Marine Invertebrates: An Untapped Pharmacopeia

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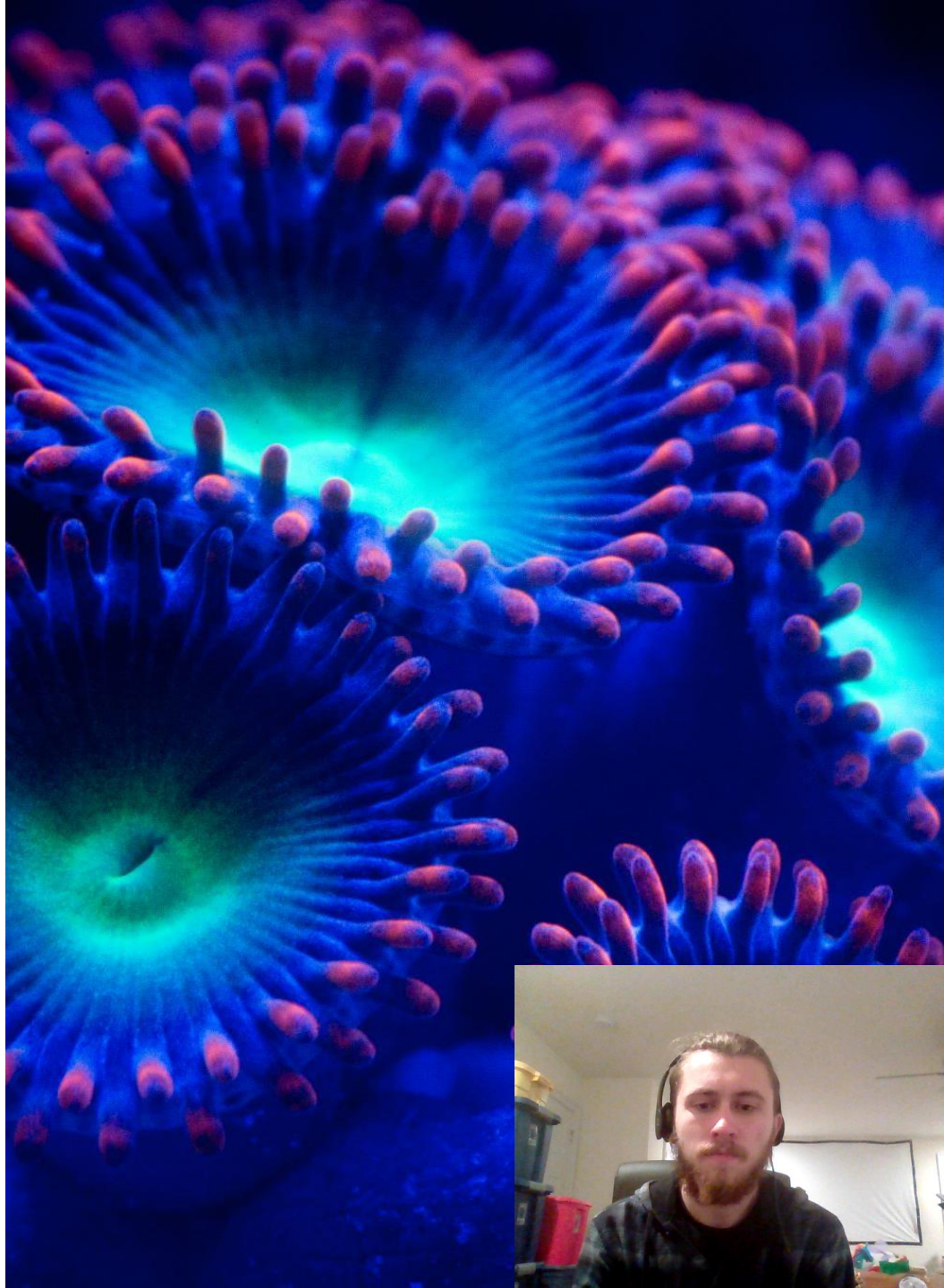
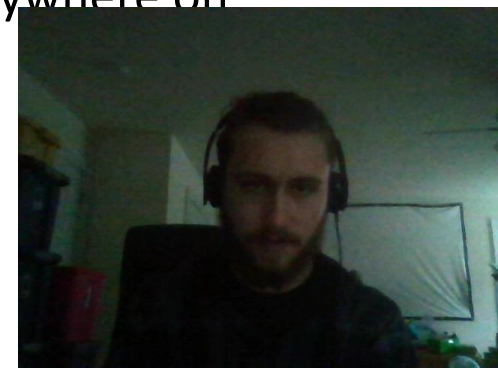
Outline

