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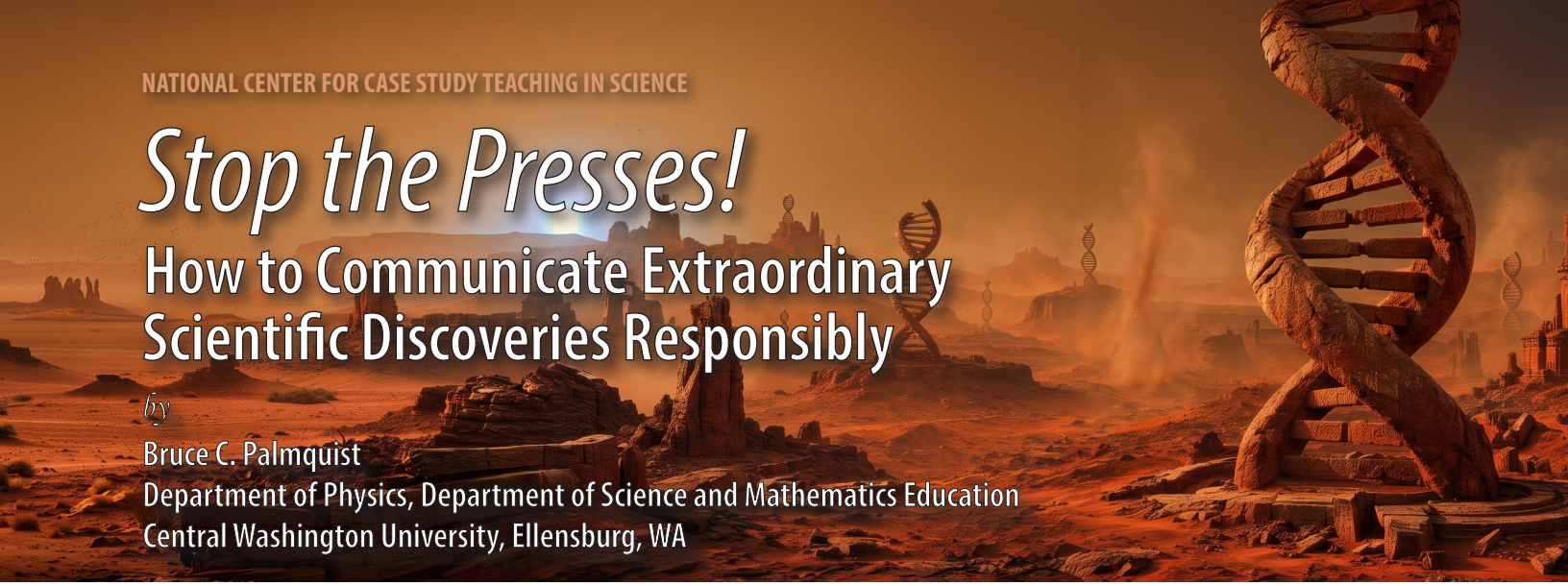

Stop the Presses!

How to Communicate Extraordinary Scientific Discoveries Responsibly

by

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Part I – Background

SpaceComp, a hypothetical private AI and space technology company, recently sent a small probe to Jezero Crater on Mars. The probe targeted dark deposits on a rock formation nicknamed Cheyava Falls, where NASA's Perseverance rover had previously detected possible biosignatures. SpaceComp's probe drilled into these deposits, collected samples, and ran a chemical analysis followed by an AI based "reconstruction" of the ancient molecular fragments, all done remotely on Mars.

The probe detected DNA nucleotide-like components resembling adenine, thymine, cytosine, and guanine, components of DNA. However, the ratios and structural variations were different from those typically seen in Earth organisms. These differences raise the possibility that the molecules are not contamination from Earth but may represent a form of DNA-like chemistry with an independent origin.

SpaceComp's leadership (especially the company owner, Ren) sees the discovery as groundbreaking and wants to announce it immediately. Kai, the lead scientist, agrees that the results are exciting but believes the evidence must be checked carefully before it is announced to the world. A collaborating team at MIT has already verified SpaceComp's preliminary quantitative analyses, but feels that further scientific scrutiny is still needed.

Question

1. SpaceComp may have discovered the first extraterrestrial DNA-like molecule beyond Earth. List the first three specific steps the company should take and briefly describe why each is important. (Note: you may assume that the leaders of SpaceComp already know the regulations of their home country, the county of the launch, and any relevant multi-national treaties.)

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Part II – Sharing the Science

"We need to tell the world about this!" Ren said, almost bursting into the lab. "We've detected DNA-like molecules in Martian rock. This changes everything."

Kai nodded. "It's an extraordinary result. But it's exactly the kind of discovery that must be considered carefully. We may be the first group ever to conclusively identify life on another planet. Before we go public, we need to be certain."

