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ニコラウス・ステノによる筋の幾何学的記述－17世紀における筋運動の探究－

(Nicolaus Steno's Geometrical Description of Muscle: The Investigation of Muscle Movements in 17th Century)

安西 なつめ (あんざい なつめ)

博士 (医学)

### Abstract

Nicolaus Steno (1638-1686) was a famous geologist and was also known as a skillful anatomist in the 17th century. He discovered the parotid duct (Stensen's duct), foramen incisive (Stensen's foramen) and vortex veins (Stensen's veins). His main work on anatomy "Elementorum myologiae specimen, seu musculi descriptio geometrica" (1667) analyzes the mechanism of muscle movements on the basis of geological methods. He aimed to handle muscle movements in the style of Cartesian mechanical philosophy assuming the muscle fibers as geological lines to represent the structural and functional unit of the muscle. Steno modelled muscles as parallelepiped integration of fibers. Steno thought the shortening of muscle fibers modified parallelepiped integration and its modification resulted in muscle movements. His parallelepiped model enables to regard muscle as physics object. In this study Steno introduced geometrical representation into the muscle study. The direct influence of Steno is found in the anatomical books and researches on the muscle movements until the 1680's, including John Browne's "A compleat treatise of the muscles as they appear in humane body" (1681) and Govart Bidloo's "Anatomia humani corporis, centum & quinque tabulis" (1685). Steno's assumption and model built methodological foundation of mechanistic physiology of muscle, and influenced later 17th century thinkers, especially Borelli.