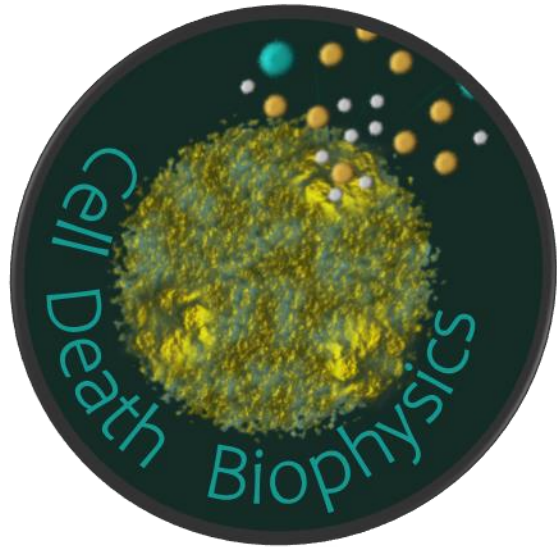


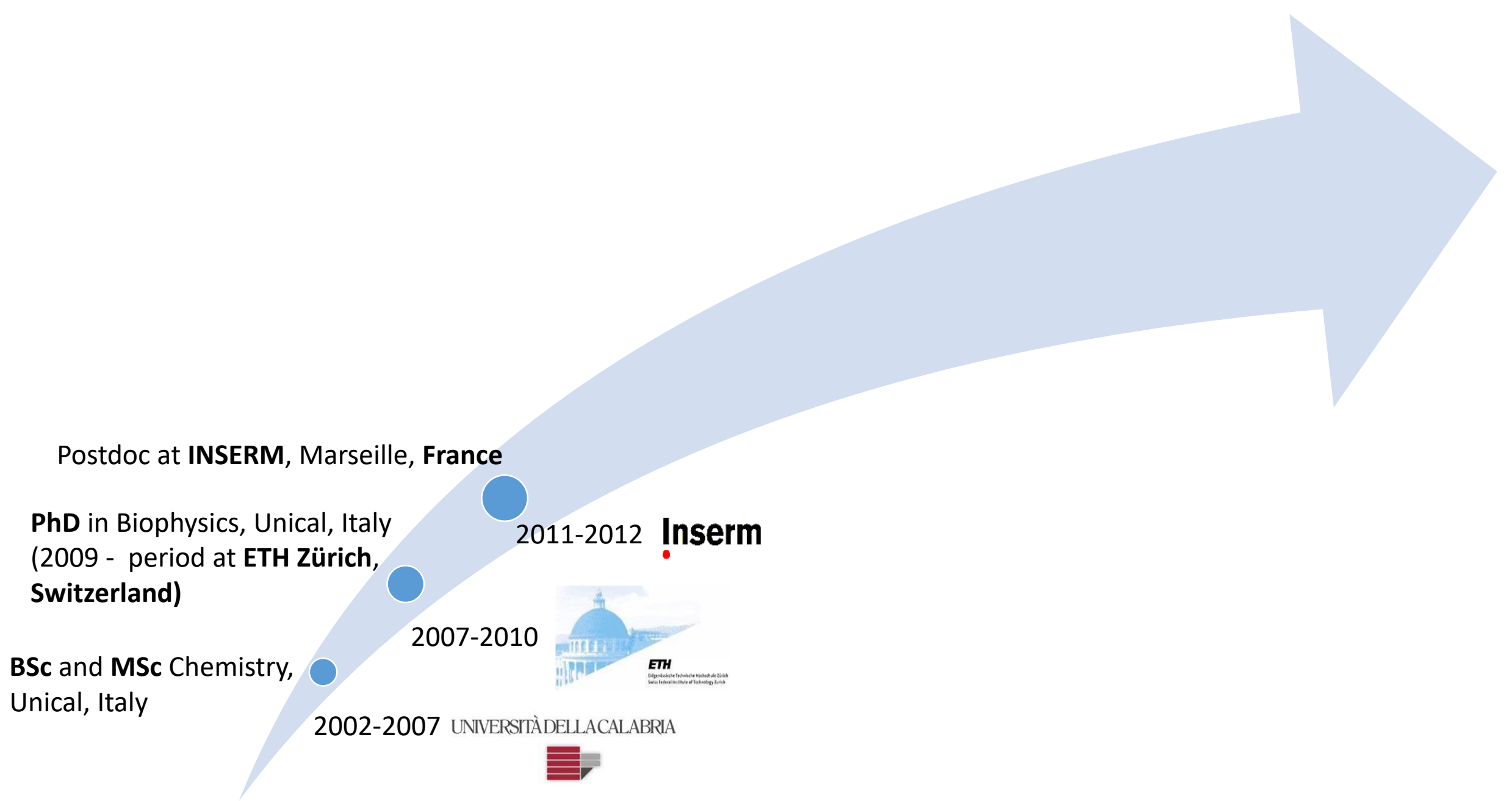
Molecular mechanisms of inflammatory cell death



Katia Cosentino

Cell Death Biophysics

Education and Research Experience



Education and Research Experience



MAX-PLANCK-GESELLSCHAFT

Max-Planck postdoc at Tübingen University, Germany

DAAD

Deutscher Akademischer Austauschdienst
German Academic Exchange Service

Postdoc at DKFZ, Heidelberg, Germany

2014-2018

Postdoc at INSERM, Marseille, France

2013

dkfz.

GERMAN
CANCER RESEARCH CENTER
IN THE HELMHOLTZ ASSOCIATION

**PhD in Biophysics, Unical, Italy
(2009 - period at ETH Zürich,
Switzerland)**

2011-2012

Inserm

2007-2010



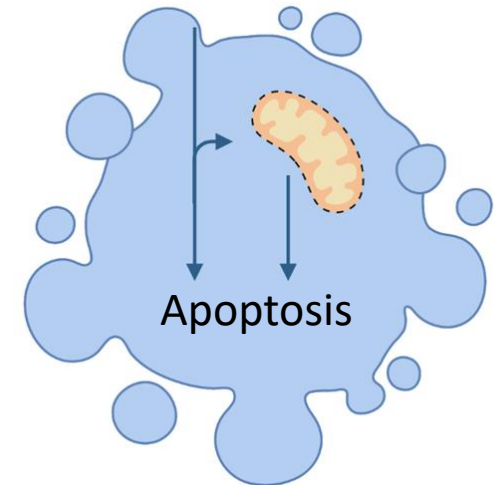
ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zürich

