

Potential Adverse Effects of Petroleum/Dispersant Exposure,” involves the latest in innovative testing methods that takes advantage of where the researchers have set up shop. Although the Hollings Marine Laboratory is a National Oceanic and Atmospheric Administration (NOAA)-administered facility, it is a fully cooperative enterprise with activities governed by the five partner organizations that include MUSC and the National Institute of Standards and Technology (NIST).


“It’s not just great science we’re proposing, but it is also the setting that provides us a step up compared to lots of places. We have this unique community that we have built and continue to build. It validates the marine biomedicine model we have of having a medical school partnering with NOAA and NIST and world-class analytical chemists and biologists.”

### Into the Lab

Guillette and colleagues have worked extensively for years trying to find out how environmental contaminants and native hormones influence gene expression via steroid receptors – acting as mimics of estrogen, progesterone and testosterone. The question was how to screen chemicals, in this case the petroleum and dispersant chemicals, in a way to avoid testing a wide array of wild animals.

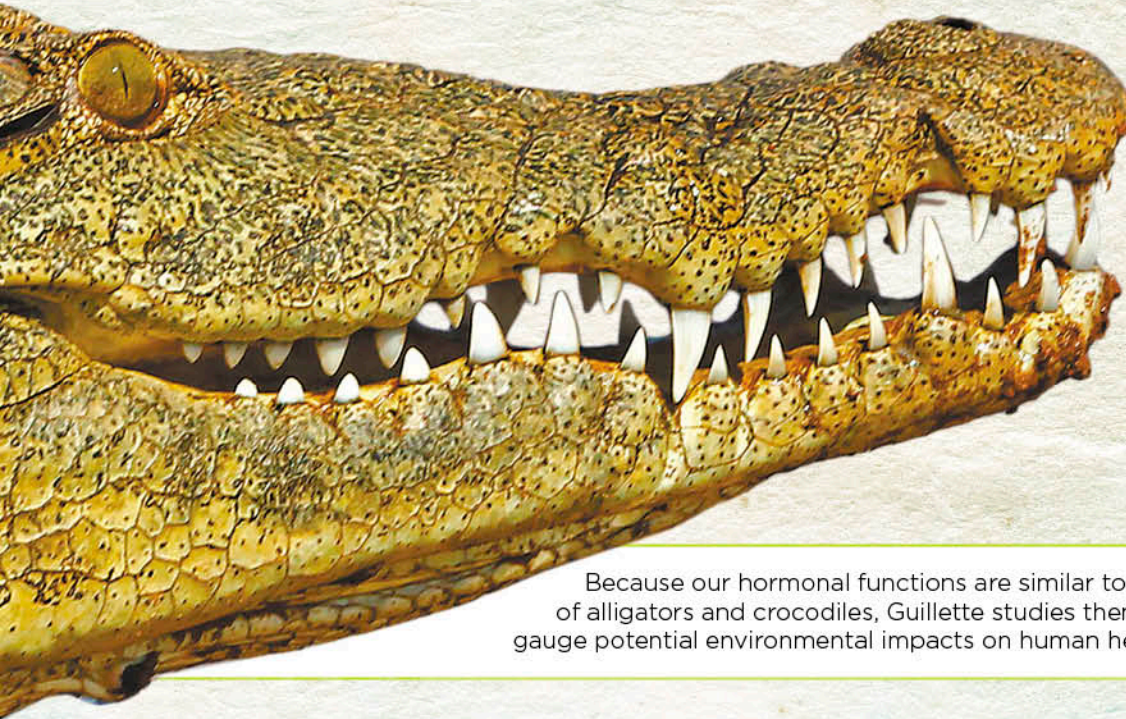

Fortunately, together with Spyropoulos, Kohno and Baatz, they had insights based on their research programs that could contribute a new approach to testing environmental chemicals. They’ve developed a technique that can take the estrogen or progesterone receptors from the more than 40 marine animals that have been cloned and put it into a cell with a reporter construct so that when researchers add a chemical, it binds to the receptor, says Guillette.

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“It’s not just your genes. The idea is there is far more you in your health than just what is inherited from mom and dad. Your daily actions actually have a much greater impact, not only on your health but the health of your children and even your grandchildren. This potentially has a multi-generational effect.”

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Because our hormonal functions are similar to those of alligators and crocodiles, Guillette studies them to gauge potential environmental impacts on human health.