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Meeting Report

12th International Workshop on the CCN Family of Genes

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ABSTRACT: Cellular Communication Network factors 1-6 (CCNs) are matricellular proteins consisting of an N-terminal secretory peptide and four multifunctional structural domains. The CCN1-6 members belonging to this family have a complex network of interacting ligands that can affect diverse signaling pathways through a multitude of mechanisms. Specifically, these proteins play crucial roles in cell proliferation, differentiation, angiogenesis, apoptosis, chondrogenesis, wound repair, and extracellular matrix (ECM) formation/remodeling. This short communication provides a brief summary of the 12th International Workshop on the CCN Family of Genes held at the Scandic Holmenkollen Park Hotel in Oslo, Norway from 20–23 June 2024.

Keywords: Cellular Communication Network factors; CCNs; Matricellular protein; WISP; CYR61; CTGF

Since the identification of the first member of this family in 1990 [1], the different members have received much attention because they have been shown to be prominently involved in the pathogenesis of major diseases. Work from the last decades has shown that the CCN family of biological regulators plays a master control role in pathway coordination by controlling the activity of different ligands, acting as ligands themselves, and coordinating multi-signaling complexes involved in cell signaling and communication [2]. Consequently, all six CCN members have attracted attention from many scientists and clinicians, forming a close collaborating network. To foster knowledge in the CCN field, the International CCN Society (ICCNS) was founded in 2001 after the first International Workshop on the CCN family of genes held in St. Malo in France on 17–19 October 2000. This Society aims to foster scientific cooperation, provide comprehensive information related to the field of CCN genes and proteins, facilitate the distribution of suitable biological reagents among the CCN community, promote contacts with other scientific societies, and provide a forum for experts and newcomers in the field to discuss findings and establish cooperation [3].

The 12th International Workshop on the CCN family of genes was held at the Scandic Holmenkollen Park Hotel in Oslo, Norway from 20–23 June 2024. The workshop, titled “Cell–Matrix Communication and Functions in Health and Disease”, was organized by Håvard Attramadal and Vivi T. Monsen from Oslo University Hospital and supported by co-organizers Bernard Perbal and Annick Perbal from the ICCNS. Approximately 70 scientists from Europe, the US, Australia, and Asia attended the meeting to discuss their recent findings in the field. The scientific advisory board, consisting of Lester F. Lau, Brahim Chaqour, Bernard Perbal, Vivi T. Monsen, and Håvard Attramadal, organized five sessions: (i) ECM Proteins in Cell Communicaton and Signaling, (ii) Vascular Development and Pathophysiology, (iii) Mechanisms of Diseases: Fibrosis and the Matrix, (iv) Tissue Development and Homeostasis, and (v) Mechanisms of Disease: Cancer and the Matrix.

Following a comprehensive "universal" Scientific Introduction of the CCN Field by Bernard Perbal (ICCNS, France), Joon-JI Jun (Chicago, USA), Vanja Pekovic-Vaughan (Liverpool, UK), Taihao Quan (Michigan, USA), Brahim Chaqour (Pennsylvania, USA), Fan E. Mo (Tainan, Taiwan), Zhiyong Lin (Cleveland, USA), Mei-Zhen Cui

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(Texas, USA), Raymond B. Birge (New Jersey, USA), Andreas Romaine (Oslo, Norway), Vivi T. Monsen (Oslo, Norway), Ole J. Kaasbøll (Oslo, Norway), Stephen M. Twigg (Sydney, Australia), Milos Marinkovic (San Antonio, USA), Satoshi Kubota (Okayama, Japan), Masaharu Takigawa (Okayama, Japan), Nai-Yuan Cheng (Chicago, USA), Li-Jen Lee (Taipei, Taiwan), Danqing Min (Sydney, Australia), Celina G. Kleer (Ann Arbor, USA), Kathryn E. Meier (Spokane, USA), Gary Fisher (Michigan, USA) reported on their current findings in the CCN field. In addition to gathering scientists deeply focused on CCN proteins, the organizers had also invited several speakers who work on related areas of ECM biology. The talks by Donald Gullberg (Bergen, Norway), Sylvie Ricard-Blum (Lyon, France), Anna Zampetaki (London, UK), Morten A. Karsdal (Herlev, Denmark), Bhudev C. Das (Noida, India), and Björn Högberg (Umeå, Sweden) showed that many other ECM proteins have close relationships with CCN proteins and cooperate in many biological processes. During breaks between sessions, coffee breaks, and lunch breaks with excellent food from the Norwegian kitchen provided opportunities for all participants to engage in scientific discussions.

