

社団法人日本超音波医学会  
第2回特別学会賞受賞者

Ultrasound Prize of Japan Society of Ultrasonics in Medicine



田中元直 (1932-)

田中元直氏は超音波医学の中でも特に循環器（心臓・血管系）と基礎的な方面における研究に数多くの成果をあげてこられた。特筆されるのは、世界で最初に行った「超音波心拍同期心臓断層法（1964）」と「経胸壁超音波心臓断層法（1965）」の開発により、超音波心臓病学という新領域を創始した事である。その功績は多大なものであり、世界の超音波医学、循環器病学の発展に貢献せられた。

田中氏は1932年1月1日に東京都文京区白山にて誕生（父佐々木栄助，母るい）した。夫人は徳子，子息は元明。東北大学医学部を1958年に卒業し，インターンを終了後第26回医師国家試験に合格，東北大学大学院内科学に進まれ，1963年に「Phonocardiographic Studies in Congenital Heart Diseases with Special Reference to the Frequency Analysis of Heart Sounds

and Murmurs by Special Phonocardiography. Sci. Rep. Inst. Tohoku Univ.-C, 11:214, 1962」によって医学博士号を所得した。1963年東北大学文部教官助手（東北大学抗酸菌病研究所），1965年東北大学医学部講師，1967年東京工業大学講師，1979年東北大学教授（抗酸菌病研究所電子医学研究部門）となる。1987年には東京工業大学教授を併任し，精密工学研究所の医用計測部門の指導も行った。1993年に東北大学抗酸菌病研究所電子医学研究部門が機構改革により，加齢医学研究所臓器病態研究部門病態計測制御分野となり，引き続き教授を務める。1994年に定年退官と共に東北大学名誉教授となり，東北厚生年金病院の病院長に就く。この間に，その業績により東北医学会賞，日本音響学会論文賞，可視化情報学会論文賞，日本超音波医学会論文賞等多くの顕彰を受け，また，日本超音波医学会で

は評議員，理事を9期，監事，編集委員会委員長，第41回学術集会長（1982）の要職を務められ，日本心臓病学会理事，評議員，日本循環器学会評議員，日本ME学会評議員等数多くの関連学会役員に就かれている。現在は社団法人日本超音波医学会功労会員，東北大学名誉教授，東北厚生年金病院名誉院長，結核予防会宮城県支部長である。

田中元直氏の門下からは，寺沢良夫，仁田桂子，仁田新一（評議員），中村一彦（評議員），西條芳文（評議員）など多数の人材が輩出し，日本超音波医学会の発展に貢献された。

田中元直氏の業績は，音響工学ならびに電子音響学の医学への応用に関する研究，特に心臓大血管を含む胸部疾患診断への応用研究である。呼吸音の電氣的描写法，心音図記録法の開発と心疾患診断への応用研

究，超音波の診断的応用研究。昭和39年超音波心臓断層法を開発し，超音波キモグラム法，ドプラ血流計測法と超音波複合診断法の開発研究と応用。昭和56年東北大学工学部との共同研究による生体組織計測用超音波顕微鏡の開発と組織音響特性の研究，昭和63年の変調方式超音波ドプラ法による心臓内血流の定量計測の開発，人体の無侵襲生体計測法の研究等など多岐にわたる。

多くの著書の中でも超音波断層法の集大成である「超音波心臓診断学（1978）メディカルエレクトロタイムズ社」は特筆されるものである。超音波医学（医学書院），超音波診断（医学書院），ME事典（コロナ社），Ultrasonic Tissue Characterization（Springer）等など多数の著書および原著論文がある。

## Motonao Tanaka

### Pioneer of the Ultrasono-cardiotomography (1932-)

Motonao Tanaka was born in Bunkyo-ku, Hakusan, Tokyo, Japan, on January 1, 1932. He was the son of Eisuke Sasaki, a policeman who belonged to the Tokyo Metropolitan police board. Dr. Tanaka's mother's name was Rui and his wife's name is Tokuko. Motonao and Tokuko have a son, Motoaki.

Dr. Tanaka's taste and refinement are reflected in his playing of the traditional bamboo flute and in his indian-ink drawing.

Dr. Tanaka graduated from the Tohoku University School of Medicine in 1958. In 1963 he received his PhD from Tohoku National University. His PhD thesis was entitled "Phonocardiographic Studies in Congenital Heart Diseases with Special Reference to the Frequency Analysis of Heart Sounds and Murmurs by Spectral Phonocardiography" and was published in the Sci. Res. Inst. Tohoku Univ. (1962; 11: 214).

Dr. Tanaka studied the internal medicine, cardiology, medical engineering and ultrasound in medicine at the Tohoku University Research Institute for Chest Diseases and Cancer. He conducted research on the application of acoustic engineering in medicine and biology. He has interest in the application of ultrasound to acoustic tissue characterization, analysis of cardiac function and measurement of blood flow. His greatest medical achievement has been his development of new cardiac tomography ultrasound equipment based on his own original research. Physicians around the world were stunned when he announced his non-invasive cardiac tomography of the living human heart and great vessels at the fifth meeting of the Japan Society of Ultrasonics in Medicine (JSUM) in 1964, at the 6th international Conference on Medical Electronics and Biological Engineering in 1965, and at the Japanese Society of Internal Medicine in 1965. He has conducted many interesting and original studies on ultrasound in medicine: ECG gated Ultrasono-Cardiotomography (1964), Transthoracic Ultrasono-Cardiotomography (1965), Combined Method of Ultrasono-Cardiotomography and M-Sequence Modulated Ultrasonic Doppler Method (1971), Real-time Frequency Analysis of the Ultrasonic Doppler Signals by the use of Heterodyne Technique (1972), Multichannel Doppler Echocardiography for the Measurement of Intracardiac Blood Flow (1975), Left Heart Catheterization under the Two-Dimensional Echocardiography (1982), Scanning Acoustic Microscope for the Bio-medical Use (1982), Two-dimensional display method for the stream line and dynamic pressure in Intracardiac blood flow (1986), Quantitative measuring method for intracardiac blood flow dynamics (1987), Visualization method for local blood flow in heart chambers (1990), and Quantitative measurement of local myocardial functions by the use of phase difference tracking method (1996).

Dr. Tanaka was a professor at Tohoku University, where he worked from 1979 to 1994 in the Department of Medical Engineering and Cardiology in the Research Institute for Chest Diseases and Cancer, which later became the Institute of Development Aging and Cancer. He held an additional professorship at the Tokyo Institute of Technology from 1987 to 1991. Dr. Tanaka is a professor emeritus of Tohoku University and has served as director of Tohoku Welfare Pension Hospital from 1994. He was the past president of 41st meeting of Japan Society of Ultrasonics in Medicine (JSUM), an Executive Board

member of JSUM, and a member of the Executive Board of Japanese College of Cardiology.

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