DNA, RNA and protein formation
Creating three dimensional structures

Finally, how does the cell go from a linear polypeptide to the three-dimensional shape seen in the protein? Well, that's where individual amino acids come into play, because individual amino acids, the different types, can interact with each other in a variety of ways. So, depending on particular amino acids in the polypeptide in question, and their position in the sequence, the interactions occur, giving the weird and wonderful, very characteristic, three-dimensional shape of the protein in question. Well, that completes the journey from DNA to protein, but it's worth having another look at translation, this time from a slightly different perspective. We'll look at what happens in the cell, that's on the ribosome.

Commentary:
In this sequence we concentrate on how the messenger RNA interacts with the ribosome. A specific set of bases on the message signifies a start signal for protein synthesis. The ribosome and the messenger are in a move relative to one another. The instructions in the message are decoded to produce a polypeptide chain. This requires the transfer RNA adaptor molecules, omitted here for simplicity. The process continues until the ribosome reaches a stop signal in the message, again denoted by a specific set of bases. The completed polypeptide chain is released.

Norman Cohen:
Well, that's just about it. We've looked at the structure of DNA, how DNA's replicated, and how the information in DNA is utilised to make proteins. But as we saw all of that, I think there's one principle that really helps tie things together, and that's the principle of base pairing. We've seen how base pairing helps explain replication of DNA. It also helps explain transcription to make messenger RNA, and translation of messenger RNA to make proteins. And of course base pairing is also important in explaining why the DNA molecule is a double helix. It's quite a remarkable molecule and one that provides a wonderful example of the connection between structure and function. It's also a very clever solution to the three problems that we set earlier for inherited material: stability, accuracy of copying, and containing information. Clever? Well, if molecules did have brains, this one would be Einstein.