**BSc and MSc Chemistry,
Unical, Italy**

2002-2007 UNIVERSITÀ DELLA CALABRIA



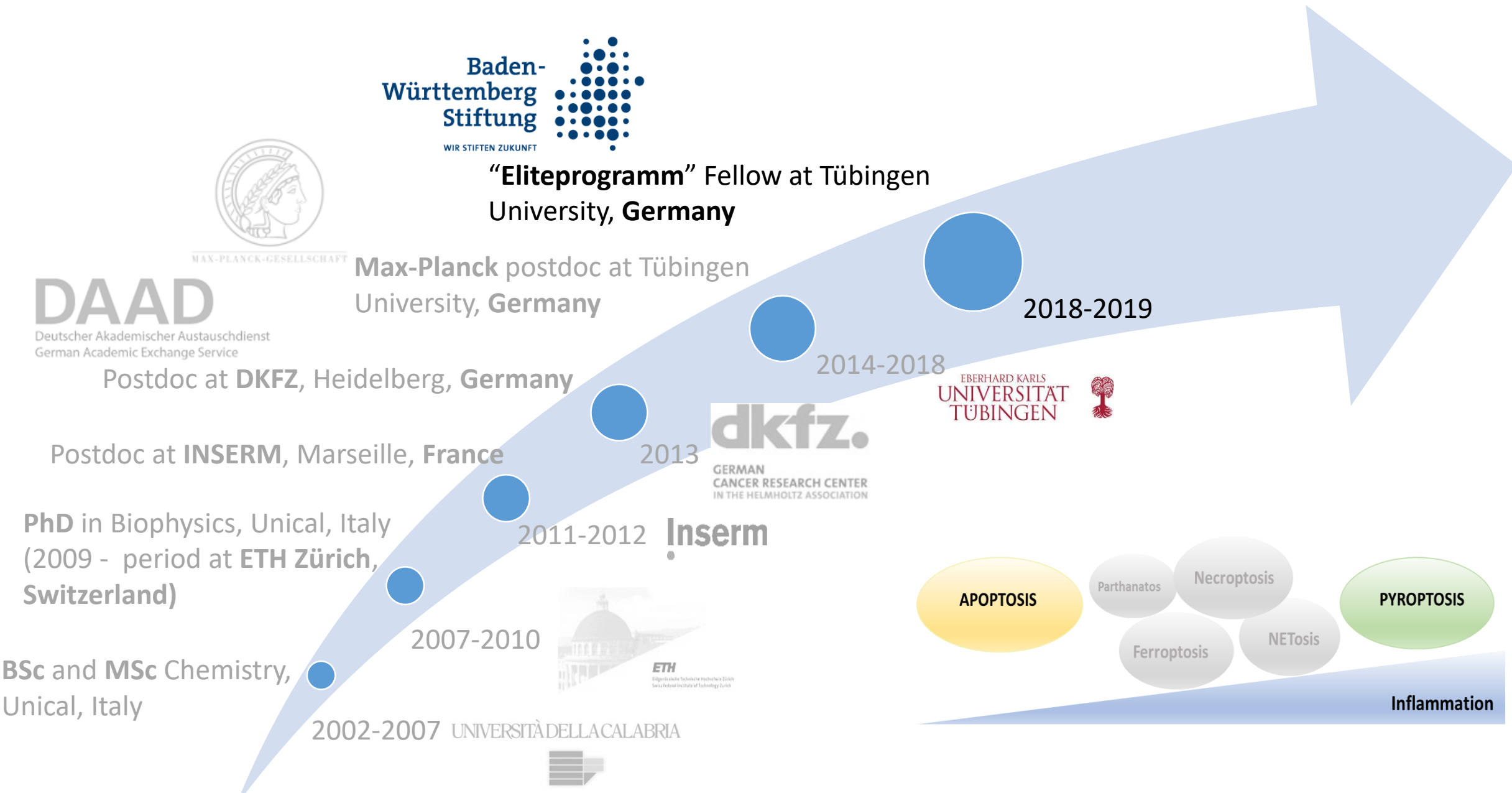
EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN



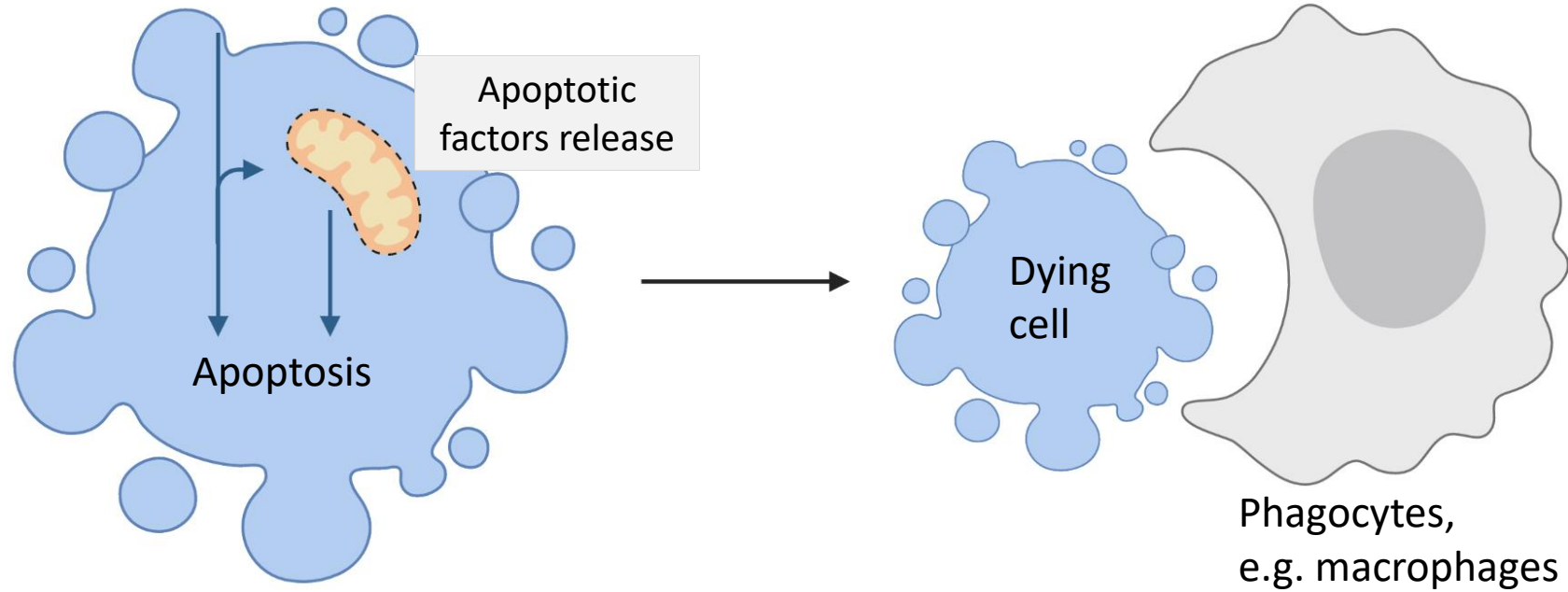
Salvador-Gallego R. et al. *EMBO J.* 2016

