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LS-5-P-2762 Cryoimmunoelectron microscopy analysis of the tubular elements of the Golgi complex of epididymal cells

Martínez-Alonso E.[1], Martínez-Martínez N.[1], Atienza-Guillén E.[1], Martínez-Menárguez J. A.[1]

[1]Department of Cell Biology, School of Medicine, University of Murcia, 30100 Murcia, Spain

Email of the presenting author: emma@um.es

The Golgi complex is usually composed of 3-9 stacked flat cisternae forming the Golgi stack or dictyosome, surrounded by vesicular and tubular elements. In most mammalian cells, stacks are laterally connected by tubules forming a continuous ribbon. Associated to the cis Golgi side of the Golgi stack, there is a tubule-vesicular system known as the cis-Golgi network (CGN). This is formed of tubules connected to the first Golgi cisterna. The trans-Golgi network (TGN) is located at the trans side and is the place where proteins are sorted, packed and delivered to their final destination. These tubules are continuous with the trans Golgi cisternae. Tubules were almost forgotten in the field for decades probably due to the difficulty of identifying them in electron micrographs. Epididymal epithelial cells have a highly developed Golgi complex (1,2,3), so that they are the perfect model to study tubular elements. In the present study, electron microscopy and cryoimmunocitochemistry were used to characterize the tubular networks associated to the stacks in this cell type. The tubular nature of most membranes associated to the stack was demonstrated in 80-nm thick sections. A wide battery of antibodies against Golgi proteins (resident enzymes, Rab, SNARE, and matrix proteins) was used to identified and characterize these elements. Rab 6 and Giantin have been proved to be good markers of the lateral tubules connecting stacks, while GM130 and KDEL receptor were specify for the cis-Golgi network. Further analysis of their structure and composition may help to integrate these elements in our knowledge of the Golgi complex.

References:

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