

immune checkpoint inhibitors, ICIs 免疫检查点抑制剂 → 是一种"免疫治疗药物", 用于杀灭癌细胞

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1. New Cancer Vaccines Could Treat Some Types of Pancreatic, Colorectal and Other Deadly Forms of the Disease 新的癌症疫苗可以治疗某些类型的胰腺癌、结直肠癌和其他致命疾病

In large part, pancreas 胰腺 cancer is a very challenging malignancy 恶性 (肿瘤等), and even in the best set 一套, 一副, 一组 (配套使用的东西) of circumstances /when it's able to be operated upon 接受手术, there is a very high risk of the disease recurring 再发生, 反复出现.

在很大程度上, "胰腺癌"是一种非常具有挑战性的恶性肿瘤, 即使在能够进行手术的最佳情况下, 这种疾病复发的风险也非常高.

Most *pancreatic cancers* and some *colorectal 结肠直肠的 cancers* do not respond to traditional immunotherapy approaches 方式, 方法, such as *checkpoint (边防) 检查站; 边防关卡 inhibitors* 抑制剂, 抑制因子. So scientists have started investigating (v.)研究; 调查 vaccines as a way to prime (v.)把 (事物) 准备好; 事先指点; 使 (某人) 做好准备 the immune system more effectively.

大多数"胰腺癌"和一些"结直肠癌", 对传统的"免疫治疗方法" (例如检查点抑制剂) 没有反应。因此, 科学家们开始研究疫苗, 作为更有效地启动免疫系统的一种方法。

Example 1. 案例 inhibitor

- 1.(chemistry 化) a substance which delays or prevents a chemical reaction 抑制剂; 阻聚剂
- 2.(biology 生) a gene which prevents another gene from being effective 抑制基因

prime

- 1.[VN] to make sth ready for use or action 把 (事物) 准备好
 - The bomb was primed, ready to explode. 炸弹已准备好, 可随时引爆。

2.~ sb (for/with sth) : to prepare sb for a situation so that they know what to do, especially by giving them special information 事先指点；使（某人）做好准备
- They had been primed with good advice. 他们事先得到了高人指点。
- She was ready and primed for action. 她已胸有成竹、跃跃欲试了。

KRAS mutations cause (v.) roughly one third of all cancers. They' re found in about 95 percent of pancreatic cancers /and 30 to 40 percent of colon cancers.

大约三分之一的癌症是由 KRAS 突变引起的。它们存在于约 95% 的"胰腺癌", 和 30% 至 40% 的"结肠癌"中。

Example 2. 案例 KRAS 突变

Kras是一种鼠类肉瘤病毒癌基因, ras基因家族与人类肿瘤相关的基因有三种——H-ras、K-ras和N-ras, 分别定位在11、12和1号染色体上。

在ras基因中, K-Ras对人类癌症影响最大, 它好像分子开关: 当正常时, 能控制调控细胞生长的路径; 发生异常时, 则导致细胞持续生长, 并阻止细胞自我毁灭。它参与细胞内的信号传递, 当K-ras基因突变时, 该基因永久活化, 不能产生正常的ras蛋白, 使细胞内信号传导紊乱, 细胞增殖失控而癌变。

KRAS基因的全名叫 Kirsten ratsarcoma viral oncogene homolog, 翻成中文是“Kirsten大鼠肉瘤病毒癌基因同源物”。KARS基因编码的蛋白, 是一种小GTP酶 (smallGTPase), 它属于RAS超蛋白家族。

KRAS基因对人类癌症影响很大, 大约有30%的癌症患者, 都存在KRAS突变, 其中包括90%的胰腺癌, 50%的结肠癌, 和25%的肺癌。在非小细胞肺癌中, KRAS基因突变占20~30%, 多存在于胰腺癌中, 肺鳞癌中比较罕见。

早在几十年前, 研究人员就把KRAS, 确定为癌症的重要治疗靶点, 然而由于KRAS蛋白表面没有适于"小分子抑制剂"结合的口袋, 也就是说这种蛋白质缺乏明显的靶点, 可以让小分子药物与之结合并损害其功能。因此这么多年, 关于KRAS基因靶向治疗的药物, 屈指可数。

Drugs 后定 targeting cancers with KRAS mutations /must be stuck (a.)卡住; 陷住; 动不了; 无法移动 to a protein.

