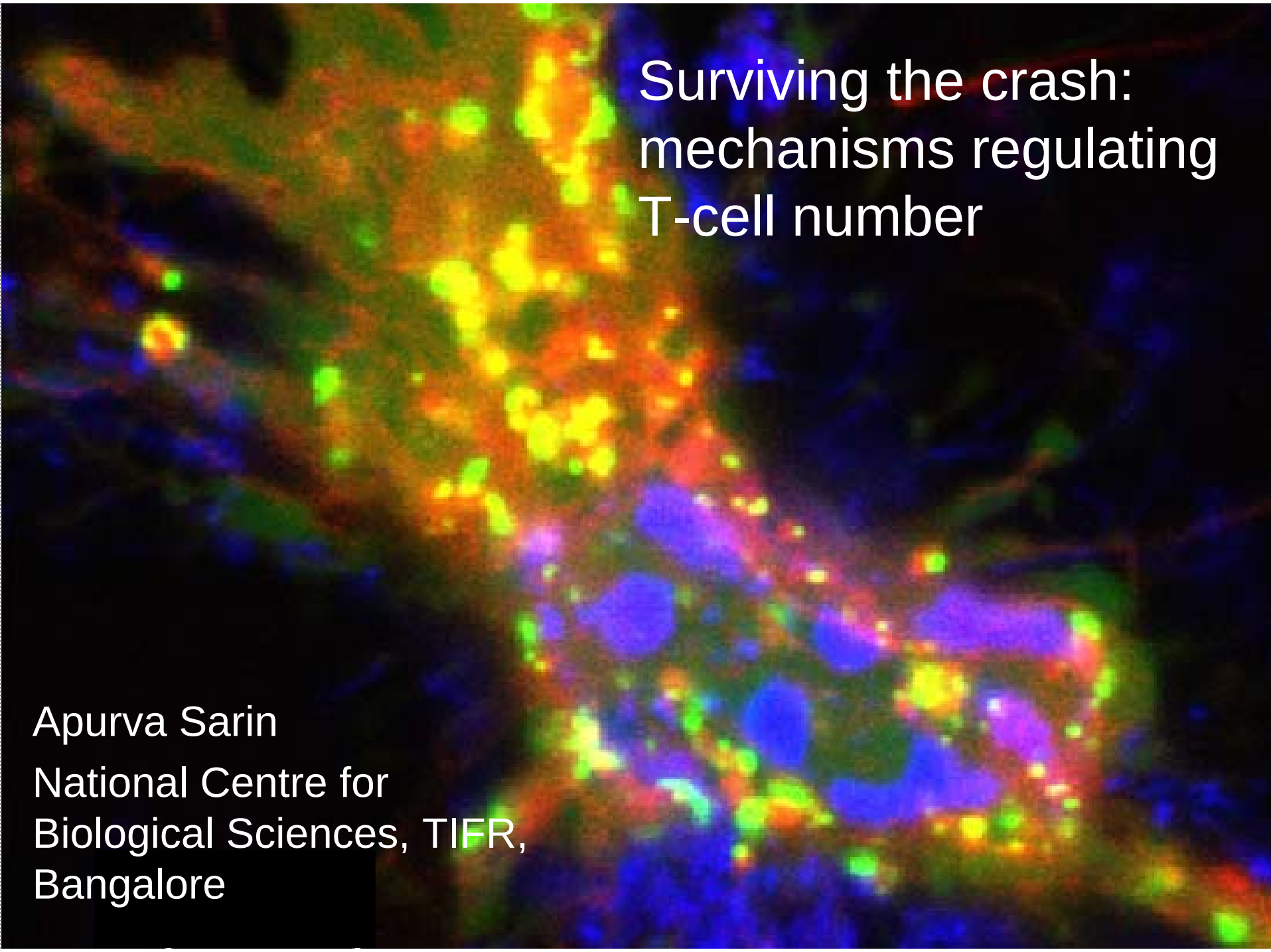
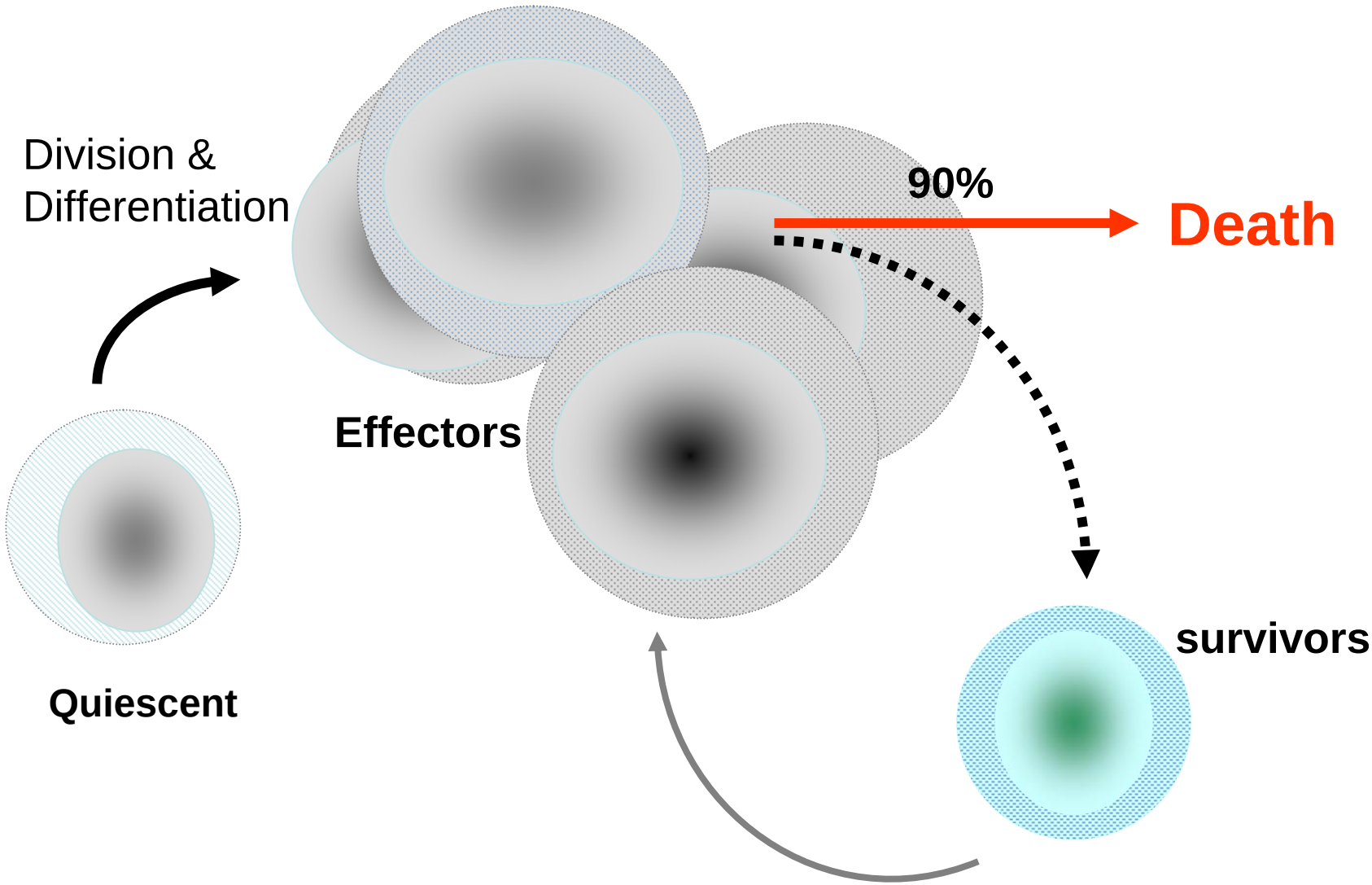


