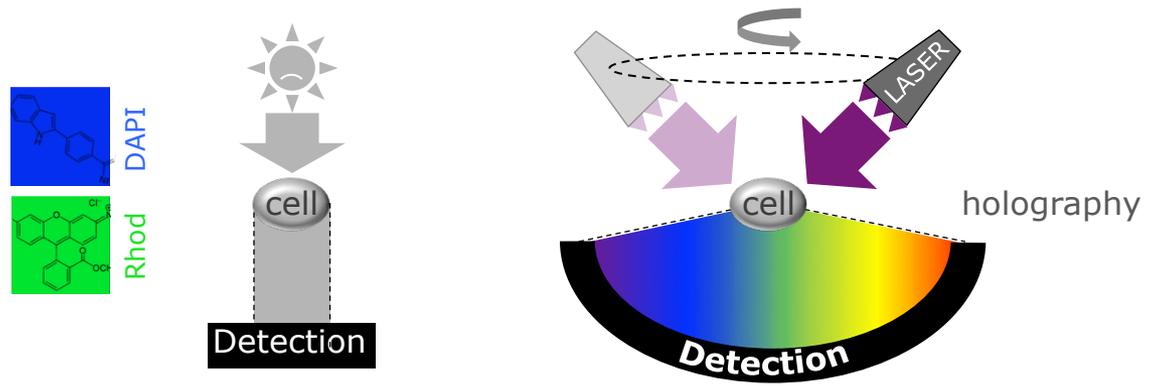
Cotte et al., **Nature Photonics** 7, 113-117 (2013)



Watch promotion video:

<http://vimeo.com/nanolive>

3D Cell-Explorer



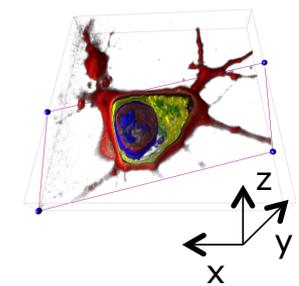
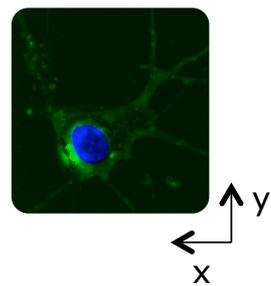
Qualitative
Chemical staining



Quantitative
Digital staining



fluorescence



- Nucleoplasm
- Nucleoli
- Golgi
- Cytosol
- Membrane



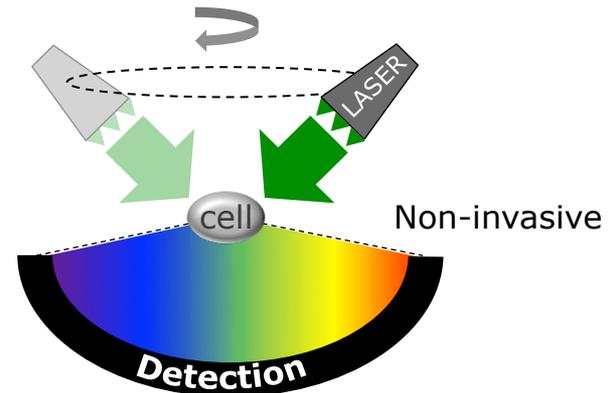
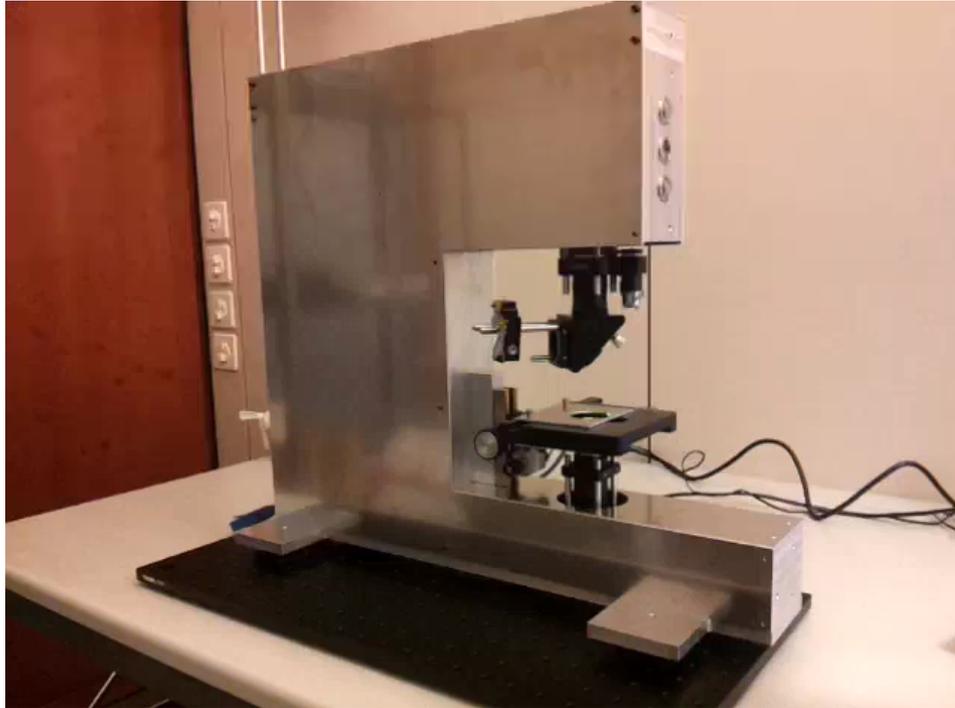
3D Cell-Explorer