Subburaj Y.*, Cosentino K.*, et al. *Nat. Commun.* 2015

Education and Research Experience

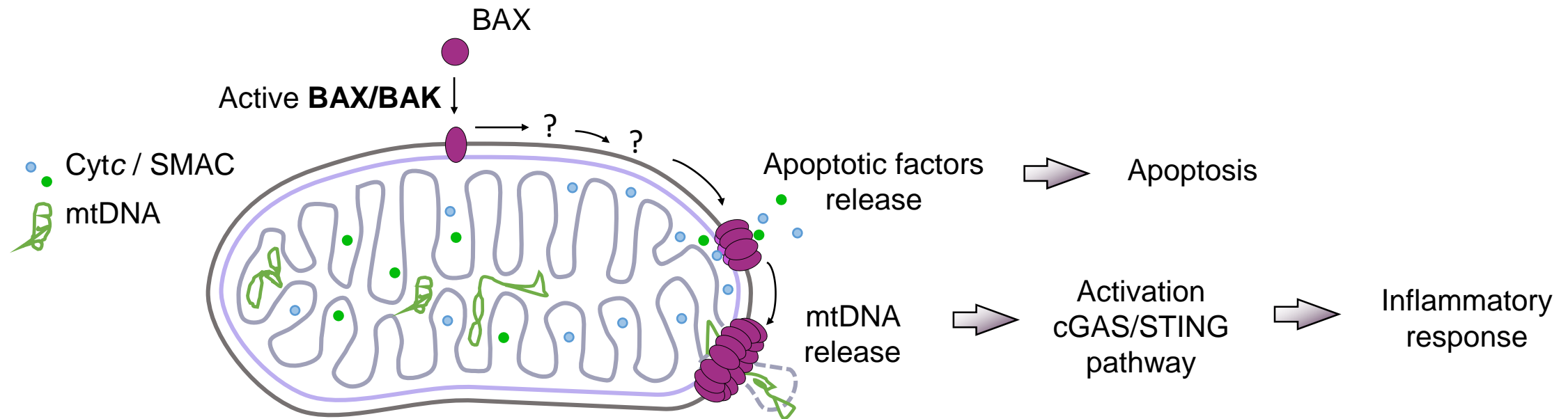


Apoptosis as an immunological silent form of cell death



Is apoptosis always immunologically silent?

Membrane permeabilization in apoptosis and inflammatory responses

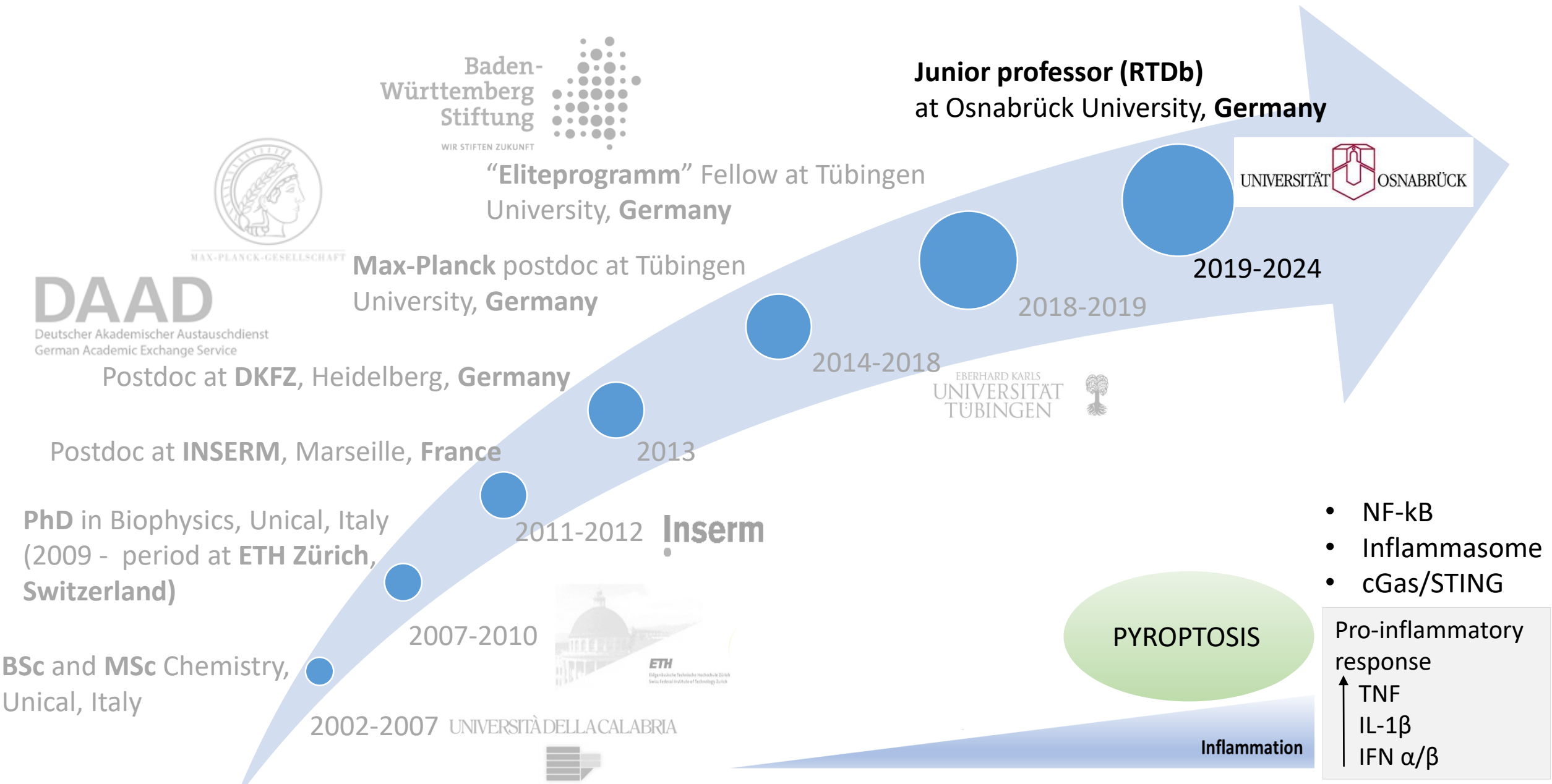


Adapted from Barisch C.*, Holthuis J.* & Cosentino K.* *Biol Chem* 2023
Cosentino K.*, Hertlein V.*, Jenner A.* et al. *Mol. Cell* 2022