Ren gestured impatiently. "We are certain. Didn't your team finish the chemical analysis?"

"Yes," said Kai. "The probe discovered nucleotide like fragments—similar to how adenine, thymine, cytosine, and guanine are bonded in DNA—but with ratios and structural features unlike those known in any Earth organism. That's what makes them so intriguing and consistent with a possible extraterrestrial origin."

"But the AI reconstruction worked beautifully," Ren replied. "Didn't we test it and compare with how it arranged the nucleotide fragments in thousands of Earth species?"

"We did," said Kai. "We degraded known DNA under long term Mars-like radiation and used our protocol to rebuild the original sequences. It performed extremely well, with over 99.8% reconstruction accuracy in tests. But we still needed outside evaluation."

"And that's why we sent everything to MIT," Ren said. "They checked the chemistry and said our numbers were solid."

"Exactly," Kai agreed. "They confirmed our measurements and agreed that the molecular patterns don't match any known Earth life. That's an essential first step, but it's still just one independent group. And they receive some of their funding from our foundation, which means people could question their objectivity."

Ren sighed. "So what now?"

"Now we submit the full analysis and AI protocol for broader peer review," said Kai. "If multiple independent teams confirm what MIT found, then we'll have something truly historic. A press release announced before broader peer review would undermine our credibility."

Question

2. Think of past major scientific announcements that you have read or heard about (e.g., gravitational waves, exoplanets, COVID lab results, cold fusion, high temperature superconductivity, etc.). Focus on those you think were either very effective or very ineffective. Which communication strategies should SpaceComp adopt for its announcement and which should it avoid? Why? Examples of communication strategies include being highly technical and sharing everything about the project, being vague about specifics, hyping the findings for maximum impact, underselling the results, etc.

Part III – Other Key Communication Considerations

Ren has agreed to submit the manuscript for expedited peer review to a respected journal but still wants to issue a public statement. Sam, director of public relations, is asked to shape the plan.

Ren: The takeaway should be simple: we chemically analyzed ancient Martian material in our spacecraft on Mars and used the analysis to construct a DNA-like molecule with our new AI protocol.

Kai: In the meantime, the public statement needs to say that we've paused and explain why. Until independent review and oversight teams weigh in, we need to be careful about claims.

Sam: Two additions will help our message be better received. First, we explain the need for a "do no harm" pause—no new drilling near Jezero Crater until consultation as part of oversight policies and implementation of planetary protection guidelines and practices. Second, we should pre-brief two outside advisors: an ethicist with planetary protection experience and a multifaith communicator. They won't judge the science but they'll help us anticipate and respond to public questions and unintended meanings in our wording.

Ren: We're scientists. Won't this complicate the message?

Sam: It will clarify it for audiences who are listening for risk and meaning. The moment we speak, people will start asking what we know versus what we don't know, why we've paused to avoid harm, and what the discovery means to them. A single afternoon advisory huddle will help us pressure test our message without slowing us down, so we reduce misinterpretation, avoid preventable backlash, and increase public understanding and trust.

Kai: Scientifically, we can say that the probe found nucleotide-like fragments with ratios and structural features different from those seen in Earth organisms, MIT researchers verified our measurements, and additional groups are now reviewing our protocol. Our statement should show that sequence—verification, independent checks, consultation, and a no-harm pause—so we don't oversell.

Sam: Also, remember our public; most people in the world say they believe in God or gods who have a role in the creation of life. They'll bring that lens to this news on day one. There may be more than just science- and methodology-based questions ahead.

Kai: But we're talking microbes. Isn't that different?

Sam: Microbes are still life. Some traditions—Jainism, for example—emphasize no harm toward all living beings, even microscopic ones. And in practical terms, intelligent life begins with microbial life. If we disrupt a nascent biosphere, are we prejudging its future? Even if our claim stays modest, our language should show we've considered the many questions involved, including those involving ethics and plural worldviews.

Ren: Fine. One afternoon. One ethicist, one multifaith convener. No delays.

Sam: Done. The press kit will include: (1) the core lab facts and uncertainties; (2) our no-harm pause and next steps; (3) who independently checked what, and what's next; (4) a note that we invited outside perspectives to improve clarity and public understanding.

As the team finalizes their statement, Ren watches the clock. The data look strong; independent reviews are in motion. Sam's quick outside consult is set. Kai adds one sentence: "We will pause on-site activity near Jezero while review proceeds here on Earth."

Question

3. In a few sentences, name the voices (both scientific and non-scientific) that you would include to add authority to this announcement, and explain how their presence could make the message clearer and more trustworthy to the public. You may name specific people or general titles (such as doctors, engineers, teachers, etc.) of people you would include.