

## In the news

### FATAL ATTRACTION

Researchers in South Korea have developed a magnetic ‘switch’ that induces apoptosis of colon cancer cells *in vitro*, and have also shown that this technology can be applied *in vivo* in a zebrafish model. The research, published in *Nature Materials*, raises the possibility of new targeted anticancer therapies that could potentially avoid p53 mutation-induced drug resistance.

A team from Yonsei University, Seoul, South Korea, constructed magnetic nanoparticles conjugated to a death receptor 4 (DR4)-specific antibody. Once the nanoparticles were bound to DR4-expressing colon cancer cells, a magnetic field was applied and the receptors were shown to form densely populated aggregates. This receptor clustering promoted extrinsic apoptosis signalling pathways; within 24 hours around 50% of the treated cells were dead, whereas the untreated cells remained viable. *In vivo*, the magnetic switch was shown to cause morphological alterations in the tail region of zebrafish — a sign of apoptosis.

Andrew MacKay of the University of Southern California, USA, said “They’ve identified a major opportunity for magnetic nanoparticles ... This might be a new way to do really targeted therapeutics” (*ScienceNews*, 9 Oct 2012). However, Henry Scowcroft of Cancer Research UK cautioned that although fascinating, this was still “extremely preliminary research [with] a long way to go before it’s ready to test in humans” (*MailOnline*, 8 Oct 2012). Concerns about the efficacy of the nanoparticles in drug-resistant cells were also raised by Courtney Broaddus of the University of California, USA, although she concluded, “it’s very intriguing, the potential applications of this technology” (*ScienceNews*, 9 Oct 2012).

The team now plan to extend their research to different types of cancer cells, as well as to other clinically useful membrane receptor targets.

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