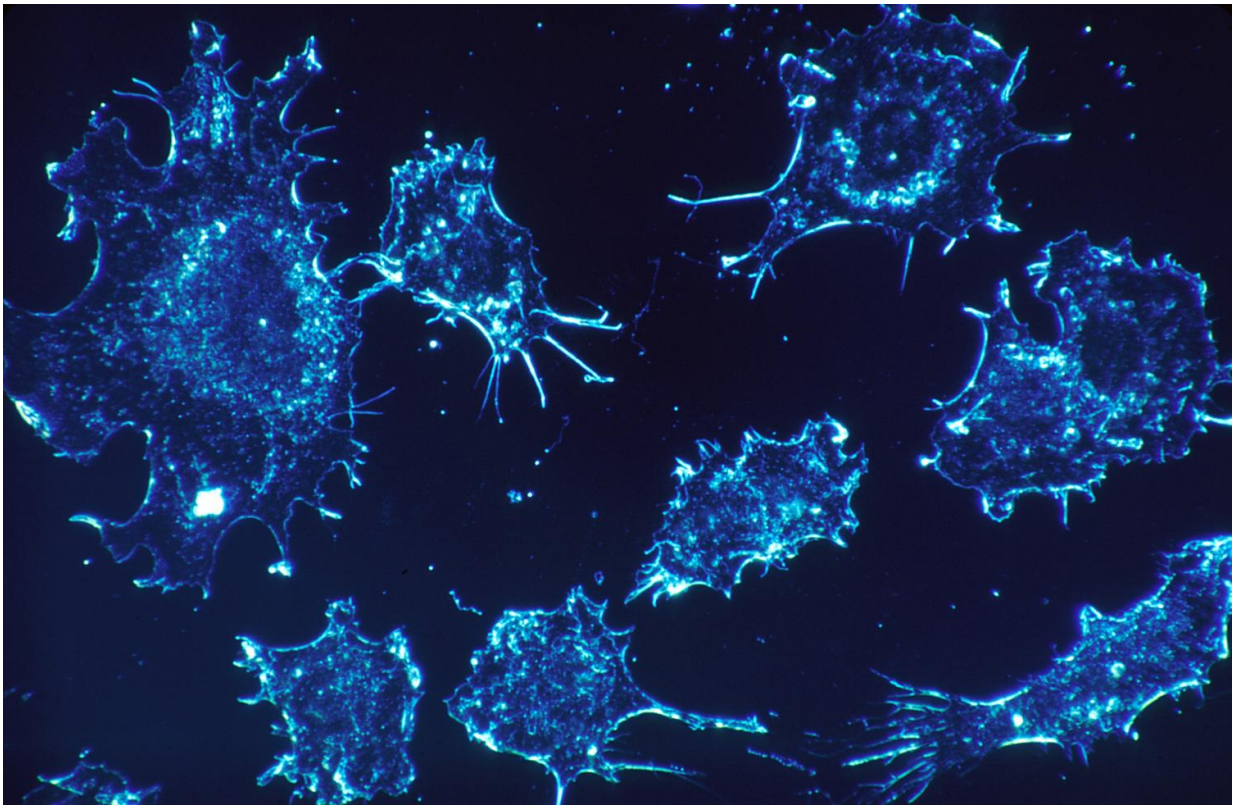
Medical Xpress

Could less deadly therapies be a better way to keep cancer in check?

October 2 2018



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While many cancer therapies initially can be very successful, tumors often return and spread when remaining cancer cells develop resistance to treatment. To combat this tendency, Frédéric Thomas of the French National Centre for Scientific Research proposes that cancer researchers

take a lesson from our own immune system and explore "natural adaptive therapies." Such an approach would mimic the immune system's more restrained way of keeping cancer in check by gradually killing off cancerous cells. Ideally, these therapies would remove the evolutionary pressure that often leads to the spread of resistant tumors.

In Thomas' article, publishing 2nd October in the open access journal *PLOS Biology*, he and his colleagues reason that the body has evolved anti-cancer responses that direct and slow the evolution of life-threatening cancer cells by not killing off too many cells too quickly. Natural adaptive therapies would use a similar approach to keep tumor size stable, while slowing the evolution of resistance. This strategy may be especially useful to prolong lifespan and quality of life in patients after a cancer has metastasized.

The authors also explore the risk that cancer immunotherapies may force the immune system to rapidly kill malignant cells in a way that undermines the body's natural adaptive therapies, thus accelerating the evolution of immune resistance.

According to Thomas, further explorations into the mechanisms employed by the immune system to stabilize tumors could help researchers to identify new therapies to prevent tumor growth and metastasis.

More information: Thomas F, Donnadieu E, Charriere GM, Jacqueline C, Tasiemski A, Pujol P, et al. (2018) Is adaptive therapy natural? *PLoS Biol* 16(10): e2007066. doi.org/10.1371/journal.pbio.2007066

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