- A general overview of marine invertebrates.
- When marine invertebrates first come into use as medicines.
- Talk about secondary metabolism.
- Marine invertebrates' current uses in the medical field.
- Why marine invertebrates should be of more interest as potential medical insights and therapies
- Marine invertebrates' potential future uses in the medical field.
- The advantages marine invertebrates have over other types of medicines.



A general overview of marine invertebrates.

- Marine invertebrates represent the vast majority of marine biodiversity.
- Sponges, jellyfish, corals, bluebottles, worms, shells, sea urchins, starfish, crustaceans, sea cucumbers, and nudibranchs.
- Can range in size from microscopic to some of the largest creatures on earth.
- Can be found just about everywhere on Earth.

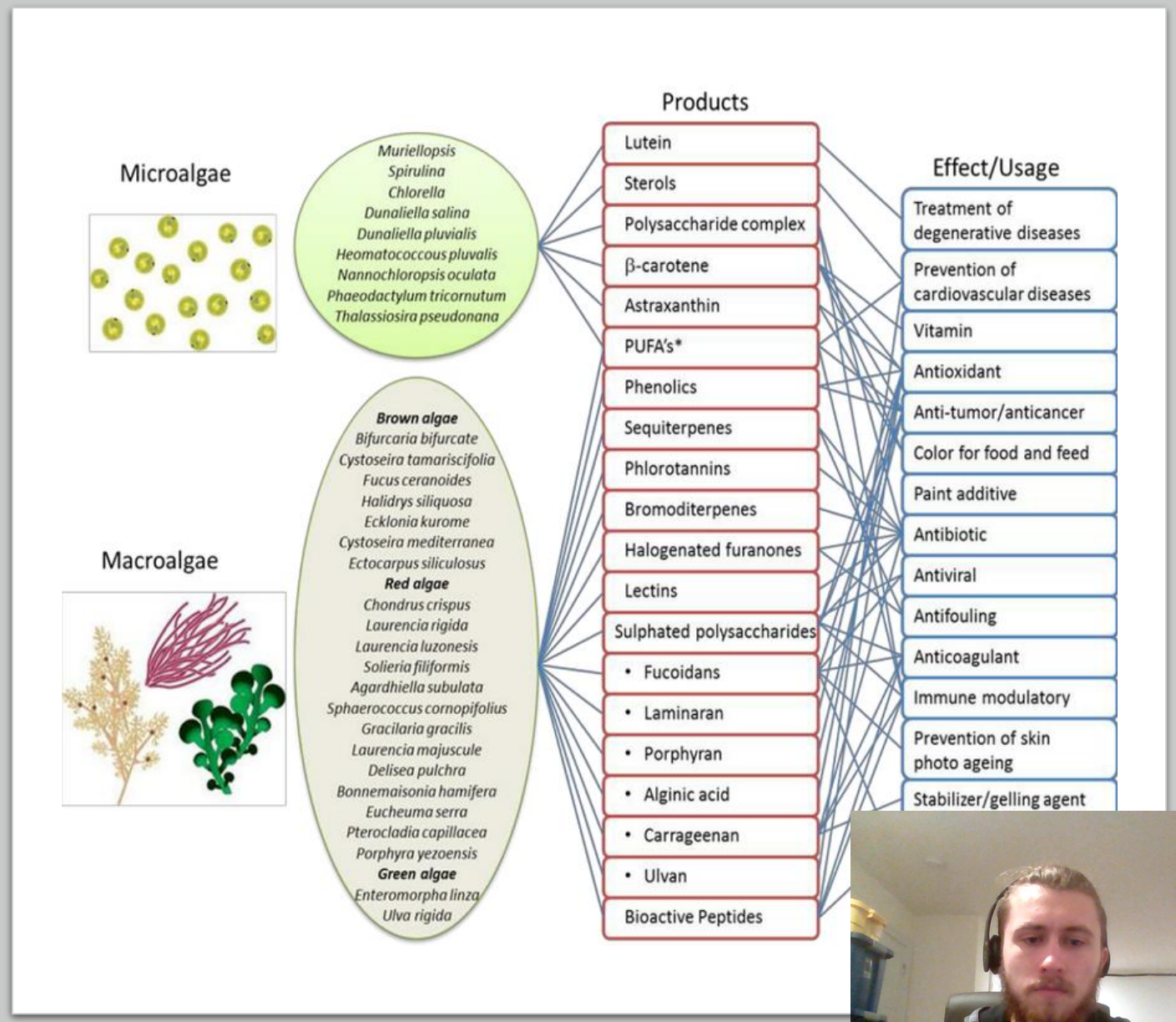


When marine invertebrates first come into use as medicines.

- About 4000 years ago.
- The classical Greeks and early Byzantine periods referenced marine invertebrates used in medicines.

Talk about secondary metabolism.

- Natural products chemistry.
- Marine natural products.
- Derived from primary metabolites.

