

Examples of Prebiotic Lab Simulations

Pulication	Reactants	Products	Energy Source	Conditions
Miller, 1953	CH ₄ , H ₂ , NH ₃	amino acids	electric discharge	gas phase reaction
Oro, 1961	HCN	adnine	chemical	high pH
Fox & Harada, 1958	amino acids	polymers	dry heat	180 C
Ponnamparuma, 1972	HCHO	sugars	chemical	high pH
Usher & McHale, 1976	RNA hexamers	RNA dodecamers	anyhydrous cond.	desert temp
Huber & Wachtershauser, 1997	CO, CH ₃ SH	C-C bonds	chemical	100 C
McCollom et al, 1999	CO, H ₂	hydrocarbons, fatty acids	chemical	200 C
Matsuno, 1999	glycine	oligoglycine	high temp	hydrothermal vent
Ferris et al, 2002	nucleotides	RNA	chemical	clay catalyst
Orgel, 1983	nucleotides	RNA	chemical	solution chemistry
Aliamandola et al, 1990s	H ₂ O, CH ₃ OH, NH ₃	organic mix	UV light	high vacuum, low temp
Hazen et al, 2002	pyruvate	complex mixture	chemical	high pressur & temp
Huber & Wachtershauser	H ₂ S, FeS ₂ , CH ₃ SH	acetic acid, amino acid	chemical	superheated water
Deamer et al, 2006	mononucleotides	RNA-like polymer	dry-wet heat	lipid matrices
Patel et al, 2015	HCN, Ferrocyanide, P-salts	Glycoaldehyde & arabinose	UV-light & impact heat	post-meteorite impact

adapted from D. Deamer's First Life

Simulation
atmosphere
solution chemistry
geothermal
solution chemistry
template directed
mineral catalysts
geothermal
hydrothermal vent
mineral catalysts
template directed
dust grain, interstellar
geothermal
vent conditions
combinatorial chemistry
combinatorial chemistry