Diabetes is a chronic disease that affects millions of people worldwide. But what does it exactly entail? Actually, there are two main types of Diabetes.

**Type 1 Diabetes (T1DM)**
- Generally appears at a young age caused by the destruction of the pancreatic cells in charge of producing insulin.

**Type 2 Diabetes (T2DM)**
- Characterized, not by the absence of insulin, but rather by the resistance of the organism to its action. It appears generally at a more advanced age and is related with a sedentary lifestyle and a diet excessively high on fat and sugar.

The levels of glucose (the principal sugar we use to obtain energy) in a diabetic patient are too high. Glucose remains in circulation but is not available, which can cause secondary effects. The role of insulin is crucial in this process. Insulin helps glucose enter the cells, where it will be transformed into energy.

**Knowledge on Diabetes Evolved in Phases:**

- **1869:** The German physician Paul Langerhans discovered the “Langerhans islets” which produce insulin in the pancreas.
- **1921:** Discovery of insulin by the Canadians Banting and Best, following treatment with insulin injections of a dog without a pancreas.
- **1922:** The Nobel Prize in Physiology and Medicine was awarded to the discovery of insulin. Diabetes Day is commemorated on the 14th of November, the birthday of Frederick Banting.
- **1926:** Foundation of the Associação Protetora dos Diabéticos de Portugal (APDP), the first diabetic patient association in the world.

Diabetes is an undiagnosed one of the major threats to public health in the world. There are 414 million people living with diabetes.

In Portugal, more than a million people live with this disease. It is expected that these numbers will double in upcoming years.

One out of two adults with diabetes is undiagnosed.
Diabetes has implications in almost all organs of our body, causing, or exacerbating, different pathologies:

- **Liver**: Higher probability to suffer hepatic problems.
- **Respiratory System**: Sleep apnea or other sleep disturbances increase the predisposition to suffer from diabetes.
- **Cardiovascular System**: One of the major risk factors for the development of cardiovascular diseases.
- **Lung**: Increased propensity to suffer from neoplastic and respiratory diseases (like Alzheimer’s disease) and stroke.
- **Brain**: Cognitive impairments and memory.
- **Dysregulation of Appetite**: It affects the normal function of the hypothalamus, the regulatory center of energy balance.
- **Kidneys**: Predisposition to renal failure - diabetic nephropathy.
- **Extremities**: Loss of sensitivity in the extremities, chronic inflammation, and peripheral vascular disease -- chronic wounds (diabetic foot).
- **Alterations in the skin microbiome** that can lead to infections in chronic wounds.
- **Joints**: Risk factor to develop osteoarthritis, characterized by painful and rigid joints.
- **Reproductive System**: Infertility problems in both men and women. During pregnancy, diabetes can have serious consequences both for the mother and the fetus.
- **Vision**: Diabetic retinopathy, cataracts.
- **Brain**: Increased propensity to suffer from neurodegenerative diseases (like Alzheimer’s disease) and stroke.
- **Cognitive impairments and memory**.
- **Dysregulation of Appetite**: It affects the normal function of the hypothalamus, the regulatory center of energy balance.

From the diagnostic techniques used by ancient Egyptians up until now, the knowledge on diabetes has evolved dramatically. For instance, research in biomarkers in urine or saliva helps identify people at risk, allowing for preventive interventions. There are also pharmacological and cellular strategies to control Type II Diabetes, namely with increased activity of mitochondria (the powerhouses of our cells), or the minimization of damage caused to the different organs.

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However, the most efficient therapy consists of following a healthy diet, regular physical exercise, and adopting good sleep habits, together with educational and awareness initiatives.

You don’t need to be a scientist to contribute effectively in fighting diabetes and improving health issues in the population. And who knows, maybe eventually it will no longer be necessary to celebrate this day.