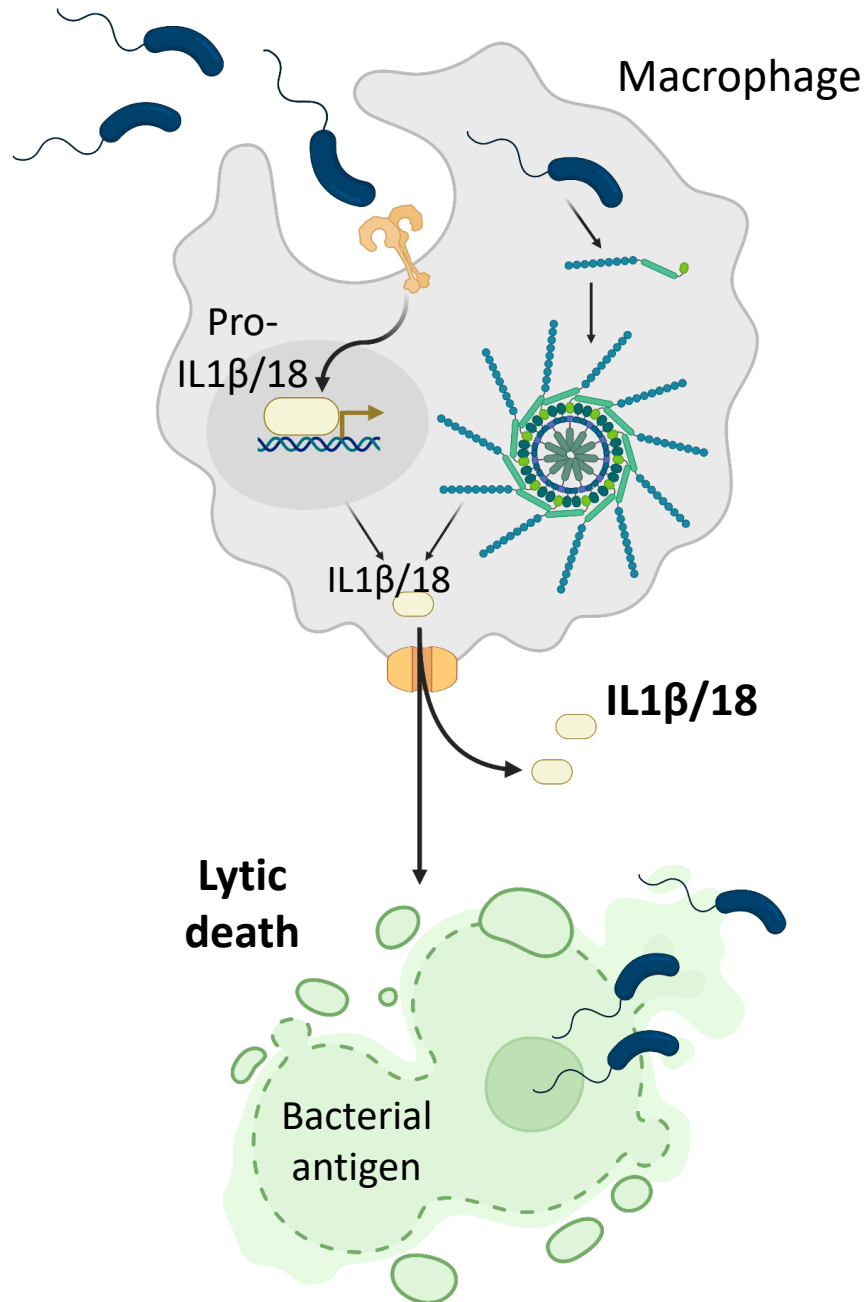
How does inflammatory apoptosis impact immune response?

- Implications for the inflammatory outcome of apoptosis in therapeutic settings (e.g. **chemotherapeutic drugs**)