Surviving the crash: mechanisms regulating T-cell number

Apurva Sarin

National Centre for Biological Sciences, TIFR, Bangalore

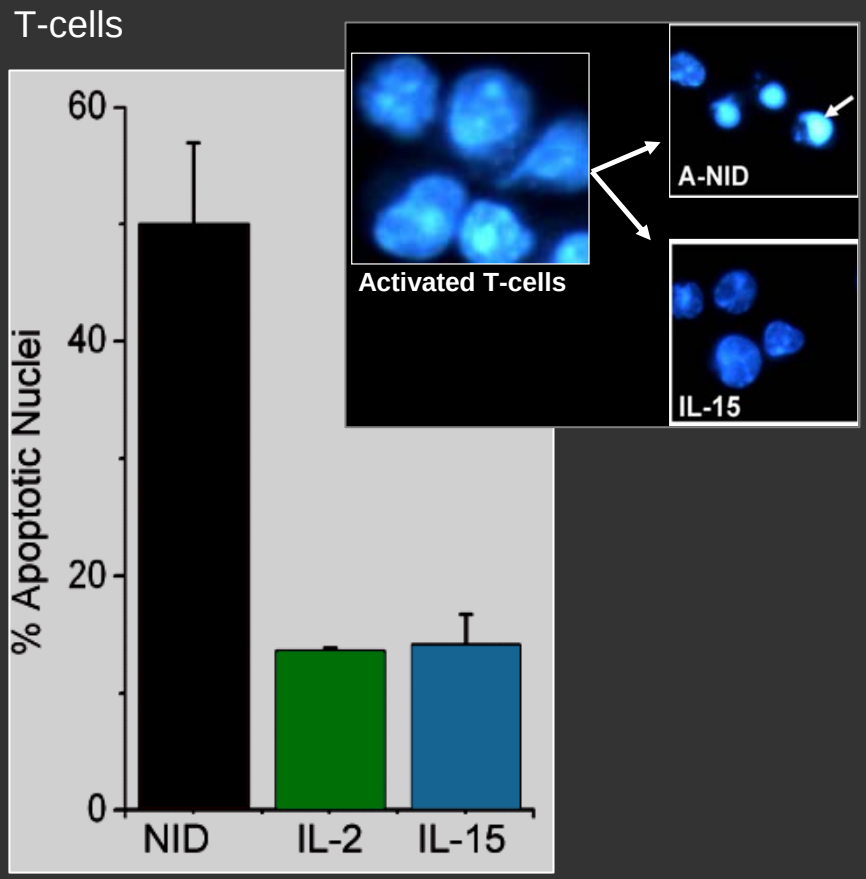
Controlling number in the mature T-cell compartment

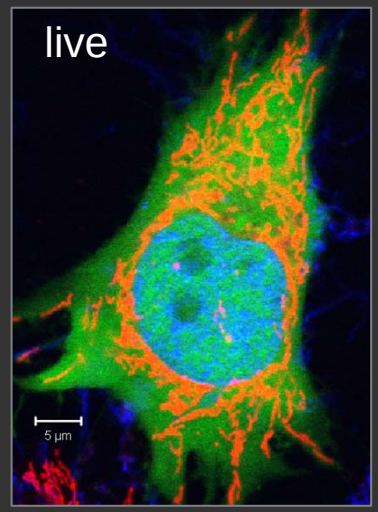


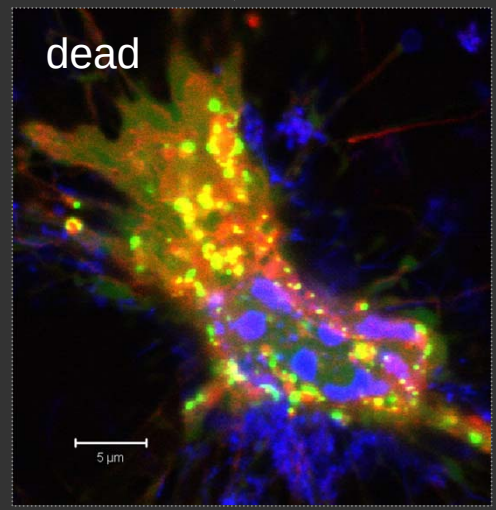
- Heterogeneity associated with the immune response
  - Interactions between molecules regulating cell death and survival

