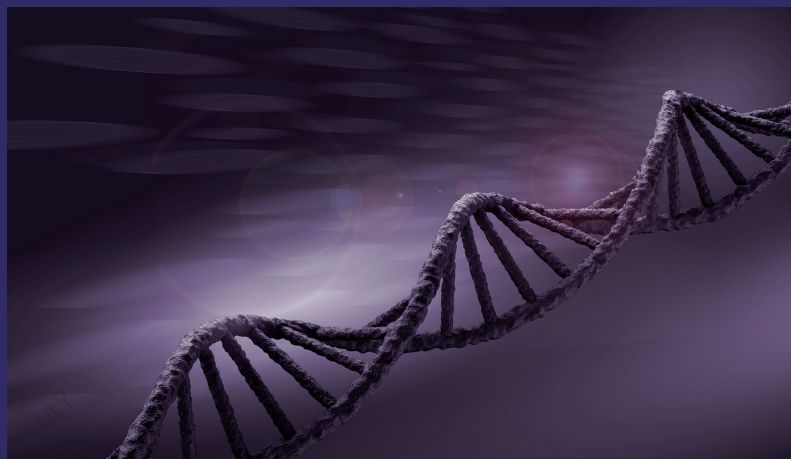


The question of life's primordial beginning, one of the existential questions that scientists have pondered since antiquity, belongs directly to the domain of chemistry. It is therefore relevant to study and reflect on the kinds of chemical reactions that would have been important in molecular origins. The origin of life can be addressed in the platform of an interdisciplinary approach that covers chemical conundrums as well as biological, physical and philosophical sciences. In this thesis I focus on the chemical perspectives on the origin of life and the creation of the synthetic cell because of their overwhelming chemical significance. The thesis also aims at exploring the ethical concerns over 'creating life' with special emphasis on Craig Venter's synthetic cell with a view to ensure hope and security in the context of the scientific predictions and mounting apprehensions. It underscores the worries that synthetic cells are inherently bad because they are unnatural or that their creators are 'playing God'.

CHEMISTRY OF LIFE AND 'SCIENCE PLAYING GOD'



Beena Jose



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A critical study of the theological and ethical aspects
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CHAPTER I

SOME INTRODUCTORY IDEAS ON LIFE

I. 1 Introduction

Life is an inordinately complex unsolved puzzle. Despite rapid advancements in the field of astrobiology, microbiology, and genetics in recent years the evolution of life remains an ineffable enigma. The origin of life on earth is a most curious thing: no one presided over the origin of life to observe it and much of the relevant evidence has been lost in the intervening 3.5 billion years or so. Nonetheless, many separate lines of evidence do shed light on this event, and as biologists continue to investigate these data, they are slowly piecing together a picture of how life originated. There are a few key experiments that we will look at in order to gain a better understanding of how scientists have until now best hypothesized how life started on earth. This initial chapter gives an outlook of how life originated on earth and examines theories behind the evolution of life, the chemistry of life, and controversies surrounding the origin of life.

I. 2 Early Earth and Beginning of Life

Earth formed as part of the birth of the solar system some 4.6 billion years ago. It was very different from the world we know today.¹ There were no oceans, neither was there any oxygen in the atmosphere. Between 4.3 and 3.8 billion years ago, the earth is believed to have undergone a period of heavy meteoric bombardment, which may have lasted for 700 million years. Earth was assailed by planetoids and other material leftovers from the formation of the solar system. This planetary onslaught combined with the heat produced from radioactive breakdown and heat from the pressure of the cosmic contraction caused the planet at this stage to become fully molten. Heavier elements sank

¹ Ehrenfreund Pascale, "Astrophysical and astrochemical insights into the origin of life," 1427.