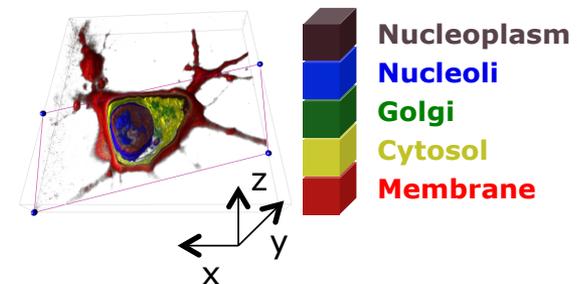
STANDARD traditional microscopy	NANOLIVE our technology
✗ 1-72 hours preparation	✓ No sample preparation
✗ Invasive – dead cells	✓ Non-invasive
✗ 2D	✓ 3D Cell Tomography
✗ No contrast or dyed of one color	✓ Real color: Specific to refractive index
✗ Micro-meter resolution	✓ Up to 4x better resolution than traditional microscopy (down to 70nm lateral resolution)

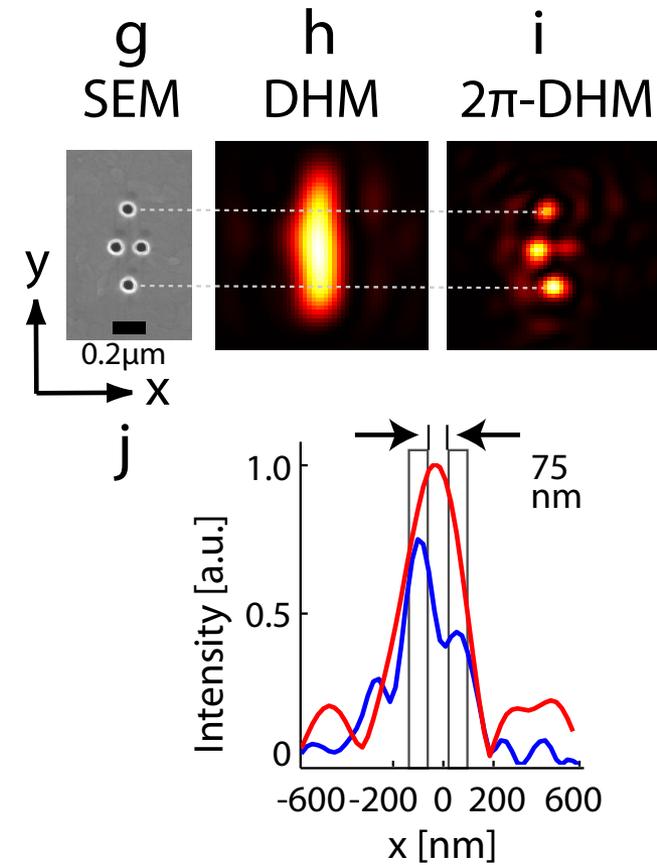
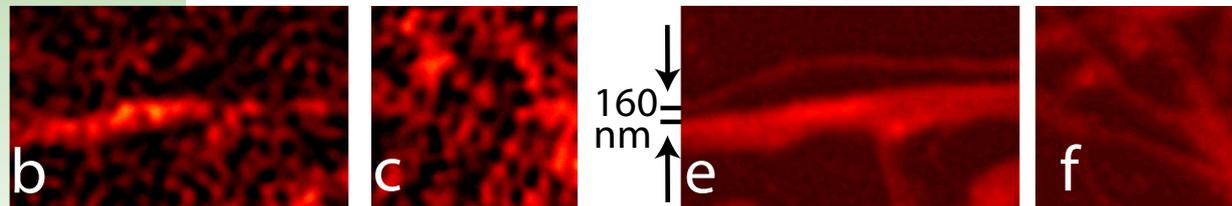
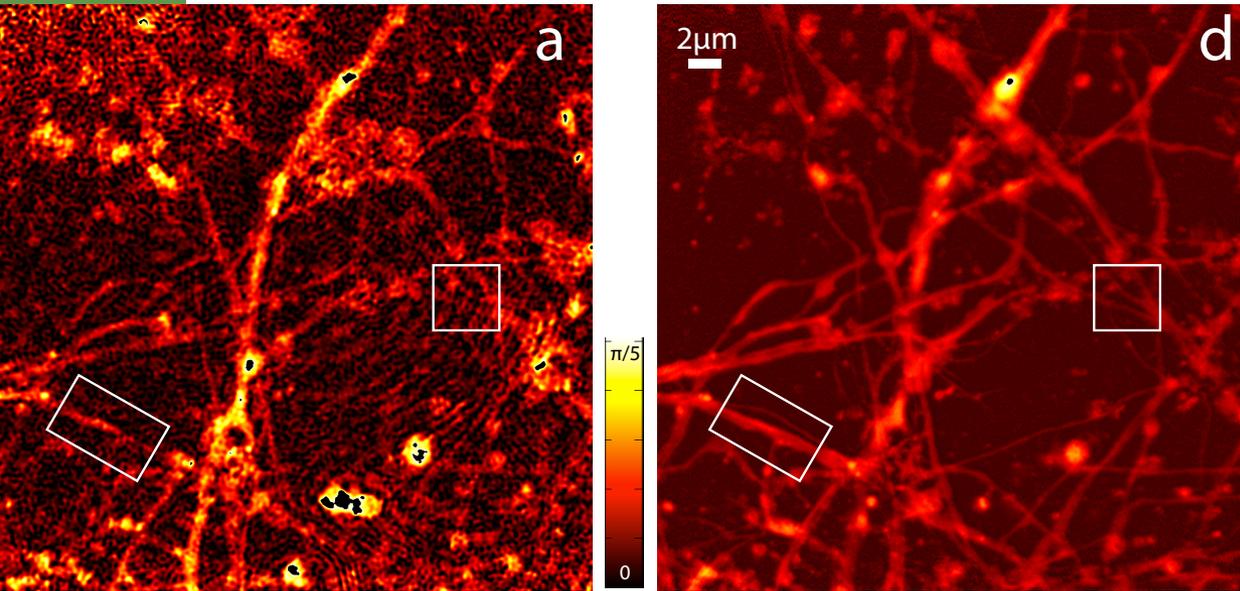