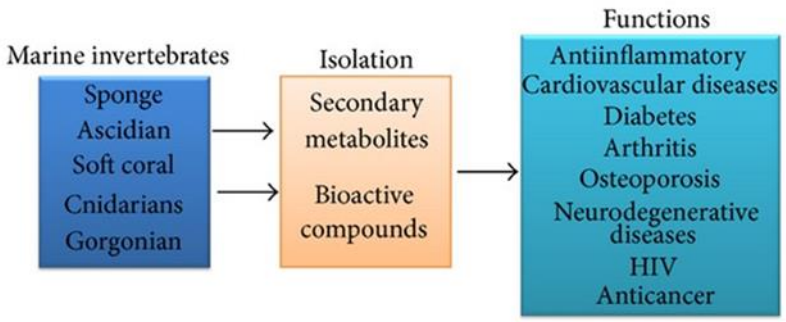


Sources of Secondary Metabolites from Marine Organisms

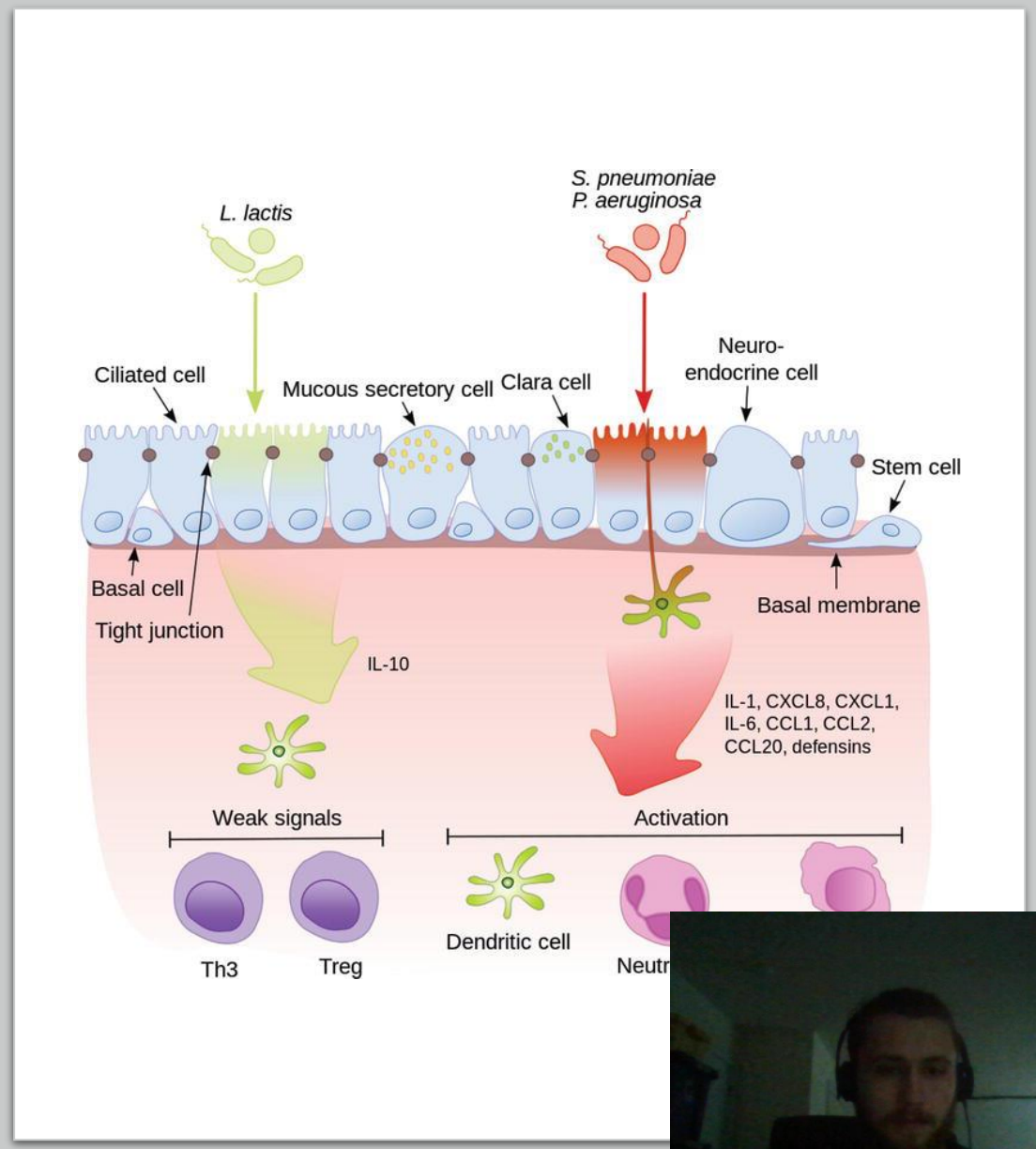
- Marine Ecosystems and processes.
- Functions are ecological in nature.
- Defense, nutrient acquisition, settlement cues, predator/prey interactions, food selection, mate recognition, and symbiosis.

Marine invertebrates' current uses in the medical field.

- Limulus Amebocyte Lysate (LAL) test.
- Some other uses: treat asthma, cancer, pulmonary tuberculosis, and urinary diseases.

