It is for me a great honor to introduce Dr. Ajit Varki to the Universidad de San Martin community. Let me briefly talk about his life, honors and awards and to dedicate most of my talk to describe part, only part as they are too many, of his scientific achievements.

 **Ajit´s life**. Ajit was born in India. I am sure that those that have been in that country must have appreciated the multiethnic, multicultural characteristics of Indian society. For instance, bank notes are printed in 27 different languages, many of them using different alphabets. Ajit was born within a community that may be described as a minority within a minority. His family comes from the State of Kerala, in Southwest India, and belongs to a Christian community founded, according to tradition, by St. Thomas, one of Christ´s disciples. Ajit went to High School in Bangalore, the see of the Indian Institute of Science, in the State of Karnataka. He then proceeded to pursue medical studies at the Christian Medical College of Vellore and finally at the University of Madras. In 1976 he immigrated into the United States, first to the University of Nebraska, where he was first licensed as a MD in America. In 1978 Ajit pursued a four year a postdoctoral training at the Washington University in St Louis under the supervision of one of the founding fathers of modern Glycobiology. I´m talking about Stuart Kornfeld. Finally, in 1982 took his first independent position as an Assistant Professor of Medicine at the University of California in San Diego. He has been at that same institution since then. In 1987 he was promoted to Associate Professor and in 1991 to Full Professor of Medicine. In 2001 he was promoted to Full Professor of Cellular and Molecular Medicine (but keeping his full professorship of Medicine) and finally in 2006 to Distinguished Professor of Medicine and Cellular and Molecular Medicine. He holds both positions at present.

**Awards and honors**. Ajit has received numerous awards and honors from the scientific community and I will mention here only a few of them: He has been Editor in Chief of the prestigious Journal of Clinical Investigation and was then instrumental to freely open the journal to the scientific community, the first scientific journal to adopt that policy. He was president of the American Society of Clinical Investigation and of the Society for Glycobiology. He received the most prestigious awards in this discipline, the Karl Meyer Award of the last society and the Award from the International Glycoconjuate Organization. He is Editor in Chief of Essentials of Glycobiology (something as the Bible in this discipline) and, finally, he is a member of the American Academy of Arts and Sciences and of the National Academy of Medicine.

**Scientific Achievements**. It is not easy to describe Ajit´s extremely large scientific output: there are 265 papers in the Original Research Papers section of his CV to which one has to add 195 Reviews and Book Chapters.

Lysosomal degradative enzymes are glycoproteins displaying high mannose phosphorylated oligosaccharides (GlcNAc2Man6,7P1,2) (Fig. 1). Phosphate is linked to position 6 in the Man unit. The Man 6-P epitope is recognized by specific receptors in the Trans Golgi Network and thus lysosomal enzymes are transported to lysosomes by vesicular transport. According to Stuart Kornfeld´s pioneering work Man 6-P markers are created in the Golgi by transfer of GlcNAc 1-P from UDP-GlcNAc to position 6 in the Man units. A phosphodiesterase then removes the GlcNAc unit thus exposing the Man 6-P epitope. In his postdoctoral training with Stuart Kornfeld Ajit described the structure of phosphorylated oligosaccharides present in lysosomal enzymes, identified, purified and characterized the phosphodiesterase that removes the GlcNAc unit (enzyme 4 in the figure), described that patients with I-cell disease, that lack the full complement of lysosomal enzymes in fibroblasts, are devoid of the GlcNAc-P transferase activity and characterized the affinities of oligosaccharides with different phosphate content for the isolated receptor.

Once as an Independent Research at the University of California San Diego, Ajit started to study the biological role of sialic acids present in glycoproteins and glycolipids. As depicted in the electromicrograf shown in the next figure (Fig. 2) a mammalian cell in externally covered by oligosaccharides linked to proteins and lipids (glycoproteins and glycolipids). This is the so called glycocalix. It may be concluded that the first thing that a cell, a protein, a virus a bacteria or any other substance sees on approaching another cell are saccharides. Thence the relevance of studying the structures of protein- or lipid-linked oligosaccharides, the mechanisms by which they are formed, their variations under different developmental and differentiation conditions and their roles in various biological processes.

Sialic acid (Fig. 3) is a nine carbon monosaccharide in which acetyl or glycolyl groups may be linked to nitrogen. They are referred to N-acetyl- or N-glycolyl-neuraminic acids, respectively. As depicted in Fig. 4 sialic acids are the more distal monosaccharides present in glycoproteins and glycolipids. Any agent approaching cells, therefore, would first see sialic acid residues. Additionally, as depicted in Fig. 5, there several ways by which sialic acid residues may be modified: in addition to acetyl or glycolyl residues, methyl, lactyl, phosphate or sulfate residues may be added to OH groups. Ajit first described these acetylated or sulfated structures and their variations in oligosaccharides isolated from glycoproteins and glycolipids present in normal and tumor cells and identified in many cases the enzymes responsible for creating those modifications (O-acetyltransferases) and also for removing the added groups (acetylesterases) as well as their modulation under pathological conditions. He also studied the subcellular distribution of the modifying enzymes within the Golgi apparatus as well as their association with glycosyltransferases involved in the processing of oligosaccharides.

Ajit then decided to study proteins that recognize sugar units in glycoconjugates. Those proteins are called lectins (from latin, to select). They usually recognize domains of oligosaccharides most distally located from the protein or lipid moieties. According to the primary sequence and 3-D structure of their carbohydrate binding domains, there are mainly four lectin families in animal cells (Fig. 6). Galectins, that bind galactose-containing glycoconjugates, the C-type lectins, that bind calcium, and to which selectins belong, the P type that includes the receptor of Man 6-P groups mentioned before and the I type. The Siglec subgroup in this last family recognizes sialic acid residues. Ajit performed several studies involving selectins mainly studying their binding to normal and tumor cells and the effects that their presence or absence produces in tumor growth and metastases. But perhaps the main emphasis of Ajit´s work on lectins has been on Siglecs, the sialic acid-recognizing lectins. Siglec is a term I think introduced by Ajit and means **Sialic-acid-binding immunoglobulin-like lectin**. There many different siglecs and they show a highly restricted range of tissue expression. For instance Siglec Sn is expressed in macrophages, CD22 in B lymphocytes, Sig15 in osteoclasts, Siglec 7 in Natural Killer cells, Siglec 8 in eosinophils, etc. Ajit´s foundational work on Siglecs has dealt with their identification, the study of their functional characterization and of their biological roles. I think that I will stop here. I expect to have provided a brief glimpse of the fantastic work performed at Ajit´s lab. It represents an extraordinary mix of Biochemistry (and of course Glycobiology), Structural Chemistry, Molecular Biology, Evolutionary Genetics and translation Medicine. Description of the most recent results would certainly require a second “Laudatio” conference. I have known Ajit for more than thirty years. This photo (Fig. 7) was taken in October 1900 at a Glycobiology meeting in San Diego. You may see from left to right Jacques Baenziger from Washington University in St. Louis, Ajit, myself, and Annette Herscovics, a Canadian colleague that passed away several years ago. It is therefore a great pleasure for me to have introduced you, Ajit to our University and it is a great honor for the University to count you as one of its “Honoris causa” doctors.