



FASEB

Federation of American Societies
for Experimental Biology

Cephalopod Research

Cephalopods are a group of marine invertebrates that includes octopus, squid, and cuttlefish among many other diverse animals. Their characteristics enable scientists to explore various features and applications of biology important for advancing science and medicine.

The Value of Cephalopod Research

Neuroscience Research



Cephalopods are highly intelligent animals. They have the largest and most complex brains among all invertebrates.

Octopuses help neuroscientists not only study brain development, limb movement, and memory, but also find ways to treat brain diseases.

Treating Eye Diseases



The octopus has the highest sensitivity to light polarization which help researchers study the pigments in our eyes that filter blue light and protect vision.

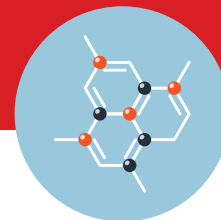
This allows researchers to learn more about eye diseases like macular degeneration and develop new therapies.

Improving Gene Therapy



Cephalopods can edit their RNA, allowing them to control the proteins they make. Scientists use this feature to create new therapies for genetic diseases such as muscular dystrophy by fixing damaged genes. This is called gene therapy.

Developing Prosthetics



Cephalopods can regrow their muscles, nerves, and arms/tentacles. This property helps researchers develop therapies like prosthetics for humans with tissue, organ, or limb damage, such as those occurring from spinal cord injuries.

How are Cephalopods Cared For in Research?

Researchers and veterinarians treat cephalopods with the utmost care just like all animals in research. Cephalopod studies are routinely monitored to ensure excellent health and well-being.

IACUC: Federal laws require that institutions have an Institutional Animal Care and Use Committee (IACUC) made up of scientists, nonscientists, veterinarians, and members of the public to make sure studies follow all rules and regulations. Oversight bodies such as IACUCs, ensure that cephalopod care and use is appropriate and humane. This includes making sure people who work with cephalopods are properly trained and have the resources to provide appropriate care.

AAALAC: In addition to following federal and local laws, many institutions volunteer to participate in AAALAC International programs such as accreditation and assessments. AAALAC is a private organization that promotes the humane treatment of all animals in science, including invertebrates such as cephalopods. Therefore, AAALAC-accredited institutions using cephalopods refer to AAALAC's detailed guidance.