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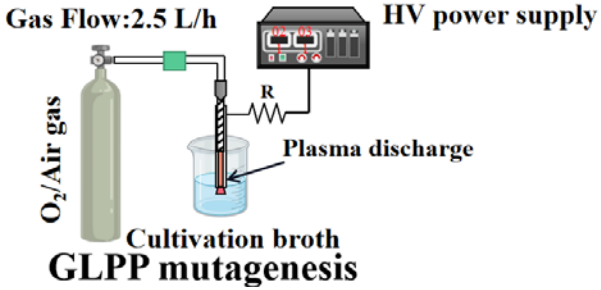
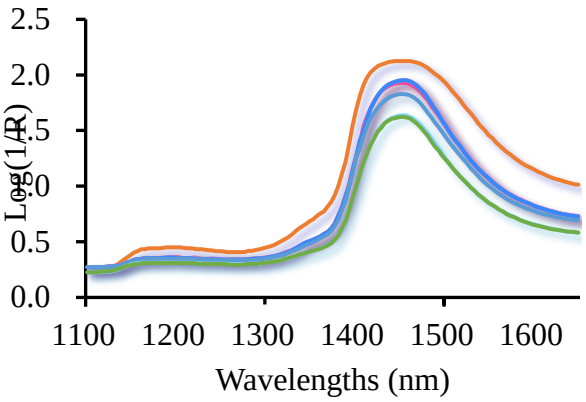
# Integrative combination of gas–liquid-phase plasma mutagenesis and high-throughput screening to enhance eicosapentaenoic acid production by *Schizochytrium* sp.

**Key words:** Eicosapentaenoic acid (EPA); *Schizochytrium* sp.; Mutagenesis; High-throughput screening; Near-infrared spectroscopy (NIRS)

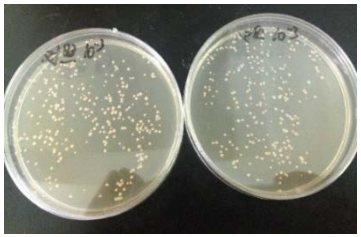
# Research Summary

**This study developed an innovative strategy to increase EPA production in *Schizochytrium sp.* involving gas-liquid-phase plasma (GLPP) mutagenesis followed by near-infrared spectroscopy (NIRS) screening, which enables the identification of high-yield strains from a 1469 mutant library in just one week. The study explored in the following aspect:**




- **GLPP mutagenesis of *Schizochytrium* sp.**
- **NIRS high-throughput screening of high-yield strains for EPA production**
- **Medium optimization and fed-batch fermentation for high efficient EPA production**





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# *Innovation points*

- **Application** of gas-liquid-phase plasma (GLPP) mutagenesis to *Schizochytrium* sp.

- **Establishment** of high-throughput screening method based on near-infrared spectroscopy (NIRS) technology.

- **Identification** of high-yield strains and optimization of fermentation process to enhance EPA production.

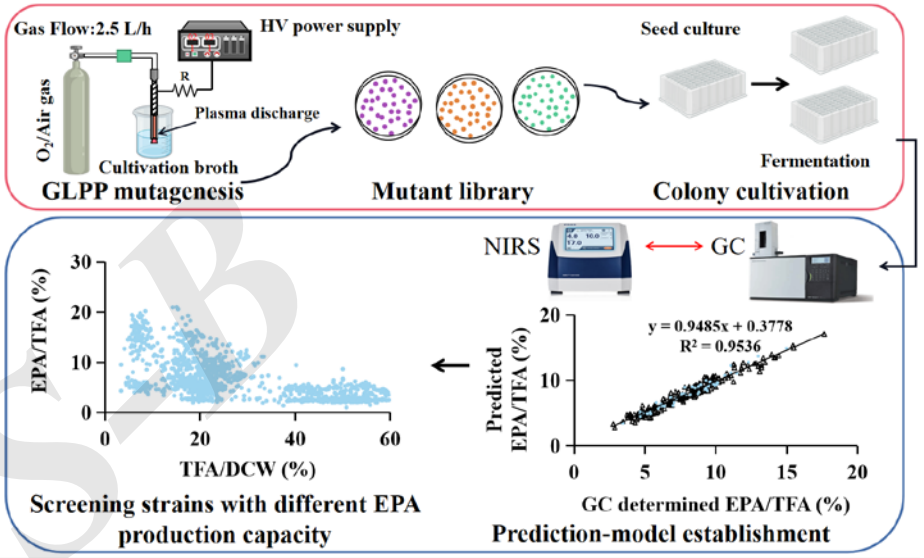


Figure 1

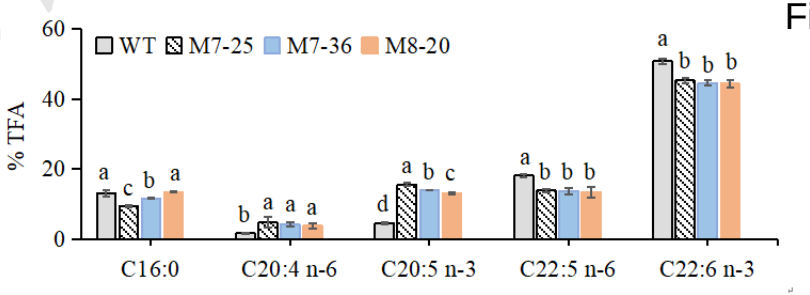


Figure 4(f)

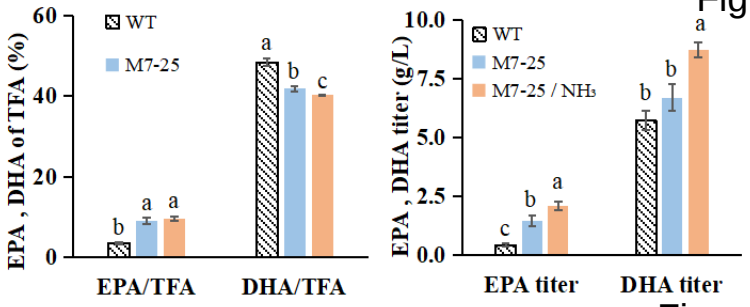


Figure 6(b,c)

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