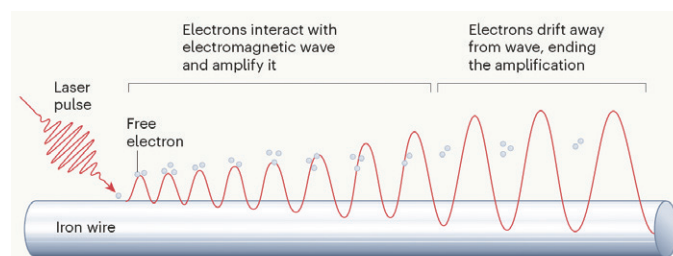


Irradiating an Iron Wire into a Laser-like Light Source

In a groundbreaking study published in *Nature* on November 2, Zhang *et al.* from the CAS Shanghai Institute of Optics and Fine Mechanics presents an innovative approach to generating laser-like light using a piece of wire (doi: 10.1038/s41586-022-05239-2).

By shining a laser on an iron wire, the researchers generated fast-moving electrons that amplified the electromagnetic waves created by the light interacting with the wire. This method could potentially surpass existing methods that use free-electron lasers, which are typically limited to large-scale facilities.

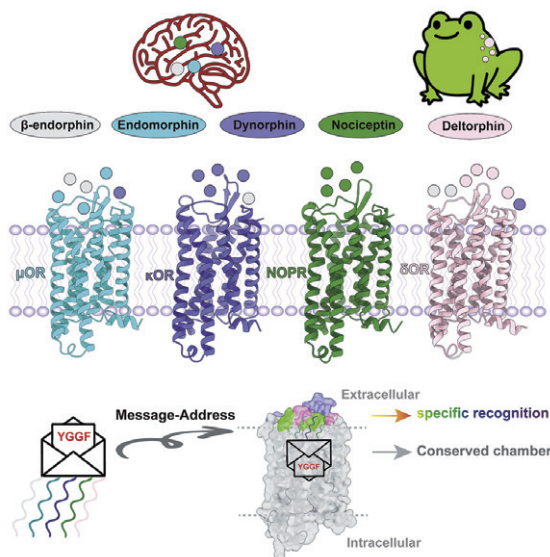
The new approach, if extended to other media and higher frequencies, could lead to highly compact



Amplification of light by laser-induced free electrons. (Credit: Nicholas Rivera/*Nature*)

and tunable sources of amplified light with potential applications in materials that are difficult to use as laser media.

A Promise for Better Painkiller



The selectivity of four human opioid receptors towards endogenous opioid peptides and deltorphin, a naturally occurring peptide primarily found in the skin of certain frogs. (Credit: *Cell*)

Researchers from the CAS Shanghai Institute of Materia Medica (SIMM) and their American collaborators have made a breakthrough in understanding opioid receptor interactions with peptides, potentially leading to safer pain relief medications.

The study, published in the journal *Cell*, used cryogenic electron microscopy (cryo-EM) to observe the binding of natural peptides to all four types of human opioid receptors (doi: 10.1016/j.cell.2022.12.026).

These insights could help drug developers create safer and more effective pain relief options by understanding the activation mechanisms of these receptors. Cryo-EM images captured the receptors in their “active state,” providing a detailed view of peptide-receptor interactions. This research brings the scientific community closer to developing improved pain relief options with reduced side effects and addiction risks.

Towards a Better Version of Pea Pan-genome

A pan-genome is like a pool of diverse personalities within a species, capturing the unique genetic traits of each individual. Creating a pan-genome helps researchers understand a species' diversity, adaptation, and evolution, benefiting crop breeding and conservation efforts.

In a recent study published in *Nature Genetics* (doi: 10.1038/s41588-022-01172-2), a joint team of Chinese and Indian scientists improved the pea reference genome of cultivar ZW6, enabling a better understanding of pea genetics. They also constructed a pea pan-genome from 118 accessions, providing additional genes and sequences not found in the reference genome.

These resources offer insights into pea genome evolution, domestication and valuable information for pea genetics and breeding research.



With the help of pan-genomes, scientists may pin down the genes required for forming a pod. (Source: Pexels)