Franklin's X-ray pictures to Watson, who realised at once that it provided crucial evidence for the double helix. "But science is not supposed to be kept in bags, any more than cats," Wilkins responded. His sombre mien contrasted sadly with the story of robust commercialisation which came later.

Gosling's view was that "Rosy would have been appalled to learn that they had taken quite so much detail of her current work and put it into their model". On the other hand, Franklin may have been unwise to laugh dismissively when Watson and Crick showed her their first, imperfect model. For no particular reason, Gosling also opined that Franklin's hair was "in no particular arrangement".

The human factor emerged again in comments about Pauling and his erroneous model, "No-one at Caltech had the courage to tell Pauling that it was wrong," Watson said. "Linus was like the Pope. He wasn't used to people saying he was wrong." More questionable was Peter Pauling's remark: "For Pah, DNA was just a substance like sodium chloride."

No, it was not. Neither was it uncontroversial, as Maurice Wilkins believed when he selected DNA as a research topic, after working on the Bomb during wartime. The succeeding episode, After DNA: The Story of Life, opened with the storm of controversy that accompanied the advent of recombinant DNA.

There was needless hyperbole in the description of the first genetic engineers ("With their new powers, they could accelerate evolution according to their own designs and alter the destiny of life on earth"). But the programme put into true perspective both the reasonable concerns of people such as Paul Berg, which led to the Asilomar conference of 1975, and the unreasonable assertions of Alfred Velluccci, Mayor of Cambridge, Massachusetts, whose rantings helped to eject Walter Gilbert and his work from Harvard. "They don't even know what's going to come out of their experimentation," said Vellucci. "It could be anything; contamination, infections, and suddenly they could crawl out of the laboratory, such as a Frankenstein".

The giddy business climate of the times, with the inception of Genentech and other biotechnology firms, came over strongly, as did anxieties which returned in full measure two decades later. "If they could modify farm crops to resist disease and improve yields, Monsanto might one day be able to control the world's food production," the voice-over said at one point.

Unlike many recent commentators, the programme was careful to distinguish technical questions about the safety of genetic modification from those that reflect instead concerns over issues such as the power of multinational companies and the impact of novel technologies on north–south geopolitics. Paul Berg, a pioneer of the technology as well as an early whistle-blower, said he was concerned that the first commercial products of crop manipulation had all been beneficial for farmers and companies but not for consumers.

Sadly, After DNA: The Story of Life failed to examine today's furore over GM food in light of the anxieties expressed in the early 1970s. A dispassionate comparison of this sort would have revealed two crucial things. Firstly, the early calls for caution, moratoria and practical care led to the establishment of stringent regulations for GM work that continue to be applied throughout the world over a quarter of a century later. The technology is neither new nor 'out of control', as opponents claim. Secondly, none of the apocalyptic prophecies about GM organisms in the environment — of unstoppable epidemics and environmental disasters, for example — have come to pass in the intervening years.

Those two points, with chapters and verses, would have been valuable correctives in the present climate, within which rejection of GM is an essential article of faith for politically correct discussants in the pub and at the dinner party. The programme makers seemed reluctant to reach any strong conclusions at all about the safety and utility of genetic manipulation, preferring instead the platitudinous 'only time will tell'. I prefer Jim Watson's verdict on the opponents: "These people want the world to stay as it is. I don't want the world to stay as it is."

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Anniversary uptake

DNA at 50: Media editors have been thinking hard about the best ways to cover the DNA landmark and subsequent developments. **Richard Harris** looks at how the story came out.

Big anniversaries give editors heartburn. On the one hand, journalists love to commemorate events on years that have nice round numbers. On the other hand, they always want to be first with a story, so it's oh so hard to wait for the actual date, knowing that the competition most likely won't.

Editors around the world have been dancing this minuet in recent months, as we've passed various anniversaries relating to the discovery of the structure of DNA. The Associated Press got out of the blocks in early February, using the old 50-years-ago-this-month trick. Most others, however waited patiently until at least the week of the actual anniversary of the discovery — which was February 28th.

More than one journalist dredged up the classic lore of the discovery and made it the lead of the story. The Times of London was just one of the papers to capitalize on this: "Fifty years ago today, Francis Crick, a Cambridge University physicist, walked into the city's Eagle pub with his collaborator, James Watson, and announced: 'We have discovered the secret of life'." The anecdotes go on to relate how Crick's wife

was dismissive, noting that he always came home with grandiose claims. But this one was, as the San Francisco Chronicle put it, "arguably the most significant to biology since Charles Darwin published his theory of evolution in 1859."

