

Cell recycling protects tumor cells from anti-cancer therapy

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Cells have their own recycling system: Discarded therapies.

cellular components, from individual proteins

through to whole cellular organs, are degraded and Source: Helmholtz Association of German

the building blocks re-used in a different place. The Research Centres

scientific term for this recycling process is

autophagy. In severely damaged cells, autophagy

can also be a form of programmed cell death. In

this case, the cell uses the mechanism for

complete self-decomposition.

Cancer cells, too, make use of autophagy –

especially after radiation or chemotherapy.

However, why autophagy is activated in this

context, is not clear. It is possible that the process

contributes to the death of the treated tumor cells.

But autophagy might also be an attempt by the

cells to survive. “Autophagy is also switched on

specifically, for example, when the cell does not

have enough nutrients at its disposal,” explains

Professor Ingrid Herr, head of the Research Group

“Molecular OncoSurgery” of the German Cancer

Research Center.

Working together with Dr. Anja Apel and scientists

of the University of Tübingen, Ingrid Herr has

studied the role of autophagy in cancer treatment.

To this end, the investigators switched off a

number of genes in tumor cells that are essential

for autophagy.

Subsequently, they irradiated the cells and then

examined how many cells had survived the

treatment. They found out that cells that had been

almost completely resistant to radiation became

more sensitive to radiotherapy due to blocked

autophagy. No effect was found on cancer cells

that had already responded well to radiotherapy

before.

Therefore, the researchers assume that highly

aggressive cancer cells use autophagy to resist

tumor therapy. The Heidelberg researchers will

now investigate whether blocking the recycling

system might be useful to support anti-cancer

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