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ULTRASTRUCTURAL AND FUNCTIONAL ANALYSIS OF WEIBEL-PALADE BODIES

Author Block: James Streetley¹, Ana-Violeta Fonseca², Jack Turner³, Nikolai I. Kiskin³, **Tom Carter**⁴, Peter Rosenthal³.

¹MRC Center for Virus research, Glasgow University, Glasgow, United Kingdom, ²MRC NIMR, London, United Kingdom, ³The Francis Crick Institute, London, United Kingdom, ⁴Molecular & Clinical Sciences Research Institute, St George's University London, London, United Kingdom.

Abstract:

The adhesive glycoprotein von Willebrand factor (VWF) is stored for secretion in specialized endothelial cell secretory organelles called Weibel-Palade bodies (WPBs). VWF plays a crucial role in hemostasis and defects in the protein result in the bleeding disorder Von Willebrand's disease. Previously we used Fourier analysis of cryo-EM images and tomographic reconstructions of vitrified human umbilical vein endothelial cells (HUVEC) to show that VWF is stored as a series of helical tubules that tight pack to a paracrystalline matrix in the WPB lumen (Berriman et al 2009, 2009;106:17407-17412). WPB fusion with the plasma membrane is associated with disassembly of the paracrystalline array of tubules and appearance of a membranous extension of the WPB that we speculated might represent a connection to the plasma membrane. Here we extend our ultrastructural studies of WPBs in situ in vitrified HUVEC to reveal a novel structural feature of the organelle. Using light microscopy of live and fixed cells we identify a marker of this novel structural feature. Direct visualization of these features during cell stimulation sheds new light on the nature of the morphological changes during WPB exocytosis.

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Author Disclosure Information:

J. Streetley: None. **A. Fonseca:** None. **J. Turner:** None. **N.I. Kiskin:** None. **T. Carter:** None. **P. Rosenthal:** None.

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