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Survivin governs mitochondrial health by regulating the availability of phosphatidylethanolamine, PE

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Survivin is an essential protein with established roles in mitosis and the inhibition of cell death. It is overexpressed in all cancers, its abundance correlating with tumour resistance to irradiation (IR). In normal cells, survivin expression is confined to the G2 and M phases; however, it is also present during interphase in the nucleus, the cytosol and the mitochondria of cancer cells PE is a phospholipid with a small head-group that facilitates negative curvature of membranes, thereby increasing their accommodation of proteins; thus it is enriched in specific membranes, such as the mitochondrial cristae and the cytokinetic furrow. Here we report the remarkable discovery that mitochondrial survivin regulates PE biosynthesis. The data suggest that survivin can govern mitochondrial integrity and metabolism, cell division and resistance to IR by limiting PE availability. This novel molecular insight suggests that many of the apparently disparate roles of this "multitasking" protein may be fundamentally linked to membrane architecture, and offers a completely unexpected perspective on its contribution to cancer and other metabolic disorders.

Biography:

Sally Wheatley is originally from Scotland, Sally studied Zoology (Bsc hons) at St. Andrews University, before going to University College London where she studied (PhD) cell division cycle mutants in the fission yeast, *S. pombe*. After several post-doctoral positions, in France, the US and Edinburgh, she was awarded a Cancer Research UK Senior Fellowship and started her independent lab at the University of Sussex (2003-2009), where she focused her work primarily on the mitotic roles of survivin. Since 2009 she has been an Assistant Professor at the University of Nottingham where she teaches Biochemistry, and continues her research into the multiple roles and signaling pathways that involve survivin, from mitochondrial health to tumour metastasis.