The Chronicle didn't use the well-worn pub story, but it did pull out the West coast equivalent — a meeting many years later between Stanley Cohen and Herbert Boyer who, "chatting in a Honolulu delicatessen, realized that together they could harness specific enzymes to cut the genes of unrelated bacteria and combine them to create new organisms." Naturally, any attempt to catalog the medical and intellectual advances based on the double helix is bound to use up all the superlatives in the thesaurus. So, after giving it a stab, journalists went on to pursue all nature of other angles.

The secret of life is that life has no single secret. DNA alone did not make Watson and Crick. It also took training, conversation and warm, flat English beer.

"Is the DNA dream about to expire?" the Times of London asked on the big date. "For generals at the helm of the genetics revolution in America, there are only two places to be today. The beautiful people will gather at the Waldorf-Astoria in New York for a dazzling gala ball," the Times wrote. "The other venue is the humbler Holiday Inn in Silver Spring, Maryland," where the FDA was sitting in judgment over gene therapy. Reflecting this reserved tone was a Wall Street Journal column titled, "DNA's Double Helix Isn't So Golden Now, But Happy 50, Anyway." That column dwelt on the sometimes overlooked reality that there's more to biology than DNA.

Given the protagonists in this story, there was also plenty of fodder for reflecting on personality. The New York Times carted out Watson's assertion that his Harvard lab discovered mRNA independently of his rivals. He told the Times he and Walter Gilbert "were in some sense equal to Francis and Sydney [Brenner]". But the Times went on to note that, "Neither Dr. Crick nor Dr. Brenner is willing to accord Dr. Watson that much credit for messenger RNA. 'He has got to the stage of misremembering things,'" Crick told the Times.

And then there's the well-worn story of who was not on the guest-of-honor list. Of course, Rosalind Franklin's name came up repeatedly, but so did a few others. Newsday, on New York's Long Island, recounted the story of Oswald Avery and his colleagues, who showed that DNA was the stuff of genes back in 1944, but never got a Nobel.

Wandering even farther from Cambridge, Cornell mathematician Steven Strogatz argued in a New York Times commentary that in all the hoopla over DNA, "there was no mention of another scientific feat that also turned 50 this year — one whose ramifications may ultimately turn out to be as profound as those of the double helix." He argued the real neglected heroes of 50 years ago are Enrico Fermi and colleagues, who invented the concept of a computer experiment at Los Alamos in 1953.

Inevitably, the romps past Raelians and Dolly through fields of genetically modified crops eventually returned to the day of discovery in Cambridge and the understated Nature paper that was to follow. Johns Hopkins science historian Nathaniel Comfort, in a commentary on National Public Radio, put it as well as anyone when he concluded, "The secret of life is that life has no single secret. DNA alone did not make Watson and Crick. It also took training, conversation and warm, flat English beer."

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Wellcome Trust DNA celebration

DNA at 50: The structure of the molecule and its implications has had a major impression on some artists, highlighted in a new exhibition, but its discovery was slow to make an impression. **Nigel Williams** reports.

The Wellcome Trust, Britain's largest biomedical research charity, has a double celebration of the 50th anniversary of the publication of the discovery of the structure of DNA. Not only is it running an exhibition of work commissioned by contemporary artists, it is also celebrating the opening of Francis Crick's archive, obtained by the trust in 2001.

Ten artists, both established and emerging, have been commissioned to provide their own interpretation of the subject. One of the artists provides a very personal view of James Watson, another is intrigued by the comparable anonymity of Maurice Wilkins. Yet others have either responded to the iconic status of of Rosalind Franklin, or chosen to comment on the social history of DNA and genetics.

The exhibits and artworks are displayed at both locations of the Wellcome Trust on Euston Road, London. Four of the artists have produced limited-edition works to accompany their commissions, and which will be available free of charge at the exhibition or via its website, www.wellcome.ac.uk/fourplus.

Denna Jones, curator of the exhibition said: "The passionate debate around what is arguably the greatest discovery of the 20th century, and its consequences, has stimulated artistic responses using a variety of media, including sound, film images and writings," she says.

The Wellcome Trust was a key contributor to the public Human Genome Project. "I hope that visitors will be prompted to consider the passions and personalities that contributed to this momentous discovery and the