In addition, Katia Scotlandi from Bologna, Italy, who received the ICCN Award at the CCN meeting provided a summary of her current studies on Ewing's sarcoma. She discussed the essential roles that different CCN proteins play in this field. The ICCNS also presented the Young Investigator award to Naiyuang Cheng from Chicago, USA. Working in the laboratory of Lester F. Lau and Joon-JI Jun, Cheng presented his talk titled "Injury-induced CCN1 regulates intestinal regeneration". A brief summary of all presentations will be published in an upcoming issue of the Journal of Cell Communication and Signaling (JCCS), the official journal of the ICCNS [4].

In addition to the excellent scientific program, the organizers had put together an extremely appealing social program. Along with the welcome reception and dinner featuring live music on the first day of the meeting, a scenic boat trip with the S/V Legend along the coast of the Oslo Fjord was organized, during which a delicious buffet was served.

Overall, the 12th International Workshop on the CCN Family of Genes, held in a scenic environment close to the Holmenkollbakken jumping hill, has showcased important new scientific findings in the field and provided an excellent platform for attendees to expand their scientific networks (Figure 1).

The next meeting of the ICCNS will be very likely held in Chicago, USA in 2026. It will be a great opportunity to become a part of this wonderful community. For more information on this upcoming event, please visit the ICCNS homepage [3].

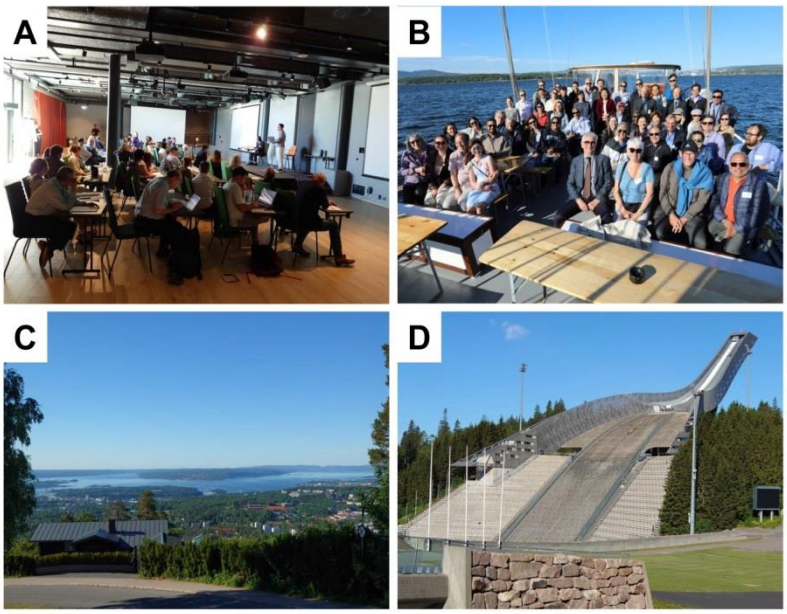

Figure 1. Impressions from the 12th International Workshop on the CCN Family of Genes. (**A**) Participants engaged in discussions about the latest findings in the field of CCNs. (**B**) Attendees of the CCN workshop enjoying a boat trip on S/V Legend along the coast of the Oslo Fjord. (**C**) View from the conference venue. (**D**) The Holmenkollbakken at Holmenkollen in Oslo, with a hill size of 134 m (440 ft).

Author Contributions

Conceptualization, R.W.; Writing—Original Draft Preparation, R.W.; Writing—Review & Editing, R.W., H.A., and B.P.

Ethics Statement

Not applicable.

Informed Consent Statement

Not applicable.

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Declaration of Competing Interest

B.P. is President of the CCN Society, a non-profit association. Furthermore, he is Editor-in-Chief of the Journal of Cell Communication and Signaling (JCCS) that is the official journal of the International CCN Society. R.W. and H.A. are Executive Editors of JCCS. The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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