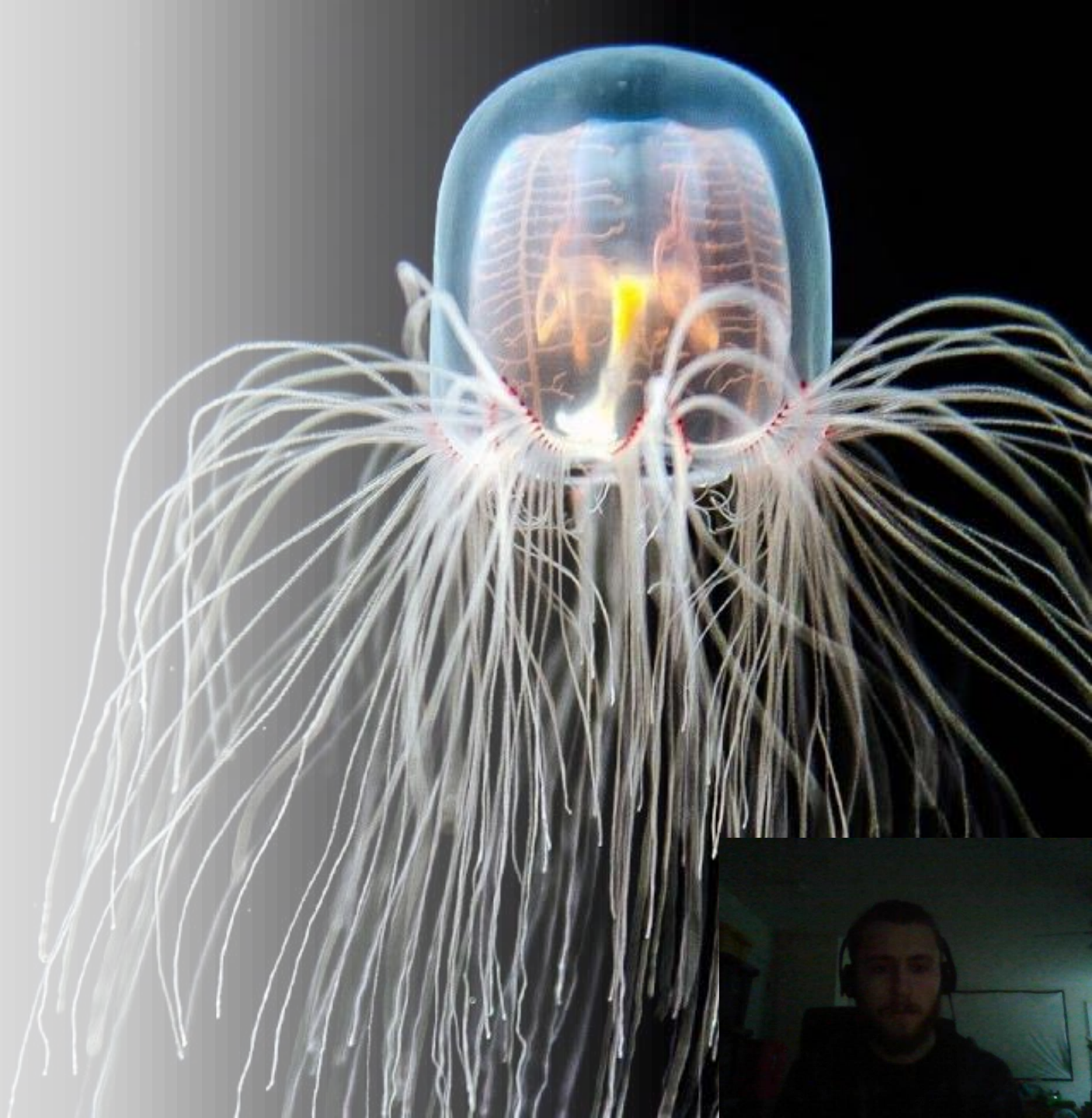


Summary of marine invertebrate natural products with anti-inflammatory and some chronic diseases (Senthilkumar 2013).



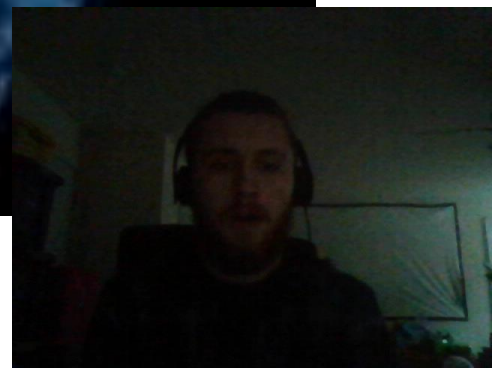
Why marine invertebrates should be of more interest as potential medical insights and therapies.

