

Unexpected discovery on hormone secretion

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A team of geneticists at the Institut de recherches cliniques de Montréal (IRCM), directed by Dr. Jacques Drouin, made an unexpected discovery on hormone secretion. Contrary to common belief, the researchers found that pituitary cells are organized in structured networks. The scientific breakthrough was published yesterday by the scientific journal *Proceedings of the National Academy of Sciences* (PNAS).

The pituitary gland, located at the base of the brain, secretes the hormones that preserve the balance between all other glands of the endocrine system, which includes all hormone-producing organs.

"Each [hormone](#) in the pituitary gland is secreted by a specific type of cells," explains Dr. Drouin, Director of the Molecular Genetics research unit at the IRCM. "Until now, we believed that these cells were randomly distributed throughout the pituitary gland."

By using three-dimensional imaging, the researchers discovered that the pituitary gland's secreting cells are rather organized into highly-structured networks. Inside these networks, each cell remains in contact with other cells of the same type, so as to form continuous sheets of cells. In fact, cells of the same lineage can recognize, exchange signals and even act in concert with one another.

"We were the first to reveal this three-dimensional organization," says Lionel Budry, graduate student in Dr. Drouin's laboratory and first co-author of the study. "In addition to discovering the cell's structure, we showed its importance for the development and function of the pituitary

gland."

"We studied two networks of cells: cells that modulate our responses to stress, and cells that control reproduction," adds Dr. Drouin. "Disturbing these networks could be associated with hormone deficiencies."

This research project was conducted in collaboration with the team of experts in three-dimensional imaging at the Université de Montpellier directed by Dr. Patrice Mollard, which includes Chrystel Lafont, who is first co-author of the article with Lionel Budry.

More information: [doi: 10.1073/pnas.1105929108](https://doi.org/10.1073/pnas.1105929108)

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