are all independently working on bi-specific antibodies that bind both BCMA and CD3 to bring together BCMA-expressing plasma cells and endogenous cancer-killing T-cells. "They all have their utility," says Yu-Tzu Tai, a myeloma immunotherapy researcher at the Dana-Farber Cancer Institute in Boston, who has worked on both kinds of BCMA antibody-targeted technologies.

But unlike other therapies that require regular and indefinite administration, CAR-T cells, once they've been harvested and engineered, need only be infused once, after which recipients can visit their oncologists intermittently for clinical monitoring. "It allows patients to get on with their lives," Maus says.

Elie Dolgin *Somerville, Massachusetts*

Life-changing results from a CAR-T therapy

H. Morrow

Harrison Morrow, a 52-year-old former construction worker from Billerica, Massachusetts, is picking up the pieces of his life again after a five-year battle with myeloma during which time he received chemotherapy, immunomodulating agents, proteasome inhibitors, an experimental antibody drug and an autologous stem cell transplant—all to see his cancer return time and again. In recent years, his bones wore down to the point that he needed a titanium rod implanted in his arm, medical-grade concrete poured into his spine and a cobalt replacement of his hip.

For years, Morrow was taking fentanyl and other powerful opioids for the pain. But after his CAR-T transplant on March 7 as part of the bb2121 trial, "I'm not in as much pain as I used to be," Morrow says, "and that can't be discounted enough." His outlook on life has changed so dramatically that Morrow and his fiancée Karen Johnson have even begun to make wedding plans, something they've been reluctant to do since their engagement four years ago for fear of Morrow's imminent death.

"I am one thankful dude for the people around me who got me into this CAR-T program," says Morrow. "I feel like my life can now start in a new direction." *ED*

Merck KGaA, F-Star shake on immune-oncology bispecifics

German pharma Merck KGaA has gained an option to five bispecific antibodies developed at F-Star Biotechnology. The deal will provide Cambridge, UK–based F-Star with up to $129.5 million over two years, including an upfront payment, R&D funding and milestones. It includes rights to F-Star's lead immuno-oncology asset, FS118, which is designed to block LAG-3 (lymphocyte-activation gene 3) and PD-L1 (programmed death-ligand 1), two pathways commonly used by cancer cells to evade the immune system. FS118 is currently in preclinical testing. Merck, which is headquartered in Darmstadt, can select up to four additional, discovery-stage antibodies under the agreement. F-star will be responsible for preclinical and clinical development of each of the antibodies until Merck exercises its option, which could be worth an additional $1 billion if the company chooses to acquire all five programs. F-Star applies its modular antibody technology platform to develop bispecific antibodies. The platform introduces a novel antigen-binding site into the constant (Fc) region of an antibody to create an Fc domain with antigen binding activity. The resulting structure becomes a building block for combining with other drug formats, for example, with a variable region of an existing antibody to generate a bispecific antibody. Merck already has a bifunctional antibody, M7824, against PD-L1 and transforming growth factor β in phase 1 testing. Its anti-PD-L1 antibody Bavencio (avelumab), developed with New York–based partner Pfizer, was granted accelerated approvals in the US in 2017 to treat locally advanced or metastatic urothelial carcinoma and Merkel cell carcinoma.

"The lay literature on the microbiome is crap." Craig Venter tells an audience at the BIO2017 conference in San Diego that Human Longevity, Inc., a company he co-founded, has only a few conditions associated with the microbiome's composition. (21 June 2017)

"If [Grail reports] every cancer, we will go broke. That is clear as day. We can't infinitely add to the most expensive health care in the world." Laura Hercher, a genetic counselor at Sarah Lawrence College in New York, on the event of cancer blood test developer Grail's merger with its inventor Dennis Lo's company, Hercher. (*Technology Review*, 5 June 2017)

"A feature, not a bug." Innovator George Church ascribes his visionary ideas to narcolepsy, which has persuaded him to think that the world needs neurodiversity: people with different brains, including individuals with high-functioning autism, obsessive-compulsive disorder, attention deficit disorder and narcolepsy. (*STAT*, 8 June 2017)