Education and Research Experience



Pyroptosis has a critical role in innate immune response to infection

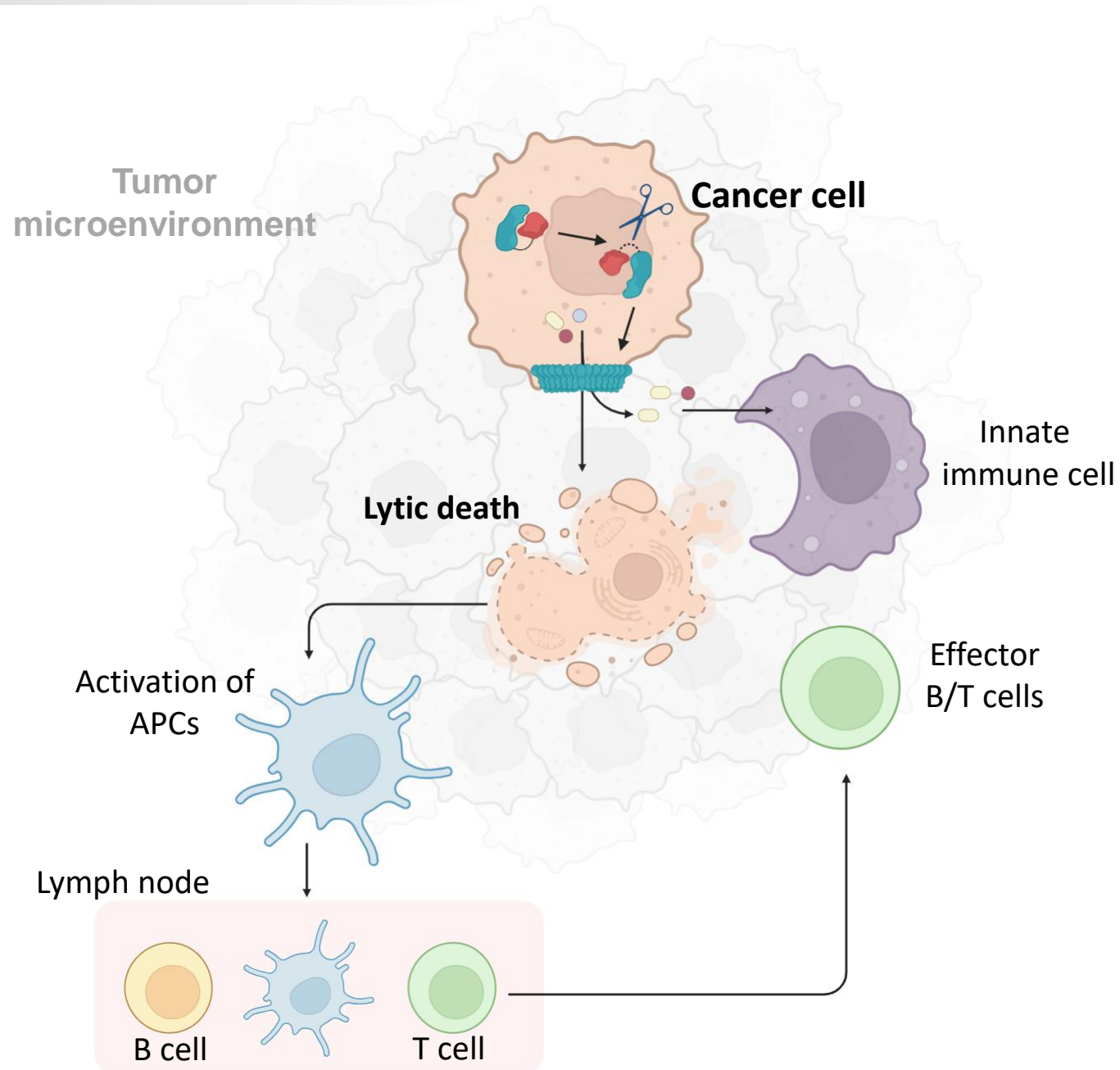


Consequences of Pyroptosis:

- ✓ Inflammatory cytokine release
- ✓ Cell lysis

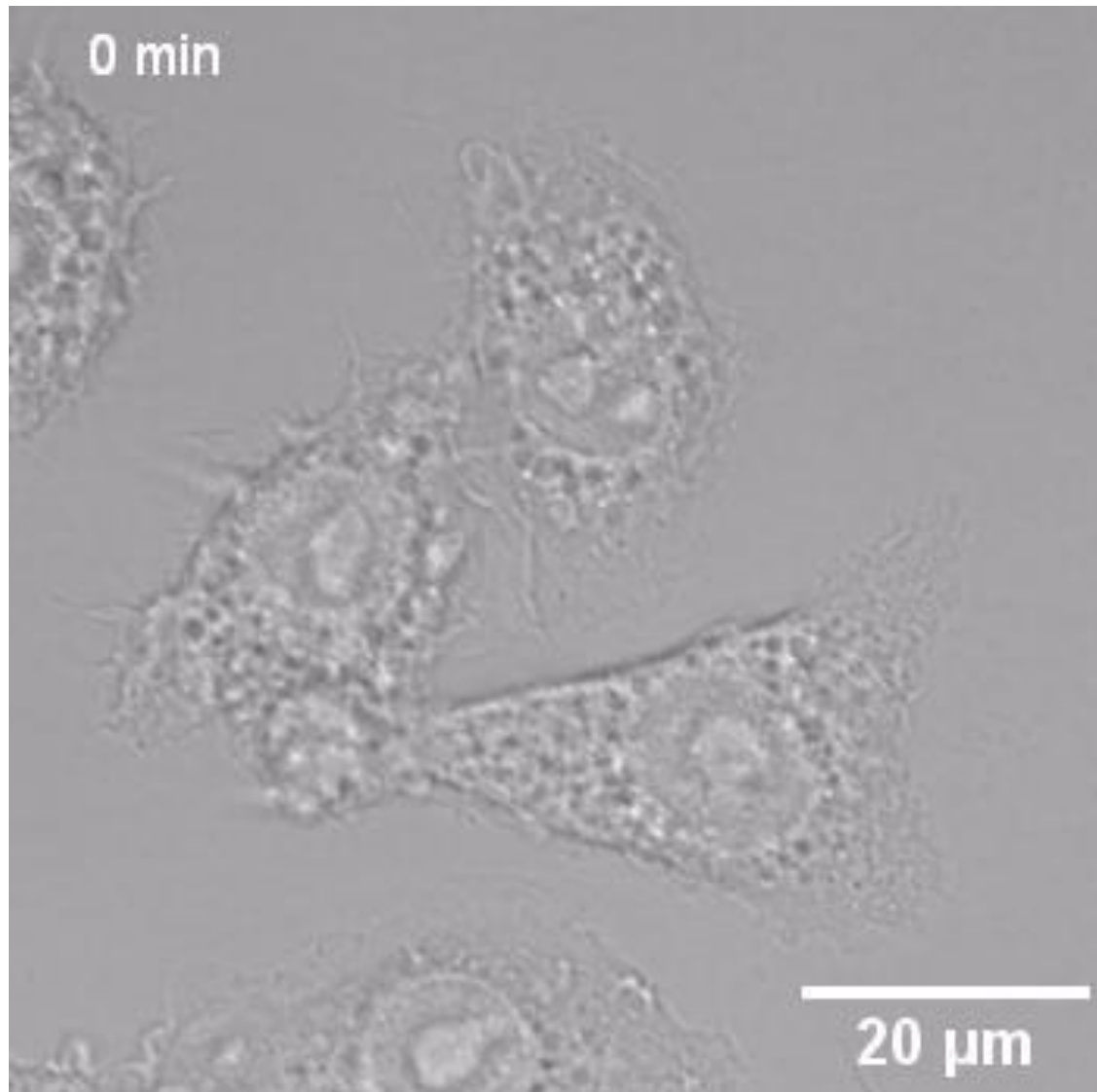
- Pathogen defense and rescue of cell damage
- **Pathological outcomes** (e.g. sepsis, inflammatory bowel disease (IBD), rheumatoid arthritis)

