The Current Status of Chemical Theories on the Origin of Life, with a Christian Critique

How life on earth began remains a question unexplained in terms of pure naturalism. Since it is a vital part of the pan-evolutionary Grand Narrative, experimental as well as model studies and reviews are numerous. The talk will categorise the various reductionist approaches to this ultimately unobservable beginning. With "only" chemical materials, chemical processes plus information involved, possible scenarios are amenable to experimental and theoretical testing, in contrast to large organismal transitions in biology. Of late, non-reductionist non-theistic philosophies have been introduced in origin of life explanations. This will also be addressed. The Christian critique will show that what we scientifically know about chemical processes and properties of matter, strongly suggests that a creative, living influence is needed in order to create life. So the Christian view of life as being wilfully created by God is in better accordance with the latest scientific findings than non-theistic theories are.

Peter Imming received degrees in pharmacy and chemistry and a PhD and venia legendi in pharmaceutical chemistry from a German university. He has been involved in drug chemistry teaching and research in Germany, the UK, China, and other countries. Currently, he is head of a pharmaceutical chemistry department of a German university. His research focusses on the design and synthesis of new drug substances and on molecular mechanisms of drug action. He has a strong interest in the relation of science and Christian faith, frequently lecturing on related topics by invitation of e.g. universities, churches, and schools.

I. Transition of dead matter to living matter? Stating the issue.

A. Scientific disciplines involved:
1. Chemistry

2. Information theory

B. Asking for the origin of
1. biomolecules

2. molecular organisation

3. without "integrative management"?

II. Categorising theories on the origin of living matter:

A. first, polymeric molecules were formed that had the ability to replicate ("replicator first"):

1. Proteins

2. RNA

B. first energy-driven networks of chemical reations were formed with lower molecular mass molecules ("metabolism first")

III. Special, popular notions and theories:

A. Miller experiments

B. RNA world scenarios

C. Meteorites brought homochiral amino acids

D. Hydrothermal vents

E. Lipids and membrane-forming compounds

F. Making simplest life forms in the lab

IV. Non-reductionist non-theistic voices

A. Emergence

B. Neovitalism

C. Creation science: "How can a theory of evolution that purports to explain how creatures with trillions of cells arose from unicellular beginnings lost in the mists of pre-Cambrian time be taken seriously if all it tells us is that differential rates of destruction can alter the genetic composition of populations? How are the new variants that natural selection spreads through populations created in the first place? Although the phrase 'creation science' carries disreputable connotations because of its frequent use by some religious fundamentalists, we truly need some 'creation science' (in the other sense of that phrase) as a major component of evolutionary theory." Wallace Arthur (geneticist specialising in evolutionary developmental biology), "Biased embryos and evolution", Cambridge Univ. Press 2004, p. 36

D. Physicalism? Biologism? Naturalism? "In the present intellectual climate such a possibility is unlikely to be taken seriously, but I ... no viable account, even a purely speculative one, seems to be available of how a system as staggeringly functionally complex and information-rich as a self-reproducing cell, controlled by DNA, RNA, or some predecessor, could have arisen by chemical evolution alone from a dead environment. Recognition of this problem is not limited to the defenders of intelligent design." Thomas Nagel (philosopher, not a defender of ID), "Mind and Cosmos", Oxford University Press 2012, p. 123

V. Why the Christian faith in a personal Originator is neither a "gap filler" nor a matter of personal opinion

"That which is known about God is evident within them; for God made it evident to them. For since the creation of the world His invisible attributes, His eternal power and divine nature, have been clearly seen, being understood through what has been made." Romans 1:19-20 (NASB)

Helpful Resources:

Abel, D. L., Trevors, J. T. Self-organization vs. selfordering events in life-origin models. Physics of Life Reviews 2006. doi: 10.1016/j.plrev.2006.07.003, 2006b.

Binder, H. Miller-Experimente zur Chemie der Lebensentstehung - 50 Jahre danach. Studium Integrale Journal. 2003, 10, 65-73. http://www.si-journal.de/jg10/heft2/sij102-3.html.

Cleaves II, H. J. Prebiotic Chemistry: What we know, what we don't. Evo. Edu. Outreach 2012, 5, 342-360.

Dembski, W., Wells,J. The Design of Life: Discovering Signs of Intelligence in Biological Systems. Foundation for Thought & Ethics, 2007.

Eschenmoser, A. The search for the chemistry of life's origin. In: Arber W, Cabibbo N, Sánchez Sorondo M. Scientific insights into the evolution of the universe and of life. Pontificae Academiae Scientiarum Acta 20, Ex aedibus academicis in civitate Vaticana, Vatican City 2009.

Imming, P. Die fehlenden Spiegelbilder. Studium Integrale Journal 2006, 14, 14-21. http://www.si-journal.de/jg14/heft2/sij142-1.html

Imming, P., Bertsch, E. Zufall und Notwendigkeit erklären den Ursprung des Lebens nicht. Studium Integrale Journal Nr. 2006, 13, 55-65. http://www.si-journal.de/jg13/heft1/sij131-2.html

Imming, P. Wie ist das Leben entstanden? In: Atheistischer und jüdisch-christlicher Glaube: Wie wird Naturwissenschaft geprägt? Forschungssymposium vom 2. bis 4. April 2008 an der Universität Regensburg; Hans-Joachim Hahn, Richard McClary, Christiane Thim-Mabrey (Hrsg.), Books on Demand, Norderstedt 2009

Junker, R., Scherer S. (eds.), Evolution – ein kritisches Lehrbuch. Weyel-Verlag, Gießen 2006 (6. Auflage).

Kaufman, G. D. A religious interpretation of emergence: Creativity as God. Zygon 2007, 42, 915-928; doi: 10.1111/j.1467-9744.2007.00880.x

Lane, N., Allen, J. F., Martin, W. How did LUCA make a living? Chemiosmosis in the origin of life. BioEssays 2010, 1-10. doi: 10.1002/bies.200900131.

Martin, W., Russell, M. J. On the origin of biochemistry at an alkaline hydrothermal vent. Philosophical Transactions of the Royal Society 2007, 362, 1887–1925.

Meyer, S. Signature in the Cell: DNA and the Evidence for Intelligent Design. HarperOne, New York 2010.

Mann, S. The Origins of Life: Old Problems, New Chemistries. Angewandte Chemie International Edition 2013, 52, 155–162.

Orgel, L. The Implausibility of Metabolic Cycles on the Prebiotic Earth. PLoS Biology 2008, 6(1), e18, doi: 10.1371/journal.pbio.0060018.

Rode, B. M., Fitz, D., Jakschitz, Th. The first steps of chemical evolution towards the origin of life. Chemistry & Biodiversity 2007, 4, 2674-702.

Saladino R, Crestini C, Pino S, Costanzo G, Di Mauro E (2012) Formamide and the origin of life. Phys. Life Rev. 9, 84-104

Shapiro, R. A simpler origin for life, Scientific American 2007, 296, 23-31.

Trevors, J.T., Abel, D.L, Chance and necessity do not explain the origin of life. Cell Biology International 2004, 28, 729-739.

Vasas, V., Szathmáry, E., Santos, M. Lack of evolvability in self-sustaining autocatalytic networks constraints metabolism-first scenarios for the origin of life. PNAS 2010, 107, 1470-1475. doi:10.1073/pnas.0912628107

Vollmert, B. Das Molekül und das Leben. Vom makromolekularen Ursprung des Lebens und der Arten: Was Darwin nicht wissen konnte und Darwinisten nicht wissen wollen. Rowohlt-Verlag, Reinbek 1985.