

<https://rcc.harvard.edu/event/major-threats-human-health-21st-century-seminar-series-diabetes-and-cancer-i-diabetes-and>

Major Threats to Human Health in the 21st Century Seminar Series: Diabetes and Cancer. I, Diabetes and Metabolic Syndrome

Date:

Mon - Mon, Sep 18 to Oct 9, 5:00pm - 6:00pm

Location:

RCCHU Conference Room, 26 Trowbridge St. and over Zoom

The Diabetic syndrome constitutes one the major threatening on public health worldwide owing to its great prevalence. In fact, it is a true pandemic disease. Several complications aggravate the disease such as the cardiovascular damage, digestive cancers and also neurodegenerative diseases such as the Alzheimer disease. Even more importantly, the diabetic disease and its complications associates with others metabolic and pathophysiological disturbances such as obesity, hyperlipidemia, systolic hypertension and hyperuricemia conforming the named Metabolic Syndrome, the most prevalent pathology in humans and the great pandemic challenging the human longevity in the 21st century. The purpose of this Seminar Series is to follow up the historical diabetes, the type 1 diabetes, an autoimmune disease with and abrupt debut and the twenty-century diabetes, the type 2 diabetes, a progressive disease. Thus, the etiology of the type 2 diabetes will be uncovered, and the progression of the disease will be followed up from an initial event related to the insulin resistance and its progression to the full-blown diabetic phenotype, the manifest diabetes. Along this progression of the disease over decades of life, major complications will be arising such as the cardiovascular disease and the atherogenic process. Thus, the contribution of the insulin resistance syndrome to the Metabolic Syndrome, the final storm, will be discussed. Finally, we will address new complications that have emerged over the last decade related to the link between type 2 diabetes with the digestive cancer or the development of neurodegenerative diseases, singularly the Alzheimer disease.

Series I, program:

Section 1: **The Discovery of insulin: A new Era (September 18th, 2023)**; Section 2: **The discovery of type 2 Diabetes. The pandemics (September 25th)**; Section 3: **Diabetes and the Metabolic Syndrome: The final challenge to longevity (October 2nd)**, and Section 4: **Diabetes and Dementia (October 9th)**

All the seminars from 5:00 pm to 6:00 pm

Major Threats to Human Health in the 21st Century Seminar Series: Diabetes and Cancer. II, Human Cancer

Date:

Mon - Mon, Oct 16 to Oct 23, 5:00pm - 6:00pm

Location:

RCCHU Conference Room, 26 Trowbridge St. and over Zoom

Human pluripotent cells proliferate during the embryonic development with a very high mitotic rate. Owing to a very active telomerase enzymatic activity those cells maintain intact their telomere length within the telomeric extreme of the lineal eukariotic chromosomes. Thus, human cells sustain a mitotic rate of proliferation, such as the immortalized cells, allowing the human embryos to reach the programmed somatic growth at term. However, the telomerase expression and its activity decline allowing adult cells to undergo the cellular arrest. At that stage, the differentiation process takes place, allowing all the tissues and organs to express genes that confer them their specialized physiological function. In parallel, damaged cells arisen along the developmental process are eliminated by apoptosis. Finally differentiated cells die completing the cycle of life. However, human body inherits or somatically acquired critical genes altered by mutations that were named as 'oncogenes', genes that directly or indirectly control the cell cycle. Our course will be devoted to describing those oncogenes and their alterations playing a positive ('protooncogens') or negative ('suppressor genes') role in the cell cycle and their progressive intervention into the human carcinogenic process: From the eruption of the primary tumor to dissemination of cancer cells into the tumoral metastasis. As paradigm, we will describe in detail the human carcinogenesis in colorectal cancer, the most prevalent tumor in humans, with special focus on the transition from the adenoma (benign tumor cells) to the carcinoma (malignant tumor cells) and the importance of the genetic signature on the design of personalized cytostatic therapeutic tools against primary tumors and metastasis.

All the seminars from 5:00 pm to 6:00 pm

Series II, program:

Section 5: **The cycle of life: The Splendor and the Sunset (October, 16th)**, and Section 6: **The Cancer response to the immortality/mortality dilemma (October, 23rd)**

All the seminars from 5:00 pm to 6:00 pm

Speaker and Coordinator: Prof. **Manuel R. Benito de las Heras** (*Emeritus Professor, Complutense University of Madrid, Visiting Professor of Medicine, Harvard Medical School*)

Sponsor: RCCHU; Complutense University of Madrid, Harvard Medical School, Harvard University



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