

Scotopia: A multidisciplinary biannual e-journal

ISSN: 2455-5975

Website: <https://scotopia.in/>

**DR. AUTAR SINGH PAINTAL**

**(LEADING NEUROSCIENTIST AND PADMABIBHUSHAN  
AWARDEE)**



MohuaSeth<sup>1</sup>: Swetanjana Ghosh <sup>2</sup>

1 Faculty, Department of Physiology, Hiralal Mazumdar Memorial College For Women,  
Dakshineswar, Kolkata- 700035

2 Junior Research Fellow, School of Environmental Studies, Jadavpur University,  
Kolkata-700032

Email:mohuaseth@gmail.com

Autar Singh Paintal was an eminent medical scientist who made pioneered discoveries in the area of neurosciences and respiratory sciences. He is the first Indian Physiologist who was elected as the Fellow of the Royal Society, London. He was born on 24th September, 1925 in Mogok, a town located in the Northern region of the Burma (Myanmar). His father's name was Dr. Man Singh and his mother was Rajwans Kaur (1). He was started his studies in St. Paul's in Rangoon and after that he went to St. Peter's Mandalay. From Mandalay he went to Kingswood School at Kalaw, a picturesque hill station in the Southern Shan States. Football was his great passion and he spoke good Burmese. Later at the age of fourteen, he was sent to Lahore to complete his matriculation from the Khalsa High School. He studied hard and by this time he started to build his inexhaustible

Scotopia: A multidisciplinary biannual e-journal

ISSN: 2455-5975

Website: <https://scotopia.in/>

fund of limericks and for that he subsequently became famous. Here he learnt to row the large country boats on the River Ravi. In 1943 he passed the Intermediate Examination from the Forman Christian College under the Punjab University and subsequently took his admission into the King's George Medical College, Lucknow. During his study as a medical student (1943-1948), he got many distinctions, honours and awards and finally he won the coveted "Hewitt Gold Medal" for the highest marks in the final MBBS Examination. After completion of graduation in 1948 with an extraordinary brilliant record, he gave up his clinical training for the sake of a research job and after being appointed as a Lecturer in the Department of Physiology of King George's Medical College, he started to work for an M.D. degree in the field of Psychophysiology. He worked on the "Electrical Resistance of the Skin in Normals and Psychotics" and subsequently devised "Paintal Index". After the submission of M.D. thesis, he obtained the Rockefeller Fellowship to pursue his Ph.D. Degree with Prof. David Whitteridge in the Department of Physiology, Medical School, Edinburgh. Here he showed the "pulmonary vascular fibres" and this was graciously accepted by the Physiological Society, UK. He also acquired a certain specialization in electronic engineering and developed small circuits and learnt to repair his equipment (2).

Paintal returned to India and spent about 2 years in Kanpur (1952-1954) at the Technical Development Establishment Laboratories (Ministry of Defence) for the testing of clothes and drugs for the Army and to study environmental physiology. Later he became the Assistant Director (1954-1956) of the Vallabhbhai Patel Chest Institute, New Delhi. Here he discovered the J Receptors, his most important discovery. He joined in the Departments of Physiology in the Medical Schools of Albert Einstein, New York and Salt Lake City, Utah as a Visiting Associate Professor and worked on the mammalian muscle. After his return from the USA, he joined in the All India Institute of Medical Sciences, New Delhi as the Professor of Physiology (1958-1964). Here he continued his works on muscle and studied the mechanism of muscle pain (3).

In 1964 he arrived once again at the Vallabhbhai Patel Chest Institute, New Delhi as its Director and appreciated the needs and difficulties of other scientists. He gave full freedom to the faculties to carry out the research works in the field of cardio-respiratory physiology and also ran a journal club for the physiologists

Scotopia: A multidisciplinary biannual e-journal

ISSN: 2455-5975

Website: <https://scotopia.in/>

everyday, overafternoon tea. At that time, in addition to the existing departments, he introduced some new departments among which the most significant was the Department of High Altitude Physiology. In 1985, he took leave from the Chest Institute to work as the Director General of the Indian Council of Medical Research for 5 yrs. He was also the founder president of Society of Scientific Values (2)

Autar Paintal was the leading neuroscientist of his generation in India and introduced new standards of excellence to the Neurosciences in India. His major contribution to the world of science is the development of a single-fiber technique for recording afferent impulses from individual sensory receptors. Paintal discovered several sensory receptors including Type B Atrial Receptors (Volume Receptors), Gastric Stretch Receptors, Mucosal Mechanoreceptors of the Intestines, Ventricular Pressure Receptors, Pressure-Pain Receptors in the Muscles, Pulmonary J-Receptors, the J Reflex and Breathlessness. These discoveries have set the beginning of new era in physiological understanding. Based on his discoveries, the Department of Science & Technology set up a Centre for Visceral Mechanisms to intensify and extend work on dyspnoea (breathlessness) and exercise limitation that arise reflexly by the stimulation of the J receptors (3).

In addition, the following new techniques introduced by him are being routinely used in numerous laboratories around the world:

1. Technique for dissecting and recording impulses from mammalian nerve fibres dissected from nerves under liquid paraffin ( 1953)
2. Technique for providing the conduction velocities of individual active fibers in a mixture of other nerve fibers (1953)
3. Technique for locating visceral sensory receptors with drugs (1954) (4) .

In recognition of his outstanding work, the Royal Society of Edinburg was the first to elect him to its fellowship in 1966 and later in 1972 he was elected to the fellowship of the Indian National Science Academy (1) and was also elected to the Fellowship of the Royal Society of London (1981) (4). He had received numerous honours and awards, including the B.C. Roy Oratorship (1974) and the Silver Jubilee Award of the Medical Council of India (1978), the Barclay Medal of the Asiatic

Scotopia: A multidisciplinary biannual e-journal

ISSN: 2455-5975

Website: <https://scotopia.in/>

Society (1982), the Rameshwardas Birla National Award (1983), the Jawaharlal Nehru Science Award of the Government of Madhya Pradesh (1983) and Padma Vibhushan (1986) . He served as the President of the Indian National Science Academy and the President of the Indian College of Allergy and Applied Immunology (1980) . He was elected as the General President of the Indian Science Congress Association (1984 to 1985) and honorary member of the Physiological Society, U.K., and of the American Physiological Society (1990)(4) .

Paintal had 3 children by his first wife Iris Paintal. His second wife DrAshima Anand-Paintal is also a scientist (3) .

On 21 st December, 2004, he passed away after a heart attack (2)

#### References:

- 1 . Iggo, A. Autar Singh Paintal. 24 September 1925 -- 21 December 2004: Elected FRS 1981 . Biographical Memoirs of Fellows of the Royal Society. 52: 251 –262 (2006) . doi:10.1098/rsbm.2006.0018. PMID 18543474.
2. AUTAR SINGH PAINTAL. (24 September 1925 - 21 December 2004). Biog. Mem. Fell. INSA, N. Delhi. 29: 145-168 (2006) .
3. Autar Singh Paintal (1925-2004). Indian Journal of Physiology and Pharmacology. 49 (2): 247–250 (2005).PMID 16247944.
4. Adventures in Physiology: The times and life of Autar S Paintal. J. Biosci. 31 (5): 513-524 (2006) .