Pyroptosis triggers anti-cancer immunity



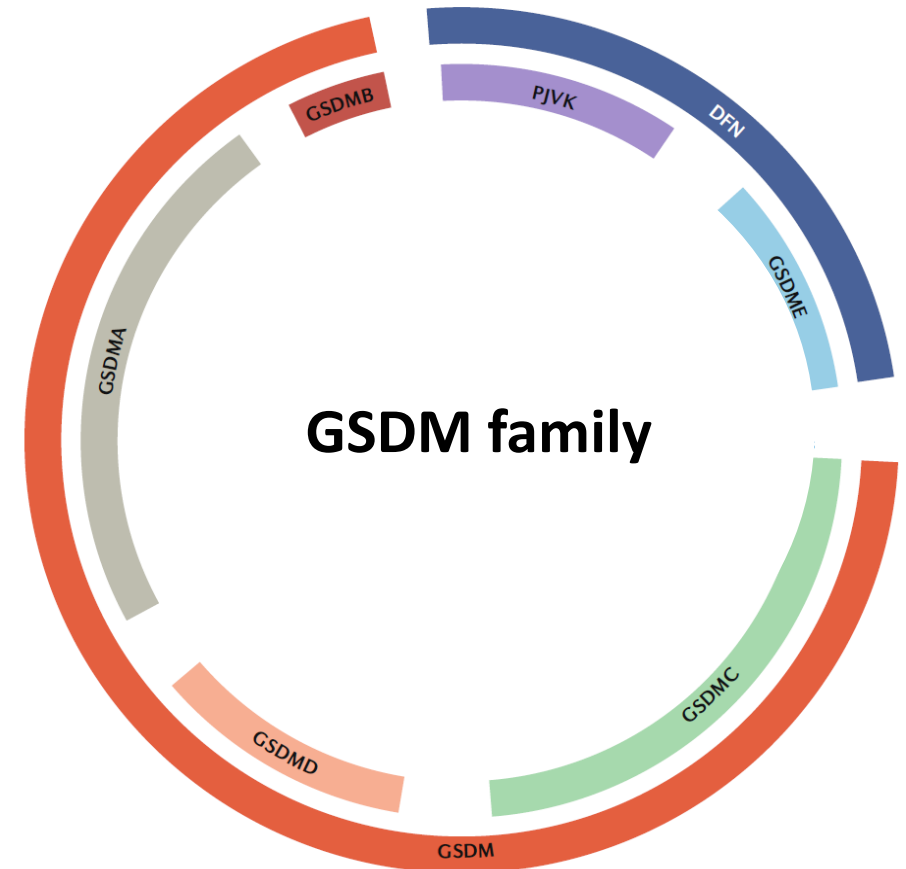
- ✓ Killing cancer cell
- ✓ Anticancer immunity