- Spatial and temporal elements
  - Cellular sites for the integration of cell death and survival cues
  - Spatial regulation of Notch activity for cell survival

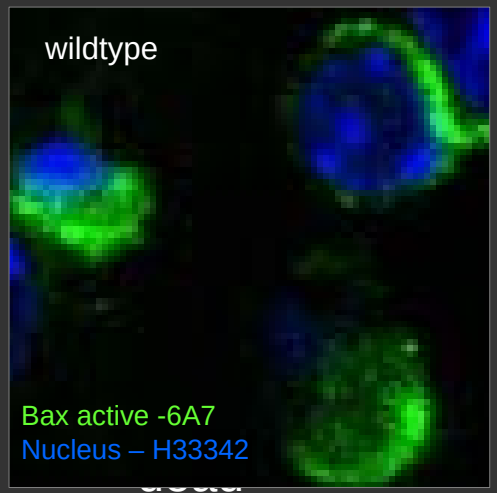
Cell survival is determined by the availability and uptake of nutrients





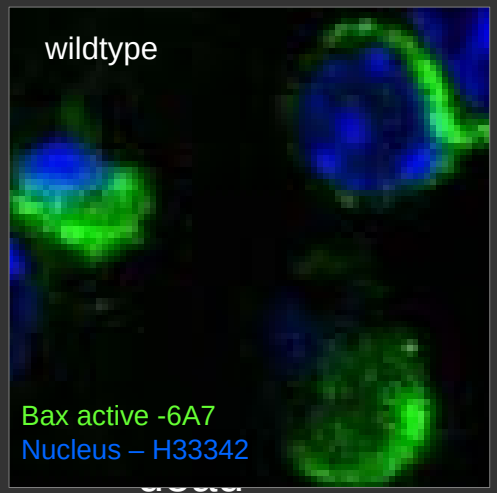


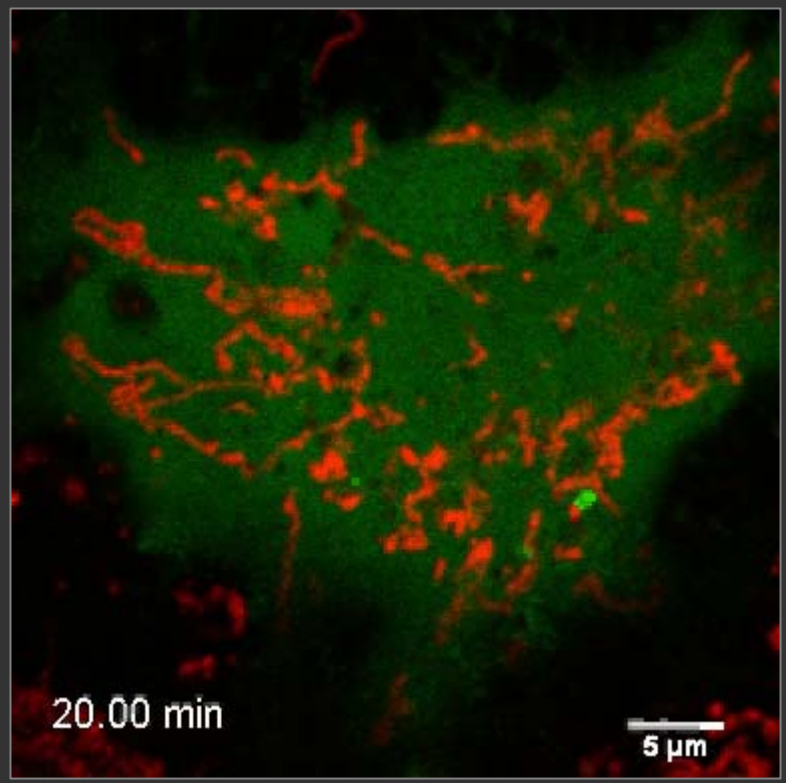
Apoptotic T-cells



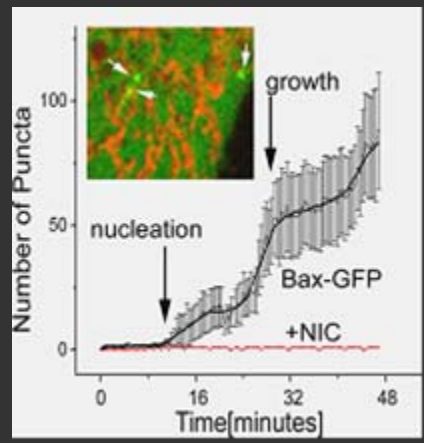
The formation of higher order apoptotic structures at the mitochondrion precedes cellular collapse

