Personalized precision cancer treatments tailored to your genes improving but hurdles high

Elaine Mardis and her colleagues first encountered 39-year-old Lucy in 2010 at the Genome Institute at Washington University in St Louis, Missouri. Lucy had been referred there after a confusing leukaemia diagnosis. Her doctors thought she had a subtype of the disease called acute promyelocytic leukaemia (APL) — one of the most treatable forms — which usually occurs when parts of chromosomes 15 and 17 get mixed up. But other features of her chromosomes suggested that she might have a much more dangerous form of the disease and therefore need a bone-marrow transplant.

While her medical colleagues treated Lucy, Mardis sequenced Lucy's genome and that of her cancer and discovered that the leukaemia was indeed caused by a piece of chromosome 15 inserting itself into chromosome 17. "Our chromosomal analysis indicated that she would respond well to traditional APL therapy," Mardis says. In other words, the treatment she had already received should hold her cancer at bay — and no risky transplant would be needed.

Personalized, 'precision' medicine for cancer is in a difficult time of transition. There are promising stories like Lucy's, wherein the DNA typing of tumours suggests clear approaches to therapy, with improved results for patients. But the field is still limited by many complexities and constraints.

Read the full, original story: Therapy: This time it's personal