In focus in Bad Ischl: Golgi apparatus 2013

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From September 17 to 19, 2013, Bad Ischl in the Salzkammergut, Austria will host an international symposium dedicated to a highly complex organelle, the Golgi apparatus. Although 115 years have passed since its first description by Camillo Golgi in 1898 (Dröschner 1998), the Golgi apparatus is steadily in the focus of interest and subject of continuing scientific controversies. Because of its extraordinarily complex organization and involvement in diverse cellular functions (Fig. 1), the Golgi apparatus still presents a formidable challenge to cell and molecular biologists. Experts from all parts of the world working in different areas of Golgi apparatus research and using different experimental models and

techniques will meet in Bad Ischl to present and discuss recent advances related to the structure and function of this complex organelle.

Lecture sessions and poster presentations are dedicated to key topics of present-day Golgi apparatus research: “The complexity of Golgi trafficking routes in secretion and endocytosis”, “Protein dynamics, sorting and recycling”, “Models for antero- and retrograde transport across the stacks of cisternae”, “Regulation of the Golgi apparatus architecture”, “Signalling circuits”, “Mechanisms of Golgi cisternal stacking”, “Golgi structure–function relationships”, “Dynamics at the ER-Golgi-interface and the *trans* Golgi network”, “Molecular machineries and formation of transport carriers”, “Golgi apparatus and cytoskeleton”, “Golgi-derived microtubules”, “The role of the Golgi apparatus in cell polarity and directional migration”, “Unconventional transport”, “Golgi biogenesis”, “The Golgi apparatus in mitosis and cell division”, “Golgi organization in response to physiologic and pathologic cellular changes”, “Golgi dissociation and reorganization, disassembly, reassembly and new formation”, “The Golgi apparatus in plants, algae and yeast”, “New technical approaches and novel microscopic methods” (Boncompain and Perez 2013; Chia et al. 2013; Day et al. 2013; Egea et al. 2013; Machamer 2013; Martínez-Alonso et al. 2013; Polishchuk and Lutsenko 2013; Sandvig et al. 2013; Tillmann et al. 2013; Uemura and Nakano 2013; Warren 2013; Willett et al. 2013; Zhu and Kaverina 2013).

The Golgi apparatus as schematically depicted in Fig. 1 serves to demonstrate the organelle’s complex and variable appearances and its involvement in diverse cellular activities. It is a main goal of the symposium to unravel the complex relationships between the different structural appearances and the multiple functions and processes in which the Golgi apparatus is involved.

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Fig. 1 The interconnected stacks of cisternae with *cis*-to-*trans* polarity are composed of flexible *cis*, medial and *trans* subcompartments (indicated by increasing staining intensities). The endoplasmic reticulum–Golgi intermediate compartment (ERGIC), *trans*-Golgi network (TGN) and *trans*-Golgi-ER help to define the *cis* and *trans* sides of the stacks, respectively. However, their presence and dimension depend on the specialization and functional state of cells (shown for secretion on the left-hand side and for endocytosis on the

right-hand side; the endocytic TGN is drawn in black). In the middle upper stack, a TGN is missing but *trans*-Golgi ER is closely attached to the *trans* cisternae. The left lower part of the drawing shows a “backbone” cisterna (asterisk) connecting stacks with exchanged polarities. The drawings at the right lower section address processes of disassembly and reassembly, dissociation and reorganization of Golgi membranes and new formation of Golgi stacks, as they occur during the cell cycle and in response to drug treatments

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