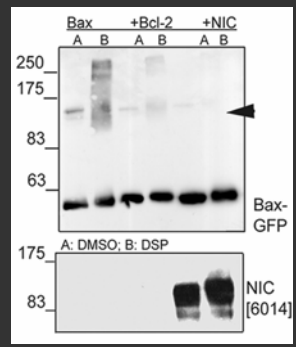
Apoptotic T-cells





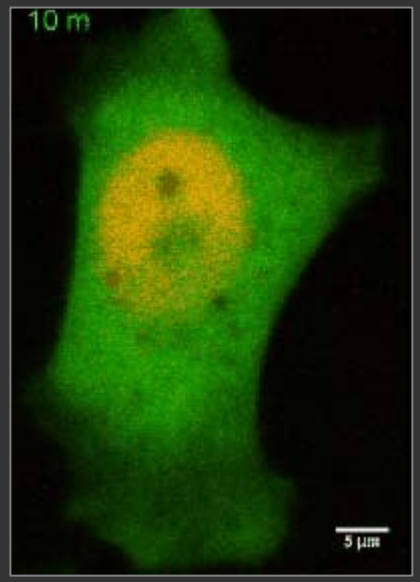
Tracking bax multimerization at mitochondria





Molecules promoting survival intersect with these events

Notch activity protects
from cell death



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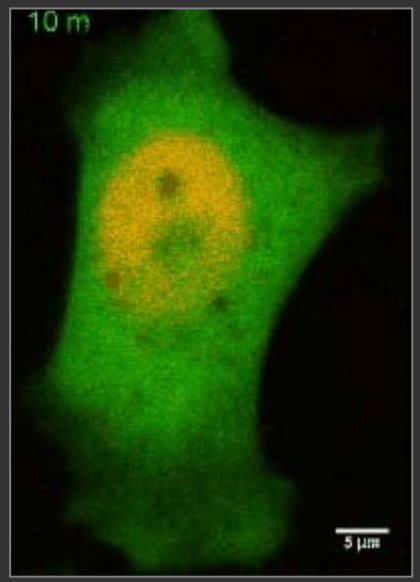
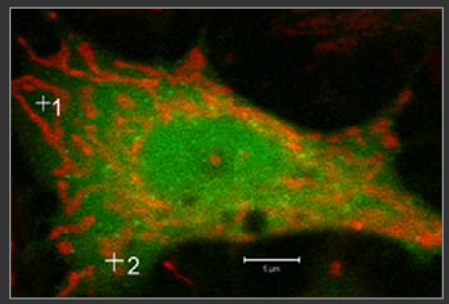
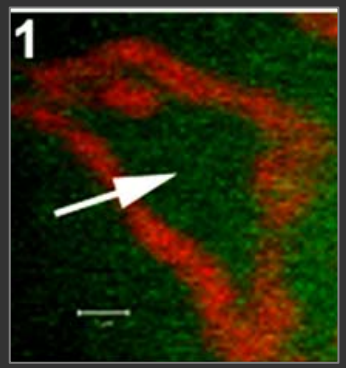
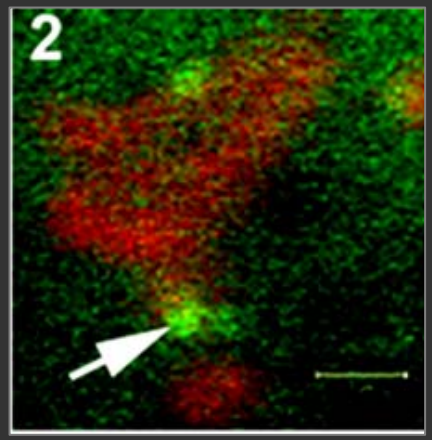
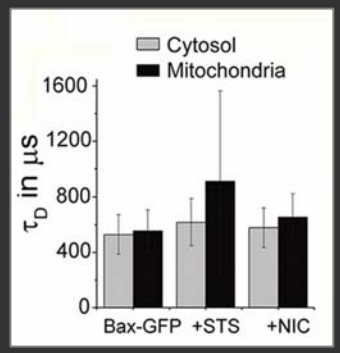






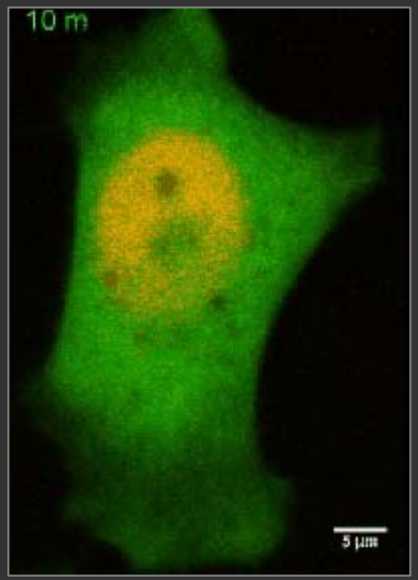


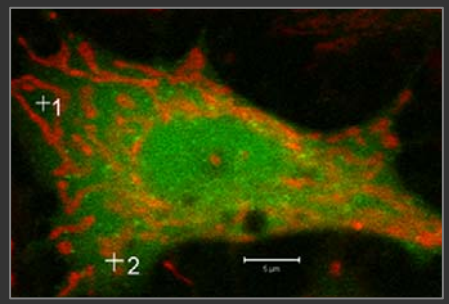


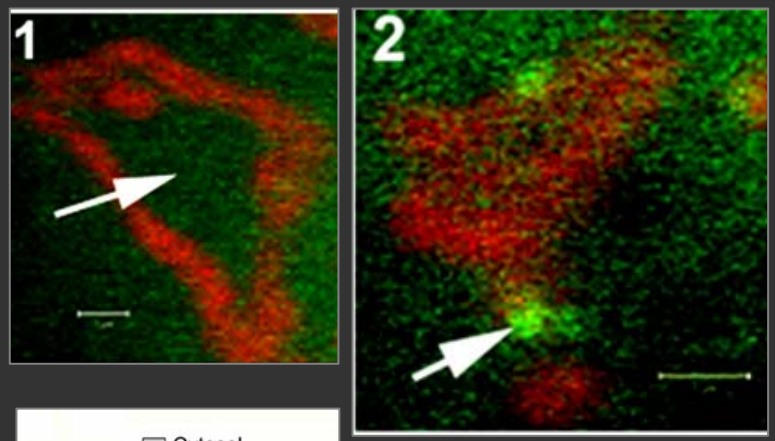
Analysis of Bax dynamics by Fluorescence Correlation Spectroscopy [FCS]

