



A whale for a laboratory animal?

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In collaboration with Griffith University in Australia, an Eawag research group has succeeded in developing humpback whale cell cultures in the laboratory.

As an aquatic species with an average length of 17 metres, humpback whales are understandably not the ideal candidates for laboratory research. They are of research interest, however, as, although they spend a large proportion of their lives far from civilisation in Arctic and Antarctic waters, large amounts of environmental pollutants are stored in their blubber.

In collaboration with Griffith University in Australia, a research group at Eawag has now succeeded in developing humpback whale cell cultures in the laboratory. The cells originated from those of two wild males, from which the skin samples were taken during their annual migration from Northern Australia towards the Antarctic.

"The cell lines will enable the researchers to assess the toxicological impact of environmental pollutants on whale cells in the laboratory", says Eawag-scientist Michael Burkard. This is an important step towards being able to make more accurate predictions regarding the effects of chemicals on humpback whales. Until now, whale researchers have had to rely on default values derived from laboratory animals such as mice or fish for their risk assessments for the whales.

Initial tests on the newly-developed humpback whale cells have indicated that they have a lower sensitivity to the substance DDE than human cell cultures. DDE is a metabolite of the well-known insecticide DDT, and builds up in the blubber of whales. These findings clearly indicate that DDE can have a differing effect on different species.

When the whale cells were exposed to a combination of chemicals taken from whale blubber, the cells

reacted much more strongly than they did to DDE alone. The conclusion which may be drawn from this is that a mixture of chemicals has a greater toxicological effect than individual substances on their own.

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Original article in Aquatic Toxicology

Griffith University, Southern Ocean Persistent Organic Pollutants Program (SOPOPP)

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