

A scientific breakthrough could help understand certain cancers

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A scientific breakthrough by researchers at the Institut de recherches cliniques de Montréal (IRCM) will be published tomorrow in *Developmental Cell*, a scientific journal of the Cell Press group. Led by Dr. Frédéric Charron, the team of scientists discovered a new requirement for the proper functioning of the Sonic Hedgehog protein.

Sonic Hedgehog belongs to a family of proteins that gives cells the information needed for the embryo to develop properly. It plays a critical role in the development of many of the body's organs, such as the central nervous system. Malfunctions of these proteins are associated with many diseases including [cancer](#), which is the leading cause of death in Canada.

"On one hand, certain molecules travel through our organs (in this case, Sonic Hedgehog) and transmit signals to cells with information on how they should function," explains Luisa Izzi, postdoctoral fellow in Dr. Charron's laboratory and co-first author of the article. "On the other hand, our cells have receptors to receive these signals. The receptors then instruct the cell's DNA as to which genes to turn on or off in order to perform its function."

The team studied the interactions between the Sonic Hedgehog molecule and the recently-identified receptors Boc, Cdon and Gas1, all found on the surface of cells. "Our research showed, unexpectedly, that these receptors are essential for the transmission of the hedgehog molecule's signal," adds Martin Lévesque, an alumnus from Dr. Charron's research unit and co-first author of the article.

"Disrupting the transmission of the Sonic Hedgehog signal can lead to diseases," says Dr. Charron, Director of the IRCM's Molecular Biology of Neural Development research unit. "A better knowledge of the receptors Boc, Cdon and Gas1

might in turn help our understanding of pathologies associated with defective Sonic Hedgehog signalling. Our results could also lead to new avenues for the treatment of certain diseases such as cancer."

More information:

[www.cell.com/developmental-cell ... 1534-5807\(11\)00171-7](http://www.cell.com/developmental-cell/1534-5807(11)00171-7)

Provided by Institut de recherches cliniques de Montreal

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