- The Immortal Jellyfish (*Turritopsis dohrnii*)
- Transdifferentiation: Through this process the immortal jellyfish can live forever under the right conditions.
- Potential in human cells.



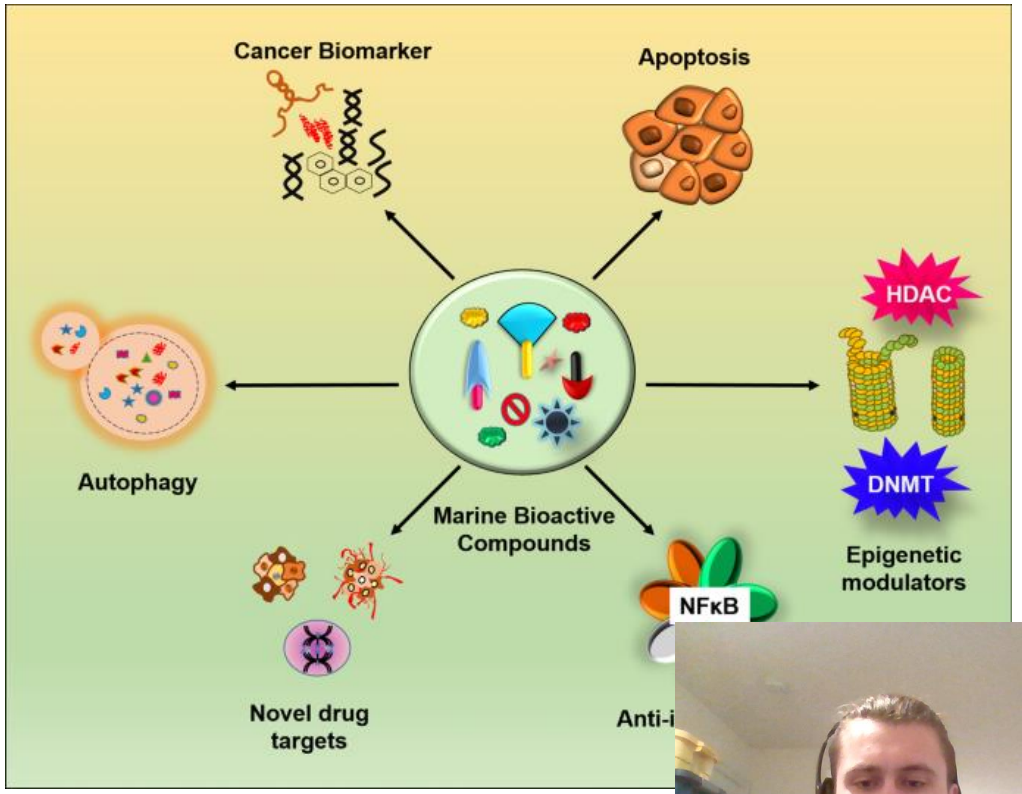
Marine invertebrates' potential future uses in the medical field.

- New research has shown that some species of jellyfish may be useful for developing therapeutics to treat arthritis, hypertension, ulcers, skin conditions, and improving digestion.



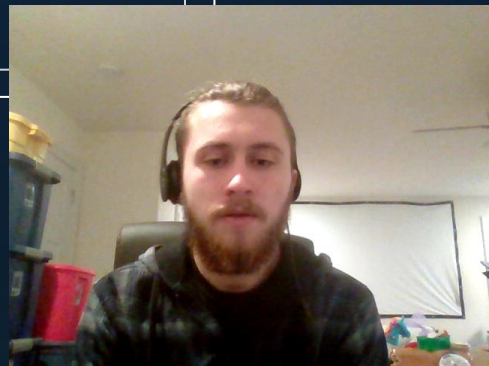
The advantages marine invertebrates have over other types of medicines.

- Systematic searches for new drugs have shown that marine invertebrates produce more antibiotic, anti-cancer, and anti-inflammatory substances than any group of terrestrial organisms.



Conclusion

Are marine invertebrates the future of medical research?



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