



TRANSCRIPT «VNR PATHFINDER»

TC In: 00:03:00:00

TC Out: 00:08:08:00

Program duration :05'08''

Voice Over

Tc In: 00:03:08:00

In the human body, the greatest part of cellular receptors is located on the membrane of the cell. However, there is another class of receptors: nuclear receptors.

ITV Vincent Lodet

Tc In: 00:03:20:00

'A nuclear receptor is a molecule that is a receptor. Hence, it fixes a hormone onto another molecule most of the time. It is nuclear in the nucleus of the cell. Hence, this receptor is capable to directly activate and regulate the gene activity in the cell, and not at its surface like other receptors.'

The nuclear receptor directly fixes onto the DNA. It immediately starts or puts out a gene. If we act on this receptor with a hormone or a drug, we can immediately start or put out the gene we choose, in the tissue we select.'

Voice Over

Tc In: 00:03:54:00

In a nutshell, the ligands – which are the hormones that link to the nuclear receptor – freely crosses the cell's cytoplasmic membrane. The communication is hence quickened in comparison to the membrane receptors.

ITV Vincent Lodet

Tc In: 00:04:09:00

'very clearly speaking, what we are going to manage to do with the ongoing studies is to make it so that the treatment of many illnesses will be much more specific, which will allow to avoid secondary effects. I think of osteoporosis, where we will be able to treat people for osteoporosis by avoiding the risk of breast cancer. I think of many metabolic problems, what we call the metabolic syndrome, such as obesity and diabetes. Nuclear receptors are at the heart of this problem, and many medicines that we will use tomorrow against diabetes and obesity will in fact be nuclear receptor ligands.'

Voice Over

Tc In: 00:04:43:00

To study these receptors, project Pathfinder gathers scientists from Huddinge, Lyon, Thiais, Oslo, Turku and Singapore.

The fruit of this collaboration, which started in the mid 90s? A significant number of characterised nuclear receptors. Indeed, in 1997, the scientific team, led by Jan-Ake Gustafsson, identified a nuclear receptor that is capital in the organism of women.



ITV Jan-Ake Gustafsson

Tc In: 00:05:20:00

'The discovery of the 'beta' oestrogen receptor undoubtedly represents the most significant discovery we made in the course of the past decade. Before this, we thought that only the 'Alfa' oestrogen existed. We now discovered that these two receptors – and this is completely new – seem to neutralise each other. This is of considerable importance in the case of some illnesses. In some cases, the NR-Alfa seems to trigger the development of cancer. This knowledge will allow us to develop new medicines for the treatment of several gynaecological conditions.'

Voice Over

Tc In: 00:06:04:00

Allying applied research with fundamental research, this collaboration amongst researchers allowed for great advances in this area. For example, the scientists in the Paris group are currently conducting experimentations on tadpoles. The rapid development of the organism of this amphibian gives us a glimpse of the psychopathological phenomenon that could later occur in humans.

ITV Barbara Demeneix

Tc In: 00:06:24:00

My group in Paris is working on the nuclear receptors for thyroid hormone produced by the thyroid gland affect gene transcription in the brain and different tissues, and for this purpose we use animal models, especially amphibians, such as a tadpole, because when a tadpole becomes a frog, the whole process is regulated by thyroid hormones. We can use this tadpole model to understand how the thyroid hormone affects cellular processes that are involved in brain development. Like a thyroid hormone in an adult will cause slowing of mental capacities and there are ideas that a thyroid hormone could exacerbate certain degenerative diseases.

Voice Over

Tc In: 00:07:07:00

In Finland, scientists centre their research on a new manner to approach diets, and the way in which they can be made healthier. There again, nuclear receptors play an essential communication role between cells.

ITV Särri Mäkelä

Tc In: 00:07:21:00

'We work on hormone-dependent cancers and are interested in reports that some nutritional factors, in particular those that have an effect on the activity of nuclear receptors, may have in the regularisation of cancer risk.

Thereby, we hope to be able to find nutritional factors allowing a decrease in the risk of cancer. These cancers are widespread and are constantly spreading. It is clear that there is a need for new means to decrease the risk. And these nutritional factors can present possibilities in this sense.'

Voice Over

Tc In: 00: 07:49:00

The HESS project is a finalist of the Descartes Prize 2005 for Excellence in Scientific collaboration awarded by the European Commission.

Tc out : 00:08:08:00

International Version

TC in : 00:08:30:00

Tc out : 00:13:38:00

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B Roll

ITV Vincent Lodet

00:14:00:00

ITV Jan-Ake Gustafsson

00:15:16:00

ITV Barbara Demeneix

00:16:02:00

ITV Särri Mäkelä

00:16:48:00

Animation

00:17:20:00

Scientists, fat people

00:17:50:00

Map

00:18:19:00

Scientist meeting and cells animation, lab images

00:18:35:00