when small vaccine molecules (such as peptides 多肽类, short strands (线、绳、金属线、毛发等的) 股, 缕 DNA and some proteins) are injected (v.) (给...) 注射 (药物等), the blood captures (v.) them /and flushes (v.) (用水) 冲走 them through the body. Some of the vaccine may end up 最终成为 at irrelevant 不相关的, 不相干的 sites where there are no immune cells; some may get degraded (使) 退化, 降解; 分解 or destroyed; and some may flow to places that suppress (v.) 压制; 阻止; 抑制 the immune response /or lead to toxicity 毒性. In contrast, larger vaccine molecules are too big to enter the bloodstream 体内循环的血液; 血流 /and can thus travel (v.) straight to the lymph system, which is the body' s immune response 免疫反应 command center.

针对具有 KRAS 突变的癌症的药物, 必须粘附在蛋白质上。

当注射小疫苗分子 (例如肽、短链 DNA 和一些蛋白质) 时, 血液会捕获它们并将它们冲入体内。一些疫苗可能最终到达没有免疫细胞的不相关部位; 有些可能会退化或被破坏; 有些可能会流向抑制免疫反应或导致毒性的地方。相比之下, 较大的疫苗分子太大, 而无法进入血液, 因此可以直接进入淋巴系统, 这是人体的免疫反应指挥中心。

Example 3. title strand

2. 附录

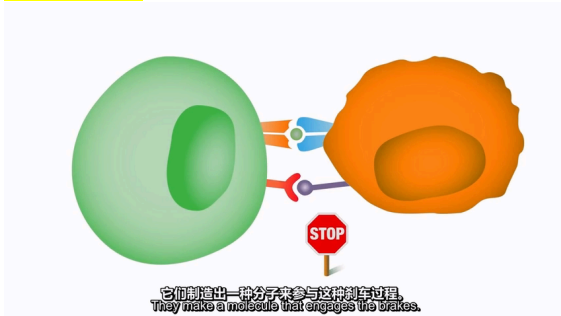
2.1. 医学常识 — immune checkpoint inhibitors, ICIs 免疫检查点抑制剂

癌症免疫疗法中, 最令人兴奋的方法之一, 就是**松开"抑制免疫系统"的天然"刹车"**. 这种方法被称为**"免疫检查点阻断" (Checkpoint Blockade)**, 其利用的是**免疫系统自身对抗癌症的能力**.

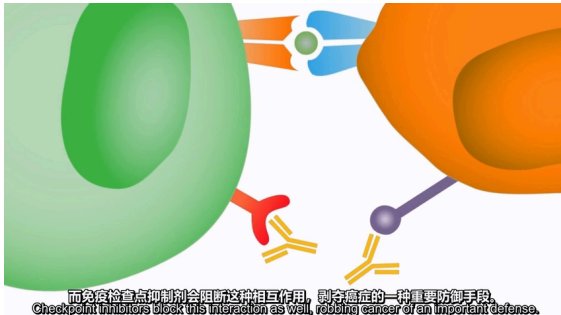
免疫系统的主要抗癌细胞, 被称为 **"T细胞"**. **T细胞表面有执行不同功能的"受体"**, 有些就像汽车的**油门踏板**, 可以启动细胞的**"抗癌反应"**; 另一些则像一个**刹车**, 使得 **"T细胞"**关闭相关作用.



许多癌细胞已经学会了操纵这些类似的**"免疫刹车"**来避免被破坏, 它们制造出一种分子, 来参与这种**刹车过程**.



而**"免疫检查点抑制剂" (Checkpoint inhibitors)** 会阻断这种相互作用, 剥夺癌症的一种重要防御手段. 被称为**"免疫检查点抑制剂"**的药物, 可以松开刹车, 使得免疫系统踩下油门, 并**对抗癌症**.



目前 FDA 批准了几种**"检查点抑制剂"**, 用于**"黑色素瘤"**和**"肺癌"**的治疗.

如, 药物 Yervoy可以阻断一个被称为 **"CTLA-4 的免疫检查点"**. 另外两种药物, Opdivo 和 Keytruda , 可以阻断 **"PD-1 检查点"**.

3. New Cancer Vaccines Could Treat Some Types of Pancreatic, Colorectal and Other Deadly Forms of the Disease

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Most pancreatic cancers and some colorectal cancers do not respond to traditional immunotherapy approaches, such as checkpoint inhibitors. So scientists have started investigating vaccines as a way to prime the immune system more effectively.

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