Tribute to Professor Bhanu P. Jena **Professor Bhanu P. Jena**

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Professor Dr. Bhanu P. Jena a pioneer in modern cell biology, has made **monumental discoveries on the molecular machinery and mechanism of cell secretion**. His studies on cell secretion began more than 30 years ago, in 1975, while still a masters student in Zoology. At the young age of 19, he published his first scientific paper on cell secretion, *i.e.*, the '*role of hypothalamus in the regulation of pituitary hormone release*' [Prakruti, U.U. J. Sci. (12): 81–7, 1975 & Masters Thesis].

The extension of our sense of vision, especially of life, was revolutionized with the invention of the light microscopes almost four hundred years. Since then, our perception of the world has changed. Extending this perception further, has since been the driving force for scientific discoveries. The atomic force microscope (AFM), a force spectroscopy has extended our sense of touching into the nano-world of the live cell.

Using AFM on live cells, Professor Jena was the first to report the discovery of a *new cellular structure* the '**porosome**'. The porosomes are permanent supramolecular structures at the cell plasma membrane, where secretory vesicles dock and fuse to release intravesicular contents to the outside. This discovery was a major breakthrough in our understanding of cell secretion. Today, the porosome, has been determined as the universal secretory machinery in cells, from exocrine cells of the pancreas, to neuroendocrine

cells, and neurons. Professor Jena and his research team have subsequently determined the structure and dynamics of the porosome in live cells, at nm resolution and in real time. The structure of the porosome was further confirmed by electron microscopy in whole cells, and in isolated porosome preparations. The isolated porosome has been both structurally and functionally reconstituted in lipid membrane, and its composition determined. Thus the discovery of the porosome as a new cellular structure, and an understanding of its structure, function, composition, and reconstitution, opens a new field in cell biology; **nano cell biology**.

Among the honors and awards Professor Jena has received over the years are, the Swebelius Cancer Research Award, the Hallim Distinguished Award Lecture jointly with Prof. Ahmed H. Zewail (the 1999 Nobel Laureate in Chemistry), the Sir. Aaron Klug Award (Prof. Klug is the 1982 Nobel Laureate in Chemistry), Elected to the Korea Academy of Science & Technology, the 2005 George E. Palade Medal, six Honorary Doctorates including one from Babes-Bolyai University, Romania, jointly with Professors George E. Palade (the 1974 Nobel Laureate in Physiology or Medicine) and Günter Blobel (the 1999 Nobel Laureate in Physiology or Medicine), and Distinguished Visiting Professorships at numerous academic institutions world wide.