Membrane permeabilization at the core of pyroptosis



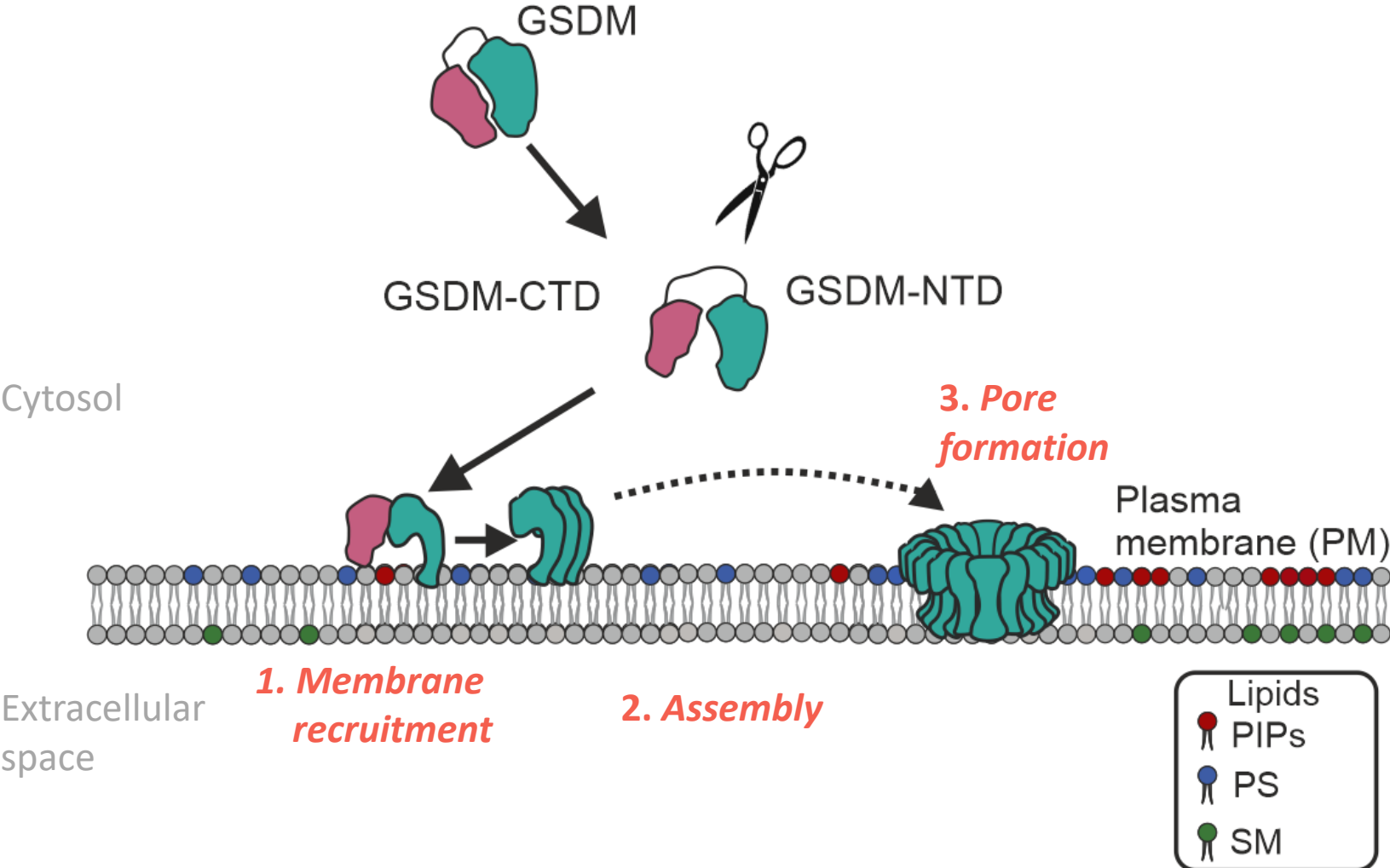
iBMDM

Pyroptosis induction:
LPS & Nigericin



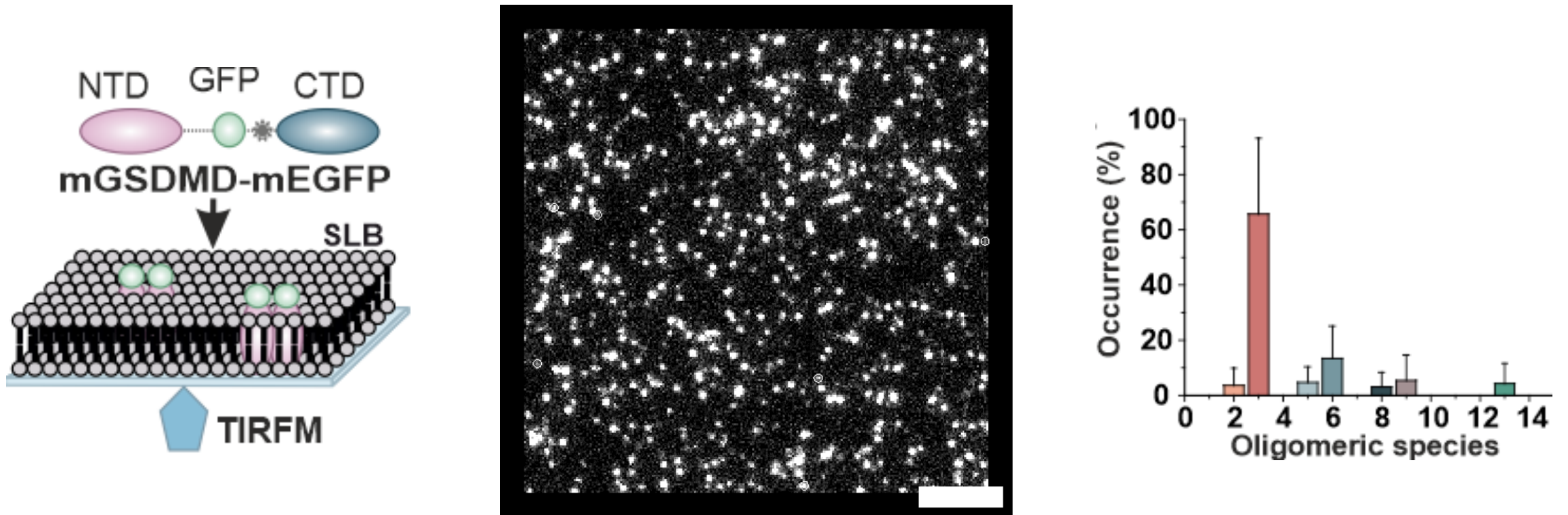
ToPro3-Iodide (Plasma membrane impermeable dye)

Gasdermins (GSDMs) drive membrane permeabilization in pyroptosis



Strategies: Single-molecule imaging (SMI)

Study of the oligomerization process



Monomer



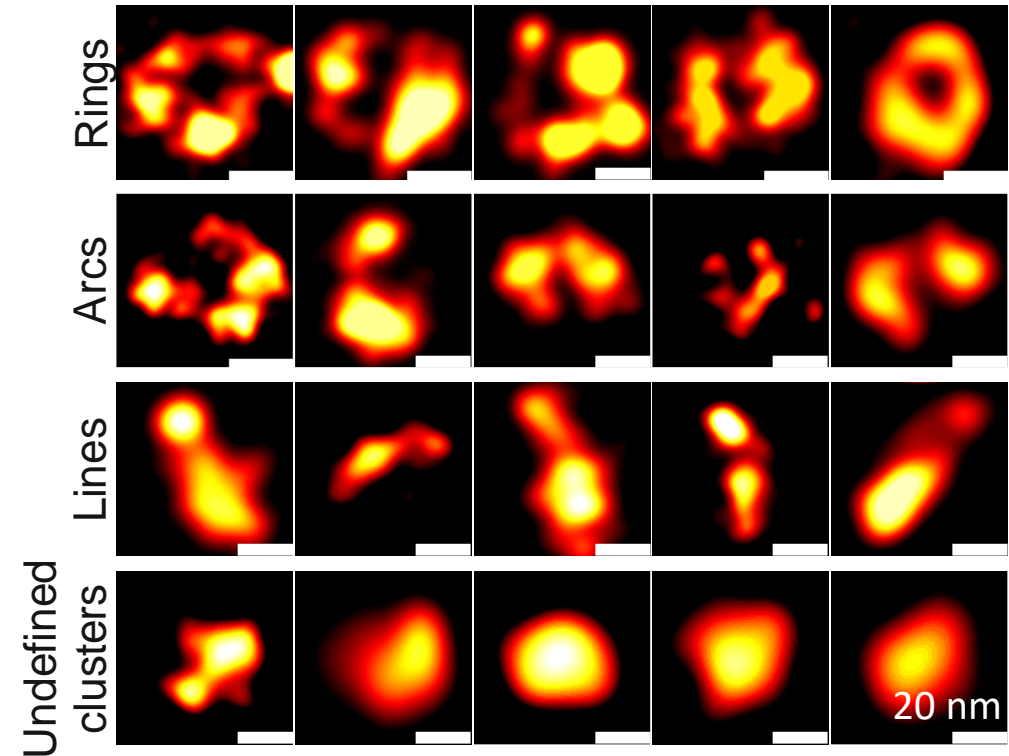
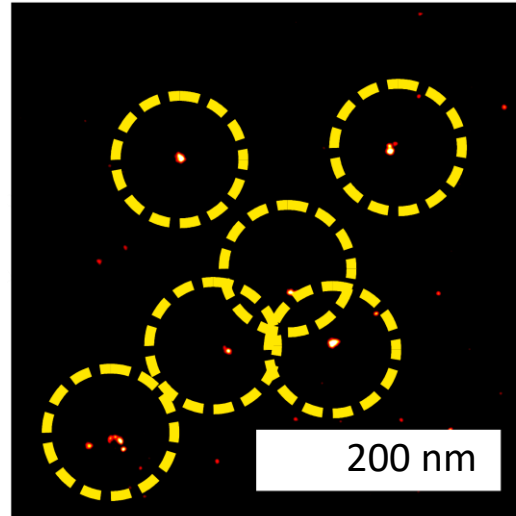
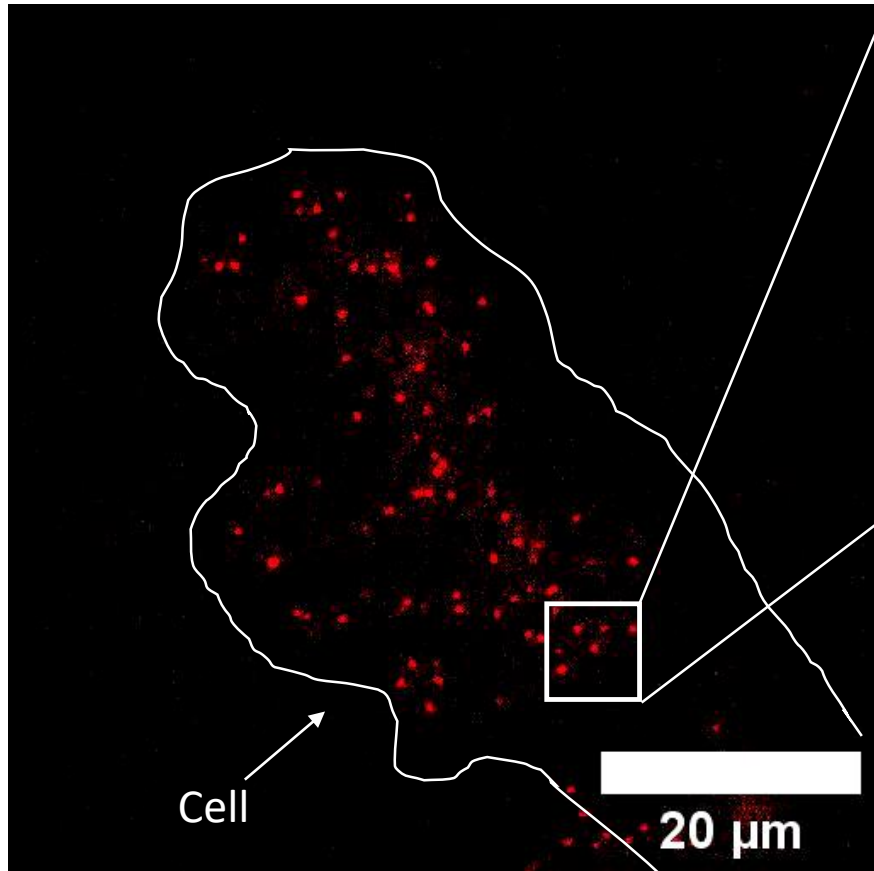
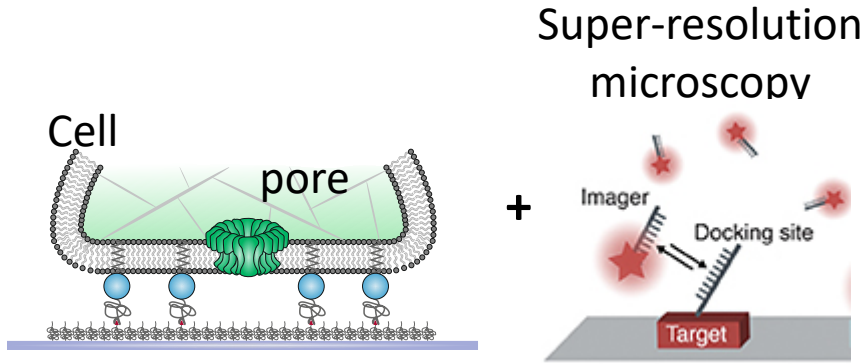
Dimer/Trimer



