Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Webinar

Subcellular view of islet cells to understand type-2 diabetes

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A well-functioning pancreas preserves glucose homeostasis by secretion of insulin from pancreatic beta cells hence lowering blood glucose after a meal. Although mechanisms behind secretion of insulin has been studied for years a clear subcellular view on secretion had remained elusive. This work was focused on elucidating the steps leading to secretion of insulin from the individual secretory granules localized in beta cells using high-resolution total internal reflection fluorescence microscopy techniques. Individual secretory granules localized at the plasma membrane were visualized to discover secretory granule pools in individual beta cells responsible for secretion of insulin. Molecular determinants which are part of these individual pools of granules gave a better understanding of which granule pools are disrupted in human type-2 diabetic beta cells leading to loss of insulin secretion. This discovery lead to understanding the abnormalities in human type-2 diabetic islet cells affecting mechanisms of islet hormone secretion.

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4:00 PM