3D Cell-Explorer



3D Cell Tomography





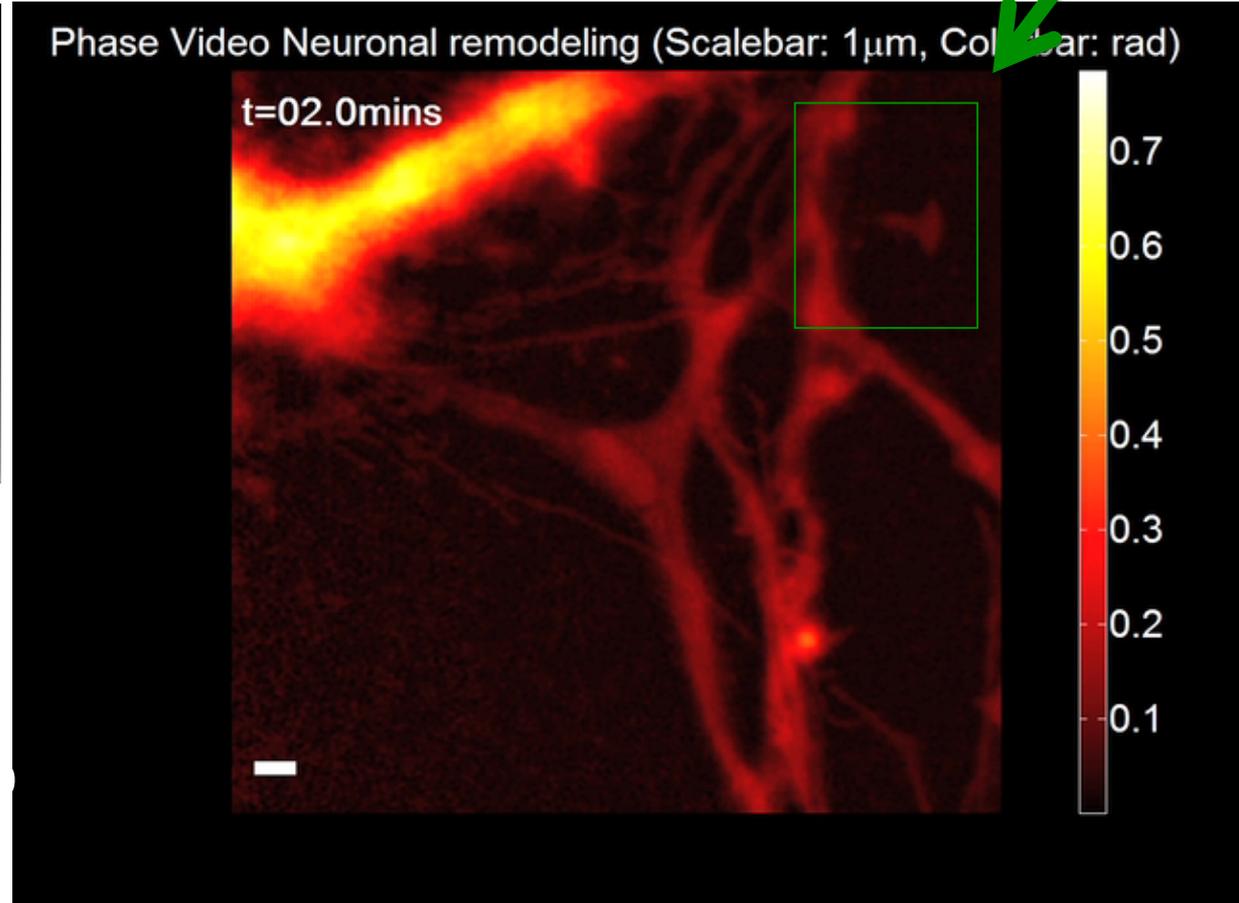
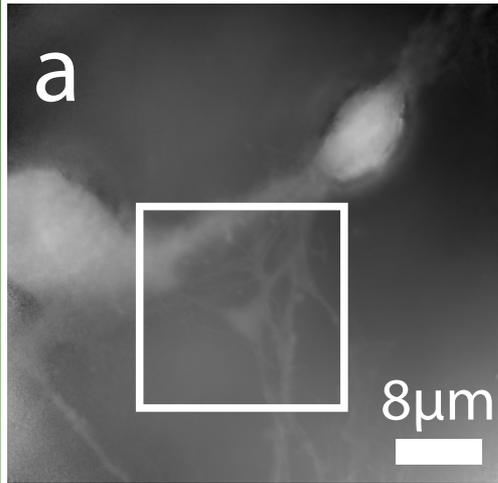
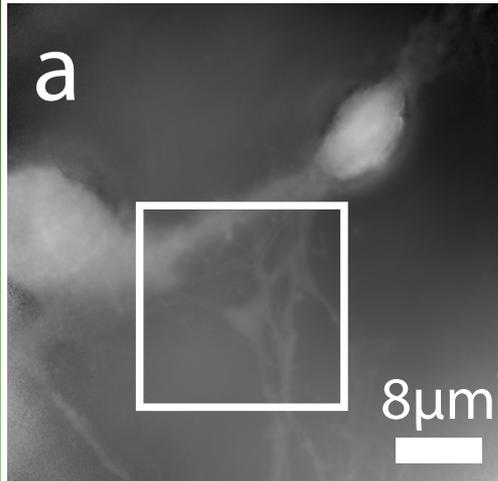