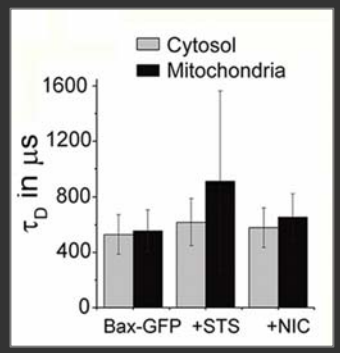
Molecules promoting survival intersect with these events

Notch activity protects from cell death

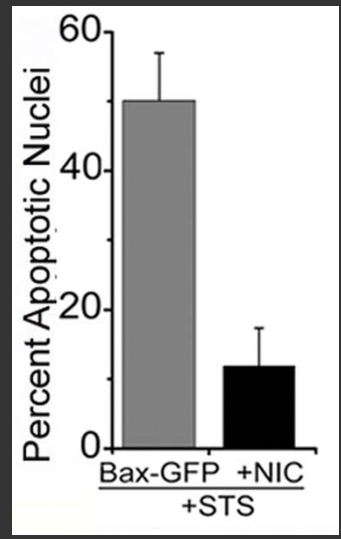


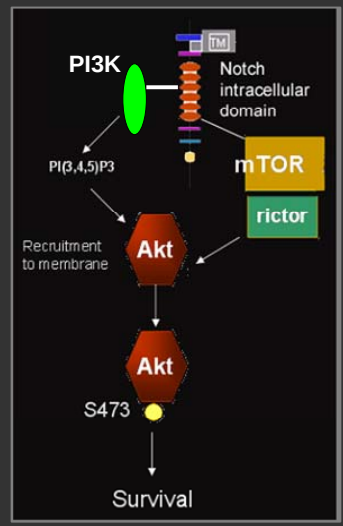






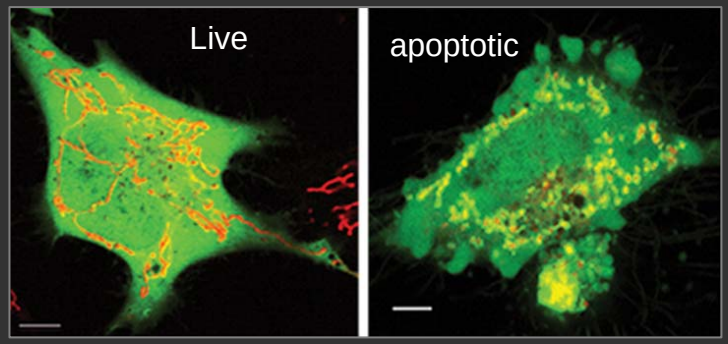
Analysis of Bax dynamics by Fluorescence Correlation Spectroscopy [FCS]

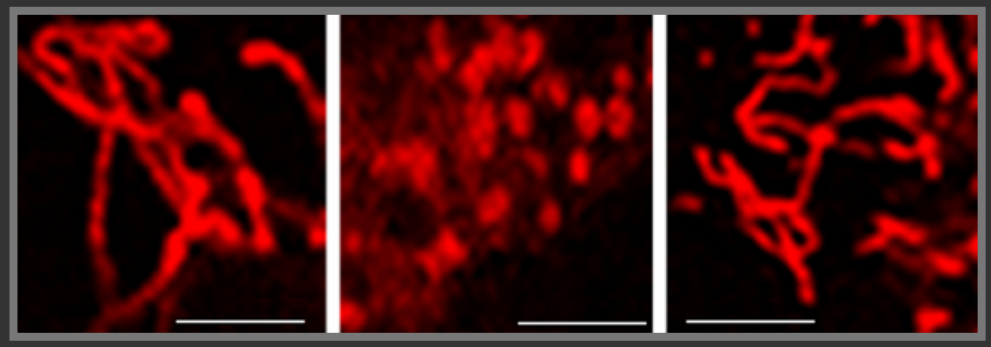




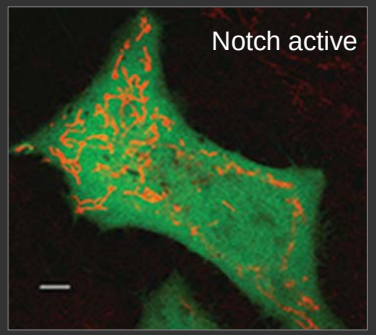
Perumalsamy et al Cell Death & Differentiation. 2009

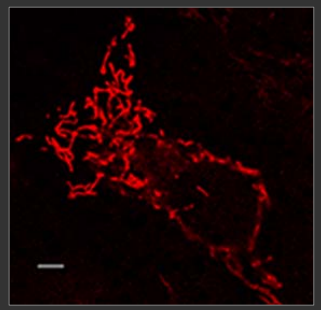
The mitochondrion is a key site for the integration of cell death and survival cues





