Last days in Arcadia

The genetic code and Francis Crick shared a memorable birthday party.

John Cairns

The entire genetic code had been worked out by 1966. In a sense, this was not really a discovery. Obviously there had to be some kind of code and, in the end, it was deciphered more by brute force than subtle argument, using short molecules of RNA to drive protein synthesis in a test-tube. But the table showing the meaning of each of the 64 possible triplets was the culmination of all that had gone before.

In the 13 years since Watson and Crick had revealed their model for the structure of DNA, the essential ingredients that handle biological information had been identified — DNA sequence, operons, repressors, messenger RNA, transfer RNA and ribosomes, plus the various classes of enzymes needed to make those ingredients. These were formidable discoveries, and they changed the science of molecular biology from an esoteric field inhabited by a small coterie into the discipline that has dominated biology ever since.

In those days, there were far fewer scientists. Conferences did not tread hard upon each others' heels, and a single symposium at the Cold Spring Harbor Laboratory in New York state could just about cover all of molecular biology. The first breach into the code had come with the discovery that poly-U — an RNA chain of uracil nucleotides — translated into a chain of the amino acid phenylalanine. This, incidentally, contributed to the feeling of many molecular biologists that God was on their side, because poly-U was the easiest RNA to make and poly-phenylalanine is barely soluble and therefore easily detected. The rest followed soon after, making the complete deciphering of the genetic code the natural subject for the 1966 symposium.

It is the custom, halfway through each symposium, to hold a banquet preceded by a cocktail party — something is needed to relieve the fatigue and tensions brought on by listening to 15 or 20 talks each day. By chance, the 1966 symposium, celebrating the birth of the genetic code, coincided with Francis Crick's fiftieth birthday. To mark the occasion, Jim Watson devised a Bacchanalian interlude to take place during the cocktail party. I shall cast a veil over the details. But it was sufficiently lurid that Max Delbrück, hearing about it — and being himself something of an expert in embarrassing practical jokes — insisted that there should on no account be any party for his sixtieth birthday, due to coincide with his teaching that summer's Cold Spring Harbor phycomyces course.

So our scene is set. The party is under way. Crick survives Watson's interlude. A telegram from England is read out, mysteriously signed "Elizabeth", which congratulates Francis on having managed to reach the age of 60 (*sic*). Rollin Hotchkiss reads a narrative poem, composed for the occasion and entitled "A Happy Crickmass", a tale of arms and the man which seems to go on almost as long as Virgil's epic. And the visitors mill around on the sloping sunlit lawn between the dining hall and the harbour, in a vinous stupor, secure in the knowledge that there are no lectures on the evening of the banquet.

At the time, my view of the proceedings was overcast by the gloomy pragmatism that affects most administrators, but any visitor from outer space would surely have judged this as an Arcadia peopled by innocents. The territory between biochemistry and genetics, long virtually uninhabited, was now open to all. Furthermore, thanks to Sputnik One, there was ample support for science, and funding agencies had not yet fulfilled Leo Szilard's prophecy that, with more money to spend, they would become fussy and insecure. Those were golden days indeed.

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A third of a century later, molecular biology has lost its air of relaxed innocence. In the 1960s, it was primarily the study of information stored in one dimension — the DNA molecule. The prevailing view was that amino-acid sequence was sufficient to determine the three-dimensional structure of a protein; this, therefore, was not a pressing problem. The only structure of interest was the double helix and, as Alfred Hershey once said, it was remarkable in being the only instance where structure had anything useful to say about mechanism. So the era of one-dimensional molecular biology in the mid-1960s was a time of maximum simplicity.

Since then, however, we have become able to find out how things work in three dimensions, and we are seeing that billions of years of evolution have allowed (or forced?) even the simplest cell to become unimaginably complicated. Just as two objects moving at random in a three-dimensional space need never meet, perhaps molecular biology's leap from one to three dimensions will take it beyond human comprehension. The old-timers must often look back longingly to that sunlit June evening, when molecular biology was a self-confident teenager and Crick a stripling youth of 50. □

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Hotchkiss reads his poem, "A Happy Crickmass", as Crick (far left) and the other party-goers look on.