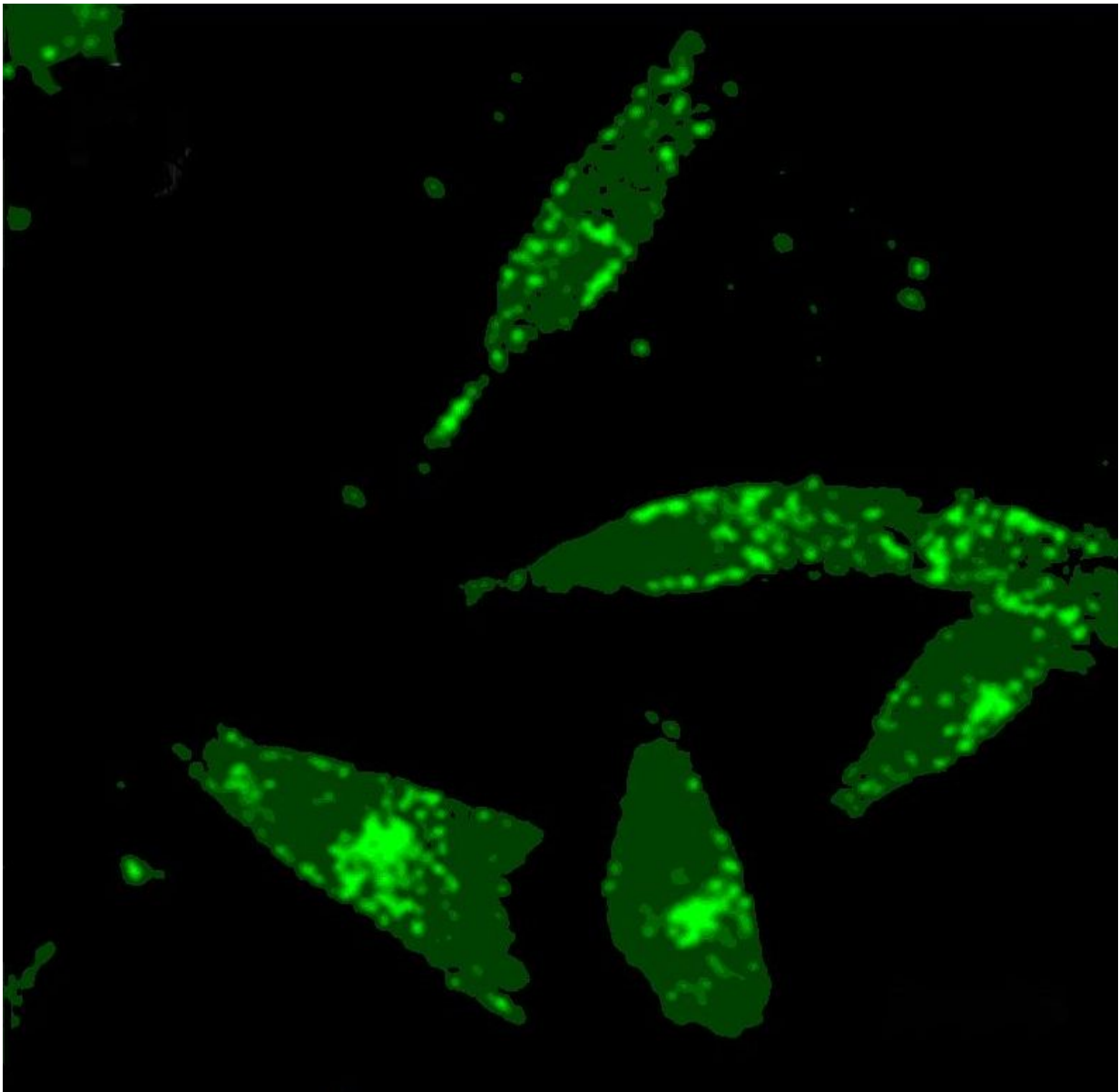


Thinking positively: A new way to deliver medicine into cells

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New CPPs (attached to a fluorescein probe) efficiently enter cells. Credit: American Chemical Society

Just as a scientist dressed in a lab coat and goggles might get stuck behind the velvet rope at a trendy bar, many otherwise good drugs can't get inside cells if they don't look the part. In a report published this week in *ACS Central Science*, researchers report a new set of molecules that could ferry medicines into cells by taking on the right charge and shape, easily sliding past lipid membranes.

Timothy Deming and coworkers note that a special class of [molecules](#) called cell-penetrating peptides (CPPs) are particularly good at getting into [cells](#), and they can bring along cargo, including therapeutics and imaging agents. CPPs are short chains of [amino acids](#), whose positive charges can stick to negatively charged cell surfaces. In addition, oily amino acids can help the molecules slide through greasy plasma membrane, but at a cost. Greasier CPPs are typically more toxic. With these considerations in mind, Deming and colleagues sought to design a CPP that could efficiently get into cells without the toxic side effects.

The researchers developed new CPPs with the usual positive charge. But instead of incorporating oily amino acids, they included [sugar molecules](#) that dissolve easily in water. These new molecules entered cells more efficiently than a standard CPP, and they had very low toxicity. The team says that they hope these CPPs will be the basis for new, safe and efficient drug-delivery methods.

More information: Reinventing Cell Penetrating Peptides Using Glycosylated Methionine Sulfonium Ion Sequences, *ACS Central Science*, 2015.

Provided by American Chemical Society

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