

## Who discovered messenger RNA?

When we study discoveries in Biology or any other science, the pathway of how the answer was reached is clear to us. However, this is a murky road from the other end because the scientists and researchers who work to answer such questions do not have a set way to go. They cannot even be sure that the “material” they are researching exists (consider the example of ‘ether’ as a universal medium).

This essay covers the issue very well by giving us a detailed and precise way to the discovery of mRNA. More importantly, it tells us why this way must have been uncertain even for the most brilliant minds in Biology. Not one scientist was awarded the Nobel Prize for this discovery precisely because the experiments did not involve a single individual or even a single group. People looking at issues from different angles collaborated and collided to answer this question.

The journey started after Watson and Crick described genetic material in detail as it opened up avenues for asking how exactly the genetic code works. Andre Bolvin summarised that DNA works to produce RNA, which in turn is responsible for producing cytoplasmic proteins and enzymes.

For a while, the microsomal particles responsible for synthesising proteins were not mentioned. The name ‘ribosomes’, a term we now learn in 9th-grade biology, was even coined during informal discussions. Hoagland and Zamecnik’s suggested that RNA in the ribosome was the template for protein synthesis. The missing link between amino acids and ribosomes was termed ‘adapter molecule’ by Crick, a molecule also being researched simultaneously by other scientists and which would turn out to be tRNA.

Many experiments on RNA and protein synthesis in the 1950s picked up on the presence of a short-lived intermediate. However, these scientists missed out on identifying mRNA because their focus was on the two types of RNA already hypothesised.

Various researchers had found molecules with “a rapid turnover”, “a transitory form of RNA”, and even “the link between DNA and RNA”. Finally, the team of Institut Pasteur, Paris, began to focus on the nature of a mysterious messenger molecule which gave immediate chemical signals to the protein synthesis system, calling it a ‘cytoplasmic messenger’.

It was only during the informal discussions between the British group of Cambridge and the Parisian group that these scientists realised the possibility of a new, short-lived form of RNA.

The story of this discovery, however important and life-changing, is peppered with informal, friendly discussions between scientists, which show a camaraderie between these scholars, in addition to the competition we usually see. Even when the Crick-Brenner-Messelson team had solidified their results, they waited three months to publish them in deference to the request made by Watson’s team. Calling the Pardee-Jacob-Monod team a ‘PaJaMa’ party, imagining Brenner and Jacob discussing Science in a corner during a full-blown event, makes us realise that these scientists were also human. It makes us accept that such extraordinary feats were accomplished by many talented, devoted, but ordinary people.