Fig. ▲ Three-dimensional remodeling of synaptic network in long time observation.





t=02.0mins

Video Neuronal Remodeling,
Axis [μ m], Colorbar Δn

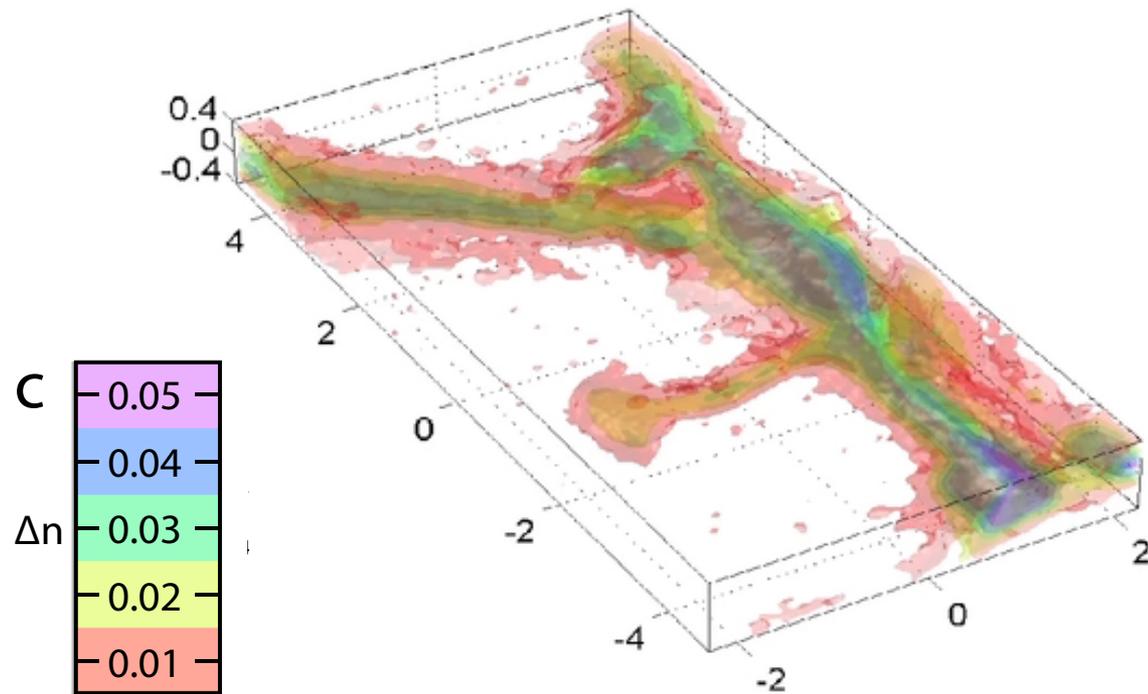
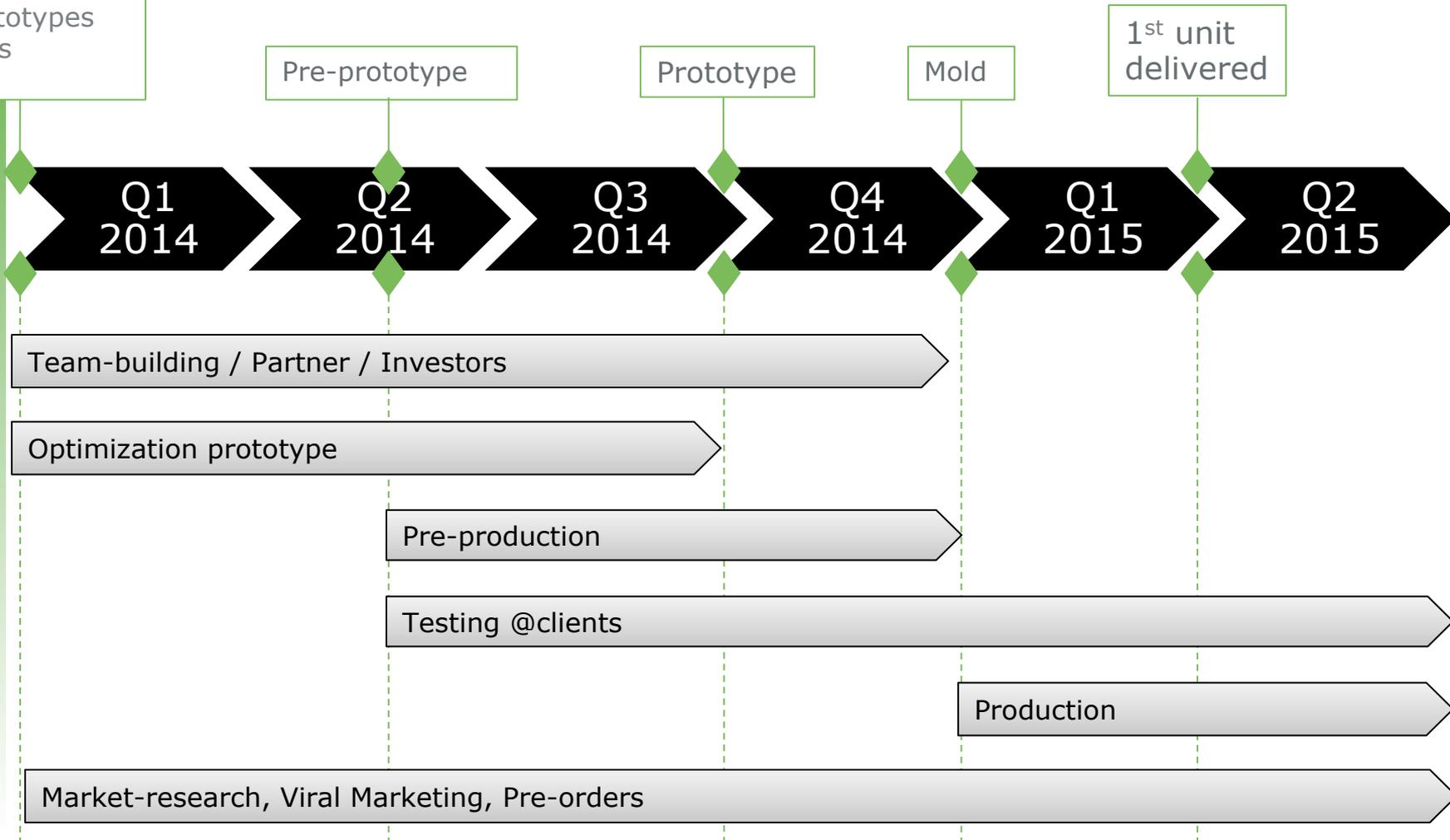


Fig. ▲ Three-dimensional remodeling of synaptic network in long time observation.





- ✓ IP
- ✓ Grants
- ✓ Nature
- ✓ Prototypes
- ✓ LOIs
- ✓ SA





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