# Chemical communication in life and AI

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**Abstract.** This work presents a montage of images inspired by our previous article: "Compression Principle and Zipf's Law of Brevity in infochemical communication". After training with the article, the images are generated by Bing's Copilot generative AI, selected for their beauty and representation of complexity in chemical communication. The montage juxtaposes these AI-generated images with the figures from the original article, emphasizing the infinite generative capacity of AI and raising questions about the role of AI in scientific creativity.
The visual represents the complex interplay of chemical communication within ecosystems, highlighting the role of infochemicals in shaping ecological communities. Results in artistic creation still contain errors but can produce beautiful and plausible images. But doesn't genetic replication or the generation of chemicals in organisms also cause errors? However, this is not the case for chemical science, despite there are research groups working on the automatic generation of proteins, following language models and physical constraints.
Admire these invented figures, and don't be frightened by chemical elements that don't exist, if any doubt: could they exist? How would they change our universe?
The complexity of chemical communication impacts research by challenging scientists to understand the nuances of these interactions and their implications for ecological dynamics. The montage reflects this complexity through its combination of scientific figures and AI-generated images, sparking contemplation on the potential future applications of AI in scientific discovery. We want it to be understood as a metaphor: can the AI errors of today, the inventions of formulas and chemical elements, be a reality tomorrow, can they inspire researchers for future work?
We invite viewers to admire the invented figures, stimulating curiosity about how AI could reshape our understanding of our universe. Maybe AI can give you the idea for your next paper?

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Fit to LND(5.24, 0.42)
allelochemicals
P(MW)
MW
(Z)-9-Tetradecenyl acetate
Formula: $C_{16}H_{30}O_2$
MW: 254.41
allelochemicals
$\lambda = 0.054$
Degree
Compound Size (MW)
Fit to LND(5.42, 0.47)
pheromones
infochemical
Fit to 33.2 + 13.5x
Number of C
Ethanol
Formula: $C_2H_6O$
MW: 46.07
pheromones
Pheromones
(intraspecific communication)
Allelochemicals
(interspecific communication)
Attractants
Allomones
Kairomones
Synomones
Example
Balance
Effect of aggregation pheromones in Pentatomid bug nymphs.
*Bulbophyllum amplebracteatum* attract the *Bactrocera cucurbitae* (melon fly).
Carnivorous plants (*Drosera capensis*) can attract many insects as ants (*formica fusca*).
*Pinus ponderosa* emits terpenoids that can attract pests from pine beetle (*Dendroctonus frontalis*).
*Amphiprion ocellaris* (Clown anemonefish) is attracted by sea anemones (*Actenactis magnifica*) in a symbiotic relationship.
Emitter
Receiver
Graphic design: Javi Martínez Córdoba
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IN ANIMAL COMMUMINCATION NETWORKS