Japanese Dental Science Review (2012) **48**, 114

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Editorial commentary

CCN2: A novel conductor in orchestration of orofacial tissue development and remodeling

Tissue development and remodeling are preceded by complex interactions among a vast number of collaborative molecules. The execution of specific functions during development and remodeling in various tissues requires an ingenious conductor that orchestrates the molecules involved in these processes. In this issue, Dr. Satoshi Kubota introduces his opinion that CCN2 is a candidate conductor that orchestrates the development and remodeling of various tissues, including orofacial tissues [1].

The CCN family of proteins comprises the following six members: CCN1/CYR61, CCN2/CTGF, CCN3/NOV, CCN4/WISP1, CCN5/WISP2, and CCN6/WISP3. The name CCN was derived from the initial letters of the names of three molecules, CYR61, CTGF, and NOV; these three molecules correspond to CCN1, CCN2, and CCN3, respectively, according to the recent nomenclature. Among the CCN family, CCN2 is the most extensively investigated for its function.

CCN2 is expressed in not only a variety of cells, including fibroblasts, endothelial cells, chondrocytes, osteoblasts, and smooth muscles under physiological conditions but also some inflammatory cells and tumor cells under pathological conditions. CCN2 exerts multiple functions under both physiological and pathological conditions. The author provides an overview of the roles played by CCN2 in the development of orofacial tissues, and then proceeds to discuss the roles played by this molecule in remodeling of orofacial tissues in the context of some pathological conditions affecting hard-tissue regeneration and drug- or chemical-induced gingival fibrosis.

The most critical and interesting issue discussed in this review is how CCN2 exerts multiple functions in various tissues. Although an exact mechanism has not been proved, the author logically and carefully discusses possible mechanisms with an attempt to address this difficult question. I would like to emphasize that this review is based on a large number of well-orchestrated works on CCN2 research conducted by Professor Masaharu Takigawa, who is a mentor of the author of this review, Department of Biochemistry and Molecular Dentistry at Okayama University. Finally, I am very proud to introduce this excellent review article by a member of the active Japanese Dental Research group to the *Japanese Dental Science Review*.

Reference

[1] Kubota S. CCN2 in orofacial tissue development and remodeling. J Dent Sci Rev 2012;48:101—13.

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Received 26 June 2012; accepted 27 June 2012

http://dx.doi.org/10.1016/j.jdsr.2012.06.003