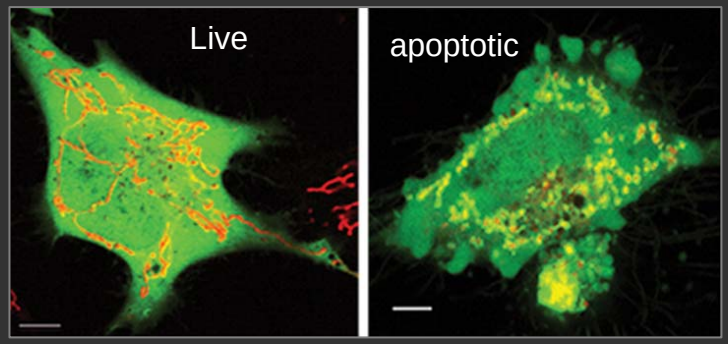
Live Apoptotic Protected

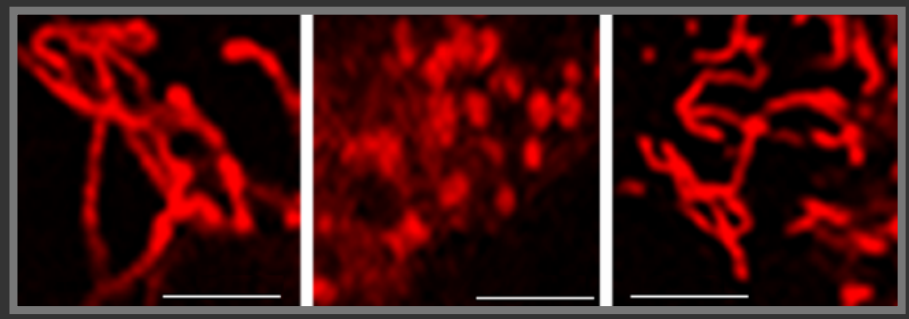




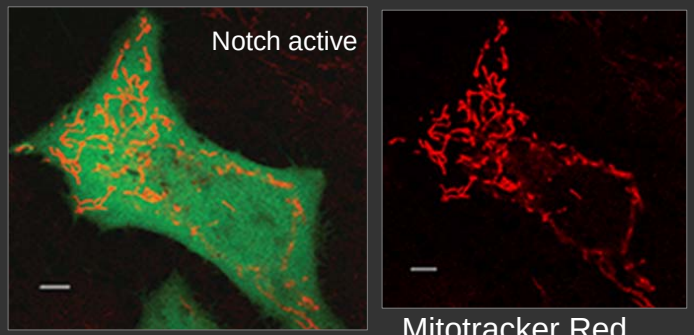
Mitotracker Red

The mitochondrion is a key site for the integration of cell death and survival cues