Higher oligomer



Strategies: Single cell/single molecule & Super resolution microscopy

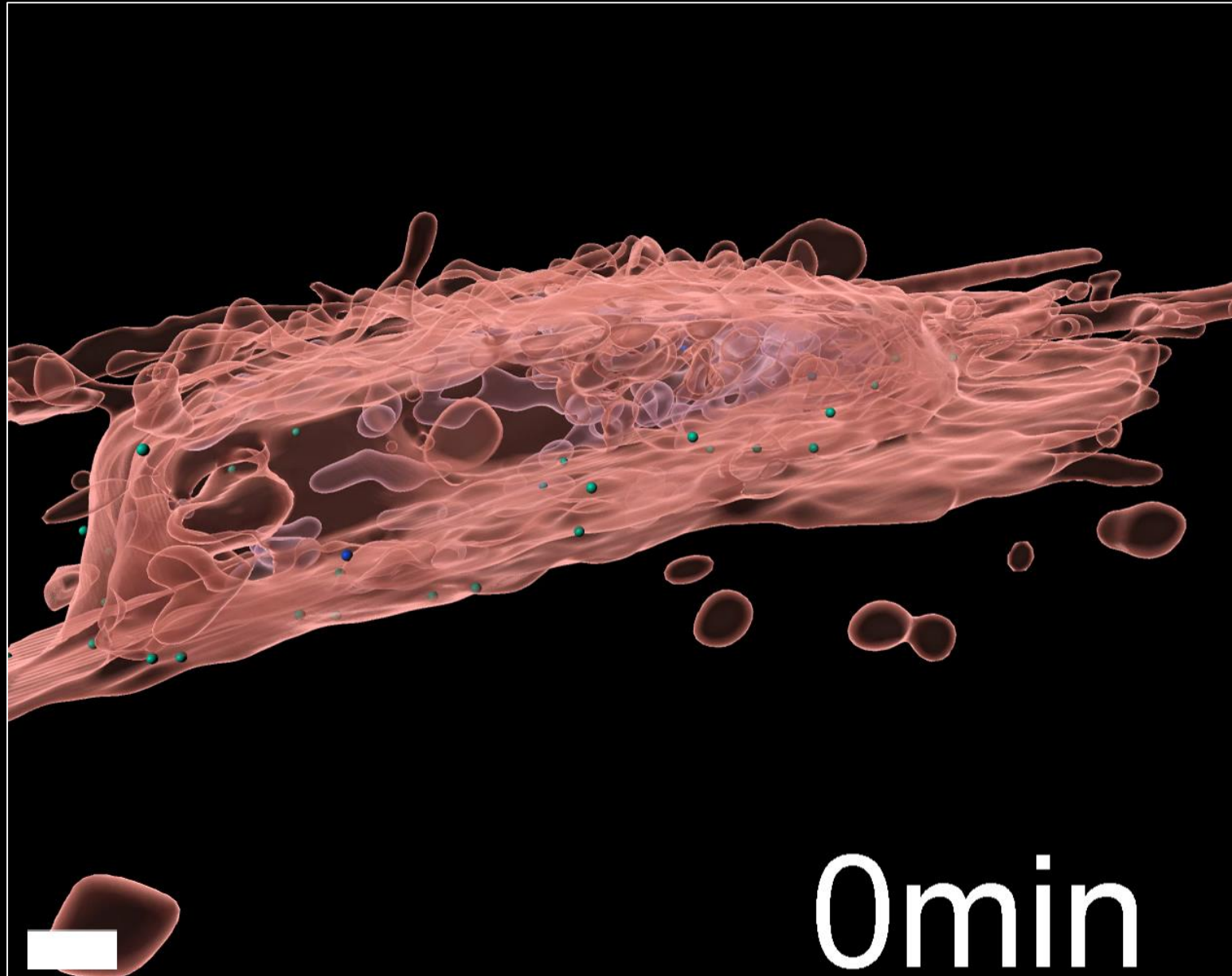


Kinetics of GSDMD membrane targeting by 3D LLSM

HEK

+ mGSDMD-GFP

+ PM



Scale bar: 2 μ m

Kappelhoff S ... & Cosentino K *in preparation*

- Organization of “**EWCD: European Workshop on Cell death**’ (main organizer) - 11-16th May 2025, Fiuggi
- Since 2025: Member of the editorial board of ***The FEBS Journal***
- ***Happy to collaborate on Cell Death and Advanced Optical Fluorescence Microscopy!***

