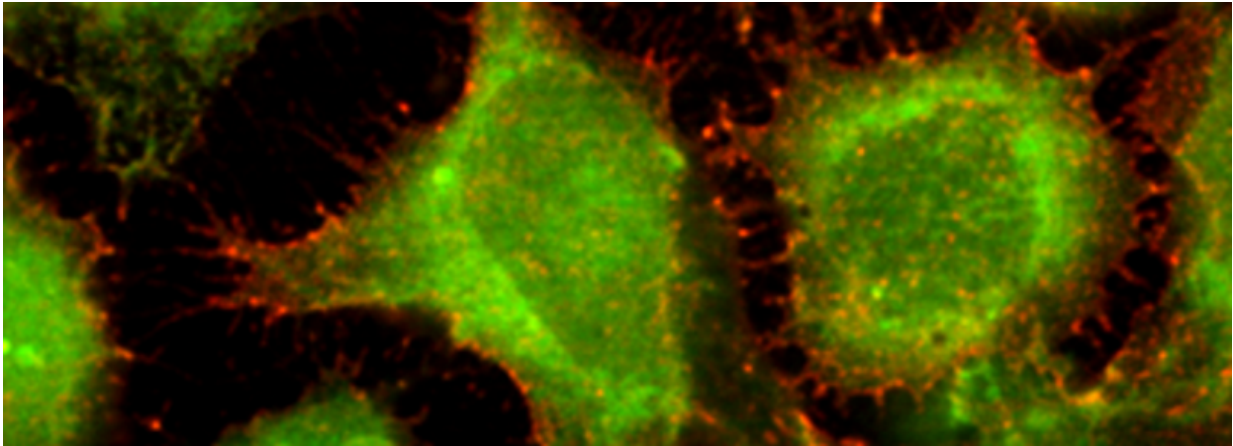


# Essential protein for metastasis identified

April 5 2017

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Picture of cells with fluorescence labeled hERG1 (green) and  $\beta 1$  integrin (red). Image taken with a confocal spinning disk microscope. Credit: Leiden University

An essential protein that regulates our heart beat turns out to be important for cancer cells as well. The discovery might open novel treatment strategies for fighting metastasis. Publication in *Science Signaling* on April 4th.

No matter how focused we are on the tasks in front of us— as long as we live we will always remember to keep our heart beating. And although we don't actively think about this, still it is our brain that makes sure the heart won't even skip one beat. It controls this process among others through a protein called hERG1.

## Cancer cells

Now a collaboration of groups from the universities of Leiden, Milan-Bicocca, Florence and Turin, headed by pathologist Annarosa Arcangeli (Florence) has unveiled a novel function of hERG1: it plays an important role in cancer cells too. They found that hERG1 is involved in the response of cancer cells to external mechanical signals, which are believed to be essential for [metastasis](#). At Leiden University, physicists Thomas Schmidt and Stefano Coppola were able to provide additional evidence for this role of hERG1 in mechanical signaling. Together with their Italian colleagues they publish their results in *Science Signaling* on April 4th.

## Drug

The finding poses the challenge of creating a drug that won't affect the heart function, but does alter hERG1's function in metastasis. And although this will be an immense effort, nature provides drug researchers with an opening; hERG1 forms a complex with another protein called  $\beta 1$  integrin in both heart and [cancer cells](#), but in [heart cells](#) also a third protein is involved. This difference might give a future medicine the means to selectively target tumors and leave the heart unaffected.

**More information:** Andrea Becchetti et al. The conformational state of hERG1 channels determines integrin association, downstream signaling, and cancer progression, *Science Signaling* (2017). [DOI: 10.1126/scisignal.aaf3236](https://doi.org/10.1126/scisignal.aaf3236)

Provided by Leiden University

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