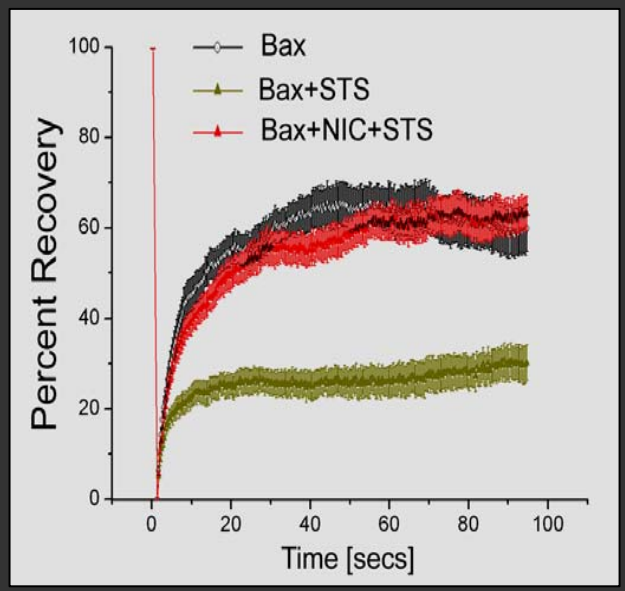




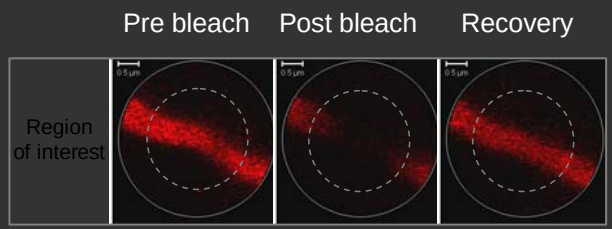
Untreated Apoptotic Protected



Mitotracker Red

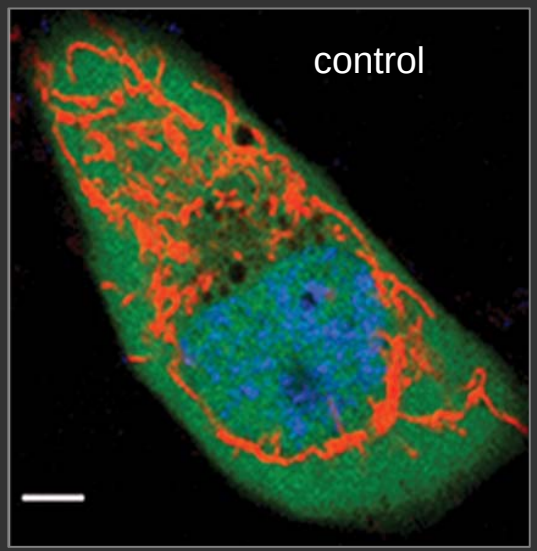


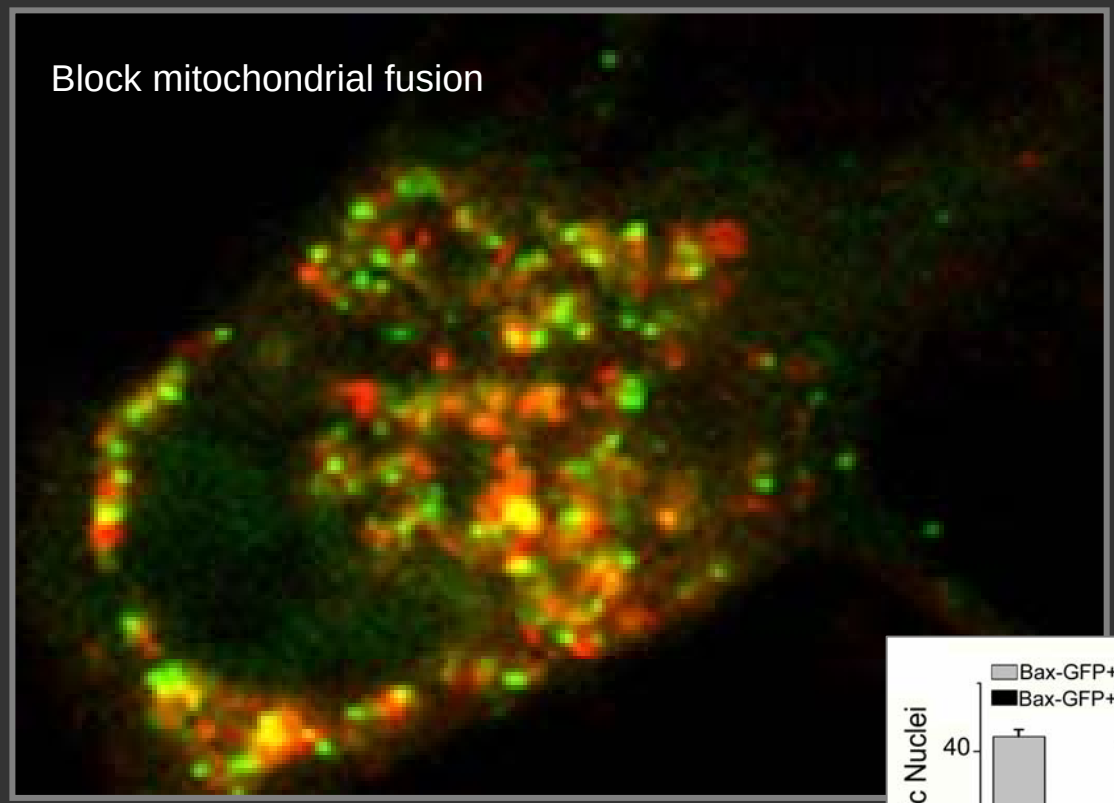
Fluorescence recovery after photobleaching in cells loaded with MitoTracker Red

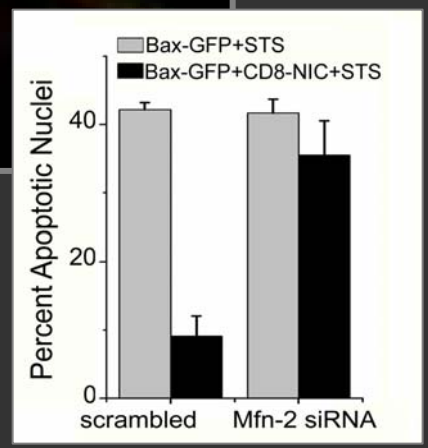


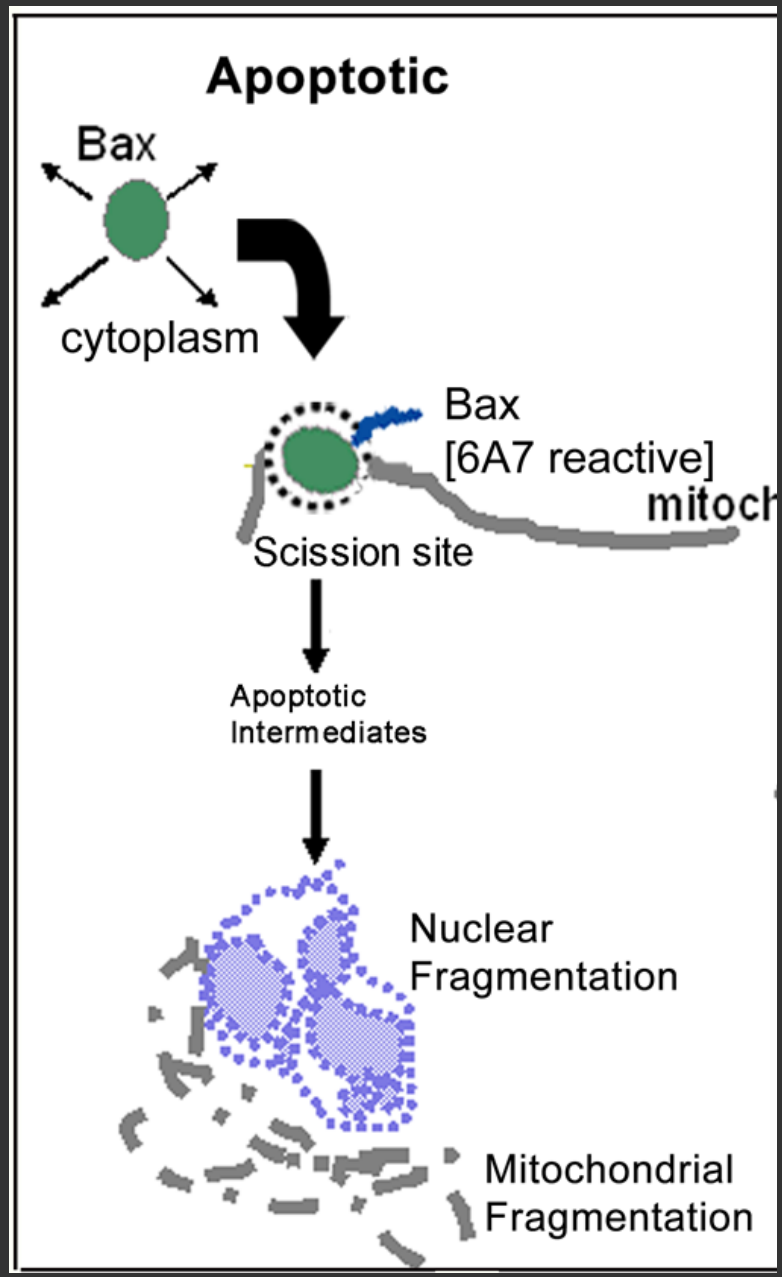
Laser for analysis- 543nm :1%; Bleach Laser -543nm : 100%

