

Fluorescent Probes For Detection Of Copper In Cells And Living Organisms

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Technology description

Copper is involved in the development and progression of many diseases, including Menkes disease, Wilsons disease, neurodegenerative diseases, anemia, heart disease, and cancer. Furthermore, copper is a well-known metal cofactor in many enzymes and is necessary for proper cellular function. Therefore, there is a great demand for systems that can be used to detect and study copper in both cells and, more importantly, living organisms.

Scientists at UC Berkeley have developed multiple molecular sensors for the detection of copper that are based on fluorescent scaffolds. In the absence of copper, these fluorescent sensors have little or no fluorescent signal following excitation by a light source. However, in the presence of copper, these fluorescent copper sensors emit light in the near-infrared region of the electromagnetic spectrum, making them ideal for in vivo imaging because they circumvent issues of autofluorescence and signal attenuation by tissue.

Application area

- Diagnostics and determination of treatment efficacy in human patients
- Animal models for genetic and neurodegenerative diseases
- Detection of basal levels of copper
- Long-term experiments with copper levels monitoring (e.g. aging and dietary studies)

Advantages

- Real-time
- Non-invasive
- Non-toxic
- Selective
- Highly sensitive

Institution

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