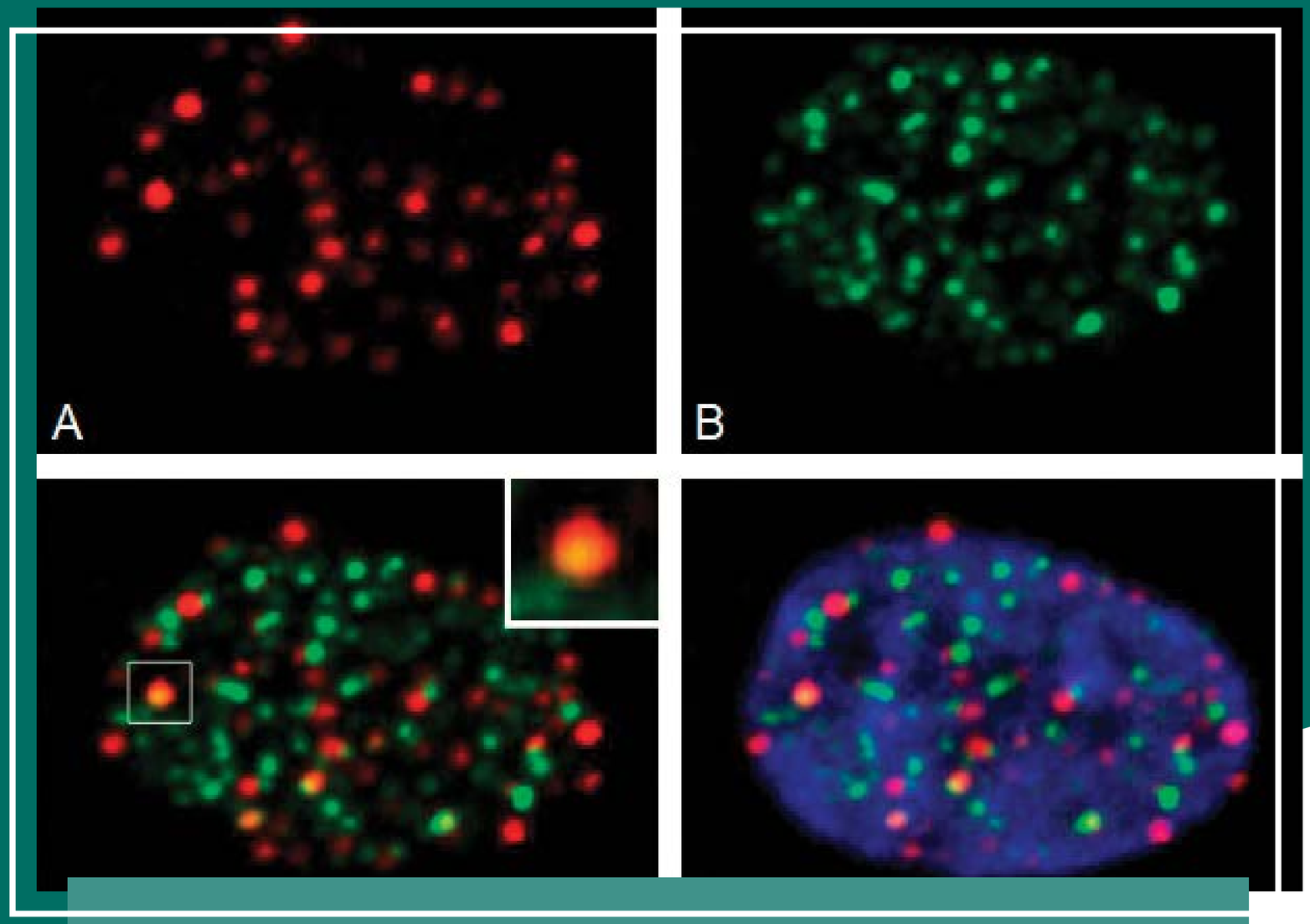
Mobilizing Tiny Machines in Our Cells to Prevent Cancer

PROUTY FUNDED 2020 RESEARCH

"Understanding how condensins prevent cycles of genome instability is critical to understanding how normal cells become cancer cells."

GIOVANNI BOSCO, PhD



The blue ovals show nuclei of human cultured cells. Red dots are tips of DNA molecules called telomeres. Green dots mark sites where DNA has been damaged. Overlaying red and green within the blue nuclei tells us how many telomeres have suffered DNA damage. We can zoom into a specific dot (white square), to see the degree of damage.

STUDY NAME Quantitative proteomic analysis of human telomere-condensin binding complexes

PRINCIPAL INVESTIGATORS Giovanni Bosco, PhD // Scott Gerber, PhD

FOCUS To understand how protective DNA structures called telomeres are damaged and how tiny molecular machines called condensins work to protect telomeres.

Damage to telomeres leads to genome instability, a hallmark of many cancers. We predict that condensins find telomeres by interacting with proteins that know the way, and then use their machine-like qualities to fold telomere DNA, creating structures that are resistant to damaging agents within the cell.

Dartmouth-Hitchcock NORRIS COTTON CANCER CENTER

The Prouty™