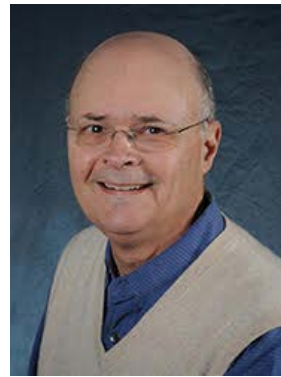


School of Physics and Astronomy

Astrobiology Cognition and Exo-life (ACE) Seminar

How inevitable is Life? Chemistry, Structural Biology, and the Origin of Biological Meaning

*Professor Charles Carter
Department of Biochemistry and Biophysics
School of Medicine
University of North Carolina*



As scientists delve more deeply into the chemistry and physics that underlie life, we encounter coincidences suggesting that life's origins depended on serendipities in much the same way that an idiosyncratic choice of physical constants ensured that our universe assumed the form it does.

I will summarize two sets of coincidences that may have led to emergent properties necessary for biology to emerge from chemistry. My theme will be that the central molecular machineries that make life possible grow organically from much simpler ancestral forms, and take advantage of those coincidences. The central focus will be on the role played by the biological machines that translate the genetic code—enzymes called aminoacyl-tRNA synthetases—in the origin of genetic coding. Genetic coding represents perhaps the earliest example of how biology began to store information about the universe in the sequences of nucleic acids, the biopolymers from which genes are made. That information was essential to the symbolic “translation” of genetic information into the structures of proteins, the biopolymer from which the majority of biological machines are made.

The coherence of the coincidences appears to constrain the form that living things in our universe will assume. Those constraints strengthen the notion that life may be a probable emergent consequence of circumstances that now appear to be widespread in the universe.

When:	Friday February 1, 2019
Time:	1pm
Where:	L1, Seminar Room 107, 10 College Walk

info: john.lattanzio@monash.edu