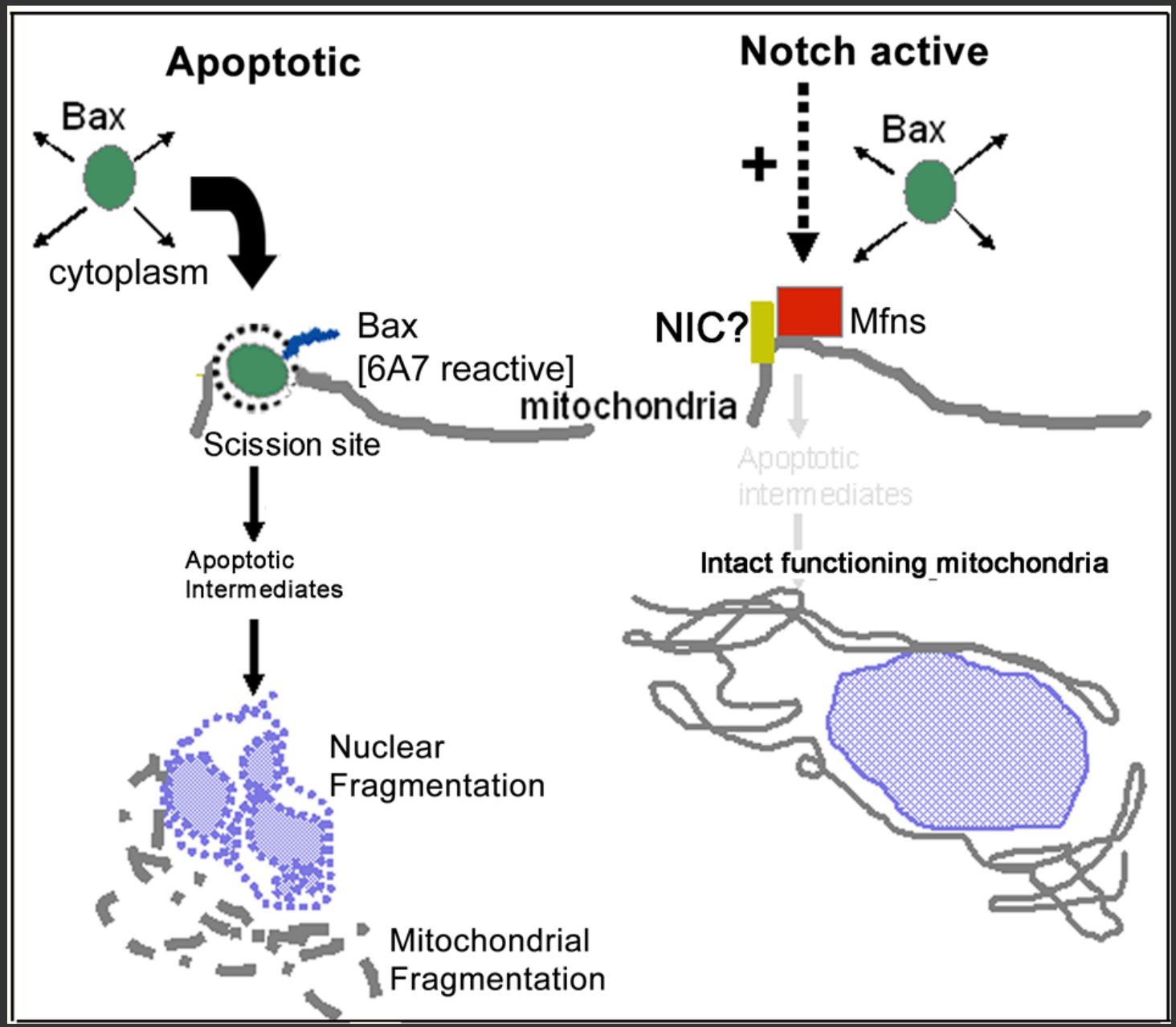
Notch activity requires the mitochondrial remodeling machinery








Apoptotic
Bax
cytoplasm
Bax
[6A7 reactive]
mitoch
Scission site
Apoptotic
Intermediates
Nuclear
Fragmentation
Mitochondrial
Fragmentation



Sade et al J Biol. Chem. 2004; Perumalsamy L, Nagala M & Sarin A, Proc. Natl. Acad. Sci. USA.2010

- P Divya
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- Vinod Singh
- Rasika Venkataram
- Manjula Nagala

Lakshmi

Manjula

Divya

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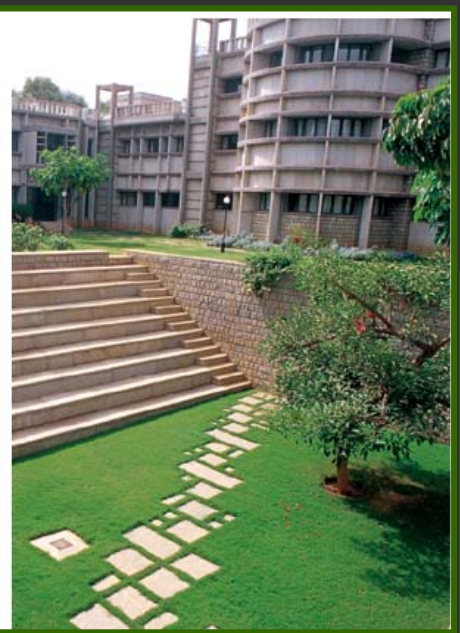
Freddy Radtke, SIEC, Switzerland
Phil Hawkins, Babraham, Cambridge

NCBS, Bangalore



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